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

July 27, 2017

Ms. Mary J. Fisher
Senior Director for Decommissioning
Omaha Public Power District
Fort Calhoun Station
9610 Power Lane, Mail Stop FC-2-4
Blair, NE 68008

SUBJECT: FORT CALHOUN STATION, UNIT 1 - ISSUANCE OF AMENDMENT RE: REVISE EMERGENCY PLAN TO ADDRESS THE PERMANENTLY DEFUELED CONDITION (CAC NO. MF8326)

Dear Ms. Fisher:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 291 to Renewed Facility Operating License No. DPR-40 for the Fort Calhoun Station, Unit 1 (FCS), in response to your application dated September 2, 2016, as supplemented by letters dated March 3 and April 5, 2017.

The amendment authorizes the revision of the Nuclear Radiological Emergency Response Plan for FCS for the plant condition following permanent cessation of power operations and defueling to reflect changes in the shift staffing and Emergency Response Organization staffing.

A copy of the related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

James Kim

James Kim, Project Manager
Special Projects and Process Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-285

Enclosures:
1. Amendment No. 291 to DPR-40
2. Safety Evaluation

cc: Listserv

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

OMAHA PUBLIC POWER DISTRICT

DOCKET NO. 50-285

FORT CALHOUN STATION, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 291
Renewed License No. DPR-40

1. The Nuclear Regulatory Commission (NRC, the Commission) has found that:

   A. The application for amendment by the Omaha Public Power District (the licensee), dated September 2, 2016, as supplemented by letters dated March 3 and April 5, 2017, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, by Amendment No. 291, Renewed Facility Operating License No. DPR-40 is hereby amended to authorize the revision to the Fort Calhoun Station, Unit 1 Nuclear Radiological Emergency Response Plan as set forth in the Omaha Public Power District application dated September 2, 2016, as supplemented by letters dated March 3 and April 5, 2017, and as evaluated in the NRC staff's safety evaluation issued with this amendment.

3. The license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Michele G. Evans for

Brian E. Holian, Acting Director
Office of Nuclear Reactor Regulation

Date of Issuance: July 27, 2017

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 291 TO RENEWED FACILITY

OPERATING LICENSE NO. DPR-40

OMAHA PUBLIC POWER DISTRICT

FORT CALHOUN STATION, UNIT 1

DOCKET NO. 50-285

1.0 INTRODUCTION

By letter dated June 24, 2016 (Reference 1), Omaha Public Power District (OPPD, the licensee) informed the U.S. Nuclear Regulatory Commission (NRC, the Commission) that the Fort Calhoun Station, Unit 1 (FCS) would permanently cease operations no later than December 31, 2016. By letter dated August 25, 2016 (Reference 2), OPPD submitted certification to the NRC indicating its intention to permanently cease power operations at the FCS facility on October 24, 2016, pursuant to paragraph 82(a)(1)(i) to Part 50, "Domestic Licensing of Production and Utilization Facilities," of Title 10 of the *Code of Federal Regulations* (10 CFR). By letter dated November 13, 2016 (Reference 3), OPPD submitted a certification to the NRC of the permanent removal of fuel from the reactor vessel, pursuant to 10 CFR 50.82(a)(1)(ii). Upon docketing of the certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel, pursuant to 10 CFR 50.82(a)(2), the 10 CFR Part 50 license for FCS no longer authorizes operation of the reactor or the emplacement or retention of fuel into the reactor vessel. The irradiated fuel will be stored in the spent fuel pool (SFP) and in dry cask storage at the on-site independent spent fuel storage installation (ISFSI) until it is shipped offsite.

By application dated September 2, 2016 (Reference 4), as supplemented by letters dated March 3 and April 5, 2017 (References 5 and 6, respectively), OPPD requested approval by the NRC of proposed changes to the FCS Nuclear Radiological Emergency Response Plan (RERP) as required under 10 CFR 50.54(q)(4), prior to implementation by the licensee, to support the planned permanent cessation of operations and permanent defueling of the FCS reactor. The proposed changes would revise the FCS RERP emergency response organization (ERO) on-shift and augmented staffing commensurate with the reduced spectrum of credible accidents for a permanently shutdown and defueled power reactor facility. As a result of the transition from an operating facility to a permanently defueled facility, the changes are to properly reflect the conditions of the facility while continuing to maintain effectiveness of the FCS RERP.

The proposed changes would revise the FCS RERP to eliminate the following seven on-shift ERO positions from current staffing levels:

- Two Reactor Operators (RO),
- One Equipment Operator (EO),
- One Control Room Communicator,
- One Chemistry Technician,
- One Habitability Technician, and
- One Shift Technical Advisor (STA).

Also, the following ERO augmented positions are proposed to be eliminated:

Technical Support Center (TSC)

- One TSC Conference Operations (COP) Communicator (minimum staff position),
- One TSC Reactor Engineer,
- One TSC Electrical/Instrument & Controls (I&C) Engineer,
- One TSC Primary Systems Engineer,
- One TSC Secondary Systems Engineer,
- One TSC Director,
- One Administrative Assistant,
- One Site Director Secretary,
- One TSC Status Board Keeper, and
- One TSC Conference Health Physics (CHP) Communicator.

Operations Support Center (OSC)

- One Radiation Protection (RP) Technician,
- One RP Coordinator (minimum staff position, but can be filled with RP Technician),
- One Maintenance Coordinator,
- One Chemistry Coordinator,
- One Medical Response Coordinator,
- One OSC Operations Liaison,
- One Dosimetry Technician,
- One Emergency Response Message System (ERMS) Operator,
- One Radio Operator,
- One Storekeeper, and
- One Accountability Clerk.

Emergency Operations Facility (EOF)

- One Emergency Response Coordinator,
- One EOF Secretary,
- One EOF Dose Assessment Assistant (minimum staff position),
- One EOF Status Board Keeper,
- One EOF Dose Assessment Coordinator,
- One EOF Clerical Assistant,
- One Emergency Director Secretary,
- One Information Technology (IT) Specialist,

- One EOF CHP Communicator, and
- One Communications Specialist.

Joint Information Center (JIC)

- One Executive Liaison,
- One Internal Information Liaison (Spokesperson),
- One Public Inquiry Supervisor, and
- Five of 10 Public Inquiry Specialists.

The supplemental letters dated March 3 and April 5, 2017, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's proposed no significant hazards consideration determination as published in the *Federal Register* (FR) on November 8, 2016 (81 FR 78650).

2.0 REGULATORY EVALUATION

The regulatory requirements and guidance on which the NRC staff based its review of the license amendment request are addressed below.

2.1 Regulatory Requirements

- Section 10 CFR 50.47(b)(1), which states, in part, that "each principal response organization has staff to respond and to augment its initial response on a continuous basis."

- Section 10 CFR 50.47(b)(2) which states, in part, that "adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified."

- Section 10 CFR 50.54(q)(4), which states, in part, that "The changes to a licensee's emergency plan that reduce the effectiveness of the plan...may not be implemented without prior approval by the NRC. A licensee desiring to make such a change...shall submit an application for an amendment to its license."

- Section 10 CFR 50.72(a)(3), which states that "[t]he licensee shall notify the NRC immediately after notification of the appropriate State or local agencies and not later than one hour after the licensee declares one of the Emergency Classes."

- Section IV.A, "Organization," of Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50, which states, in part, that "[t]he organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization...."

- Section IV.D, "Notification Procedures," of Appendix E to 10 CFR Part 50, which states, in part, that "[a] licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency."

2.2 Guidance

Regulatory Guide 1.101 (RG 1.101), Revision 2, "Emergency Planning and Preparedness for Nuclear Power Reactors," October 1981 (Reference 7), provides guidance on methods acceptable to the NRC staff for implementing the planning standards of 10 CFR 50.47(b)(1) and (2) and the requirements of Section IV.A and D of Appendix E to 10 CFR Part 50. Revision 2 of RG 1.101 endorses Revision 1 to NUREG-0654/FEMA-REP [Federal Emergency Management Agency – Radiological Emergency Preparedness], referred to hereafter as NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980 (Reference 8), which provides specific acceptance criteria for complying with the planning standards set forth in 10 CFR 50.47. These criteria provide a basis for NRC licensees, and State and local governments to develop acceptable radiological emergency plans.

In NUREG-0654, Section II, "Planning Standards and Evaluation Criterion," Evaluation Criteria II.B.1 and II.B.5 address the 10 CFR 50.47(b)(2) planning standard. Evaluation Criterion II.B.1 specifies the on-site emergency organization of plant staff personnel for all shifts, and its relation to the responsibilities and duties of the normal shift complement. In addition, Evaluation Criterion II.B.5, states, in part, that:

> Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both on-site and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1.

