UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 19, 2011

Mr. David J. Bannister
Vice President and CNO
Omaha Public Power District
Fort Calhoun Station
444 South 16th St. Mall
Omaha, NE 68102-2247

SUBJECT: FORT CALHOUN STATION, UNIT NO. 1 – REQUEST FOR ADDITIONAL INFORMATION RE: PROPOSED CHANGE TO ESTABLISH THE ULTIMATE HEAT (UHS) SINK LIMITING CONDITION FOR OPERATION AND ADDITION OF UHS LEVEL AND TEMPERATURE SURVEILLANCE REQUIREMENTS (TAC NO. ME5830)

Dear Mr. Bannister:

By letter dated March 4, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML110680093), Omaha Public Power District (the licensee) requested an amendment to Renewed Facility Operating License No. DPR-40 for Fort Calhoun Station, Unit 1. The proposed amendment would establish the limiting condition for operation (LCO) requirements for the ultimate heat sink (UHS) in Technical Specification (TS) 2.16, "River Level," and adds two new surveillance requirements (SRs) for UHS level and temperature to TS 3.2, "Equipment and Sampling Tests," Table 3-5, "Minimum Frequencies for Equipment Tests." Specifically, this proposed change revises the title of LCO 2.16 from "River Level" to "Ultimate Heat Sink (UHS)"; provides more explicit applicability for the LCO 2.16; removes the existing LCOs for river level in TS 2.16, items 1) and (2); and reformats TS LCO 2.16 to provide required actions for an inoperable UHS. In addition, two new SRs, items 25 and 26, will be added to TS 3.2, Table 3-5, to test the river level and temperature on a daily frequency and for consistency, the columns will be reformatted to allow adding the column header to Table 3-5 for items 17 through 24. The Table of Contents is also revised to reflect the title change of LCO 2.16.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided in your application and determined that additional information is required in order to complete its review. A draft copy of the enclosed request for additional information was provided to Mr. Bill Hansher of your staff via e-mail on September 16, 2011. A public teleconference will be scheduled to discuss your responses to the NRC staff's questions.

If you have any questions, please contact me at 301-415-1377 or via e-mail at lynnea.wilkins@nrc.gov.

Sincerely,

Alan Wang for

Lynnea E. Wilkins, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-285

Enclosure:
As stated

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REQUEST FOR ADDITIONAL INFORMATION

OMAHA PUBLIC POWER DISTRICT

FORT CALHOUN STATION, UNIT 1

DOCKET NO. 50-285

By letter dated March 4, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML110680093), Omaha Public Power District (OPPD, the licensee) requested an amendment to Renewed Facility Operating License No. DPR-40 for Fort Calhoun Station, Unit 1 (FCS). The proposed amendment would establish the limiting condition for operation (LCO) requirements for the ultimate heat sink (UHS) in Technical Specification (TS) 2.16, "River Level," and adds two new surveillance requirements (SRs) for UHS level and temperature to TS 3.2, "Equipment and Sampling Tests," Table 3-5, "Minimum Frequencies for Equipment Tests." Specifically, this proposed change revises the title of LCO 2.16 from "River Level" to "Ultimate Heat Sink (UHS)"; provides more explicit applicability for the LCO 2.16; removes the existing LCOs for river level in TS 2.16, items 1) and (2); and reformats TS LCO 2.16 to provide required actions for an inoperable UHS. In addition, two new SRs, items 25 and 26, will be added to TS 3.2, Table 3-5, to test the river level and temperature on a daily frequency and for consistency, the columns will be reformatted to allow adding the column header to Table 3-5 for items 17 through 24. The Table of Contents is also revised to reflect the title change of LCO 2.16.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided in the application and determined that the following additional information is required in order to complete its review.

1. FCS is committed to the draft General Design Criteria (GDC), which are contained in Appendix G, "Response to 70 Criteria," of the FCS Updated Safety Analysis Report (USAR), and are similar to the GDCs in Appendix A, "General Design Criteria for Nuclear Power Plants," in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50. FCS Design Criterion 2, "Performance Standards," states, in part, that

   > Those systems and components of reactor facilities which are essential to the prevention of accidents which could affect public health and safety or to mitigation of their consequences shall be designed, fabricated, and erected to performance standards that will enable the facility to withstand, without loss of the capability to protect the public, the additional forces that might be imposed by natural phenomena such as earthquakes, tornadoes, flooding conditions, winds, ice and other local site effects.

   NRC Regulatory Guide 1.59, "Design Basis Floods for Nuclear Power Plants," states, in part, that structures, systems, and components (SSCs) important to safety be designed to withstand the effects of natural phenomena such as floods without loss of capability to perform their safety functions.

