

September 5, 2007

Mr. Christopher M. Crane
President and Chief Nuclear Officer
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4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT NO. 1; DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3; LASALLE COUNTY STATION, UNITS 1 AND 2; LIMERICK GENERATING STATION, UNITS 1 AND 2; OYSTER CREEK NUCLEAR GENERATING STATION; PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3; QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION RE: RELIEF REQUEST TO USE OF THE BOILING WATER REACTOR VESSEL AND INTERNALS PROJECT GUIDELINES (TAC NOS. MD5352 THRU MD5363)

Dear Mr. Crane:

By letter to the Nuclear Regulatory Commission (NRC) dated April 19, 2007, Exelon Generation Company, LLC and AmerGen Energy Company, LLC submitted a request to use the Boiling Water Reactor Vessel and Internals Project (BWRVIP) guidelines in lieu of specific American Society of Mechanical Engineer Boiler and Pressure Vessel Code requirements for the subject plants.

The NRC staff is reviewing your submittal and has determined that additional information is required to complete the review. The NRC staff sent a draft of the enclosed questions by facsimile to the licensee on August 16, 2007. During a conference call with your staff on August, 24, 2007, to clarify the intent of the questions, the NRC staff agreed that the responses to Question 1 and Question 3 could be combined into a single response, and that a response to Question 2 was not necessary because the information that was requested was already contained in docketed material.

In a followup discussion with your staff on August 27, 2007, it was agreed that the licensee's staff would provide a response to the enclosed questions by October 5, 2007.

The NRC staff considers that timely responses to requests for additional information help ensure sufficient time is available for staff review and contribute toward the NRC's goal of

C. Crane

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efficient and effective use of staff resources. If circumstances result in the need to revise the requested response date, please contact me at (301) 415-1055.

Sincerely,

/RA/

Christopher Gratton, Senior Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-461; 50-237 and 50-249; 50-373 and 50-374;
50-352 and 50-353; 50-219; 50-277 and 50-278; and 50-254 and
50-265

Enclosure:
Request for Additional Information

cc w/encl: See next page

C. Crane

-2-

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Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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50-352 and 50-353; 50-219; 50-277 and 50-278; and 50-254 and
50-265

Enclosure:
Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION
REGARDING A REQUEST FOR RELIEF FOR
CLINTON POWER STATION, UNIT NO. 1; DRESDEN NUCLEAR POWER
STATION, UNITS 2 AND 3; LASALLE COUNTY STATION, UNITS 1 AND 2;
LIMERICK GENERATING STATION, UNITS 1 AND 2;
OYSTER CREEK NUCLEAR GENERATING STATION;
PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3;
QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2
DOCKET NOS. 50-461; 50-237 AND 50-249; 50-373 AND 50-374; 50-352 AND
50-353; 50-219; 50-277 AND 50-278; AND 50-254 AND 50-265

By letter dated April 19, 2007, Exelon Generation Company, LLC and AmerGen Energy Company, LLC (the licensee) submitted Relief Request (RR) RS-07-058 for its boiling-water reactor (BWR) fleet. The licensee proposed to use BWRVIP guidelines as an alternative to certain requirements of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for inservice inspection (ISI) of reactor vessel internal (RVI) components. The NRC staff has reviewed the information the licensee provided that supports the proposed RR and has the following questions:

(1) In a letter dated October 1, 2003, Entergy Nuclear Operations Inc. (Entergy), the licensee of the Vermont Yankee Nuclear Power Station (VYNPS), submitted a similar RR in which the licensee proposed to implement the BWRVIP guidelines in lieu of ASME Code Section XI requirements for the VYNPS's RVI components. In a supplemental letter dated January 22, 2004, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML040690734), Entergy submitted details of the inspections for the RVI components that are consistent with the BWRVIP inspection guidelines. The Nuclear Regulatory Commission (NRC) staff, in its safety evaluation (SE) dated September 19, 2005, approved the VYNPS's RR.

The NRC staff requests that the licensee provide inspection requirements and inspection frequencies for the following units similar to those addressed in VYNPS's (ADAMS Accession No. ML040690734). This information will enable the NRC staff to perform an effective review of the BWRVIP inspection criteria that will be implemented by the licensee.

- (1) Clinton Power Station, Unit No. 1
- (2) Dresden Nuclear Power Station, Units 2 and 3

- (3) LaSalle County Station, Units 1 and 2
- (4) Limerick Generating Station, Units 1 and 2
- (5) Oyster Creek Nuclear Generating Station (Oyster Creek)
- (6) Peach Bottom Atomic Power Station, Units 2 and 3
- (7) Quad Cities Nuclear Power Station, Units 1 and 2

(2) Deleted

(3) Identify whether the following RVI components in each of the units specified in question (1) have previously experienced cracking due to stress corrosion cracking, intergranular stress corrosion cracking, irradiation-assisted stress corrosion cracking (IASCC) or cyclic loading and identify the extent of cracking. Also provide information regarding the inspection methods and inspection frequencies that were used thus far, and the corrective actions that were taken when degradation was identified in these RVI components.

- (1) Core plate hold-down bolts
- (2) Top guide grid beams and hold-down assemblies
- (3) Core shroud welds
- (4) Core shroud support welds
- (5) Core spray piping
- (6) Core Spray nozzle and thermal sleeve
- (7) Core spray spargers
- (8) Jet pump assembly and Jet pump beams
- (9) Jet pump diffuser
- (10) Jet pump riser welds and thermal sleeves
- (11) Control Rod Drive (CRD) guide tube
- (12) CRD stub tube
- (13) In-core housing
- (14) Dry tube
- (15) Instrument penetrations
- (16) Vessel inside diameter brackets
- (17) Low Pressure Coolant Injection couplings
- (18) Fuel support castings
- (19) CRD nozzle
- (20) Steam dryer
- (21) Moisture separator
- (22) Surveillance capsule specimen holder
- (23) Lower plenum
- (24) Feedwater sparger

(4) The NRC staff requests that the licensee identify whether there are any furnace-sensitized stainless steel vessel attachment welds associated with the RVI components in the plants identified in question (1). It is requested that the licensee provide an explanation regarding the type of inspection program and any additional augmented inspection program that are implemented for any existing furnace-sensitized stainless steel attachment welds in these BWR units.

