May 24, 2005

Mr. Michael G. Gaffney
Site Vice President
Kewaunee Nuclear Power Plant
Nuclear Management Company, LLC
N490 State Highway 42
Kewaunee, WI 54216

SUBJECT: KEWAUNEE NUCLEAR POWER PLANT - REQUEST FOR ADDITIONAL INFORMATION REGARDING AMENDMENT REQUEST (TAC NO. MC6916)

Dear Mr. Gaffney:

By letter dated May 5, 2005, Nuclear Management Company, LLC (NMC or the licensee) proposed a license amendment that would change the technical specifications to modify the auxiliary feedwater (AFW) pump suction protection requirements and change the design-basis as described in the Updated Safety Analysis Report to revise the functionality of the discharge pressure switches to provide pump runout protection, which requires operator actions to restore the AFW pumps for specific post-accident recovery activities. The U.S. Nuclear Regulatory Commission staff has completed its preliminary review of your response and has determined it needs additional information to complete its review as described in the enclosure.

The enclosed questions were provided by email to Mr. T. Breene of your staff on May 12, and May 18, 2005. In order to support the schedule you requested in your May 5, 2005, letter, please provide your responses as soon as possible. If circumstances change, please contact me at (301) 415-2296 at the earliest opportunity.

Sincerely,

**/RA/**

Carl F. Lyon, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosure: Request for Additional Information

cc w/encl: See next page

May 24, 2005

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REQUEST FOR ADDITIONAL INFORMATION

AMENDMENT REQUEST DATED MAY 5, 2005, RE: AUXILIARY FEEDWATER

KEWAUNEE NUCLEAR POWER PLANT

NUCLEAR MANAGEMENT COMPNAY, LLC

DOCKET NO. 50-305

Instrumentation & Controls Questions:

1. Please discuss how you intend to determine the operability of the proposed auxiliary feedwater (AFW) suction trip.

2. Is the proposed AFW suction trip a Limiting Safety System Setting (LSSS)? Please justify your answer. If the proposed AFW suction trip is a LSSS, please answer question 3 below.

3. The standard technical specifications Bases define a LSSS as an allowable value (AV). During reviews of proposed license amendments that contain changes to LSSS setpoints, the U.S. Nuclear Regulatory Commission (NRC) staff identified concerns regarding the method used by some licensees to determine the AVs. AVs are identified in the technical specifications (TSs) as LSSS to provide acceptance criteria for determination of instrument channel operability during periodic surveillance testing. The NRC staff's concern relates to one of the three methods for determining the AV as described in the Instrument Society of America (ISA) recommended practice ISA-RP67.04-1994, Part II, "Methodologies for Determination of Setpoints for Nuclear Safety-Related Instrumentation."

   The NRC staff has determined that to ensure a plant will operate in accordance with the assumptions upon which the plant safety analyses have been based, additional information is required regardless of the methodology used to establish LSSS values in TSs. Details about the NRC staff's concerns are available on the NRC's public website under the Agencywide Documents Access Management System Accession Numbers ML041690604, ML041810346, and ML050670025.

   In order for the NRC staff to assess the acceptability of your May 5, 2005, license amendment request related to this issue, the NRC staff requests the following additional information:

   a. Describe the setpoint methodology used to establish AVs associated with LSSS setpoints.

   b. In discussing the methodology used, address the following questions regarding the use of the methodology:

(1) Discuss how the methodology and controls you have in place ensure that the analytical limit (AL) associated with an LSSS will not be exceeded (the AL is a surrogate that ensures the safety limits will not be exceeded). Include in your discussion information on the controls you employ to ensure the trip setpoint established after completing periodic surveillances satisfies your methodology. If the controls are located in a document other than the TSs, discuss how those controls satisfy the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50.36.

(2) Discuss how the TS surveillances ensure the operability of the instrument channel. This should include a discussion on how the surveillance test results relate to the TS AV and describe how these are used to determine the operability of the instrument channel. If the requirements for determining operability of the LSSS instrument being tested are in a document other than the TSs (e.g., plant test procedure), discuss how this meets the requirements of 10 CFR 50.36.

c. In discussing the methodology, the following explicit regulatory commitments and proposed TS changes are requested by the NRC staff to complete its review of the methodology:

(1) To adopt the final Technical Specification Task Force TS changes adopted by NRC for plant TSs to come into conformance with the requirements of 10 CFR 50.36 for LSSS.

(2) To assess the operability of tested instrumentation based on the previous as-left instrument setting and accounting for the uncertainties associated with the test or calibration.

(3) To revise the TSs for the LSSS being changed by the license amendment request to incorporate a footnote in the TSs that states: "The as-left instrument setting shall be returned to a setting within the tolerance band of the trip setpoint established to protect the safety limit."

4. Plant analyses have demonstrated that the suction pressure trip combined with an additional suction water volume protect the AFW pumps by sensing loss of suction, tripping the associated AFW pump, and providing sufficient reserve water volume to allow the AFW pump to coast to a stop, thus preventing AFW pump damage. Is there a check valve or isolation valve between the Class 1 section and the non-Class 1 section of the suction piping to prevent loss of the reserve water volume through the non-Class 1 pipe break?