The Office of Nuclear Security and Incident Response (NSIR)/Division of Preparedness and Response (DPR) Interim Staff Guidance (ISG) document NSIR/DPR-ISG-01, "Emergency Planning for Nuclear Power Plants," November 2011 (Reference 9), provides updated guidance information to address emergency planning requirements for nuclear power plants. Specifically, NSIR/DPR-ISG-01 was developed to address the assignment of tasks or responsibilities to on-shift ERO personnel that that would potentially overburden them and prevent the timely performance of their emergency plan functions. The ISG also endorsed the Nuclear Energy Institute (NEI) document NEI 10-05, Revision 0, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities" (Reference 10), which was developed to establish a standard methodology for licensees to perform analyses of the ability of on-shift staff to perform all required functions and tasks necessary to respond to a declared emergency for an operating power reactor. Licensees are able to use this methodology as an acceptable method to meet the requirement of Section IV.A.9 to Appendix E of 10 CFR Part 50 for all accident scenarios that are applicable in a permanently defueled condition. However, the licensee must also evaluate the continued on-shift staffing required to promptly implement the SFP implementation strategies required in accordance with License Condition 3.G(b)7 of the FCS Renewed Facility Operating License based on the continued storage of spent fuel in the SFP.

3.0 TECHNICAL EVALUATION

The NRC staff reviewed the licensee's regulatory and technical analyses in support of its proposed emergency plan changes, as described in the licensee's letter dated September 2, 2016, and supplemented by letters dated March 3 and April 5, 2017. The staff reviewed the request using the evaluation criteria in Table B-1 of NUREG-0654, as well as the licensee's ability to promptly implement the SFP mitigation strategies, if required. The staff's technical evaluation for each major functional area of Table B-1 to NUREG-0654 is detailed in Sections 3.1 through 3.7 of this safety evaluation.

In Section 4.2.2 of Attachment 1, "Description and Evaluation of the Proposed Changes," of the letter dated March 3, 2017, the licensee stated, in part, that:

> To support reduced staffing following permanent cessation of power operations and permanent removal of fuel from the reactor vessel, the proposed post-shutdown on-shift staffing was evaluated in conjunction with the postulated accidents previously submitted to the NRC using methodology presented in NEI 10-05....

Specifically, the licensee stated that the following accident scenarios were included in the analysis of proposed post-shutdown on-shift staff:

- Design Basis Threat,
- Fuel Handling Accident (FHA) with General Emergency and protective action recommendation (PAR),
- Aircraft Potential Threat, and
- Event Requiring Control Room Evacuation and Maintaining SFP Cooling.

The spectrum of credible accidents and operational events for a permanently shutdown and defueled reactor, and the number and complexity of activities required for the safe storage of spent nuclear fuel is reduced, as compared to an operating plant. As such, the licensee identified that the primary events of concern in the immediate post-shutdown and defueled condition will be an FHA and a loss of SFP cooling and/or water inventory.

In Section 4.2.1.2 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> During fuel handling activities there will be extra personnel on site that will, were a FHA to occur, be able to respond to the event. Events involving a loss of SFP cooling and/or water inventory will continue to be addressed by implementation of SFP inventory makeup strategies in plant procedures and as required under 10 CFR 50.54(hh)(2). These strategies will continue to be maintained as a license condition.

3.1 Major Functional Area: On-Shift Plant Operations and Assessment of Operational Aspects

The guidance for licensee minimum staffing for nuclear power plants licensed by the NRC is documented in Table B-1 of NUREG-0654. Plant operations shift staffing, as implemented in the current FCS RERP, was based on a philosophy that provided defense-in-depth for an operating nuclear power plant. The licensee's post-shutdown On-shift Analysis concluded that

because of the reduced number of possible events requiring mitigating actions and the limited number of actions to be performed by the control room positions for a permanently shutdown and defueled condition, there were no identified STA job tasks required for any of the events analyzed.

The FCS RERP currently identifies the following on-shift staffing:

- One Shift Manager (a Senior Reactor Operator (SRO)),
- One Unit Supervisor (a SRO),
- One STA,
- Two ROs,
- Two EOs,
- One Control Room Communicator,
- One RP Technician,
- One Chemistry Technician, and
- One Habitability Technician.

The licensee's post-shutdown On-shift Analysis concluded that in a permanently shutdown and defueled condition, with the postulated accidents that would be applicable to that condition, the following on-shift complement would be able to perform all required FCS RERP actions in a timely manner and that there are no identified collateral duties that would prevent the timely performance of emergency plan functions:

- One Shift Manager (a SRO/Certified Fuel Handler (CFH)),
- One Control Room Operator (a SRO or RO/CFH),
- One Equipment Operator/Non-Certified Operator (NCO), and
- One RP Technician.

In Section 4.2.2 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> Because of the reduced number of possible events requiring mitigating actions in the permanently defueled condition and the limited number of actions to be performed by the Control Room positions in a permanently defueled condition, no Licensed Reactor Operators or STA job tasks were noted as being required for any of the events analyzed in the analysis of proposed post shutdown on-shift staffing. Therefore, the Licensed Reactor Operators and STA positions can be eliminated without reducing the effectiveness of the post-shutdown FCS RERP.

In Section 4.2.3 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> Plant Operations shift staffing, as implemented previously, was based on an operating philosophy that provided defense in depth. The analysis of proposed post-shutdown on-shift staffing concluded that in a permanently shut down and defueled condition, the Shift Manager (CRO) [Control Room Operator], and one Equipment Operator/NCO can perform all required FCS RERP actions in a timely manner and there are no collateral duties that would prevent the timely performance of emergency plan functions.

The licensee concluded that the proposed on-shift staffing changes do not impact the capabilities of the on-shift staff to respond to an emergency and continue to comply with the FCS RERP, site commitments, and applicable regulations.

Operating power reactor licensees' emergency plans are developed for a level of effectiveness commensurate with the potential consequences to public health and safety for a wide spectrum of accident scenarios. With the permanent cessation of operations and the permanent removal of the fuel from the reactor vessel at FCS, most of the accident scenarios postulated for an operating power reactor are no longer possible. The irradiated fuel will be stored in the SFP and in the on-site ISFSI until it can be moved offsite for long-term storage or disposal. The reactor, reactor coolant system (RCS), and reactor support systems are no longer in operation, and have no function related to the storage of the irradiated fuel. Therefore, postulated accidents involving a failure or malfunction of the reactor, RCS, or reactor support systems are no longer applicable. A fuel handling accident in the spent fuel storage facility, accidental waste gas system releases, and cask handling accident (for non-single-failure-proof cranes) are the only postulated DBAs that will remain applicable to the permanently defueled FCS. During reactor decommissioning, the principal public safety concerns involve the radiological risks associated with the storage of spent fuel on-site. Based on this, the proposed level of on-site operations staff will continue to provide for the direction and performance of actions to mitigate the remaining DBAs and the prompt implementation of mitigating actions in response to an SFP accident.

In the post-shutdown condition, there are no time critical Radiation Protection or chemistry tasks. Chemistry Technician tasks are reassigned to a trained and qualified on-shift Radiation Protection Technician with no conflicting duties. Therefore, the Chemistry Technician position can be eliminated. Habitability concerns in a permanently shutdown and defueled condition do not require a dedicated on-shift Habitability Technician position due to the reduced spectrum of credible accidents.

Based on the NRC staff's review of the information in this section, the NRC staff finds that the proposed level of the on-shift staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) and the requirements of Section IV.A and D of Appendix E to 10 CFR Part 50, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the FCS facility. As such, the proposed changes in on-shift staffing for the positions listed above for this functional area do not impact the ability of the on-shift staffing to perform the required functions and are acceptable.

3.2 Major Functional Area: On-Shift Notification/Communication

The FCS RERP currently identifies an on-shift staffing position as the Control Room Communicator for performing the function of notification/communication. The licensee proposes to replace the Control Room Communicator position with the designated CRO performing the function as a collateral duty.

The regulations in Section IV.D.3 of Appendix E to 10 CFR Part 50 require that "[a] licensee shall have the capability to notify responsible State and local government agencies within 15 minutes after declaration of an emergency classification." The licensee states that the initial notification of the States of Nebraska and Iowa is made within 15 minutes after declaration of an emergency classification. The states, in turn, notify other governmental response agencies as appropriate for the emergency classification. Notification is also made by FCS to Washington, Harrison, and Pottawattamie Counties within 15 minutes after declaration of an emergency

classification. Subsequent notifications are made should the event escalate and for informational updates. The resource commitment to support the communication function is not full time so there is time to support performance of collateral duties during the first 60 minutes until licensee staff augmentation of an additional communicator can occur.

