

June 14, 2002

Mr. Norm Cohen, Coordinator
The UNPLUG Salem Campaign
Coalition for Peace and Justice
321 Barr Avenue
Linwood, NJ 08221

Dear Mr. Cohen:

I am responding to the electronic mail (e-mail) you sent to me on March 20, 2002. In the e-mail, you asked about the situation at the Salem Nuclear Generating Station (Salem), Unit Nos. 1 and 2, with respect to the corrosion discovered on the reactor pressure vessel (RPV) head at the Davis-Besse Nuclear Power Station (Davis-Besse) in Oak Harbor, Ohio.

Background

On February 16, 2002, the FirstEnergy Nuclear Operating Company (FENOC), the licensee for Davis-Besse, began a refueling outage that included inspecting the nozzles entering the RPV head. Of these vessel head penetration (VHP) nozzles, the licensee's inspections focused on the nozzles associated with the control rod drive mechanisms (CRDMs). The inspections were consistent with the FENOC's commitments in response to Nuclear Regulatory Commission (NRC) Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles," issued on August 3, 2001.

FENOC found that three CRDM nozzles had indications of axial cracking, which had resulted in leakage of the reactor's pressure boundary. Specifically, the licensee found these indications in CRDM nozzles 1, 2, and 3, located near the center of the RPV head. The licensee for Davis-Besse also identified significant corrosion of the RPV head under deposits of boric acid. The licensee reported these findings to the NRC on February 27, 2002.

Impact on Salem

On March 18, 2002, the NRC issued Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," to all pressurized-water reactor licensees. Bulletin 2002-01 required PSEG Nuclear LLC (PSEG), the licensee for Salem, to take the following actions:

1. Within 15 days of the date of the Bulletin, PSEG was to provide the following:
 - A. a summary of the RPV head inspection and maintenance programs that have been implemented at Salem,
 - B. an evaluation of the ability of PSEG's inspection and maintenance programs to identify degradation of the RPV head including, thinning, pitting, or other forms of degradation such as the degradation of the RPV head observed at Davis-Besse,

- C. a description of any conditions identified (chemical deposits, head degradation) through the inspection and maintenance programs described in 1.A that could have led to degradation and the corrective actions taken to address such conditions,
 - D. PSEG's schedule, plans, and basis for future inspections of the RPV head and penetration nozzles. This should include the inspection method(s), scope, frequency, qualification requirements, and acceptance criteria, and
 - E. PSEG's conclusion regarding whether there is reasonable assurance that regulatory requirements are currently being met. This discussion should also explain the basis for concluding that the inspections discussed in response to Item 1.D will provide reasonable assurance that these regulatory requirements will continue to be met.
2. Within 30 days after plant restart following the next inspection of the RPV head to identify any degradation, PSEG is required to submit to the NRC the following information:
- A. the inspection scope (if different than that provided in response to Item 1.D.) and results, including the location, size, and nature of any degradation detected,
 - B. the corrective actions taken and the root cause of the degradation.
3. Within 60 days of the date of the Bulletin, PSEG is required to submit to the NRC the following information related to the remainder of the reactor coolant pressure boundary:
- A. the basis for concluding that PSEG's boric acid inspection program is providing reasonable assurance of compliance with the applicable regulatory requirements discussed in Generic Letter (GL) 88-05 and this Bulletin. If a documented basis does not exist, provide plans, if any, for a review of these programs.

On April 1, 2002, PSEG provided its 15-day response to the NRC. A copy of this letter and other correspondence related to the RPV head degradation issue can be obtained through the NRC's website at:

<http://www.nrc.gov/reactors/operating/ops-experience/vessel-head-degradation.html>

From this site, members of the public may access the latest news, correspondence and other related information associated with this issue.

During the most recent Salem Unit No. 2 outage (spring 2002), PSEG removed the insulation covering the RPV head to inspect all penetration welds. Removal of the insulation provided full access to the welds to check for evidence of leaks. The licensee performed a qualified weld inspection on 100% of the RPV head penetrations, and found no evidence of boric acid residue or any evidence of primary system leakage. The licensee's inspection also confirmed that no additional boric acid residue or corrosion has occurred since August 1987 when Salem Unit No. 2 experienced seal weld leakage that resulted in nine locations of pitting on the surface of

the RPV head. At that time, the pits were found to be approximately 1 to 3 inches in diameter and 0.4 to 0.36 inches deep. (The NRC issued Information Notice 86-108, Supplement 2, "Degradation of Reactor Coolant System Pressure Boundary Resulting From Boric Acid Corrosion," dated November 19, 1987, to alert licensees and describe Salem's findings in more detail.) PSEG subsequently repaired the defective weld that caused the leak, determined that the identified pitting did not affect the structural integrity of the RPV head, and concluded that the RPV head continued to meet American Society of Mechanical Engineers Boiler and Pressure Vessel Code requirements.

For Salem Unit No. 1, a certified Level II examiner performed a visual examination on all 79 RPV penetrations during its most recent refueling outage in April 2001. The necessary RPV head insulation was also removed to fully examine the welds for indications of reactor coolant leakage or boric acid crystals. The visual examination for the Salem Unit No. 1 RPV penetration welds revealed no signs of leakage, boric acid residue, or any evidence of corrosion on the RPV head.

The Davis-Besse licensee continues its root cause investigation of the RPV head degradation. In addition, the NRC recently created the Davis-Besse Reactor Vessel Head Degradation Lessons Learned Task Force. This team consists of NRC managers and staff who are not routinely associated with the Davis-Besse plant. The team officially began its review activities on June 2, 2002, and expects to issue a report detailing observations, conclusions, and recommendations in September 2002. As information becomes available, the NRC will post it on the agency's RPV head degradation website.

Sincerely,

/RA/

Robert J. Fretz, Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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