

November 14, 2003

MEMORANDUM TO: James W. Clifford, Chief, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

FROM: Richard B. Ennis, Senior Project Manager, Section 2 /RA/  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

SUBJECT: DOCUMENTATION OF CONFERENCE CALL REGARDING  
REQUEST FOR RELAXATION FROM ORDER EA-03-009, INTERIM  
INSPECTION REQUIREMENTS FOR REACTOR PRESSURE  
VESSEL HEADS, MILLSTONE POWER STATION, UNIT NO. 2  
(TAC NO. MC0942)

#### Introduction

On November 3, 2003, the Nuclear Regulatory Commission (NRC) staff held a conference call with Dominion Nuclear Connecticut, Inc. (DNC or the licensee), to discuss the preliminary results of the reactor pressure vessel (RPV) head inspections being performed during refueling outage (RFO) 15 at Millstone Power Station, Unit No. 2 (MP2). The MP2 RPV head inspections were being performed using the methods proposed in a DNC request for relaxation from NRC Order EA-03-009.

#### Background

On February 11, 2003, the NRC issued Order EA-03-009 requiring specific inspections of the RPV head and associated penetration nozzles at pressurized water reactors. The NRC issued an errata to the Order on March 14, 2003, to correct an administrative part of the Order related to requests for relaxation of the Order requirements. Section IV.F of the Order states that requests for relaxation associated with specific penetration nozzles will be evaluated by the NRC staff using its procedure for evaluating proposed alternatives to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code in accordance with Section 50.55a(a)(3) of Title 10 of the *Code of Federal Regulations*.

Sections IV.A and IV.B of the Order provide criteria to categorize each plant's RPV head with respect to its susceptibility to primary water stress corrosion cracking (PWSCC). For plants such as MP2, with RPV heads that are categorized as being highly susceptible to PWSCC, Section IV.C(1)(b) of the Order requires that the RPV head penetration nozzles be inspected each RFO using either of the following techniques: (1) ultrasonic testing (UT) from two inches above the J-groove weld to the bottom of the nozzle and an assessment to determine if leakage has occurred in the interference fit zone, or (2) eddy current testing or dye penetrant testing (PT) of the wetted surface of each J-groove weld and nozzle base material to at least two inches above the J-groove weld.

By letter dated October 3, 2003, as supplemented on October 10, October 28, and November 5, 2003, DNC requested relaxation from the requirements in Section IV.C(1)(b) of the Order for MP2. The relaxation request was made pursuant to the procedure specified in Section IV.F of the Order. Specifically, for inspection of the RPV control element drive mechanism (CEDM) penetration nozzles, DNC requested authorization to use a combination of UT and PT on the nozzle base material, and reduced examination coverage below the weld in the non-pressure boundary portion of the nozzle.

#### November 3, 2003, Conference Call

The NRC staff participating in the conference call included representatives from the Office of Nuclear Reactor Regulation (NRR), the Office of Nuclear Regulatory Research (RES) and Region I (RGN-I) as follows:

<u>Name</u>	<u>Organization</u>
R. Ennis	NRR
A. Keim	NRR
T. Chan	NRR
B. Fu	NRR
S. Bloom	NRR
R. Pulsifer	NRR
A. Hiser	RES
W. Cullen	RES
R. Lorson	RGN-I
S. Shaffer	RGN-I
A. Lohmeier	RGN-I

DNC was represented by D. Dodson as well as several other DNC staff members. The following issues were discussed:

- 1) UT has been completed on 59 of the 69 CEDM penetrations so far. The remaining 10 penetrations have not been examined yet due to problems in removal of the insulation on the RPV head.
- 2) Of the 59 CEDM penetrations that have been examined with UT, 12 penetrations had flaw indications. The affected penetrations were penetration numbers 13, 17, 22, 26, 31, 37, 42, 46, 47, 57, 60, and 68. Followup PT on these penetrations confirmed flaws on 11 of the 12 penetrations. For penetration number 46, followup PT did not confirm any flaw. The UT indication for this penetration identified that there was an anomaly at the root of the weld, not at the wetted surface. The licensee has accepted this penetration as-is (i.e., no corrective action needed).
- 3) Of the 11 CEDM penetrations with confirmed flaws, all indications are outside-diameter initiated at the toe of the weld.
- 4) For three of the CEDM penetrations (13, 31, and 47), the licensee plans to remove the flaws by grinding. Half-nozzle repairs will be performed on the other eight penetrations.

- 5) Bare metal visual (BMV) examination of the RPV head has identified boric acid residue at CEDM penetrations 44, 57, and 60. All boric acid found is believed to be approximately 14 years old (based on Cesium isotopic analysis). The licensee believes that the boric acid washed down from above the insulation and worked its way under the insulation (i.e., was not from any leaks in the RPV head). For penetration 44, the boric acid is believed to have come from a flange leak on the adjacent in-core instrumentation penetration number 72. No boric acid was observed on top of the insulation prior to its removal for the RPV head examinations. The BMV examination has not identified any corrosion of the RPV head.
- 6) At the completion of the last outage (RFO 14), the licensee did not believe that any CEDM penetration flaws were left in service. However, based on a recent re-review of the inspection results, the licensee now believes that some flaws might have been left in service. The licensee will let the NRC staff know if the actual crack growth rates are not bounded by the values provided in the Westinghouse structural integrity report for any flaws left in service.
- 7) The licensee stated that all RPV inspection activities have, thus far, resulted in approximately 80 rem of exposure to the workers.

- 5) Bare metal visual (BMV) examination of the RPV head has identified boric acid residue at CEDM penetrations 44, 57, and 60. All boric acid found is believed to be approximately 14 years old (based on Cesium isotopic analysis). The licensee believes that the boric acid washed down from above the insulation and worked its way under the insulation (i.e., was not from any leaks in the RPV head). For penetration 44, the boric acid is believed to have come from a flange leak on the adjacent incore instrumentation penetration number 72. No boric acid was observed on top of the insulation prior to its removal for the RPV head examinations. The BMV examination has not identified any corrosion of the RPV head.
- 6) At the completion of the last outage (RFO 14), the licensee did not believe that any CEDM penetration flaws were left in service. However, based on a recent re-review of the inspection results, the licensee now believes that some flaws might have been left in service. The licensee will let the NRC staff know if the actual crack growth rates are not bounded by the values provided in the Westinghouse structural integrity report for any flaws left in service.
- 7) The licensee stated that all RPV inspection activities have, thus far, resulted in approximately 80 rem of exposure to the workers.

Docket No. 50-336

DISTRIBUTION:

PUBLIC	SBloom	AHiser, RES	BMcDermott, RGN-I
PDI-2 Reading	TChan	WCullen, RES	CHolden
JClifford	AKeim	RLorson, RGN-I	TMarsh/ELeeds
REnnis	BFu	SShaffer, RGN-I	BSheron
RPulsifer	WBateman	ALohmeier, RGN-I	JJolicoeur

Accession No: ML033140166

OFFICE	PDI-2/PM	PDI-2/LA	EMCB/SC	DLPM/LPM	PDI-2/SC
NAME	REnnis	CRaynor	TChan	SBloom	VNerses for JClifford
DATE	11/13/03	11/13/03	11/13/03	11/13/03	11/13/03

OFFICIAL RECORD COPY