The on-shift and offsite communicators have advanced communications capabilities available such as the Conference Operations (COP) Network, which is a dedicated telephone system that serves as the primary means of notification to the states and counties. Provisions have been made for verification of notification messages when communications are via means other than the COP. The proposed changes to the FCS RERP neither change this communications network nor the timeframe for notification to offsite agencies, and as a result, do not impact the ability of FCS to promptly notify and initiate coordination with the offsite authorities.

Operating power reactor licensees' emergency plans are developed for a level of effectiveness commensurate with the potential consequences to public health and safety for a wide spectrum of accident scenarios. With the permanent cessation of operations and the permanent removal of the fuel from the reactor vessel at FCS, most of the accident scenarios postulated for an operating power reactor are no longer possible. The irradiated fuel is now stored in the SFP and the ISFSI, and will remain on-site until it can be moved offsite for long-term storage or disposal. The reactor, RCS, and reactor support systems are no longer in operation, and have no function related to the storage of the irradiated fuel. Therefore, postulated accidents involving failure or malfunction of the reactor, RCS, or reactor support systems are no longer applicable. Applicable DBAs (i.e., fuel handling accident in the spent fuel storage facility, accidental waste gas system releases, and cask handling accident (for non-single-failure-proof cranes)) are the only postulated DBA that will remain applicable to the permanently defueled FCS. During reactor decommissioning, the principal public safety concerns involve the radiological risks associated with the storage of spent fuel on-site. Based on this, the proposed level of on-site operations staff will continue to provide for communication and coordination capabilities with offsite organizations for the level of support required for the remaining DBAs and the prompt implementation of mitigative actions in response to an SFP accident. Additionally, the licensee continues to maintain the same level of communications equipment capabilities to perform timely communications with the required offsite agencies.

In the post-shutdown condition, the task of notifying and communicating with offsite authorities will be transferred to the designated CRO. The NRC staff reviewed the licensee's analysis of proposed post-shutdown on-shift staffing and determined that in a permanently defueled condition, the designated on-shift staff could perform this required FCS RERP action in a timely manner and there were no collateral duties identified that would prevent the timely performance of this emergency plan function, therefore, this change is acceptable.

Based on the NRC staff's review of the information in this section, the staff finds that the proposed level of the ERO staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) and the requirements of Section IV.A and D of Appendix E to 10 CFR Part 50, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the FCS facility. As such, the proposed changes in on-shift staffing for the positions listed above for this functional area do not impact the ability of the on-shift staffing to perform the required functions and are acceptable.

3.3 Major Functional Area: On-Shift Radiological Accident Assessment and Support of Operational Accident Assessment

The purpose of conducting accident assessment is to review radiological conditions using data from available instrumentation, assessing the impact of changing radiological conditions on emergency classification, assisting in accident assessments based upon those changing radiological conditions, and recommending appropriate offsite protective measures.

The FCS RERP currently identifies the following on-shift staffing:

- One RP Technician,
- One Chemistry Technician, and
- One Habitability Technician.

The licensee proposes to eliminate the Chemistry Technician and Habitability Technician positions.

In Section 4.2.2 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> Currently, the Chemistry Technician is an on-shift position per FCS RERP Section B, Attachment 1, Table B-1 ["OPPD Emergency Response Organization (ERO) Functions and Shift Staff Augmentation Plan"] so that a technician is always available to immediately collect and analyze a liquid sample if the applicable radiation monitor is not available during a release, or as directed by the Shift Manager. When the on-shift Chemistry Technician position is eliminated, the on-shift Radiation Protection Technician will be able to perform sampling and analysis, if necessary, so as to not delay information potentially needed by the Shift Manager to determine if an emergency declaration is required. For gaseous releases, the only credible scenario for releasing gas would be to mechanically damage spent fuel during handling or by impact of a heavy object. Activities that could cause mechanical damage will require that a Chemistry Technician be on-site or the radiation monitor listed in gaseous effluent EALs [Emergency Action Levels] to be in service, thereby alleviating any reliance on a potentially delayed sample analysis to determine EAL applicability.

In Section 4.2.5 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> During a toxic gas event, tasks would be assigned to the Chemistry Technician in the first 60 minutes. These tasks will be reassigned to a trained and qualified on-shift Radiation Protection Technician with no conflicting duties. Therefore, the Chemistry Technician position does not need to be maintained on-shift.

In Section IV.C of Attachment 4, "Analysis of Proposed Post-Shutdown On-Shift Staffing," of the letter dated March 3, 2017, the licensee stated, in part, that:

> A control room habitability study was prepared which determined the effect of accidental release of toxic gases on the Fort Calhoun Control Room. The onsite spill analysis postulates that either hydrazine ethanolamine or morpholine spills outside during container movement. The analysis demonstrates that the Control

> Room toxic gas concentration resulting from such a spill will not exceed the toxicity limit, thus Control Room habitability will not be affected. The analysis also demonstrates that the outside spill scenario is the limiting case.
>
> The ammonia toxic chemical accident caused by the failure of two 25,000 ton offsite refrigerated tanks required detectors at the fresh air intake of the Control Room to provide for operator warning and automatic isolation of the Control Room. For FCS toxic gas analysis, the limit chosen for ammonia is 300 [parts per million (ppm)] based on evaluation of exposure data to determine a suitable short term toxic limit. FCS conservatively assumes incapacitation if the instantaneous concentration exceeds the toxic limit of 300 ppm for ammonia. Control Room Personnel are adequately protected against the effects of accidental release of toxic gas by the use of monitors, which automatically isolate the Control Room during a toxic gas accident.

In Section 4.2.5 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> The proposed change in on-shift staffing and elimination of the on-shift Habitability Technician are appropriate given the permanent cessation of power operations and permanent removal of fuel from the reactor vessel. The spectrum of credible accidents and operational events, and the quantity and complexity of activities required for the safe storage of spent nuclear fuel is reduced as compared to an operating plant. The set of plant equipment required in the permanently defueled condition is also greatly reduced, which reduces the assessment and mitigation activities in the Control Room. Habitability concerns in a permanently shut down and defueled condition do not require a dedicated on-shift position.

In Section 4.2.7.3 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> The analysis of proposed post-shutdown on-shift staffing determined there are no time critical Radiation Protection or chemistry tasks, and that task performance is directed and prioritized by the Shift Manager for the 60-minute time frame used in the analysis. There are no overlapping Radiation Protection or chemistry tasks. Radiation Protection tasks were able to be performed without augmented personnel in the 60-minute time frame used in the analysis.

The current FCS RERP Section 4.5.1.I states:

> Habitability Technician duties include conducting surveys and verifying Control Room habitability using available equipment and initiating protective actions if needed.

Operating power reactor licensees' emergency plans are developed for a level of effectiveness commensurate with the potential consequences to public health and safety for a wide spectrum of accident scenarios. With the permanent cessation of operations and the permanent removal of the fuel from the reactor vessel at FCS, most of the accident scenarios postulated for an operating power reactor are no longer possible. The irradiated fuel is now stored in the SFP and ISFSI and will remain on-site until it can be moved offsite for long-term storage or disposal. The reactor, RCS, and reactor support systems are no longer in operation, and have no function

related to the storage of the irradiated fuel. Therefore, postulated accidents involving failure or malfunction of the reactor, RCS, or reactor support systems are no longer applicable. Applicable DBAs (i.e., fuel handling accident in the spent fuel storage facility, accidental waste gas system releases, and cask handling accident (for non-single-failure-proof cranes)) are the only postulated DBA that will remain applicable to the permanently defueled FCS. During reactor decommissioning, the principal public safety concerns involve the radiological risks associated with the storage of spent fuel on-site. Based on the installed toxic gas monitors with automatic isolation of the Control Room, and the reduced habitability concerns in the Control Room due to the permanently defueled condition, the level of on-shift RP staffing (i.e., one RP Technician) will continue to provide for radiological accident assessment, support of operational accident assessment, and offsite dose assessment capabilities for the level of support required for the remaining DBAs and for mitigative actions in response to an SFP accident.

Based on the NRC staff's review of the information in this section, the staff finds that the proposed level of the on-shift staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) and the requirements of Section IV.A and D of Appendix E to 10 CFR Part 50, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the FCS facility. As such, the proposed changes in on-shift staffing for the positions listed above for this functional area do not impact the ability of the on-shift staffing to perform the required functions and are acceptable.

