December 28, 2007

Mr. Bruce H. Hamilton
Vice President, Oconee Site
Duke Power Company LLC
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: GENERIC LETTER 2004-02, "POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY RECIRCULATION DURING DESIGN BASIS ACCIDENTS AT PRESSURIZED WATER REACTORS," EXTENSION REQUEST APPROVAL FOR OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3 (TAC NOS. MC4698, MC4699, AND MC4700)

Dear Mr. Hamilton:

We have evaluated the information provided in your letters dated November 19, December 18, and December 19, 2007, supporting a request for an extension of Oconee Nuclear Station, Units 1, 2, and 3 (Oconee) sump clogging corrective actions due date of December 31, 2007, stated in Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors." We have determined that for Oconee, it is acceptable to extend the due date for completion of corrective actions and modifications, as described in the enclosure, until the dates stated therein. If you have any questions, please contact me at 301 415-1419.

Sincerely,

/RA by John Stang for/

Leonard N. Olshan, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-269, 50-270, and 50-287

Enclosure:
As stated

cc w/encl: See next page

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OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

GSI-191/GL 2004-02 EXTENSION REQUEST APPROVAL

DOCKETS NOS. 50-269, 50-270, AND 50-287

In a letter dated November 19, 2007, (Agencywide Documents Access and Management System (ADAMS) No. ML073300021) Duke Power Company LLC (Duke, the licensee) requested an extension of the due date of December 31, 2007, stated in Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors," for completion of corrective actions at Oconee Nuclear Station (ONS), Units 1, 2, and 3. In a phone conference on November 28, 2007, the Nuclear Regulatory Commission (NRC) staff informed the licensee that the NRC believed the activities planned during the proposed extension period could be accomplished more expeditiously, and the NRC staff asked the licensee to reconsider its plans. In a letter dated December 18, 2007(ADAMS No. ML073580179), Duke submitted a revised extension request. In a phone conference on December 19, 2007, the NRC staff stated additional concerns regarding the extension request. The licensee responded to those concerns in a letter dated December 19, 2007(ADAMS No. ML073580168).

In its November 19, 2007, and December 18, 2007, letters, Duke stated that it has taken actions toward accomplishing the corrective actions described in GL 2004-02, including replacing the sump screens with substantially larger sump strainers at all three units. However, the licensee stated in the December 18, 2007, letter that two corrective actions could not be completed by the end of 2007: (1) replacement of the 3A high pressure injection (HPI) pump, and (2) replacement of seal flush orifices and cyclone separators on all low pressure injection (LPI), HPI, and building spray (BS) pumps.

In its November 19, 2007, letter, Duke requested that completion of these modifications be extended to the next refueling outages for each unit; fall 2009, fall 2008, and spring 2009 for units 1, 2, and 3, respectively. In its December 18, 2007, letter, the licensee requested that the schedule for completion of all remaining corrective actions be extended until the end of the spring 2009 Unit 3 refueling outage. In the enclosure to this letter, Duke provided a milestone schedule for completion of each modification.

The criteria for granting an extension to the due date of December 31, 2007, for completion of GL 2004-02 corrective actions are stated in SECY-06-0078. Specifically, an extension may be granted if:

- The licensee has a plant-specific technical/experimental plan with milestones and a schedule to address outstanding technical issues with enough margin to account for uncertainties, and

- The licensee identifies mitigative measures to be put in place prior to December 31, 2007, and adequately describes how these mitigative measures will minimize the risk of degraded emergency core cooling system (ECCS) and containment spray system (CSS) functions during the extension period.

The SECY also states that, for proposed extensions beyond several months, a licensee's request will more likely be accepted if the proposed mitigative measures include temporary physical improvements to the ECCS sump or materials inside containment to better ensure a high level of ECCS sump performance.

With regard to the first extension criterion, ONS has a plant-specific plan, with milestones and schedules, to complete GL 2004-02 corrective actions by spring 2009, as noted above. The schedule is based on parts delivery, the best case for which is fall 2008. The licensee stated that it has exhausted all potential options for expediting the delivery schedule for the needed parts.

The licensee's proposed schedule (page 5 of the enclosure to its December 18 submittal) shows that modifications will be made at all three units over a period of about 6 months following delivery of the parts. Where feasible during this period, the modifications are scheduled for refueling outages. Given that 24 pumps need to be modified, the NRC staff finds the licensee's proposed schedule and milestones to be appropriately expeditious and supportive of resolution of issues identified in GL 2004-02.