(5) In a letter dated October 7, 2005, Entergy Nuclear Operations Inc., the licensee of the James A. FitzPatrick Nuclear Power Plant, submitted a similar RR (ADAMS Accession

No. ML052900075) which included the following BWRVIP reports. To maintain consistency, the NRC staff requests that the licensee include the following BWRVIP reports in its response, and make a commitment that it will comply with the inspection requirements specified in these reports.

(1) BWRVIP-25, "BWR Core Plate Inspection and Flaw Evaluation Guidelines."

(2) BWRVIP-27-A, "BWRVIP Standby Liquid Control System/Core Spray/ Core Plate ΔP Inspection and Flaw Evaluation Guidelines."

(3) BWRVIP-138, "BWRVIP Updated Jet Pump Beam Inspection and Flaw Evaluation."

(6) The NRC staff requests that the licensee confirm whether NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking," will be used for the inspection of feedwater sparger tee welds and feedwater sparger piping brackets.

(7) In Table 1 of Attachment A of the submittal dated April 19, 2007, the licensee indicates that VT-3 inspection will be performed per the BWRVIP-48 report, "BWR Vessel Internal Project, Vessel ID Attachment Weld Inspection and Flaw Evaluation Guidelines," on the lower surveillance specimen holder bracket welds that are within the beltline region. However, Table 3-2 of the BWRVIP-48 report requires VT-1 examination per Table IWB-2500-1, Item Number B13.20 of ASME Section XI. Therefore, the NRC staff requests that the licensee revise Table 1 of Attachment A of the submittal dated April 19, 2007, to substitute VT-1 for VT-3 for the lower surveillance specimen holder bracket welds that are within the beltline region.

(8) In Table 1 of Attachment A of the submittal dated April 19, 2007, the licensee indicates that the shroud support leg weld (H12) will be inspected per the requirements specified in the staff's SE for the BWRVIP-38 report, "BWR Vessel Internal Project, BWR Shroud Support Inspection and Flaw Evaluation Guidelines." However, the NRC staff's final SE for the BWRVIP-38 report indicates that when inspection tooling and methodologies are developed that allow the welds in the lower plenum to be accessible, the guidelines will state that the licensee will inspect these welds with the appropriate non-destructive examination (NDE) methods in order to establish a baseline for these welds. Consistent with these requirements, the NRC staff, therefore, requests that the licensee revise Table 1 of Attachment A of the submittal dated April 19, 2007, to include a commitment that the shroud support leg weld H12 will be inspected with the appropriate NDE methods in order to establish a baseline for these welds when the inspection tooling and methodologies permit such an inspection.

(9) Top guide grid beams are prone to IASCC when they are exposed to a neutron fluence value greater than $5 \times 10^{20} \text{ n/cm}^2$ ($E > 1 \text{ MeV}$). Top guide grid beams could be exposed to a neutron fluence value greater than this threshold value where by the probability of multiple failures of top guide grid beams is enhanced. Therefore, the NRC staff requests that the licensee provide the method of inspection and inspection frequency for the BWR units' top guide grid beams that may potentially be exposed to a neutron fluence value greater than the threshold value during the current ISI interval.

(10) Section 4.1 item 5 of the BWRVIP-100-A report, "Updated Assessment of the Fracture Toughness of Irradiated Stainless Steel for BWR Core Shrouds," states that fracture toughness

values of stainless steel materials that are exposed to a neutron fluence value greater than 1×10^{21} n/cm² (E > 1 MeV) are lower than those used in Appendix C of the BWRVIP-76 report, "BWR Core Shroud Inspection and Flaw Evaluation Guidelines." Identify whether the core shroud welds and base materials in the BWR units identified in question (1) will be exposed to a neutron fluence value greater than 1×10^{21} n/cm² (E > 1 MeV) during the current ISI interval.

Since the inspection frequency in the BWRVIP-76 report is based on fracture toughness values which are not consistent with the BWRVIP-100-A report, the staff requests that the licensee confirm the following:

The inspection frequency and strategy for welds that will be exposed to a neutron fluence value greater than 1×10^{21} n/cm² (E > 1 MeV) during the current ISI interval will be evaluated taking into account the lower fracture toughness values that are specified in the BWRVIP-100-A report.

(11) According to Section 2.0 of the BWRVIP-76 report, core shroud welds shall be inspected every 6 years when the enhanced visual test (EVT-1) method is used for one-sided weld inspections, and shall be inspected every 10 years when the subject welds are examined with the ultrasonic test method. The inspection frequency for the core shroud welds (H1 through H7) as indicated in Table 1 of the submittal dated April 19, 2007, is not consistent with the aforementioned requirement. Therefore, the NRC staff requests that the licensee revise the inspection frequency requirement for the subject welds in Table 1 of the submittal.

(12) Table 2 of the submittal dated April 19, 2007, indicates that four core shroud vertical welds at the Oyster Creek were not inspected during the 2006 refueling outage as required by the BWRVIP-76 report guidelines. The NRC staff requests that the licensee provide technical justification for not performing the scheduled inspections and its plans for performing future inspections of these welds.