3.4 Major Functional Area: On-Shift Plant Systems Engineering

The emergency function of the Shift Technical Advisor (STA) is to perform independent assessments of plant operating concerns, technical support, appropriate corrective actions, analysis of events and their effects, effectiveness of response(s) to emergent conditions, classifications of emergencies, protection of the public, and any other actions related to critical safety functions and plant safety during abnormal and emergency situations. The STA also contributes to operations during normal plant conditions. By routine monitoring of equipment and plant operations, the STA can focus on preventative actions in order to mitigate the consequences of an accident. Additionally, the STA provides the core/thermal hydraulics function of the emergency plan for the confirmation of adequacy of core cooling, maintenance of coolable core geometry, and to verify that actual plant response to the event is as expected until relieved by the Technical Support Center (TSC) Reactor Engineer within 60 minutes of notification.

Because of the permanent cessation of power operations and removal of fuel from the reactor vessel, the STA position is no longer necessary for technical and analytical assistance. The spectrum of credible accidents and operational events, and the quantity and complexity of activities required for the safe storage of spent nuclear fuel is reduced as compared to an operating plant. The set of plant equipment required in the permanently defueled condition is also greatly reduced, which reduces the assessment and mitigation activities in the Control Room. The analysis of proposed post-shutdown on-shift staffing concluded that the Shift Manager and CRO (or NCO during events requiring Fire Brigade response) can perform any required technical analysis, until augmented within 60 minutes of notification by the TSC Engineering Coordinator and engineering staff, in a timely manner and there are no collateral duties that would prevent the timely performance of this task.

Based on the NRC staff's review of the information in this section, the staff finds that the proposed level of the on-shift staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) and the requirements of Section IV.A and D of Appendix E to

10 CFR Part 50, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the FCS facility. As such, the proposed changes in on-shift staffing for the positions discussed above for this functional area do not impact the ability of the on-shift staffing to perform the required functions and are acceptable.

3.5 Major Functional Area: On-Shift Repair and Corrective Actions

Table B-1 of NUREG-0654 indicates that repair and corrective action tasks may be performed by qualified shift personnel assigned to other emergency response functions/tasks (i.e., collateral duties). In addition, repair and corrective action is an acceptable collateral duty in accordance with the guidance in NEI 10-05. Table B-1 of the FCS RERP shows two "Equipment Operators" to be on-shift fulfilling this function as a collateral duty. The proposed Table B-1 of the FCS RERP reflects two "Equipment Operators/NCOs" continuing to fulfill this function as a collateral duty.

In Section 3.0 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> The term NCO is used to differentiate from CFH. CFHs will supervise fuel handling operations in the permanently defueled condition. Both Control Room Operators (CROs) and Shift Managers will be qualified as CFHs. However, the Shift Manager requires additional qualification beyond the CFH training. Therefore, any reference to the CFH position throughout this submittal is considered to be equivalent to the CRO position. NCOs will perform duties typically associated with those performed by Equipment Operators, such as manipulation and monitoring of plant equipment.

In Section II.A of Attachment 4 of the letter dated March 3, 2017, the licensee stated, in part, that:

> Equipment Operators duties include making repairs and corrective actions on plant equipment until augmented plant maintenance staff arrives, participating as an active member of the Fire Brigade, or as Fire Brigade Leader when assigned by the Shift Manager.

In Section II.D of Attachment 4 of the letter dated March 3, 2017, the licensee stated, in part, that:

> At FCS the NCOs are trained to perform the actions associated with this functional area. Actions (e.g., reset breakers, valve manipulation) directed by the CRO to mitigate the event per procedures were performed by the NCOs in this analysis.

In Section II of Attachment 4 of the letter dated March 3, 2017, the licensee stated, in part, that:

> NEI 10-05 states it is acceptable for certain functions to be assigned to personnel already assigned other functions/tasks. These include Repair and Corrective Action...

In a permanently shutdown and defueled condition, the proposed on-shift staffing can perform all required FCS RERP actions in a timely manner, and there are no collateral duties that would prevent the timely performance of emergency plan functions. Personnel assigned to fill the NCO positions during the post-shutdown period, prior to implementation of the Post-Shutdown Emergency Plan, will include both previously licensed and non-licensed operators.

As there are no significant staffing changes proposed for this functional area, only a change in the title, the NRC staff concludes that the change will not impact the timing or performance of existing emergency response duties and will continue to provide initial facility accident response in this functional area.

Based on the NRC staff's review of the information in this section, the staff finds that the proposed level of the on-shift staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) and the requirements of Section IV.A and D of Appendix E to 10 CFR Part 50, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the FCS facility. As such, the proposed changes in on-shift staffing for the positions listed above for this functional area do not impact the ability of the on-shift staffing to perform the required functions and are acceptable.

3.6 Major Functional Area: On-Shift Protective Actions (Plant)

The function of these resources is to provide radiation protection oversight of the on-shift complement of personnel for damage repair, corrective actions, search and rescue, first aid, firefighting and personnel monitoring.

The FCS RERP currently identifies the on-shift staffing as one RP Technician and one Habitability Technician (serving as the second RP Technician).

The licensee proposes to eliminate the Habitability Technician position/second RP Technician.

In Section 4.2.7.3 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> The analysis of proposed post-shutdown on-shift staffing determined there are no time critical Radiation Protection or chemistry tasks, and that task performance is directed and prioritized by the Shift Manager for the 60-minute time frame used in the analysis. There are no overlapping Radiation Protection or chemistry tasks. Radiation Protection tasks were able to be performed without augmented personnel in the 60-minute time frame used in the analysis.

In Section 4.2.7.2 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> During the initial stages of an accident, not all areas of the plant would be affected by releases of radioactive materials. Therefore, RP coverage would not be required for all areas. Because entry is expected to be limited to those areas where maintenance necessary to maintain SFP cooling is required and the areas potentially affected by an accident involving the SFP are limited, there is a significant decrease in areas potentially requiring RP coverage in a permanently shut down and defueled condition. If RP coverage is deemed necessary, multiple emergency teams can be covered by the on-shift Radiation Protection

> Technician. If RP coverage is not provided (for entry into areas with low radiological risk or known radiological status), worker protection is ensured because emergency workers are required to wear electronic dosimeters (which will alarm at preset dose and dose rate set points) and because of the installed [area radiation monitors] (which alarm locally and remotely at preset dose rates) located throughout the plant.

Operating power reactor licensees' emergency plans are developed for a level of effectiveness commensurate with the potential consequences to public health and safety for a wide spectrum of accident scenarios. With the permanent cessation of operations and the permanent removal of the fuel from the reactor vessel at FCS, most of the accident scenarios postulated for an operating power reactor are no longer possible. The irradiated fuel is now stored in the SFP and ISFSI and will remain on-site until it can be moved offsite for long-term storage or disposal. The reactor, RCS, and reactor support systems are no longer in operation, and have no function related to the storage of the irradiated fuel. Therefore, postulated accidents involving failure or malfunction of the reactor, RCS, or reactor support systems are no longer applicable. Applicable DBAs (i.e., fuel handling accident in the spent fuel storage facility, accidental waste gas system releases, and cask handling accident (for non-single-failure-proof cranes)) are the only postulated DBA that will remain applicable to the permanently defueled FCS. During reactor decommissioning, the principal public safety concerns involve the radiological risks associated with the storage of spent fuel on-site. Based on this, the level of on-shift staffing of one RP Technician will continue to provide for support of radiation protection oversight of the on-shift complement of personnel for damage repair, corrective actions, search and rescue, first aid, firefighting and personnel monitoring required for the remaining DBAs and for mitigative actions in response to an SFP accident. Additionally, there are no time critical Radiation Protection tasks identified as being needed during the 60-minute time frame after an event.

Based on the NRC staff's review of the information in this section, the staff finds that the proposed level of the on-shift staffing continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) and the requirements of Section IV.A and D of Appendix E to 10 CFR Part 50, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the FCS facility. As such, the proposed changes in on-shift staffing for the positions listed above for this functional area do not impact the ability of the on-shift staffing to perform the required functions and are acceptable.

3.7 Major Functional Areas: On-Shift Fire Fighting/Rescue Operations and First Aid

There are no staffing changes proposed for this functional area. The FCS Fire Brigade complement is one Fire Brigade Leader or advisor with Licensed Operator knowledge, two Fire Brigade trained Equipment Operators-Nuclear Auxiliary (EONA) and two other Fire Brigade qualified on-shift personnel. If use of a Fire Brigade Advisor (with Licensed Operator knowledge) is chosen, the Fire Brigade Leader will be qualified as the equivalent knowledge of a EONA. The licensee is required to implement the SFP mitigation measures required in accordance with License Condition 3.G(b)7 of the FCS Renewed Facility Operating License.

