



**Constellation
Nuclear**

**Calvert Cliffs
Nuclear Power Plant**

*A Member of the
Constellation Energy Group*

September 4, 2001

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
30-Day Response to NRC Bulletin 2001-01, "Circumferential Cracking of
Reactor Pressure Vessel Head Penetration Nozzles"

REFERENCES:

- (a) NRC Bulletin 2001-01: Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles, dated August 3, 2001
- (b) Letter from Mr. A. Marion (NEI) to Dr. B. W. Sherron (NRC), dated August 21, 2001, Generic Information for Use by Licensees in Response to NRC Bulletin 2001-01

The purpose of this letter is to forward Calvert Cliffs Nuclear Power Plant, Inc.'s (CCNPPs) 30-day response to Nuclear Regulatory Commission (NRC) Bulletin 2001-01 (Reference a). The Bulletin was issued "to (1) request that addressees provide information related to the structural integrity of the reactor pressure vessel head penetration (VHP) nozzles for their respective facilities, including the extent of VHP nozzle leakage and cracking that has been found to date, the inspections and repairs that have been undertaken to satisfy applicable regulatory requirements, and the basis for concluding that their plans for future inspections will ensure compliance with applicable regulatory requirements, and (2) require that all addressees provide to the NRC a written response in accordance with the provisions of 10 CFR 50.54(f)." In the 30-day response, the NRC requested licensees "to submit a written response indicating, (1) whether the requested information will be submitted and (2) whether the requested information will be submitted within the requested time period."

On August 21, 2001, the Nuclear Energy Institute submitted EPRI Report, "TP-1006284, PWR Materials Reliability Program Response to NRC Bulletin 2001-01 (MRP-48)" [Reference b]. The report contains generic information that we are referencing in our response. Attachment (1) to this letter provides our 30-day response to Bulletin 2001-01.

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ATTACHMENT (1)

30-DAY RESPONSE TO NRC BULLETIN 2001-01

ATTACHMENT (1)

30-DAY RESPONSE TO NRC BULLETIN 2001-01

Requested Information 1

All addressees are requested to provide the following information:

- a. *the plant-specific susceptibility ranking for your plant(s) (including all data used to determine each ranking) using the PWSCC susceptibility model described in Appendix B to the MRP-44, Part 2, report;*

CCNPP Response

Calvert Cliffs Units 1 and 2 have been ranked for the potential for primary water stress corrosion cracking (PWSCC) of the reactor pressure vessel (RPV) top head nozzles using the time-at-temperature model and plant-specific input data reported in MRP-48 (Reference 1). As shown in Table 2-1 of Reference (1), this evaluation indicates that it will take Unit 1 9.8 effective full power years (EFPYs) and Unit 2 10.2 EFPYs of additional operation from March 1, 2001, to reach the same time-at-temperature that Oconee Nuclear Station Unit 3 had at the time that its leaking nozzles were discovered in February 2001.

Using the criteria stated in NRC Bulletin 2001-01, both Units fall into the NRC category of plants with greater than 5 EFPYs and less than 30 EFPYs until reaching the Oconee 3 time-at-temperature.

- b. *a description of the VHP nozzles in your plant(s), including the number, type, inside and outside diameter, materials of construction, and the minimum distance between VHP nozzles;*

CCNPP Response

Calvert Cliffs Units 1 and 2 have 74 total RPV head nozzles each. The requested nozzle information is provided in Table 2-3 of Reference (1).

- c. *a description of the RPV head insulation type and configuration;*

CCNPP Response

As reported in Table 2-1 of Reference (1), Unit 1 has reflective contoured RPV head insulation and Unit 2 has blanket contoured RPV head insulation. Figure 1 shows the Unit 1 RPV head insulation. The configuration of the RPV head on Unit 2 is similar to Unit 1. The Transco Encapsulated Mineral Wool insulation on Unit 2 was, however, removed in 1989 and replaced with PCI Nukon Fiberglass Blanket type insulation. The Unit 1 and Unit 2 insulation can be removed to permit bare metal inspection of the head.