5. The setpoint for the suction pressure trip should account for the piping pressure drop between the suction pressure switch location and the pump. Since there are check valves in the piping between the two locations, the verification of the trip setpoint and the pressure drop would identify any check valve problems, too. Provide the setpoint calculation documentation of the AFW pump suction pressure trip channels and the AFW pump runout protection (discharge pressure) channels for NRC staff review.

6. What interlocks are provided to prevent lockout of the motor-driven AFW pumps when the automatic start signals and the low pressure trip signals coincide? What interlocks are provided for switch-over from condensate water tank water source to the safety class service water source such that the pump trip signal will not interrupt the AFW pump operation. Provide detailed drawings of these interlock designs.

Human Factors Questions:

1. For the steam generator tube rupture (SGTR) and main safety steam line break (MSLB) scenarios, what are the local operator actions as well as the control room operator's actions to address each scenario? What differences will there be in manipulating the AFW system locally and from the control room for both scenarios?

2. In those cases in which the SGTR or MSLB events are still ongoing, would the requested local operator actions be considered recovery activities or mitigation activities? It is unclear how the AFW manipulation is considered to be part of the recovery actions.

3. Provide the time validation data that addresses the length of time it takes for the operator to perform the requested AFW system manipulation activities locally for both SGTR and MSLB. Compare that time validation data to the times required to complete SGTR and MSLB activities in the current licensing and design-basis.

4. What additional activities (training, pre-briefs, walkthroughs, communications, etc.) will be incorporated with the implementation of the new operator actions? What is the completion date for these additional activities?

Plant Systems Questions:

1. Please describe the worst-case scenario and assumptions that establish the basis for the low suction pressure trip setpoints, and explain how the actual values of the low suction pressure trip setpoints were arrived at for these postulated conditions. Also, please describe post-modification system flow tests that will be completed to confirm that the low suction pressure trip setpoints are adequate to: a) prevent damage to the AFW pumps, and b) prevent undesirable AFW pump trips from occurring.

2. Low AFW pump suction pressure trips were not installed previously to provide the necessary protection for low net positive suction head because of sub-atmospheric conditions at the suctions of the AFW pumps and instead, low AFW pump discharge pressure trips were installed to provide the necessary protection. Please explain why the sub-atmospheric conditions that exist at the AFW pump suctions no longer pose a problem.

3. Please describe the worst-case scenario and assumptions that establish the basis for the additional AFW pump suction water volume that is being established, including confirmation that the Kewaunee design criteria for safety-related applications will be satisfied in all respects. Also, please describe post-modification system flow tests that will be completed to confirm that the water volume is adequate and that system flow instabilities will not occur.

4. Please describe the worst-case scenario and assumptions that establish the basis for the low discharge pressure trip setpoints, and explain how the actual values of the low discharge pressure trip setpoints were arrived at for these postulated conditions. Also, please describe post-modification system flow tests that will be completed to confirm that the low discharge pressure trip setpoints are adequate to: a) prevent damage to the AFW pumps, and b) prevent undesirable AFW pump trips from occurring.

5. The submittal indicates that one of the essential functions of the AFW system is to prevent thermal cycling of the steam generator tube sheets upon a loss of the main feedwater pumps. With respect to the proposed changes, please explain what impact a depressurized or faulted steam generator event will have on steam generator tube sheet thermal cycling considerations, including a discussion of the limiting assumptions upon which the conclusions are based.

6. Because the AFW pumps could trip on low discharge pressure during steam generator depressurization events, local operator action is proposed to manually throttle AFW pump flow using the pump discharge isolation valves. These valves are manually operated gate valves and are not designed for throttling fluid flow. Please describe flow testing that will be performed to demonstrate the capability to adequately throttle AFW flow for the most challenging conditions that can occur during the postulated depressurization events.

7. Please provide a complete listing of all postulated accidents, transients, and occurrences that could be affected by the proposed changes along with a brief summary of the potential impact and mitigative actions that are required, including those that are considered to be "recovery actions." Also, please confirm that the limiting cases that are discussed in the submittal bound these other postulated situations in all respects.

8. The Kewaunee licensing basis currently allows 10 minutes for the operators to take action from inside the control room to align the AFW pumps to take suction from the safety-related service water system in the event that the non-safety-related condensate storage tanks and related flow path are not available. However, because steam generator depressurization events can cause the AFW pumps to trip on low discharge pressure, manual operator actions from outside the control room are proposed in order to throttle AFW pump flow and avoid any further pump runout conditions; thereby allowing AFW to be restored. Also, as discussed in Question No. 6, the valves that will be used for throttling AFW flow are not designed for that particular purpose. Because the proposed actions represent a significant departure from the existing plant licensing basis and credits the use of valves that are not optimal for the required application, the proposed changes in this regard can not be viewed as a permanent solution. Please discuss actions that will be taken to fully restore the existing plant licensing basis so that operator actions from outside the control room need not be credited, and propose a schedule for completing these actions. Also, consistent with the response to this question, please propose a license condition that will assure that this matter is fully resolved in a timely manner.

Kewaunee Nuclear Power Plant

cc:

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