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Fred Dacimo
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May 31, 2005

Re: Indian Point Unit 3
Docket No. 50-286
NL-05-063

Document Control Desk
U.S. Nuclear Regulatory Commission
Mail Stop O-P1-17
Washington, DC 20555-0001

Subject: **Reactor Vessel Lower Head Inspection Results;
Indian Point Unit 3, Spring 2005 Refueling Outage (3R13)**

- Reference:
- 1) NRC Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity", dated August 21, 2003
 - 2) Entergy letter to NRC (NL-03-178); "90-Day Response to NRC Bulletin 2003-02 Regarding Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity", dated November 13, 2003

Dear Sir:

This letter provides the Reactor Vessel Lower Head Inspection Report (Attachment 1) for Indian Point Unit 3 (IP3), in accordance with Requested Information Item (2) (Reference 1). The inspection was performed during refueling outage 3R13 that was completed on April 7, 2005. The inspection was performed in accordance with the plan provided in Reference 2.

The inspection consisted of a visual examination of the lower head region adjacent to each bottom mounted instrumentation (BMI) penetration including the annulus region between the penetration and the Alloy 600 weld pad. Cleaning of the lower head penetrations annulus regions to remove this boron residue was also implemented during 3R13.

Based on the results of this inspection, Entergy concludes that there is no evidence of leakage resulting from a breach of the lower head penetrations or the attaching j-groove weld (i.e. no "popcorn-like" evidence of boron deposits at the annulus between the penetration and the weld pad). Although there were minor boron streaks and boron residue in regions of the lower head, the annulus region of each penetration was relatively free of boron residue. In those instances where boron residue was present in the annulus region, this residue was clearly traceable to

A109

sources above the penetration by following the boron streaks. In addition, residue identified in these regions, did not show any "popcorn-like" characteristics which would be expected from a pressure boundary leak. The source of boron residue was concluded to be leakage from sources located above the lower head region. Residue in the lower head annulus regions were subsequently steam cleaned after completion of the inspection with an additional as-left, baseline inspection performed prior to exiting the refueling outage.

There are no new commitments made by Entergy contained in this letter. If you have any questions, please contact Mr. Patric W. Conroy, Manager, Licensing at (914) 734-6668.

Very truly yours,



Fred R. Dacimo
Site Vice President
Indian Point Energy Center

Attachment 1 (Reactor Vessel Lower Head Inspection Results; Indian Point Unit 3, Spring 2005 Refueling Outage (3R13))

cc: see next page

cc: Mr. John P. Boska, Senior Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
U.S. Nuclear Regulatory Commission

Mr. Samuel J. Collins
Regional Administrator, Region 1
U.S. Nuclear Regulatory Commission

Resident Inspector's Office
Indian Point Unit 3 Nuclear Power Plant
U.S. Nuclear Regulatory Commission

Mr. Paul Eddy
New York State Dept. of Public Service

ATTACHMENT 1 TO NL-05-063

**REACTOR VESSEL LOWER HEAD INSPECTION RESULTS;
INDIAN POINT UNIT 3, SPRING 2005 REFUELING OUTAGE (3R13)**

**ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3
DOCKET NO. 50-286**

REACTOR VESSEL LOWER HEAD INSPECTION RESULTS;
INDIAN POINT UNIT 3, SPRING 2005 REFUELING OUTAGE (3R13)

Item (2) of Bulletin 2003-02 requested that, within 60 days of plant restart following the next inspection of the RPV lower head penetrations, Licensees should submit to the NRC (1) a summary of the inspections performed, (2) the extent of the inspections, (3) the method used, (4) a description of the as-found condition of the lower head, (5) any findings of relevant indications of through wall leakage and (6) a summary of the disposition of any findings of boric acid deposits and any corrective actions taken as a result of indications found.

(1) Summary of Inspections Performed

During the recently completed 3R13 refueling outage, Indian Point Unit 3 (IP3) removed the individual insulation half-moon plates adjacent to each of the 58 lower head penetrations and performed a bare metal visual (BMV) examination of the lower head region adjacent to each penetration including 360° of the annulus region between the penetration and the Alloy 600 weld pad.

(2) Extent of the Inspections

As discussed in item (1) above, each of the 58 lower RPV head penetrations were inspected including the Alloy 600 penetration, the Alloy 600 weld pad and 360° of the annulus between the penetration and the weld pad.

(3) Method Used

This inspection was a visual examination performed with remote video equipment and provided a resolution equivalent to the ASME Section XI VT-2 requirements as a minimum. The inspection results were reviewed by certified VT-2 personnel meeting the requirements of ASME Section XI.

(4) Description of the As-Found Condition of the Lower Head

The inspections required by Bulletin 2003-02 were performed in the beginning of the refueling outage (i.e. prior to refueling operations) and identified no evidence of leakage resulting from a breach of the lower head penetrations or the attaching j-groove weld (i.e. no "popcorn-like" evidence of boron deposits at the annulus between the penetration and the weld pad). Although this inspection identified no evidence of RCS leakage resulting from a through wall defect, it identified some minor boron residue and streaking in localized regions of the lower head including some annuli regions. This residue was characterized primarily as two-dimensional (i.e. streaks) resulting from flow of borated water from sources located above the outer most penetrations. Nine locations were identified with some minor boron residue either on or adjacent to the annulus region. In all instances where boron residue was detected in the annulus region, the residue could be traced to sources above the penetration by following the streaks. The source of these streaks and residue was identified as previous leaks from sources above the lower head.

Following refueling operations, additional boron streaks and residue were identified on the outside surface of the lower head insulation. As a result of this additional residue, sixteen penetrations (i.e. the penetrations located in the regions of the new boron streaks) were re-examined to determine if the new leakage introduced during refueling operations, had resulted in additional boron residue at the annuli of additional penetrations, which could impact the effectiveness of future BMV examinations. As a result of this re-inspection, four additional penetrations were identified with some boron residue at or adjacent to the annulus region resulting in a total of thirteen penetrations with some boron residue (nine identified prior to refueling operations plus the additional four identified as having boron residue as a result of and subsequent to refueling operations). All thirteen of these penetrations were steam cleaned during the refueling outage and a post cleaning inspection was also performed of all thirteen penetrations to verify the effectiveness of the cleaning.

(5) Findings of Relevant Indications of Through Wall Leakage

The inspections performed during 3R13 identified no evidence of leakage resulting from a breach of the lower head penetrations or the attaching j-groove weld (i.e. no popcorn-like evidence of boron deposits at the annulus between the penetration and the weld pad). The boron residue detected during the pre-refueling inspection was attributed to leakage from components located in the upper vessel head region while residue detected during the post-refueling inspection was attributed to reactor cavity leakage. This resulted in thirteen penetrations which required subsequent cleaning to ensure that future BMV inspections can be performed in an effective manner.

(6) Summary of the Disposition of any Findings of Boric Acid Deposits and any Corrective Actions taken as a Result of Indications Found

As discussed above, the residue detected on the lower head surface was a result of either leakage from components in the upper head region or from refueling cavity leakage during 3R13. This resulted in thirteen penetrations which required steam cleaning to remove the residue from the annulus regions. A post cleaning inspection confirmed the effectiveness of the cleaning in removing the boron residue.

References

1. NRC Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity", dated August 21, 2003
2. Entergy letter to NRC (NL-03-178); "90-Day Response to NRC Bulletin 2003-02 Regarding Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity", dated November 13, 2003