April 24, 2002

MEMORANDUM TO: John A. Nakoski, Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

FROM: Stephen R. Monarque, Project Manager, Section 1 ***/RA/***
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF APRIL 3, 2002, CONFERENCE CALL REGARDING DUKE ENERGY'S RESPONSE TO NRC BULLETIN 2002-01, "REACTOR PRESSURE VESSEL HEAD DEGRADATION AND REACTOR COOLANT PRESSURE BOUNDARY INTEGRITY," FOR OCONEE NUCLEAR STATION, UNIT 1 (TAC NO. MB4559)

On April 3, 2002, the U.S. Nuclear Regulatory Commission (NRC) staff conducted a second telephone conference call with the staff of Duke Energy (the licensee) to discuss the progress of the reactor pressure vessel (RPV) head inspections performed at Oconee Nuclear Station, Unit 1. The Oconee, Unit 1 Spring 2002 refueling outage began on March 23, 2002. The list of telephone conference call participants is attached. The purpose of this telephone conference call, which was a follow-up to a telephone conference call conducted on March 26, 2002, was to discuss issues related to NRC Bulletin 2002-01. During this telephone conference call, the licensee acknowledged that Oconee, Unit 1 is highly susceptible to primary water stress-corrosion cracking, and its examinations were based upon this susceptibility. The RPV head inspection was completed on March 24, 2002, and the licensee found that nozzle numbers 1 and 7 were masked with boric acid.

Prior to this April 3, 2002, telephone conference call, the licensee submitted an event notification, dated April 1, 2002, in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.72, which stated that control rod drive mechanism (CRDM) nozzle number 7 had a potential reactor coolant leak path. However, during the April 3 telephone conference call, the licensee stated that the boric acid around nozzle number 7 did not have the "popcorn-like" appearance indicative of a leaking CRDM nozzle. Therefore, the licensee concluded that leakage from the CRDM flanges, which are above the RPV head insulation, was the probable source of the masking. The licensee also indicated that the leaking CRDM flanges would be repaired. Since the conclusions from the event notification and the April 3, telephone conference call were contradictory, the licensee carefully examined all visual, ultrasonic (UT) and liquid penetrant (PT) information regarding nozzle number 7 after the April 3 telephone conference call and concluded that there is sufficient evidence that the nozzle had leaked through the J-groove weld during operation and would therefore be reportable as reactor coolant system leakage.

The reactor vessel head was inspected and cleansed of deposits. This inspection included an examination for RPV head wastage. The staff questioned the licensee as to whether or not samples were taken from the RPV head for analysis, and the licensee replied that there was not enough loose particulate material to obtain a sample. The reactor vessel head was removed, and non-destructive examinations were performed on nozzle numbers 1, 5, 7, 8, and 9. As mentioned above, nozzle numbers 1 and 7 were masked by boric acid. The licensee examined nozzle numbers 5, 8, and 9 to address the NRC staff's concerns that a 360-degree inspection had not been satisfactorily completed on the subject nozzles.

The licensee, using Framatome technology, conducted UT from the bottom of all five nozzles to the top of the reactor vessel head (i.e., full length of each nozzle). The UT results showed that nozzle number 1 had three outside diameter (OD)-initiated indications located in the J-groove weld-to-nozzle interface. These indications were not characterized as axial flaws. A PT examination was performed that showed no indications in the J-groove weld. The licensee noted that the J-groove weld was irregular in shape. The UT results showed that nozzle number 5 did not contain any indications, and this nozzle was cleared by the licensee. Five axial flaws were found on nozzle number 7, and subsequent to this conference call, the licensee repaired this nozzle by using the Framatome repair method. Nozzle number 8 was discovered to have one OD-initiated axial indication. Subsequent to this telephone conference call, the licensee repaired this nozzle. There were no indications found on nozzle number 9. The licensee determined that none of the indications found during the inspection were through-wall flaws.

The staff inquired about the possibility of expanding the number of nozzles to be examined during this outage since 40 percent of the five nozzles that were examined required repair. The licensee replied that they did not plan to examine additional nozzles since no evidence of wastage was found, and the RPV head is scheduled to be replaced during the next refueling outage.

The licensee and staff then discussed qualification of the Framatome UT method. The licensee stated they could analyze the readings to determine that no leak path was present. However, the licensee stated that this technique could not provide clear indication of a leak path for a variety of reasons. For example, changes in the shrink-fit tolerances between the nozzle and reactor vessel head could provide interfering signals and provide a false reading of a leak path. This technique could indicate the length and width, but not the depth of wastage in a RPV head. The staff replied that this type of testing could be a valuable tool in the future if these issues could be resolved.

Based on the preliminary findings from Davis-Besse, the inspections performed by the licensee, and the licensee's susceptibility to nozzle cracking, the NRC staff did not identify any issues that needed additional follow-up prior to plant restart. The staff will document its formal review after receiving the licensee's response to NRC Bulletin 2002-01.

Attachment: As stated

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Attachment: As stated

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OFFICE	PDII-1/PM	PDII-1/PM	PDII-1/LA	PM: EMCB	SC: PDII-1
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DATE	4/23/02	4/23/02	4/23/02	4/23/02	4/24/02

CONFERENCE CALL

LIST OF PARTICIPANTS

NRC	REGION II	DUKE ENERGY
Kenneth Karwoski, NRR	Robert Haag	Bruce Hamilton
Joelle Starefos, NRR	Jerome Blake	Bill Foster
Stephen Monarque, NRR		Mike Robinson
Allen Hiser, NRR		Tom Malley
William Bateman, NRR		Robert Douglas
Andrea Lee, NRR		
Steven Long, NRR		
Stephanie Coffin, NRR		
Keith Wichman		

Attachment