

December 28, 2007

Mr. G. R. Peterson
Vice President
McGuire Nuclear Station
Duke Power Company LLC
12700 Hagers Ferry Road
Huntersville, NC 28078

SUBJECT: MCGUIRE NUCLEAR STATION, UNITS 1 AND 2, - GENERIC LETTER 2004-02,
"POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY
RECIRCULATION DURING DESIGN BASIS ACCIDENTS AT
PRESSURIZED-WATER REACTORS," EXTENSION REQUEST APPROVAL
(TAC NOS. MC4692, MC4693)

Dear Mr. Peterson:

The Nuclear Regulatory Commission (NRC) staff has evaluated a request from Duke Power Company LLC, for an extension of the McGuire Nuclear Station, Units 1 and 2 (McGuire 1 and 2), sump clogging corrective actions due date of December 31, 2007. The December 31, 2007, date is included in Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors." The NRC staff's evaluation is enclosed.

The NRC staff has determined that for McGuire 1 and 2 it is acceptable to extend the due date for completion of corrective actions for GL 2004-02, as described in the enclosure, until April 30, 2008.

Sincerely,

/RA/

John Stang, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-369 and 50-370

Enclosure:
As stated

cc w/encl: See next page

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DATE	12/28/07	12/28/07	12/21/07	12/28/07

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MCGUIRE NUCLEAR STATION , UNITS 1 AND 2

GSI-191/GL 2004-02 EXTENSION REQUEST

DOCKET NOS. 50-369 AND 50-370

In a letter dated November 6, 2007, (Agencywide Documents Access and Management System (ADAMS), Accession No. ML073180487), as supplemented December 13, 2007, Duke Power Company LLC, (the licensee, Duke) requested an extension to the corrective action due date of December 31, 2007, stated in Nuclear Regulatory Commission (NRC) Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," for the McGuire Nuclear Station, Units 1 and 2 (McGuire 1 and 2).

Duke stated that it has taken actions, as described in its letters dated March 1, 2005 (ADAMS Accession No. ML050670465), September 1, 2005 (ADAMS Accession No. ML050670465), and updated the status of these actions in a letter dated June 28, 2006 (ADAMS Accession No. ML061870061), toward bringing McGuire 1 and 2 into compliance with GL 2004-02, including replacing the sump screens with substantially larger sump strainers (McGuire 2 has an additional strainer section to be installed in the spring 2008 refueling outage (RFO)). The new strainers will have an area of about 1700 square feet. The strainers are sized for the bounding debris loads after a loss-of-coolant accident (LOCA) with some margin (following the completed removal of the Microtherm® insulation from the reactor vessel heads).

Duke stated that it is continuing the evaluation of the adequacy of the replacement strainers. The results of chemical effects testing conducted during October and November 2007 are being evaluated with preliminary conclusions expected by December 31, 2007. Preliminary vertical test loop and integrated prototype test results from tests already performed by Duke and its vendors have indicated that the strainers designed for McGuire will perform their required functions. Duke stated that the final sump strainer head loss/chemical effects testing reports will not be available to Duke until after December 31, 2007; and, therefore, Duke requested until April 30, 2008, to complete the final engineering and design documentation and issue a GL 2004-02 supplemental response based on the final chemical effects testing information.

The licensee stated that for McGuire Unit 1 it has completed all modifications projected to be required to resolve issues associated with potential sump strainer clogging as described in GL 2004-02. Duke also stated that for McGuire Unit 2 it has completed all modifications except for the installation of the final strainer section that will be installed during the spring 2008 RFO. The installation of this strainer section after the GL 2004-02 completion date of December 31, 2007, has been evaluated and approved by the NRC staff in a letter dated December 19, 2007 (ADAMS Accession No. ML073450032). The extension approved for this work is until March 1, 2008 (with a 30-day grace period).

Duke stated that it, along with the industry, is working on a downstream effects evaluation to determine whether any components downstream of sump strainers could be adversely affected by chemical effects. Duke anticipates that this work will be completed for McGuire Units 1 and 2 by December 31, 2007. The licensee's original evaluation of downstream effects was stated by Duke to have been completed prior to the issuance of WCAP-16406-P, "Evaluation of Downstream

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Sump Debris Effects In Support of GSI-191," Revision 1, dated August 2007. Instead, the downstream evaluation used revision 0 of the document. The Duke request for extension makes no mention of performing an analysis with the updated version. The NRC staff expects that an adequate ex-vessel downstream evaluation will be completed by April 30, 2008. Duke should justify the original analysis or perform an analysis based on WCAP-16406-P, Revision 1 dated August 2007.

The criteria for granting an extension to the due date of December 31, 2007, for completion of the GL 2004-02 corrective actions are stated in SECY-06-0078 (ADAMS Accession No. ML053620174). Specifically, an extension may be granted if:

- the licensee has a plant-specific technical/experimental plan with milestones and schedules 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 ECCS and containment spray system (CSS) functions during the extension period.

In regard to the first extension criterion, McGuire has a plant-specific technical/experimental plan, with milestones and schedules, to complete the GL 2004-02 corrective actions and modifications by April 30, 2008. Specifically, the licensee has stated that it will:

1. Complete the evaluation of chemical effects testing and incorporate these results into the McGuire sump strainer analysis by April 30, 2008,
2. Evaluate downstream chemical effects by December 31, 2007, and
3. Complete the installation of the final strainer section for McGuire 2 during the spring 2008 RFO scheduled to be begin March 1, 2008 (extension previously approved).

In addition, as stated above, the staff expects that an adequate ex-vessel downstream evaluation will be completed by Duke for McGuire 1 and 2 by April 30, 2008. Duke should either justify the original analysis or perform an analysis based on WCAP-16406-P, Revision 1, dated August 2007.

In regard to the second extension criterion, the licensee has stated that several modifications, mitigative measures, compensatory measures, and/or favorable conditions are in effect at McGuire 1 and 2, minimizing the risk of degraded ECCS and CSS functions during the extension period. First, Duke stated that it has installed new modular ECCS sump strainers in McGuire Units 1 and 2. The Unit 1 strainer was increased from the original sump screen area of 135 square feet approximately 1700 square feet of strainer area. McGuire 2 strainer has been increased from the original sump screen area of 135 square feet to approximately 1000 square feet of strainer area.

During the spring 2008 refueling outage, an expansion of about 700 square feet will be added to the McGuire 2 ECCS sump strainer, bringing the total strainer surface area to approximately 1700 square feet. In addition to providing a significant increase in strainer surface area, the new design in both Units incorporates a reduction in strainer hole size from 0.206 inch nominal (original strainer) to less than 0.094 inch nominal (new strainer). The licensee also stated that Microtherm® insulation previously installed on the McGuire 1 and 2 reactor vessel heads has been removed and replaced with reflective metal insulation. (Microtherm® insulation has been demonstrated to be a problematic insulation from a strainer head loss perspective.)

The NRC believes that Duke has a reasonable plan for McGuire Units 1 and 2 that should result in the completion of final GSI-191 evaluations that ensure acceptable strainer function with adequate margin for uncertainties. Further, the NRC has concluded that Duke has put mitigation measures in place at McGuire Units 1 and 2 to adequately reduce risk for the requested 4-month extension period. It is, therefore, acceptable to extend the completion date for certain corrective actions for the issues discussed in Generic Letter 2004-02 (specifically, final strainer chemical effects testing evaluation and ex-vessel downstream effects evaluations discussed above) until April 30, 2008.

Principal Contributor: S. Smith

Date: December 28, 2007

McGuire Nuclear Station, Units 1 & 2

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