With regard to the second extension criterion, the licensee stated that the following modifications, mitigative measures, compensatory measures, and/or favorable conditions are in effect at ONS Units 1, 2, and 3, minimizing the risk of degraded ECCS and BS functions during the extension period:

1. The licensee has replaced the reactor building emergency sump (RBES) strainers on all three units, increasing the strainer surface area from about 100 ft^2 per unit to 4800, 5200, and 5200 ft^2 for ONS Units 1, 2, and 3, respectively. The size of the screen perforations has been reduced from a 0.12 inch square to a 0.08 inch diameter circle.

2. The licensee has replaced the ONS Units 1 and 2 HPI pumps, and 2 of the 3 HPI pumps in Unit 3.

3. The licensee has completed debris generation analysis, noting that insulation in containment is mostly reflective metal with very little fiber. Fibrous insulation within the predicted zone of influence of a loss-of-coolant accident (LOCA) has been removed. The licensee's staff has walked down the containment and determined the amount of latent debris to be very small.

4. The licensee has extensively remediated degraded containment coatings and has implemented a periodic condition assessment program for containment coatings.

The December 18, 2007, letter also discussed procedural guidance, training, and similar actions in place as a result of Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors." In the December 19, 2007, phone conference, the NRC staff asked the licensee what actions of this sort had been taken or were planned regarding recognition of pump performance issues caused by debris-induced wear. The licensee responded that it would make a commitment to evaluate the adequacy of existing guidance and to make any changes needed. In its December 19, 2007, letter, the licensee committed to review procedural guidance for operator recognition of and response to seal failures in the LPI, HPI, or BS pumps, or to a wear-related failure in HPI pump 3A. If additional

guidance is found necessary, the licensee committed to have it in place by February 29, 2008. This temporary measure is consistent with the third criterion from SECY-06-0078 as discussed above.

The licensee's December 18, 2007, letter also notes several features at ONS that reduce the risk posed by operation during the proposed extension period, including:

1. Switchover to recirculation following a large-break LOCA would be required no sooner than 44 minutes after accident initiation, allowing time for much of the debris to settle away from the RBES.

2. There are sources of margin not credited in the plants' licensing bases, including testing that has shown the BS pumps are capable of operating for extended periods at low flow rates with substantial deficiency in net positive suction head. Because of similarity in pump designs, the licensee believes the LPI pumps would perform similarly.

The licensee also provided an estimate of the risk of continuing to operate until the planned modifications are completed. The NRC agrees with the licensee that the risk is low.

The NRC believes that Duke has a reasonable plan for ONS Units 1, 2, and 3 that should result in acceptable strainer function with adequate margin for uncertainties. Further, the NRC has concluded that Duke has put or will put mitigation measures in place at ONS to adequately reduce risk for the requested extension period. However, the NRC staff does not believe it appropriate to link completion dates for corrective actions at one unit to completion of an outage at another unit. This concern was communicated to the licensee in the December 19, 2007, phone conference. In its December 19, 2007, letter, the licensee committed to complete Unit 2 corrective actions by the end of the fall 2008 refueling outage and Unit 1 corrective actions by January 31, 2009.

The NRC staff also asked the licensee its intentions regarding the 3A HPI pump if a forced outage were to occur. In its December 19, 2007, letter, the licensee committed to replace this pump by the spring 2009 refueling outage or the first Unit 3 forced outage of sufficient duration. All other actions for Unit 3 will be complete by the end of the spring 2009 refueling outage.

Based on the licensee's having satisfactorily addressed the applicable NRC criteria as discussed above, it is acceptable to extend the completion date for certain corrective actions for the issues discussed in Generic Letter 2004-02 (specifically, the pump modifications described above) until:

- January 31, 2009, for ONS Unit 1

- Completion of the fall 2008 refueling outage (scheduled to begin on October 11, 2008) for ONS Unit 2

- Completion of the spring 2009 refueling outage (scheduled to begin on April 18, 2009) for ONS Unit 3. If a forced outage of sufficient duration occurs before the spring 2009 refueling outage, the licensee has committed to replace the 3A HPI pump during the forced outage.

While the NRC accepts these dates as reasonable allowance for contingencies regarding completion of remaining activities to address GL 2004-02, the NRC expects Duke to place a high priority on completing remaining actions at ONS and updating the plants' licensing bases as soon as possible. Should Duke elect to begin the respective refueling outages more than 30 days after the dates specified above, Duke will need to provide the NRC additional justification for further delay in completing the corrective actions for GL 2004-02 for ONS Units 2 and 3.

Principal Contributor: M. Scott

Date: December 28, 2007

Oconee Nuclear Station, Units 1, 2, and 3

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