3.8 Licensee Augmented Emergency Response Organization Changes

The proposed changes to the FCS RERP will eliminate ERO positions currently identified in Section B, "Organizational Control of Emergencies," of the FCS RERP and certain Emergency Plan Implementing Procedures (EPIPs) for the augmentation of the Control Room staff and the

activation and operation of the Technical Support Center (TSC), Emergency Operations Facility (EOF), Operations Support Center (OSC) and Joint Information Center (JIC). Several of these positions are described in Table B-1 of the FCS RERP and FCS EPIPs as positions required to meet the augmentation requirements of the emergency plan and positions needed to declare the Emergency Response Facilities (ERFs) operational. The proposed changes to the FCS RERP will also eliminate non-minimum (i.e., not required for augmentation or facility activation) ERO positions currently identified in EPIPs as support personnel.

The ERFs at FCS are considered activated when minimum staffing and basic setup requirements have been attained to allow the facility to provide minimum support to the operating staff and other facilities. The ERFs at FCS are considered augmented when all minimum and augmenting staffing positions are filled. Selected support staff, which assists the minimum and augmenting staff, is shown on Table B-1 of the FCS RERP. The support staff is intended to supplement and enhance operation of their respective facilities. Additional personnel may respond.

The proposed changes to the FCS RERP will eliminate the following minimum staffing ERO positions for activation of ERFs currently identified in Section B of the FCS RERP:

- OSC Radiation Protection Coordinator [can be filled with an RP Technician],
- TSC COP Communicator, and
- EOF Dose Assessment Coordinator.

In Section 4.2.1 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> In the permanently defueled condition, FCS will maintain ERO teams, with one team being on duty and on-call at any given time. When the Shift Manager directs the activation of the ERO call out system, all ERO members are notified to ensure adequate coverage of all ERO positions at all ERFs. ERO members not on-call are expected to respond unless they are unavailable.
>
> ...During duty periods, procedures further require that team members respond within the required response time for their ERF and that they remain fit for duty throughout the duty assignment... Excess personnel that respond may be assigned support responsibilities or be designated as a relief shift. This conservative policy ensures timely activation because some off duty personnel may respond sooner than the on duty personnel.
>
> The proposed revisions to the FCS RERP will not change the requirements described above. OPPD management's continued expectation is that all duty and support ERO members report to their respective ERF as quickly as possible.
>
> FCS has designated ERO members who staff positions required to meet minimum staffing to activate the TSC, OSC, EOF, and JIC. EPIPs identify ERO positions assigned to each facility and the minimum staffing required before each facility can be declared operational...
>
> Current ERO positions are identified, and the associated duties are captured, in the ERO Task Analysis provided in Attachment 5 [to the September 2, 2016, OPPD letter]. The duties of the ERO positions were reviewed against OPPD

> procedures and the FCS RERP. Each of the eliminated positions was analyzed to identify the key duties associated with the position and the duties were then evaluated against the planning standards in NUREG-0654.

In its March 3, 2017 letter, the licensee provided additional information related to the process used to validate and document the staffing proposed for the EOF, TSC, OSC, and JIC (specifically, the analysis of all ERO positions being eliminated and the evaluation of the transfer of tasks to remaining ERO positions following permanent cessation of power operations) that stated, in part:

> During the development of the proposed changes to the ERO staffing,... FCS initiated a multi-disciplined team review of every aspect of the ERO staffing changes that were submitted for approval. This team included participants from Operations, Training, Engineering, Chemistry, Radiation Protection, Emergency Planning, Licensing, Plant Management, and Omaha Public Power District (OPPD) Corporate Communications. Membership covered all levels of ERO qualifications, incorporating shift technicians, licensed operators, reactor engineers, OSC Directors, and Emergency Directors. Each proposed change in task alignment was discussed and vetted by this group.
>
> To further validate the staffing and assignment of tasks as identified [in Attachment 5 of the license amendment request (LAR) dated September 2, 2016], FCS Emergency Planning has drafted revisions to the existing Emergency Plan Implementing Procedures (EPIPs) and position checklists to align with the [proposed] task assignments... These procedures will be used to support training of post-shutdown ERO staff and the conduct of drills that will be used to validate the staffing and assignment of tasks. FCS has held training and review sessions of these draft changes in each Emergency Response Facility, using the personnel who currently hold the proposed ERO positions. A total of four training sessions were held to orient the ERO members to the revised EPIPs. Additionally, as described in the LAR, a training drill will be conducted as a final validation of the proposed changes.

In its April 5, 2017 supplement, the licensee stated that a training drill, conducted on February 22, 2017 and observed by NRC staff, provided the opportunity for FCS to confirm the ability of the proposed post-shutdown ERO to perform the necessary functions of each Emergency Response Facility and to utilize the post-shutdown procedures developed reflecting the proposed revised assignment of duties.

The April 5, 2017 supplement, further stated:

> FCS also identified opportunities for operating crews and command and control positions to align themselves to the emergency response priorities that exist in a permanently shut down and defueled facility. Operations and Radiation Protection departments at FCS have developed separate performance improvement plans to address the areas for improvement identified in the validation drill.
>
> These plans and the associated actions have been entered into the station corrective action program and the actions will be completed prior to implementation of the [Post-Shutdown Emergency Plan].

The elimination of the minimum staffing positions, OSC Radiation Protection Coordinator [can be filled with an RP Technician], TSC COP Communicator, and EOF Dose Assessment Coordinator is evaluated below in addition to other requested changes to the ERO.

3.8.1 Operations Support Center

The OSC has been designed to meet the intent of the guidance in NUREG-0696, "Functional Criteria for Emergency Response Facilities," February 1981 (Reference 12), and the clarification in NUREG-0737, Supplement 1, "Clarification of TMI [Three Mile Island] Action Plan Requirements," January 1983 (Reference 13), as applicable. The OSC is an on-site assembly area separate from the control room and the TSC where licensee operations support personnel shall report in an emergency. Following permanent cessation of power operations and permanent removal of fuel from the reactor vessel, the OSC will continue to be located in the TSC Building. The proposed changes to the FCS RERP do not involve any physical modifications to, or layout/configuration changes in, the OSC.

The proposed staffing changes do not eliminate any ERO positions in the OSC described in Section B.4.3.3 of the FCS RERP as minimum staff positions because the proposed elimination of the RP Coordinator position is a reassignment using the RP Technician as is currently approved in the FCS RERP. The following table illustrates the proposed changes to the augmenting OSC staffing in the post-shutdown emergency plan:

Operations Support Center			
Procedure(s)	**Current Positions**	**Proposed Positions in the Post-Shutdown Emergency Plan**	**Current FCS RERP 1-Hour Augmentation Minimum Requirements**
EP-FC-112-300	OSC Director	No change	Yes
EP-FC-112-300	RP Coordinator	**Staffed with an RP Technician**	Yes or RP Tech
EP-FC-112-300	Technicians (Electrical, I&C, Mechanical Maintenance, RP/HP, Chemistry)	Reduced 2 Electrical Maintenance to 1, Reduced 6 RP/HP Technicians to 2. (I&C, Mechanical and Chemistry Technician staffing levels unchanged)	Yes
EP-FC-112-300	Dosimetry Technician	**Eliminated**	No
EP-FC-112-300	Operations Liaison	**Eliminated**	No
EP-FC-112-300	Chemistry Coordinator	**Eliminated**	No
EP-FC-112-300	ERMS Operator	**Eliminated**	No
EP-FC-112-300	Maintenance Coordinator	**Eliminated**	No
EP-FC-112-300	Maintenance Planner	**Eliminated**	No

Operations Support Center			
Procedure(s)	**Current Positions**	**Proposed Positions in the Post-Shutdown Emergency Plan**	**Current FCS RERP 1-Hour Augmentation Minimum Requirements**
EP-FC-112-300	Medical Response Coordinator	**Eliminated**	No
EP-FC-112-300	Radio Operator	**Eliminated**	No
EP-FC-112-300	Storekeeper	**Eliminated**	No
EP-FC-112-300	Accountability Clerk	**Eliminated**	No

Thus the proposed OSC staffing changes eliminate or reduce the staffing for the following augmenting positions:

- Two RP Technicians for Radiological Accident Assessment and Support of Operational Accident Assessment (Offsite Surveys) are eliminated;
- RP Technicians for Radiological Accident Assessment and Support of Operational Accident Assessment (Onsite (Out of Plant)) are reduced from two to one;
- RP Technicians for Protective Actions (Plant) are reduced from two to one; and
- Electrical Maintenance Technicians for supporting Repair and Corrective Actions are reduced from two to one.
- The following OSC non-minimum staffing positions are also proposed for elimination: Maintenance Coordinator, Chemistry Coordinator, Medical Response Coordinator, OSC Operations Liaison, Dosimetry Technician, ERMS Operator, Radio Operator, Storekeeper, and Accountability Clerk.

