Omaha Public Power District

LIC-17-0045
April 20, 2017

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Fort Calhoun Station (FCS), Unit 1
Renewed Facility Operating License No. DPR-40
NRC Docket No. 50-285

Subject: Response to Request for Additional Information, Fort Calhoun Station, Unit No. 1 - Request for Additional Information RE: Defueled Emergency Plan Exemption Request (CAC NO. MF9067)

References:

1. OPPD Letter (S. Marik) to USNRC (Document Control Desk) – "Request for Exemptions from Portions of 10 CFR 50.47 and 10 CFR Part 50, Appendix E," dated December 16, 2016 (LIC-16-0109) (ML16356A578)

2. EMAIL from USNRC (J. Kim) to OPPD (E. Matzke), "Fort Calhoun Station - Final Defueled Emergency Plan Exemption Request (CAC MF9067)", dated March 21, 2017 (ML17081A019)

By letter dated December 16, 2016 (Reference 1), the Omaha Public Power District (OPPD) proposed an amendment to Renewed Facility Operating License No. DPR-40 for the Fort Calhoun Station (FCS). The proposed exemption would revise the FCS Emergency Plan for the permanently defueled condition.

On March 21, 2017 (Reference 2), the NRC provided OPPD with Requests for Additional Information (RAI) regarding the proposed exemption request. Attachment 1 of this letter provides the responses to the RAIs.

This letter contains no regulatory commitments.

If you should have any questions regarding this submittal or require additional information, please contact Mr. Bradley H. Blome, Director –Licensing and Regulatory Assurance at (402) 533-7270.

Respectfully,

Mary J. Fisher
Senior Director - Decommissioning Fort Calhoun Station

MJF/dmp

Attachment: 1. Response to Request for Additional Information

c: K. M. Kennedy, NRC Regional Administrator, Region IV
J. Kim, NRC Project Manager
S. M. Schneider, NRC Senior Resident Inspector
Director of Consumer Health Services, Department of Regulation and Licensure,
Nebraska Health and Human Services, State of Nebraska

ATTACHMENT 1

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
DEFUELED EMERGENCY PLAN EXEMPTION REQUEST
CAC NO. MF9067**

**OMAHA PUBLIC POWER DISTRICT
FORT CALHOUN STATION. UNIT NO. 1
DOCKET NO. 50-285**

By letter dated December 16, 2016 (Agency-wide Documents Access and Management System (ADAMS) Accession No. ML16356A578), as supplemented by letter dated February 10, 2017 (ADAMS Accession No. ML17041A443), Omaha Public Power District (OPPD) requested exemptions from portions of Part 50 of Title 10 of the Code of Federal Regulations (10 CFR Part 50) for the Fort Calhoun Station (FCS) Radiological Emergency Response Plan. Specifically, OPPD requested exemption from certain Emergency Plan Requirements contained in 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and Section IV to Appendix E of 10 CFR Part 50. The requested exemptions would allow OPPD to modify the FCS emergency plan commensurate with the reduced likelihood of significant radiological events presented by the permanently defueled condition of the reactor and low decay heat rate of the stored fuel.

The U.S. Nuclear Regulatory Commission staff has reviewed the OPPD submittal and determined that additional information is required in order to complete the review. Based on precedent reviews for similar exemption requests by facilities in decommissioning, the NRC staff developed NSIR/DPR-ISG-02, "Interim Staff Guidance: Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," May 11, 2015 (ADAMS Accession No. ML14106A057). This guidance specifies that the risk reduction measures identified in NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," February 2001, as Industry Decommissioning Commitments (IDC) and Staff Decommissioning Assumptions (SDA), listed in Tables 4.1-1 and 4.1-2 of that document should be addressed to support the exemption request. The staff identified the following areas where clarification of the IDC and SDA responses is necessary.

RAI-SBPB-01:

IDC 5 of NUREG-1738 specifies that spent fuel pool (SFP) instrumentation will include readouts and alarms in the control room (or where personnel are stationed) for SFP temperature, water level, and area radiation levels. The response indicated that SFP level is monitored each shift as part of operator rounds. Clarify the location of the SFP water level instrument display and describe the expected reliability of the instrument in identifying abnormal SFP water levels. Also, explain how indication of abnormal SFP level based on control room indication (alarm only) is adequate to drive the response to an abnormal SFP water level.

OPPD Response:

Clarification of the location of the spent fuel pool (SFP) water level reading and reliability is as follows:

The normal and off-normal use instrument at Fort Calhoun Station (FCS) is designated as LI-2846, Spent Fuel Pool Level. This instrument is a bubbler type instrument located in the northeast corner of the SFP. The instrument's tubing extends down to six inches above the 995'-6" mean sea level (msl) elevation which corresponds to the bottom of the spent fuel pool. The instrument gauge is located on the outside wall in northeast corner of the SFP. This information is logged each shift into the station's OP-ST-SHIFT-0001, "Operations Technical Specification Required Shift Surveillances," for review and trending.

Other available level instruments, added to address FLEX requirements and utilized for station Emergency Action Levels (EAL) implementation, LI-4356, Spent Fuel Pool Level Indicator & Electronics Primary, and LI-4357, Spent Fuel Pool Level Indicator & Electronics Secondary also can provide remote indication of the SFP level in several locations. These instruments are attached above and extend into the SFP, and are provided with a battery backup. The remote readouts are located in the station's Auxiliary Building, LI-4356 readout is located in Room 30, Waste Evaporator Room and LI-4357 is located in Room 57, Electrical Penetration Area. . The information for LI-4357 is logged in FC-77, Water Plant Intake Logs, and LI-4356 is logged in FC-143, Auxiliary Building Log twice per shift. The control room also has indication, which is located on the station's plant digital control system (DCS).