Enclosure

In its letter dated March 4, 2011, the licensee stated that flooding at FCS is highly unlikely and, therefore, requested to remove the provision in the TS requiring a plant shutdown if the Missouri River level reaches 1009 feet. The licensee stated that a high river level TS does not meet the requirements of 10 CFR 50.36, "Technical specifications."

The regulations in 10 CFR 50.36(c)(2)(ii)(D) Criterion 4 states "a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety." In addition, 10 CFR 50.36(c)(2)(ii)(B) requires the licensee to establish a TS limiting condition for a "operating restriction that is a initial condition of a design basis accident or transient analysis."

a) Please provide the reason and justification for removing the high end (flood) of the Missouri River level from TS 2.16,

b) Please provide the latest data on river level peaking for the Missouri River at the FCS location. Assess whether the plant's design basis for the Missouri River was maintained during the recent flooding event.

c) Based upon recent operating experience, please describe how the flooding event challenged the plant's ability to maintain safe shutdown capabilities.

d) Please explain if the latest data on river level supports the current high-level setpoint.

e) Please describe how the proposed TS change to remove the high river level limit still provides assurance that the plant can safely shut down prior to losing equipment at the intake structure.

2. In the FCS Design Criterion 12, the licensee stated that instrumentation conforms to the applicable Institute of Electrical and Electronics Engineers (IEEE) standards. The licensee is proposing to add a new TS surveillance to limit the UHS temperature to 90 degrees Fahrenheit, which is the assumed limit used in the design basis calculations. The licensee credited the existing instrumentation to monitor river temperature, and stated that it will encompass the loop uncertainty for UHS temperature in the surveillance test.

   Also, the licensee is proposing to add a TS surveillance to limit the UHS to a river level of 976 feet 9 inches, which is the assumed limit used in the design basis calculations. The licensee stated that its current river level instrumentation is not very accurate and intends on replacing the river level instrumentation with a more reliable system.

The licensee designated the TS surveillance limits for the river water maximum temperature and minimum level at the design limits without showing margin.

a) Please provide the methods used for monitoring river water temperature and level to comply with the current licensing basis.

b) Please explain how OPPD plans to capture the uncertainty in the instrumentation used for monitoring river temperature and level.

c) Please show how safety margins are maintained.

3. In its letter dated March 4, 2011, the licensee stated:

> Missouri River level is currently monitored by non-safety related loop L-1900. The measurement technology is based on a bubbler system where air pressure is directly proportional to the depth of the bubbler outlet. The accuracy of this loop is very poor with an As Found/As Left loop tolerance of +/- 2 feet as documented in calibration procedure IC-CP-01-1900. This loop is in the process of being replaced with loop L-2000 via engineering change EC 35741. This instrumentation is expected to be placed in service during 2011.

Please provide the test data (accuracy) and documentation (industry experience) to support the EC 35741.

4. In its letter dated March 4, 2011, the licensee proposed a TS SR for the low level of 976 feet 9 inches of the UHS – Missouri River. The licensee stated that a river level of 976 feet 9 inches is required for raw water pumps minimum submergence level. The raw water pumps provide the cooling medium for the component cooling water heat exchangers, which are used to cool the plant down to cold shutdown. If the pumps are lost, then the plant will not have a normal means to achieve cold shutdown, nor will it have a safety-related means to obtain cold shutdown. In addition, raw water is credited as an emergency makeup source to the emergency condensate storage tank as a source of water for auxiliary feedwater pumps that maintain the plant in a hot shutdown condition.

The regulations in 10 CFR 50.36 require the licensee to establish safety limits on important process variables (e.g., UHS). When they are not met, the licensee shall shut down the reactor. The licensee proposed a TS limit on low river level at the same level where the raw water pumps become unavailable for use; however, the raw water pumps are required to shut down the reactor. Please describe how the proposed TS will assure the availability of raw water pumps to bring the plant to cold shutdown conditions.

5. Please verify that no change is being made to any containment safety analysis or any parameter that could affect the containment safety analysis as part of this license amendment request. If this license amendment request is resulting in a change to any containment safety analysis or any parameter that could affect the containment safety analysis, please describe and justify these changes.

6. Please state if the calculation for the component cooling water heat exchanger's heat removal capability to supply 160 degree return water with 90 degree river water has been reviewed by the NRC staff.

If you have any questions, please contact me at 301-415-1377 or via e-mail at lynnea.wilkins@nrc.gov.

Sincerely,

/RA by Alan Wang for/

Lynnea E. Wilkins, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-285

Enclosure:
As stated

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DATE	10/11/11	10/19/11	10/19/11

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