These changes are discussed below.

Two RP Technicians for Radiological Accident Assessment and Support of Operational Accident Assessment (Offsite Surveys) are eliminated

In Section 4.2.1.2 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> In the permanently shut down and defueled condition, the primary functions of the OSC will remain dispatching of, and accounting for, Repair and Corrective Action Teams and dispatching of Site Boundary Teams.
>
> Restoration of equipment supporting SFP cooling and inventory will be the primary focus of emergency mitigation actions for the TSC and OSC in a permanently shut down and defueled condition. Although ERO activation/response time requirements will be unchanged, the elimination of credible accidents involving an operating reactor provides additional time to plan

> and execute assessment and mitigation actions. The proposed changes do not impact the capability to assess and monitor actual or potential offsite consequences of a radiological emergency or provide information to offsite authorities in a timely manner. Therefore, the RP Coordinator, Maintenance Coordinator, Chemistry Coordinator, Medical Response Coordinator, OSC Operations Liaison, RP Technician, Dosimetry Technician, [Emergency Response Message System (ERMS)] Operator, Radio Operator, Storekeeper, and Accountability Clerk positions can be eliminated without placing an undue burden on the remaining ERO positions in the OSC and without increasing the risk to public health and safety

In Section 4.2.5 of Attachment 1, Revision 1, of the letter dated March 3, 2017, the licensee stated, in part, that:

> Currently, EPIPs direct the Protective Measures Coordinator (position maintained in the Post-Shutdown ERO) to dispatch Radiation Protection personnel to the Remote Assembly Area(s)/relocation area(s) to evaluate habitability and, if required, perform surveys of vehicles and evacuees in the event of a site evacuation, if sufficient Radiation Protection staff is present onsite at the time the site evacuation is ordered. Historically, the Radiation Protection Technician positions proposed for elimination served as the Radiation Protection personnel that would mobilize to the Remote Assembly Area(s)/Relocation Area(s) and perform these actions. However, these actions need not be performed by Radiation Protection Technicians.

The two RP Technician positions currently listed in the "Radiological Accident Assessment and Support of Operational Accident Assessment" Major Functional Area of Section B, Attachment 1, Table B.1 of the FCS RERP in the emergency position of "Offsite Surveys," proposed for elimination, do not have defined tasks in procedures. FCS is eliminating these positions from Table B.1 of the FCS RERP because the time necessary to establish the offsite locations to which RP personnel would respond precludes the need for these positions to be augmenting positions and because EPIPs direct the Protective Measures Coordinator to dispatch RP personnel, not RP Technicians, to perform the necessary actions. FCS maintains the necessary staffing to provide personnel trained in radiation protection to respond and perform the required actions, if necessary, in the post-shutdown condition. Activities related to the conduct of surveys or radiological assessment of the area surrounding FCS will be performed by the four Field Team Technicians identified in the "Radiological Accident Assessment and Support of Operational Accident Assessment" Major Functional Area of Table B.1 of the FCS RERP, independent of the augmenting RP Technician positions. Offsite surveys in support of dose assessment are currently performed by the four Field Team Technicians, which are maintained in the Post-Shutdown Emergency Plan.

RP Technicians for Radiological Accident Assessment and Support of Operational Accident Assessment (Onsite (Out of Plant)) are reduced from two to one

FCS proposes reducing the number of Radiation Protection Technicians positions currently listed in the "Radiological Accident Assessment and Support of Operational Accident Assessment" Major Functional Area of Section B, Attachment 1, Table B.1 of the FCS RERP in the emergency position of "Onsite (Out of Plant),", of the FCS RERP from two to one. The licensee states that activities related to the conduct of surveys or radiological assessment of the

area surrounding FCS will be performed by the four Field Team Technicians identified in the "Radiological Accident Assessment and Support of Operational Accident Assessment" Major Functional Area of Table B.1 of the FCS RERP, independent of the augmenting RP Technician positions. Offsite surveys in support of dose assessment are currently performed by the four Field Team Technicians, which are maintained in the Post-Shutdown Emergency Plan.

In Section 4.2.5 of Attachment 1, Revision 1, of the letter dated March 3, 2017, the licensee stated, in part, that:

> ... FCS proposes reducing the number of Radiation Protection Technicians listed in the Major Task of Onsite (Out of plant) survey in the Radiological Accident Assessment and Support of Operational Accident Assessment Major Functional Area of Attachment 1 – Table B.1 of Section B of the FCS RERP from two to one...
>
> Currently, EPIPs direct the Protective Measures Coordinator (position maintained in the Post-Shutdown ERO) to dispatch Radiation Protection personnel to the Remote Assembly Area(s)/relocation area(s) to evaluate habitability and, if required, perform surveys of vehicles and evacuees in the event of a site evacuation, if sufficient Radiation Protection staff is present onsite at the time the site evacuation is ordered. Historically, the Radiation Protection Technician positions proposed for elimination served as the Radiation Protection personnel that would mobilize to the Remote Assembly Area(s)/Relocation Area(s) and perform these actions. However, these actions need not be performed by Radiation Protection Technicians.

RP Technicians for Protective Actions (Plant) are reduced from two to one

FCS proposes reducing the number of Radiation Protection Technicians listed in the Major Task of "Radiation Protection" in the Protective Actions (Plant) Major Functional Area of Attachment 1 – Table B.1 of Section B of the FCS RERP from two to one. The licensee states that originally the radiological access control was a labor intensive task at FCS. Dedicated RP Technicians were required to check dose margins, training qualifications, and to ensure workers had read and understood their radiation work permit. Worker access control is now partially automated because many of the RP work processes have been computerized. Radiation Work Permit (RWP) access control and electronic dosimeter computer systems work together to provide a fully integrated system allowing workers to sign in on their RWP and to self-issue electronic dosimeters. However, during a declared emergency, RWPs and dose set points will change depending on the emergency situation and plant conditions. Both systems have been used by plant workers for several years. Worker dose margins and training qualifications are also automatically verified when the RWP access control system is used. Worker use of electronic dosimeters facilitates more efficient use of RP Technicians to provide RP coverage while preserving the as low as reasonably achievable concept. Access control is maintained because the worker must obtain an electronic dosimeter and enter an RWP number into the access control computer system prior to being allowed access into the radiologically controlled area. No setup is required for the RWP access control computers, which allows RP Technicians to be used for more critical tasks during emergency response. Personnel are required to self-monitor for radioactive contamination whenever they exit the radiologically controlled area. No RP involvement is necessary for this contamination monitoring activity because workers are trained to perform this task without supervision or oversight.

The licensee further states that RP coverage will only be performed if the radiological status of a room is unknown, and there is a definitive need for emergency workers to enter the room to perform a task. The decision to provide RP coverage may be based on plant radiological conditions as indicated by installed area radiation monitors or event mitigation requirements. During the initial stages of an accident, not all areas of the plant would be affected by releases of radioactive materials. Therefore, the licensee states RP coverage would not be required for all areas. Because entry is expected to be limited to those areas where maintenance necessary to maintain SFP cooling is required and the areas potentially affected by an accident involving the SFP are limited, there is a significant decrease in areas potentially requiring RP coverage in a permanently shutdown and defueled condition. The licensee further states that if RP coverage is deemed necessary, multiple emergency teams can be covered by the on shift RP Technician.

