July 3, 2008

Mr. Charles D. Naslund
Senior Vice President and Chief Nuclear Officer
Union Electric Company
Post Office Box 620
Fulton, MO 65251

SUBJECT: CALLAWAY PLANT, UNIT 1 - APPROVAL OF EXTENSION REQUEST FOR CORRECTIVE ACTIONS RE: GENERIC LETTER 2004-02, "POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY RECIRCULATION DURING DESIGN BASIS ACCIDENTS AT PRESSURIZED-WATER REACTORS," (TAC NO. MC4571)

Dear Mr. Naslund:

By letter dated June 24, 2008, Union Electric Company (UEC), the licensee for Callaway Plant, Unit 1 (Callaway), requested an extension to the 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,” corrective action due date for Callaway . The stated intent of this extension was to allow UEC additional time to review and act on delayed vendor documentation of emergency core coolant system (ECCS) sump strainer testing; to complete evaluation of upstream effects, downstream effects, debris generation, debris transport, and chemical effects; and to complete certain GL 2004-02 corrective actions. Identified corrective actions are: (1) modifications to the new ECCS sump strainers to regain net positive suction head margin necessitated by a manufacturing error resulting from a vendor error in the clean-strainer head-loss calculation and (2) potential modifications (if indicated by the final downstream effects evaluations) to safety injection system components and containment spray system pump cyclone separators. UEC plans to implement these additional modifications, if required, during the fall 2008 refueling outage. Therefore, UEC requests an extension of the due date to December 15, 2008, for completion of the specified activities.

In accordance with its reviews for granting extensions to the due date for completion of GL 2004-02 corrective actions, the NRC staff has evaluated the licensee’s request, based on the criteria stated in SECY-06-0078.

Based on the licensee having satisfactorily addressed the NRC GL 2004-02 due date extension criteria, the NRC staff finds it acceptable to extend the Callaway completion date for GL 2004-02 corrective actions associated with strainer performance testing, final analysis, and related licensing activities from June 30, 2008, to December 15, 2008.

The NRC staff's evaluation of the extension request is enclosed. If you have any questions, please contact me at (301) 415-1476 or email mohan.thadani@nrc.gov.

Sincerely,

/RA/

Mohan C. Thadani, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-483

Enclosure:
As stated

cc w/encl: See next page

The NRC staff's evaluation of the extension request is enclosed. If you have any questions, please contact me at (301) 415-1476 or email mohan.thadani@nrc.gov.

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As stated

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ADAMS Accession No.: ML081840606 *memo dated

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EVALUATION OF EXTENSION REQUEST

RELATED TO GENERIC LETTER 2004-02

BY OFFICE OF NUCLEAR REACTOR REGULATION

FACILITY OPERATING LICENSES NOS. NPF-76 AND NPF-80

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

By letter dated June 24, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML081840061), Union Electric Company (UEC), the licensee for Callaway Plant, Unit 1 (Callaway), requested an extension to the 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, corrective actions due date for Callaway. The stated intent of the requested extension was to allow UEC additional time to review and act on delayed vendor documentation of emergency core coolant system (ECCS) sump strainer testing; to complete evaluation of upstream effects, downstream effects, debris generation, debris transport, and chemical effects; and to complete certain GL 2004-02 corrective actions. Identified corrective actions are: (1) modifications to the new ECCS sump strainers to regain net positive suction head (NPSH) margin necessitated by a manufacturing error resulting from a vendor error in the clean-strainer head-loss calculation, and (2) potential modifications (if indicated by the final downstream effects evaluations) to safety injection system components and containment spray system (CSS) pump cyclone separators. UEC plans to implement these additional modifications, if required, during the fall 2008 refueling outage. Therefore, UEC requested an extension from June 30, 2008, to December 15, 2008, for completion of the specified activities.

