

June 10, 2002

MEMORANDUM TO: Stephanie M. Coffin, Chief
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Materials and Chemical Engineering Branch
Division of Engineering

FROM: Andrea Lee */RA/*
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SUBJECT: INDIAN POINT UNIT 3 SITE VISIT TRIP REPORT

On May 30, 2002, U.S. Nuclear Regulatory Commission (NRC) staff visited the Entergy Nuclear Operations, Inc.'s (licensee's) Indian Point Nuclear Generating Station Unit Number 3 (IP3) site. The purpose of the site visit was to view and discuss videotapes of the reactor pressure vessel (RPV) head inspections, conducted from above the insulation, during refueling outages in 1999 and 2001. The site visit was subsequent to a conference call conducted on May 10, 2002 where the staff and the licensee discussed questions regarding IP3's 15 day response to NRC Bulletin 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity," dated March 18, 2002. A list of attendees is attached.

Prior to viewing the videotapes, the licensee gave an introductory presentation regarding its efforts to address boric acid corrosion concerns. For example, the licensee stated that it has a low threshold for leakage as a station goal, and indicated that unidentified reactor coolant system leakage is very low (typically less than 0.1 gallons per minute). In addition, the licensee noted that contamination levels at IP3 are one to two orders of magnitude lower than what was reported at Davis Besse. In response to Information Notice 2002-13 on possible indicators of RPV head degradation, the licensee has initiated plans to examine containment fan cooler units (CFCUs) and radiation monitor filter elements. The licensee had a sample of filter paper that was pulled from one of the five CFCUs, and it had no signs of boron or rust type residue. The licensee plans to examine a CFCU monthly on an alternating basis such that after five months, all fan cooler units at IP3 will have been inspected. The slides from the licensee's presentation are attached.

In response to staff questions during the site visit, the licensee provided a time line overview of leakage (i.e. conoseals) from above the reactor vessel head insulation, and information on the

Attachments: As stated

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heats of material used for the control rod drive mechanism (CRDM) nozzles in IP3. The information includes a listing of other plants with the same heats of material as IP3. None of the other plants have detected cracking of CRDM nozzles or leakage on the RPV head. The time line and the heats of material information are also attached. In addition, the licensee has closely monitored the Point Beach Unit 2 experience with insulation replacement, and stated its intentions to replace the RPV insulation with reflective insulation during the next refueling outages for IP Units 2 and 3. The licensee is also considering additional volumetric non-destructive examination (NDE), and committed to providing its inspection plans 90 days prior to the start of the outage in a supplemental response to Bulletin 2001-01 dated November 13, 2001. NRC regional staff conducted a detailed review of plant records regarding reactor coolant system (RCS) boric acid leakage and corrosion, and concluded that later revisions of the procedure contain more detailed guidance and there is improved documentation of observations in recent years. In addition, the leakage monitoring graphs and data and the industry experience packages were reviewed.

Video Tapes of RPV Head Inspections in 1999 and 2001 (above the insulation)

The licensee had viable explanations for the majority of the staff's questions with regard to the video tapes. The licensee had a dual screen format where videos of an area taken in both refueling outage (RFO) 10 and RFO 11 were compared and showed no change in the condition of the insulation. The surface coating of the insulation was degraded, but there did not appear to be indications of active degradation of the insulation or the RPV head.

The licensee's time line overview of leakage helped the staff determine locations of past conoseal leaks as one of the probable sources of degradation on the insulation as opposed to the source being RPV head degradation. The licensee also indicated that it washes down the reactor cavity for decontamination purposes, and spray/dripping from this activity could result in some amount of water landing on the RPV head insulation. The staff questioned the licensee's ability to explain the following areas of the video tape:

Approximately four areas in the North and West quadrants of the RPV head have degraded insulation where the cement top coat has broken off in sheets and slid down the RPV head exposing the asbestos tape beneath (under the asbestos tape is a layer of "Kaylo" insulation block material). The licensee could not explain why this phenomenon has not occurred in other parts of the RPV head or in other plants (i.e. Ginna) with similar insulation.

An area between penetration numbers 54 and 66 appeared to be cracked and slightly raised. The licensee stated that the appearance of cracking was caused by visual shadowing from pieces of the cement top coat that have broken off and are laying on top of the insulation. It is difficult to reconcile which is most probable from just looking at the video tape, however, the tape is the only documentation that the licensee has with regard to this area.

Licensee's Future Actions

With regard to licensee actions until the next RFO for IP3, the licensee plans to perform the following:

1. monthly inspection of a CFCU (one of five)

2. monthly inspection of containment particulate monitor filter paper
3. monthly chemistry samples of CFCU weir or drain tray
4. monthly inspection of accessible areas of containment
5. monthly random contamination smears from containment
6. monthly chemistry samples of the containment sump
7. quarterly robotic inspection of the containment.

The licensee has also stated that it has contingencies if there should be a forced outage (and plant conditions allow) to possibly take samples of the insulation. The NRC staff is still reviewing the specifics of their contingencies.

The licensee will supplement its 15 day Bulletin 2002-01 response, and will include information from the site visit as well as the answers to question discussed during the May 10, 2002 telephone conference.

In summary, the staff gained additional information on the IP3 RPV head, as well as the licensee's ongoing and future plans concerning the RPV head. The staff obtained a better understanding of pictures and questions regarding the licensee's 1999 and 2001 inspection of the insulation on top of the RPV head. The staff has determined that it is not likely that there are indications of conditions similar to Davis Besse, however, areas of local corrosion cannot be conclusively ruled out. The staff's conclusions on outstanding issues (i.e. licensee's explanation of some areas of the video tapes and the specifics of the licensee's contingency plans for a forced outage) will be documented in a close-out letter to the licensee after the Bulletin 2002-01 review effort is completed.

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