In its April 5, 2017 supplement, the licensee provided the following:

> In License Amendment Request (LAR) 16-02, dated September 2, 2016, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16246A321), Fort Calhoun Station (FCS) indicated that one or more training drills would be developed and conducted prior to implementation of the changes described in the LAR to validate the results of the analysis of the proposed post-shutdown Emergency Response Organization (ERO) presented in the LAR. This drill was conducted on February 22, 2017, and was observed by NRC staff.
>
> The training drill provided the opportunity for FCS to confirm the ability of the proposed post shutdown ERO to perform the necessary functions of each Emergency Response Facility and to utilize the post-shutdown procedures developed reflecting the proposed revised assignment of duties. During this drill, FCS identified several opportunities to improve the deployment of Radiation Protection and emergency repair team resources from the Operations Support Center (OSC) and to improve the efficiency and performance of the onshift and augmenting Radiation Protection (RP) Technicians by utilizing existing equipment and capabilities. Self-Reading Dosimeters and Dosimeters of Legal Record (DLRs) are typically located in each of the emergency lockers in the Control Room, Emergency Operations Facility (EOF), OSC and the Technical Support Center (TSC). Additional dosimeters and DLRs may be obtained by ERO personnel from the Radiation Protection department. The addition of a dosimetry kiosk and issuing terminal located in the OSC will allow for efficient and rapid issuance of dosimetry to repair teams. Additionally, closed-circuit television, and remote reading radiation telemetry that is installed in the areas required to perform mitigation activities to the Spent Fuel Pool (SFP) and areas containing SFP-related equipment augment the monitoring capability provided by installed radiation monitors. The output of these monitoring systems will be available in the TSC and OSC to the TSC Protective Measures Coordinator and OSC Director. This allows for real time monitoring of the radiological conditions in these areas for the Protective Measures Coordinator. Use of this technology can significantly reduce the exposure and time necessary to implement corrective measures.

The NRC staff concludes that the proposed level of augmentation in the OSC with two RP Technicians is acceptable based on the use of advance in technology such as, the use

closed-circuit television, and remote reading radiation telemetry that is installed in the areas required to perform mitigation activities to the SFP and areas containing SFP-related equipment. The use of the additional monitoring capability provided by installed radiation monitors will continue to provide radiation protection oversight of the on-shift complement of personnel and augmented personnel who are expected to respond to emergency events for damage repair, corrective actions, search and rescue, first aid, firefighting and personnel monitoring for the level of support required for the remaining DBAs and for mitigative actions in response to an SFP accident.

Electrical Maintenance Technicians for supporting Repair and Corrective Actions are reduced from two to one

FCS proposes reducing the number of Electrical Maintenance Technicians listed in the Major Task of "Repair and Corrective Actions" in the Plant System Engineering, Repair and Corrective Actions Major Functional Area of Attachment 1 – Table B.1 of Section B of the FCS RERP from two to one. The Electrical Maintenance Technician duties include providing repairs and corrective actions for plant electrical equipment as directed. The spectrum of credible accidents and operational events, and the quantity and complexity of activities required for the safe storage of spent nuclear fuel is reduced as compared to an operating plant. The duties and coverage required for the position is reduced. The FCS RERP will continue to require augmentation support to the OSC for the function of repair and corrective actions with Mechanical, Electrical and I&C Technicians (one each, respectively) within 60 minutes of an Alert emergency declaration.

The NRC staff concludes that the proposed reduction in the Electrical Maintenance staffing is acceptable based on the permanently shut down and defueled condition of the reactor, the spectrum of credible accidents and operational events, and the quantity and complexity of activities required for the safe storage of spent nuclear fuel is reduced as compared to an operating plant. The primary events of concern in the immediate post-shutdown and defueled condition will be a FHA and a loss of SFP cooling and/or water inventory. During fuel handling activities there will be extra personnel on site that will, were a FHA to occur, be able to respond to the event. Events involving a loss of SFP cooling and/or water inventory will continue to be addressed by implementation of SFP inventory makeup strategies in plant procedures and as required under License Condition 3.G.

OSC non-minimum staffing positions

In Section 4.2.1.2 of Attachment 1 of the letter dated September 2, 2016, the licensee stated, in part, that:

> Restoration of equipment supporting SFP cooling and inventory will be the primary focus of emergency mitigation actions for the TSC and OSC in a permanently shut down and defueled condition. Although ERO activation/response time requirements will be unchanged, the elimination of credible accidents involving an operating reactor provides additional time to plan and execute assessment and mitigation actions. The proposed changes do not impact the capability to assess and monitor actual or potential offsite consequences of a radiological emergency or provide information to offsite authorities in a timely manner. Therefore, the RP Coordinator, Maintenance Coordinator, Chemistry Coordinator, Medical Response Coordinator, OSC Operations Liaison, Dosimetry Technician, ERMS Operator, Radio Operator,

> Storekeeper, and Accountability Clerk positions can be eliminated without placing an undue burden on the remaining ERO positions in the OSC and without increasing the risk to public health and safety.
>
> Attachment 5 ["Emergency Response Organization Task Analysis"] contains an analysis of all ERO positions being eliminated and evaluates the transfer of tasks to remaining ERO positions following permanent cessation of power operations and permanent removal of fuel from the reactor vessel. The proposed ERO staffing reductions continue to address the risks to public health and safety, comply with the FCS RERP, site commitments, and applicable regulations.

Operating power reactor licensees' emergency plans are developed for a level of effectiveness commensurate with the potential consequences to public health and safety for a wide spectrum of accident scenarios. With the permanent cessation of operations and the permanent removal of the fuel from the reactor vessel at FCS, most of the accident scenarios postulated for an operating power reactor are no longer possible. The irradiated fuel is now stored in the SFP and ISFSI and will remain on-site until it can be moved offsite for long-term storage or disposal. The reactor, RCS, and reactor support systems are no longer in operation, and have no function related to the storage of the irradiated fuel. Therefore, postulated accidents involving failure or malfunction of the reactor, RCS, or reactor support systems are no longer applicable. Applicable DBAs (i.e., fuel handling accident in the spent fuel storage facility, accidental waste gas system releases, and cask handling accident (for non-single-failure-proof cranes)) are the only postulated DBA that will remain applicable to the permanently defueled FCS. During reactor decommissioning, the principal public safety concerns involve the radiological risks associated with the storage of spent fuel on-site. Based on the previous discussion in this section, the proposed level of OSC staffing remaining after elimination of four RP Technicians and one Electrical Maintenance Technician will continue to provide the level of support required for the remaining DBAs and for mitigative actions in response to an SFP accident.

Based on the NRC staff's review of the information in this section, the staff finds that the proposed level of augmented staffing for the OSC, as described above, continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) and the requirements of Section IV.A and D of Appendix E to 10 CFR Part 50, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the FCS facility. As such, the proposed changes in OSC staffing for the positions listed above for this functional area do not impact the ability of the ERO to perform the required functions and are acceptable.

3.8.2 Technical Support Center

The TSC has been designed to meet the intent of the guidance in NUREG-0696 and the clarification in NUREG-0737, Supplement 1, as applicable. The TSC is an on-site facility located close to the Control Room that shall provide plant management and technical support to the reactor operating personnel located in the Control Room during emergency conditions. Following permanent cessation of power operations and permanent removal of fuel from the reactor vessel, the TSC will continue to be located on the north side of the Auxiliary Building. The proposed changes to the FCS RERP do not involve any physical modifications to, or layout/configuration changes in, the TSC.

The proposed staffing changes eliminate one position in the TSC described in Section B.4.3.4 of the FCS RERP as a minimum staff position, the TSC Conference Operations (COP) Communicator.

The following table illustrates the proposed changes to the augmented TSC staffing in the post-shutdown emergency plan:

Technical Support Center			
Procedure(s)	**Current Positions**	**Proposed Positions in the Post-Shutdown Emergency Plan**	**Current FCS RERP 1-Hour Augmentation Minimum Requirements**
EP-FC-112-200	Site Director	No change	Yes
EP-FC-112-200	TSC COP Communicator	**Eliminated**	Yes
EP-FC-112-200	TSC Protective Measures Coordinator	No Change	Yes
EP-FC-112-200	TSC Reactor Safety Coordinator	No change	Yes
EP-FC-112-200	TSC Elec/I&C Engineer	**Eliminated**	No
EP-FC-112-200	TSC Primary Systems Engineer	**Eliminated**	No
EP-FC-112-200	TSC Field Team Technicians	No change	No
EP-FC-112-200	TSC Ops Liaison	No change	No
EP-FC-112-200	Admin Logistics Coordinator	No change	No
EP-FC-112-200	TSC Director	**Eliminated**	No
EP-FC-112-200	Reactor Engineer	**Eliminated**	No
EP-FC-112-200	TSC Secondary Systems Engineer	**Eliminated**	No
EP-FC-112-200	Security Coordinator	No change	No
EP-FC-112-200	TSC CHP Communicator	**Eliminated**	No
EP-FC-112-200	Admin Assistant	**Eliminated**	No
EP-FC-112-200	Site Director Secretary	**Eliminated**	No
EP-FC-112-200	TSC Status Board Keeper	**Eliminated**	No

The current FCS RERP and ERO staffing is intended to address the risks to public health and safety inherent in an operating reactor. The risk in the permanently defueled condition is significantly reduced because many of the potential initiating conditions that would lead to an emergency declaration will no longer be possible.