By letters dated December 10 and December 20, 2007, UEC submitted a request for extension of the Callaway sump clogging corrective actions due date of December 31, 2007, stated in GL 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation during Design Basis Accidents at Pressurized-Water Reactors." The licensee stated that additional time was needed to complete plant-specific testing and related activities, including completion of licensee verification of design inputs, calculations, and evaluations. The NRC staff reviewed the information provided by letter dated December 28, 2007 (ADAMS Accession No. ML073610243), and determined that it was acceptable to extend the due date for completion of corrective actions at Callaway for GL 2004-02 to June 30, 2008.

In its June 24, 2008, letter, UEC stated that it had successfully completed strainer performance testing that showed adequate NPSH margin would be maintained, that increase in head-loss due to chemical effects was minimal, and the new strainer design was resistant to blockage from transported debris. Strainer bypass testing was also performed. Therefore, UEC concluded that corrective actions are nearly complete.

ENCLOSURE

The licensee noted, however, that additional time is needed to perform the following:

- Receipt of the final strainer vendor test report by mid-August 2008.

- Assessment of impact of the test results on completed strainer calculations, debris bypass impacts on downstream effects evaluations, and potential impacts on other GL 2004-02 corrective actions, along with completion of activities needed to comply with 10 CFR 50 Appendix B, by December 15, 2008.

The NRC has based its reviews for granting extensions to the due date for completion of GL 2004-02 corrective actions on the criteria stated in SECY-06-0078. Specifically, an extension may be granted if:

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

- the licensee identifies mitigation measures to be put in place prior to December 31, 2007, and adequately describes how these mitigation measures will minimize the risk of degraded ECCS and CSS functions during the extension period.

SECY-06-0078 also states that for proposed extensions beyond several months, a licensee's request will more likely be accepted if the proposed mitigation 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, UEC has provided a plant-specific technical/ experimental plan, with milestones and schedules, to complete the GL 2004-02 corrective actions, as discussed above.

With regard to the second extension criterion, the licensee stated in its letter dated June 24, 2008, that the following mitigating measures are in place:

- Plant hardware modifications, developed in response to issues identified in GL 2004-02, are installed in Callaway and are actively supporting compliance with the regulatory requirements for long-term cooling following a design basis loss-of-coolant accident. Hardware modifications include replacement of ECCS sump screens with new strainers with a surface area of 6623 square feet, and installation of debris barriers in two of the four loop entrances. These modifications are intended to maximize strainer capability while minimizing the debris load to the extent practical.

- Plant administrative procedures and processes, such as programmatic changes to controls for plant design changes and containment material controls have been implemented to support the hardware modifications.

- Interim compensatory measures implemented in accordance with NRC Bulletin 2003-02 remain in effect.

With regard to the third extension criterion, the large new sump strainers satisfy this criterion.

In an e-mail dated June 27, 2008 (ADAMS Accession No. ML081850324), UEC stated that there is a significant NPSH margin at Callaway, as supported by successful chemical effects and debris by-pass testing conducted in January 2008. In its June 27, 2008, e-mail, UEC explained that the modification to be performed during the Callaway fall 2008 refueling outage will replace the existing strainer support with one strainer having the correct hole size in order to increase NPSH margin to desired levels. UEC also stated that the current configuration ensures ECCS operability with respect to the strainer issue addressed by GL 2004-02 notwithstanding the modification planned for the fall 1008 refueling outage.

In summary, the licensee has stated that it believes it has nearly completed corrective actions for GL 2004-02 and that it has demonstrated adequate NPSH through strainer testing. Given this information, and the mitigation measures and plant improvements already in place, the additional time requested in the June 24, 2008, letter to complete remaining evaluations, documentation, and modifications is considered to be of low safety concern.

Based on the licensee having satisfactorily addressed the NRC GL 2004-02 due date extension criteria, as discussed above, the NRC staff finds it acceptable to extend the Callaway completion date for GL 2004-02 corrective actions associated with strainer performance testing, final analysis and related licensing activities, as described in this enclosure, from June 30, 2008, to December 15, 2008.

Principal Contributors: J. Golla
E. Geiger

Date: July 3, 2008