

October 11, 2002

Mr. David A. Christian
Senior Vice President - Nuclear
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, Virginia 23060

SUBJECT: NORTH ANNA POWER STATION, UNIT 1 - REQUEST FOR ADDITIONAL INFORMATION REGARDING NRC BULLETIN 2002-02, "REACTOR PRESSURE VESSEL HEAD AND VESSEL HEAD PENETRATION NOZZLE INSPECTION PROGRAMS"

Dear Mr. Christian

We have reviewed your submittal dated September 12, 2002, that provided a response to NRC Bulletin 2002-02 for North Anna Power Station, Units 1 and 2. Your response to this request for additional information is required in order for the staff to complete the review for North Anna, Unit 1.

By letter dated August 31, 2001, as supplemented by letter dated November 14, 2001, Virginia Electric and Power Company (VEPCO) provided the 30-day response to NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles" for North Anna Power Station, Units 1 and 2. In these submittals, VEPCO committed to perform inspections of the vessel head penetration (VHP) nozzles at North Anna, Units 1 and 2. During September 2001, VEPCO performed these inspections at North Anna, Unit 1. The results of these inspections are described in VEPCO's submittal dated November 5, 2001. During this inspection period, you identified indications in the J-groove welds for several nozzles as a result of the eddy current and liquid penetrant inspections that were performed at North Anna, Unit 1. VEPCO concluded, with the NRC staff concurrence, that the location and appearance of these indications were consistent with cladding flaws that did not require repair. These conclusions were reached partly based on the inconclusive visual evidence of leakage from these nozzles on the top of the reactor pressure vessel (RPV) heads.

Subsequently, you performed two inspections of the VHP nozzles at North Anna, Unit 2, first in November 2001 and recently beginning in early September 2002. During the November 2001 inspection, you concluded from the visual inspection of the top of the vessel head that three nozzles had rejectable indications of leakage. The followup examinations of the J-groove welds, using penetrant testing (PT), for these three nozzles identified numerous indications. Your initial disposition of these indications was similar to that at Unit 1, e.g., the indications were contained within the cladding and did not require additional characterization. However, after discussions with the NRC staff, VEPCO decided to excavate a portion of the weld on one of these nozzles (in addition to removing a boat sample from another of the welds). Based on this investigation, you concluded that the flaws penetrated deep into the welds at the butter layer to weld interface, and you initiated repairs of the three J-groove welds. These inspections and repairs are described in a submittal dated January 11, 2002. The September 2002 inspection at North Anna, Unit 2, which was in response to Bulletin 2002-02, has identified

numerous indications in the J-groove welds in virtually all of the VHP nozzles, including all three of the nozzles repaired in the fall of 2001.

The RPV heads of North Anna, Units 1 and 2 were manufactured within the same timeframe, using nozzle material from the same supplier and at the same fabrication facility in Rotterdam, The Netherlands. Both units have similar operating histories, including RPV head temperature (600.1°F to 607.1°F over the plant history) and operating time (about 18.5 effective full power years (EFPY) for North Anna, Unit 1 and 18.2 EFPY for North Anna, Unit 2, as of September 2002). As a result, both units have similar effective degradation years (EDY) as calculated in accordance with Bulletin 2002-02 (about 20.9 for North Anna, Unit 1 and 19.8 for North Anna, Unit 2, as of September 2002). As such, North Anna, Unit 1 has operated for a slightly longer amount of time and has a slightly higher susceptibility ranking in terms of EDY than North Anna, Unit 2.

Because of (1) the similarities in fabrication of the RPV heads for North Anna, Units 1 and 2, (2) the extensive number of indications in the J-groove welds identified in North Anna, Unit 2 during the current inspection effort, (3) the age and operating history of the two plants, (4) the unrepaired weld indications at North Anna, Unit 1 that are similar to those repaired on North Anna, Unit 2 in November 2001, and (5) the potential safety implications of leaking reactor coolant from VHP nozzles, the NRC requests that you provide the following additional information within 7 days from the date of this letter:

1. Describe the bases for concluding that the VHP nozzles and welds at North Anna, Unit 1 do not have cracking that could jeopardize reactor coolant pressure boundary integrity, and
2. Provide the bases for assurance of reactor coolant pressure boundary integrity and conformance with all regulatory requirements consistent with the terms of your operating license.

Sincerely,

/RA/

Stephen R. Monarque, Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-338

cc: See next page

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Because of (1) the similarities in fabrication of the RPV heads for North Anna, Units 1 and 2, (2) the extensive number of indications in the J-groove welds identified in North Anna, Unit 2 during the current inspection effort, (3) the age and operating history of the two plants, (4) the unrepaired weld indications at North Anna, Unit 1 that are similar to those repaired on North Anna, Unit 2 in November 2001, and (5) the potential safety implications of leaking reactor coolant from VHP nozzles, the NRC requests that you provide the following additional information within 7 days from the date of this letter:

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/RA/

Stephen R. Monarque, Project Manager, Section 1
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Office of Nuclear Reactor Regulation

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North Anna Power Station
Units 1 and 2

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