Reliability of level indicating loop since 2008:

The bubbler type instrument reliability is very high. This instrument utilizes instrument air back pressure to obtain readings on a local gauge. A review of the station's condition report (CR) system provided information of the reliability of these instruments. The level indicating loop has had zero (0) functional failures and two (2) instrument recalibrations (CR 2009-1342, 2011-9196) and three (3) instances of requiring the refilling of the sensing tube with air (CR 2008-7295, 2008-3151, 2008-0203). The alarm circuit had one (1) deficiency due to an out of calibration pressure switch (CR 2011-5744).

The FLEX instruments LI-4356, LI-4357 were installed at the end of 2016. No failures have been associated with these instruments.

Clarification of the indication of abnormal SFP water levels is as follows:

The alarm associated with the SFP level is sensed with a separate instrument, LC-2846, which is a "Barksdale" model pressure switch. The nominal setpoint for this alarm is high level at 42.3 feet (ft) which corresponds to a 1037' 9" msl elevation and a low level at 39.1 ft which corresponds to a 1034' 7" msl elevation. An alarm on this instrument will require use of the station's alarm response procedure (ARP) for this device. This ARP has steps to determine SFP level by visual inspection, which ensures verification of level locally at the pool.

LC-2846 provides a control room (CR) alarm (annunciator CB-1,2,3/A1 D-3U) to warn of high and low SFP levels. If the instrument causes an alarm, the ARP requires local verification of level. If the alarm is a valid low level signal, the operators would use procedural guidance in the station procedure OI-SFP-2, Spent Fuel Pool Cooling Makeup, to refill the SFP. If this action is inadequate, entry into the station's abnormal operating procedure (AOP) AOP-36, Loss of Spent Fuel Pool Cooling, would provide guidance to mitigate the event.

RAI-SBPB-02:

SDA-3 of NUREG-1738 specifies control room instrumentation will directly measure SFP temperature and water level. Explain how this risk reduction measure is satisfied by the existing temperature instruments. The response should address the reliability of the plant computer for monitoring of SFP temperature and the temperature instruments used to identify emergency action levels related to SFP temperature.

OPPD Response:

Clarification of the reliability of the plant computer and temperature instruments is as follows:

TE-408 A/B/C, SFP Temperature Element, provides remote temperature monitoring for the SFP. These Rosemount series 88 platinum resistance temperature detectors (RTDs) are installed inside stainless steel thermowells that are in direct contact with the SFP water on the north wall of the SFP. This parameter is monitored at several levels within the SFP, using separate instruments at 1035 ft (TE-408A), 1022 ft (TE-408B), and 1013 ft (TE-408C) msl elevations. These indications are displayed and alarm on the DCS and is displayed on the emergency response facility (ERF) computer.

The present high temperature alarm setpoints for these points are Hi alarm at 120°F and a Hi-Hi alarm at 135°F which are below the proposed EAL lowest entry level for a notification of unusual event (NOUE) of 150°F. When the alarm is initiated, the DCS ARP requires further temperature comparisons to plant panel instruments including:

- TI-2845, SFP Heat Exchanger Outlet (AI-45, Auxiliary Coolant Control Panel)
- TIC-479, CCW Outlet from AC-8 (AI-45)
- TI-2847, SFP Heat Exchanger Inlet (Room 5, Spent Fuel Pool Heat Exchanger & Pump Area Room)

Once the temperature is verified as out of normal, operators will use station procedures to adjust cooling to the pool as necessary to reduce the SFP temperature. If this is not successful, the entry into AOP-36, Loss of Spent Fuel Pool Cooling, is warranted for mitigation of the event.

Reliability of temperature readings and computer systems:

The DCS is a distributed computer system with zero (0) global failure since installation (2008). The designed reliability of the entire system is presently 100% and is required to be 99.999% (Reference 3).

The temperature loop (excluding the ERF system) T408A/B/C has had two (2) work orders to adjust alarm settings in the DCS (CR 2009-2592, 2010-0010).

Reliability of the ERF since 2014 (available trend data), shows the calculated reliability of the ERF system at 99.6% with a goal of 98% (Reference 4).

Even in the unlikely event in which all of these instruments are not available, a local thermometer readings can be taken to accommodate this requirement as directed in plant procedures.

References:

1. Letter from OPPD (S. M. Marik) to USNRC (Document Control Desk), "License Amendment Request (LAR) 16-02: Revise the Fort Calhoun Station Emergency Plan to Address the Permanently Defueled Condition," dated September 2, 2016 (LIC-16-0076) (ML16246A321)

2. EMAIL from NRC (J. Kim) to OPPD (E. P. Matzke), "Fort Calhoun Station - Final Defueled Emergency Plan Exemption Request for Additional Information Concerning Post-Shutdown EPlan Amendment (CAC MF906726)", dated February 2, 2017 (ML17033A969)

3. Program document PED-DSS-1, General Specification for Distributed Control System, Rev 3, Section 4.3.

4. NUREG-0696, Functional Criteria for Emergency Response Facilities, Section 1.5 Table 1.