June 30, 2003

Mr. Ronald A. Jones
Vice President, Oconee Site
Duke Energy Corporation
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: SUMMARY OF CONFERENCE CALL WITH DUKE ENERGY CORPORATION REGARDING THE SPRING 2003 STEAM GENERATOR INSPECTIONS AT OCONEE UNIT 3 (TAC NO. MB8978)

Dear Mr. Jones:

On May 18, 2003, your staff and our staff participated in a conference call to discuss the results of recently completed inspections of the Oconee, Unit 3 steam generator tubes during the Spring 2003 outage. Enclosure 1 is a brief summary of the call, and Enclosure 2 contains three telefaxes related to the call.

Sincerely,

***/RA/***

Leonard N. Olshan, Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-287

Enclosures: 1. Summary of Conference With Duke Energy Corporation Regarding Spring 2003 Steam Generator Inspection Results at Oconee Nuclear Station, Unit 3
2. Telefaxes from Robert C. Douglas to Leonard N. Olshan dated May 19, May 20, and May 22, 2003

cc w/encls: See next page

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**ADAMS ACCESSION NO: ML031810657** * No major change to phone call summary

| OFFICE | PDII-1/PM | PDII-1/LA | EMCB/SC | PDII-1/SC |
|---|---|---|---|---|
| NAME | LOlshan | CHawes | LLund* | JNakoski |
| DATE | 6/26/2003 | 6/26/2003 | 6/12/2003 | 6/27/2003 |

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SUMMARY OF CONFERENCE CALL

WITH

DUKE ENERGY CORPORATION

REGARDING SPRING 2003 STEAM GENERATOR INSPECTION RESULTS

AT OCONEE NUCLEAR STATION, UNIT 3

On May 19, 2003, the NRC staff participated in a conference call with Duke Energy Corporation (licensee) to discuss the results of the inspections of the Oconee Nuclear Station, Unit 3 (Oconee 3) steam generator (SG) tubes that had been completed during the Spring 2003 outage. To facilitate the discussion, the licensee provided a written response to each of 16 discussion points that had been requested by the staff prior to the conference call. These discussion points and the licensee responses are included in Enclosure 2. Some items of note are highlighted below.

The Oconee 3 SGs are scheduled for replacement at the next refueling outage in the Fall of 2004. The inspection just completed is the last scheduled inspection for the current steam generators.

Primary-to-secondary leakage at the time of shutdown for the current outage was at a very low level, less than 2 gallons per day, and had not changed during the course of the cycle. No clear source of the leakage was identified during the SG tube inspections. No secondary side pressure test was conducted.

The inspection scope included a 100-percent bobbin coil inspection, supplemented by extensive +Point inspection that included, but were not limited to, all bobbin indications, all dings (greater than 2 volts bobbin), all upper tube sheet roll and re-roll locations (except where repaired by sleeves), all sleeve roll joints, all alloy 600 rolled plugs, and a 40-percent sample of thimble plugs. The +Point program also included a 100-percent inspection of a critical area in the kidney region of the tube bundle from 2 inches above the top of the lower tube sheet (LTS) to 12 inches below the top of the LTS to address localized intergranular attack (IGA) that is present in this region. The licensee stated during the phone call that the critical area was defined on the basis of engineering judgement with the intention of bounding the region susceptible to this type of flaw. The lowermost IGA indication found was located 10 inches below the top of the LTS.

The tube inspections identified 618 tubes with pluggable indications. Over half the indications that were found involved freespan outer-diameter stress corrosion cracking and IGA located mostly in the upper two spans of the tube bundle. These freespan cracks ranged to 3 inches in length. The lengths, depths, and voltage responses of these indications were described by the licensee as being within the envelope of what had been experienced before at this unit and, with the exception noted below, have not been associated with failures during prior in situ pressure tests. The licensee performed in situ pressure tests of 13 of these tubes found to be

most limiting in terms of flaw indication length, depth, or voltage response. All tests were conducted to three times normal operating pressure with no leakage observed.

At Oconee 2 in 2002, a tube with a freespan crack indication failed during in situ pressure testing at a pressure less than three times normal operating pressure. Hindsight analysis revealed that the crack indication had been present during the previous inspection but not identified by the analysts due to the confounding presence of a ding and a manufacturing burnish mark signal at that location. Therefore, for Oconee 3 the licensee preventively plugged 11 tubes with similar dent/volumetric response combinations that could potentially mask crack indications at those locations.

No new degradation mechanisms were observed during the 2003 inspection of Oconee 3. Apart from the dominant freespan cracking mechanism, the other active mechanisms included tube wear at tube support plates; impingement; IGA in the tubesheet crevice and freespan; primary water stress corrosion cracking in the tube sheet rolls, re-rolls, dents, and plugs; and IGSCC in a sleeve expansion transition.

Apart from roll transition cracks, only one indication of circumferential cracking was observed; it was observed at an 11-volt ding located 2-1/2 inches from the hot leg tube end. This crack measured approximately 180 degrees around the circumference with measured depths ranging from 19 to 98 percent of the initial tube wall thickness. The licensee estimated the percent degraded area to be 35 percent. The licensee did not perform an in situ leakage or pressure test of this tube, but the licensee did perform an integrity assessment to verify that the tube would not sever or leak excessively under the differential thermal loads associated with a main steam line break.

Re-roll repairs were performed for 50 tubes with roll transition cracks. No sleeve repairs were performed.

The licensee stated that the severed tube issue for Oconee 3 was generally addressed during the previous inspection outage. Since then, however, the licensee identified an additional 7 tubes with welded plugs that could potentially be subject to the severance phenomena. The licensee, therefore, elected to capture (i.e., cage) these tubes by plugging and stabilizing all surrounding tubes.

The staff did not identify any concerns during the phone call regarding the licensee's inspection program or the results obtained.

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