- d. *a description of the VHP nozzle and RPV head inspections (type, scope, qualification requirements, and acceptance criteria) that have been performed at your plant(s) in the past 4 years, and the findings. Include a description of any limitations (insulation or other impediments) to accessibility of the bare metal of the RPV head for visual examinations;*

CCNPP Response

As reported in Table 2-1 of Reference (1), Calvert Cliffs Nuclear Power Plant (CCNPP) has not performed RPV head and nozzle inspections on Unit 1 within the past four years. On Unit 2, CCNPP performed a bare metal visual examination of the eight peripheral nozzles (incore instrumentation nozzles) during the 2001 Refueling outage (March, 2001). No leakage was identified. Although not within the past four years, in 1997 CCNPP performed eddy current examination of the Unit 2 Reactor Vessel Head Vent line. No indications were identified.

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- e. *a description of the configuration of the missile shield, the CRDM housings and their support/restraint system, and all components, structures, and cabling from the top of the RPV head up to the missile shield. Include the elevations of these items relative to the bottom of the missile shield*

CCNPP Response

The attached drawing No. 61-761-E provides an overall view of the configuration. Drawing No. 61787 provides the elevation of the bottom of the missile shield (73' 11-9/16") and shield construction. Drawing No. 61-769-E, Sh 1 provides the elevation of control rod drive mechanisms (CRDMs) (3 tiers at 69' 6-1/16", 68' 11-3/8", 67' 10-1/8"), and top and bottom of the electrical platform (70" 6-1/2", 71' 0-1/2"), and construction of the electrical platform.

Cable runs from the Q-panels at the exterior of the missile shield rails are routed in a random fashion to the individual CRDMs and instruments while traversing the area over the head. The CRDMs are self-supported. Structural integrity is provided by the CRDM nozzle attachment welds.

Requested Information 2

If your plant has previously experienced either leakage from or cracking in VHP nozzles, addressees are requested to provide the following information.

CCNPP Response

Not applicable. See Table 2.1 of Reference (1).

Requested Information 3

If the susceptibility ranking for your plant is within 5 EFPY of Oconee 3, addressees are requested to provide the following information

CCNPP Response

Not applicable. See Table 2.1 of Reference (1).

Requested Information 4

If the susceptibility ranking for your plant is greater than 5 EFPY and less than 30 EFPY of Oconee 3, addressees are requested to provide the following information.

- a. *your plans for future inspections (type, scope, qualification requirements, and acceptance criteria) and the schedule;*

CCNPP Response

We will perform 100 percent visual inspections of the top RPV head after removing tight fitting insulation or volumetric (or equivalent wetted surface) inspections of nozzles from under the vessel head, during the next refueling outage (currently scheduled to begin in February 2002 for Unit 1 and February 2003 for Unit 2).

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- b. *your basis for concluding that the inspections identified in 4.a will assure that regulatory requirements are met (see Applicable Regulatory Requirements section). Include the following specific information in this discussion: (1) If your future inspection plans do not include a qualified visual examination at the next scheduled refueling outage, provide your basis for concluding that the regulatory requirements discussed in the Applicable Regulatory Requirements section will continue to be met until the inspections are performed. (2) The corrective actions that will be taken, including alternative inspection methods (for example, volumetric examination), if leakage is detected.*

CCNPP Response

The technical basis for concluding that regulatory bases are met for CCNPP is provided in Reference (1). If any leaks are detected, the source will be determined, and the leakage pathway will be characterized. Inspection expansion will be determined based on the nature of the findings, but will be consistent with American Society of Mechanical Engineers and other regulatory requirements.

Requested Information 5

Addressees are requested to provide the following information within 30 days after plant restart following the next refueling outage:

- a. *a description of the extent of VHP nozzle leakage and cracking detected at your plant, including the number, location, size, and nature of each crack detected;*
- b. *if cracking is identified, a description of the inspections (type, scope, qualification requirements, and acceptance criteria), repairs, and other corrective actions you have taken to satisfy applicable regulatory requirements. This information is requested only if there are any changes from prior information submitted in accordance with this bulletin.*

CCNPP Response

Calvert Cliffs Nuclear Power Plant will provide the information requested in Item 5 of NRC Bulletin 2001-01 or indicate that no leakage was identified within 30 days after plant restart following the next refueling outage (currently scheduled to begin in February 2001 for Unit 1 and February 2003 for Unit 2).

Reference

- (1) Letter from Mr. A. Marion (NEI) to Dr. B. W. Sheron (NRC), dated August 21, 2001, Generic Information for Use by Licensees in Response to NRC Bulletin 2001-01

ATTACHMENT (1)

30-DAY RESPONSE TO NRC BULLETIN 2001-01

Figure 1
Calvert Cliffs Unit 1 RPV Head Insulation