The licensee states that the spectrum of credible accidents and operational events, and the quantity and complexity of activities required for the safe storage of spent nuclear fuel is reduced as compared to an operating plant. The set of plant equipment required in the permanently defueled condition is also greatly reduced, which reduces the assessment and mitigation activities the TSC must perform. As a result, the licensee concluded that the following proposed positions can be eliminated without placing an undue burden on the remaining positions in the TSC and without increasing the risk to public health and safety:

- One TSC Conference Operations (COP) Communicator (minimum staff position),
- One TSC Reactor Engineer,
- One TSC Electrical/Instrument & Controls (I&C) Engineer,

- One TSC Primary Systems Engineer,
- One TSC Secondary Systems Engineer,
- One TSC Director,
- One Administrative Assistant,
- One Site Director Secretary,
- One TSC Status Board Keeper, and
- One TSC Conference Health Physics (CHP) Communicator.

Attachment 5 to the licensee's letter dated September 2, 2016, contains an analysis of all ERO positions being eliminated and evaluates the transfer of tasks to remaining positions following permanent cessation of power operations.

In Section 4.2.1.1 of Attachment 1 of the letter dated September 2, 2016, the licensee stated, in part, that:

> The proposed staffing changes eliminate one ERO position in the TSC described in [Table B-1 of the FCS RERP and] FCS EPIPs as a minimum staff position, the TSC COP Communicator.
>
> TSC COP Communicator
>
> The TSC COP Communicator position is described in Section B.4.6.1.D of the FCS RERP and further detailed in EP-FC-112-200-F-05, *TSC COP Communicator Checklist*. According to Section B.4.6.1.D of the FCS RERP, the TSC COP Communicator performs notifications as directed by the Command and Control position. The EOF COP Communicator has redundant duties. Because both positions have the same response time, the TSC COP Communicator duties can be transferred to the EOF COP Communicator with no loss of efficiency.
>
> TSC Reactor Engineer
>
> While not a minimum staff position in the TSC, the primary duty of the TSC Reactor Engineer is to perform core damage assessments. In a permanently shut down and defueled condition, responsibilities associated with a reactor core no longer need to be maintained. FCS RERP Section B, Attachment 1, Table B-1 indicates that the TSC Reactor Safety Coordinator (retitled the TSC Engineering Coordinator in the Post-Shutdown RERP) is responsible for the core/thermal hydraulics task. Elimination of the TSC Reactor Engineer position will have no effect on emergency response in a permanently defueled condition because the position is not required to assess the condition of fuel in the SFP during an emergency. The TSC Reactor Engineer position can be eliminated without increasing the risk to public health and safety because the major task of evaluating core/thermal hydraulics is not necessary or possible in a permanently shut down and defueled condition.
>
> TSC Engineers (Elec/I&C, Primary Systems, Secondary Systems)
>
> The primary duties of the TSC Engineer positions include: providing engineering analysis and troubleshooting, evaluating the implementation of Severe Accident

Management Guidelines, and assisting in the assessment and development of repair plans. These duties, described in implementing procedures, are either no longer necessary in a permanently shut down and defueled condition or will be performed by other members of the post-shutdown ERO.

The TSC Reactor Safety Coordinator (retitled the TSC Engineering Coordinator in the post-shutdown RERP) is tasked with performing an engineering assessment of plant conditions and/or actions needed to mitigate damage to the plant. FCS EPIPs will continue to direct the Engineering to continuously evaluate the need for engineering resources and coordinate with the EOF Admin Logistics Manager to call in additional engineering assistance, as needed. These individuals may be tasked with activities to be completed at engineering offices external to the TSC, called to report to the TSC, or directed to other facilities as needed.

FCS EPIPs will continue to identify engineering resources as augmented positions, [which are not required to meet minimum staffing to support initial facility activation and operation,] with specific training and qualification requirements for assigned personnel in accordance with the site training program. The required training courses and requalification frequencies will be unchanged in the post-shutdown condition. However, these positions will no longer be identified as on-call positions. The elimination of the TSC Engineer positions is justified because the spectrum of credible accidents and operational events, and the quantity and complexity of activities required for the safe storage of spent nuclear fuel is reduced as compared to an operating plant. The set of plant equipment required in the permanently defueled condition is also greatly reduced, which reduces the assessment and mitigation activities the TSC must perform.

Other Positions

The elimination of the TSC Director, Admin Assistant, Site Director Secretary, TSC Status Board Keeper, and TSC CHP Communicator positions does not impact the capabilities of the on-shift staffing or augmented response. The TSC will continue to be activated at an Alert or higher declaration. Functional responsibilities of the positions [eliminated as a result of the changes will be reassigned to remaining positions as] illustrated in Attachment 5 [to the licensee's letter dated September 2, 2016]. The proposed ERO staffing changes continue to address the risks to public health and safety, comply with the FCS RERP, site commitments, and applicable regulations.

Operating power reactor licensees' emergency plans are developed for a level of effectiveness commensurate with the potential consequences to public health and safety for a wide spectrum of accident scenarios. With the permanent cessation of operations and the permanent removal of the fuel from the reactor vessel at FCS, most of the accident scenarios postulated for an operating power reactor are no longer possible. The irradiated fuel is now stored in the SFP and ISFSI and will remain on-site until it can be moved offsite for long-term storage or disposal. The reactor, RCS, and reactor support systems are no longer in operation, and have no function related to the storage of the irradiated fuel. Therefore, postulated accidents involving failure or malfunction of the reactor, RCS, or reactor support systems are no longer applicable. Applicable DBAs (i.e., fuel handling accident in the spent fuel storage facility, accidental waste

gas system releases, and cask handling accident (for non-single-failure-proof cranes)) are the only postulated DBA that will remain applicable to the permanently defueled FCS. During reactor decommissioning, the principal public safety concerns involve the radiological risks associated with the storage of spent fuel on-site.

Because these proposed changes are the reassignment of functional and administrative responsibilities, and with the limited activities required for post-shutdown condition, the NRC staff concludes that the proposed level of TSC staffing remaining after elimination of TSC COP Communicator, TSC Reactor Engineer, TSC Engineers, and administrative positions will continue to provide plant management and technical support to the operating personnel located in the control room for the level of support required for the remaining DBAs and for mitigative actions in response to an SFP accident.

Based on the NRC staff's review of the information in this section, the staff finds that the proposed level of augmented TSC staffing, as described above, continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) and the requirements of Section IV.A and D of Appendix E to 10 CFR Part 50, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the FCS facility. As such, the proposed changes in TSC staffing for the positions listed above for this functional area do not impact the ability of the ERO to perform the required functions and are acceptable.

3.8.3 Emergency Operations Facility

The EOF has been designed to meet the intent of the guidance in NUREG-0696 and the clarification in NUREG-0737, Supplement 1, as applicable. The EOF is a near-site support facility for the management of overall licensee emergency response (including coordination with Federal, State, and local officials), coordination of radiological and environmental assessments, and determination of recommended public protective actions. Following permanent cessation of power operations and permanent removal of fuel from the reactor vessel, the EOF will continue to be located at North Omaha Power Station, approximately 17 miles from the plant site. The proposed changes to the FCS RERP do not involve any physical modifications to, or layout/configuration changes in, the EOF.

The proposed staffing changes would eliminate one position in the EOF described in Section B.4.3.5 of the FCS RERP as a minimum staff position. The FCS RERP identifies the Dose Assessment Coordinator (DAC) or the Protective Measures Manager (PMM) as required minimum staff positions. The Dose Assessment Coordinator would be eliminated, with the Protective Measures Manager (Coordinator) continuing to be a 1-hour augmentation minimum position, per the proposed Table B-1 of the FCS RERP.

The following table illustrates the proposed changes to the EOF staffing in the post-shutdown emergency plan:

Emergency Operations Facility			
Procedure(s)	**Current Positions**	**Proposed Positions in the Post-Shutdown Emergency Plan**	**Current FCS RERP 1-Hour Augmentation Minimum Requirements**
EP-FC-112-400	Emergency Director	No change	Yes
EP-FC-112-400	EOF COP Communicator	No change	Yes
EP-FC-112-400	EOF Protective Measures Manager	No change	Yes, or DAC
EP-FC-112-400	EOF Dose Assessment Specialist	No change	Yes
EP-FC-112-400	EOF Dose Assessment Coordinator	**Eliminated**	Yes, or PMM
EP-FC-112-400	EOF Admin Logistics Manager	No change	No
EP-FC-112-400	EOF Information Specialist	No change	No
EP-FC-112-400	EOF Ops Liaison	No change	No
EP-FC-112-400	EOF Field Team	No change	No
EP-FC-112-400	Field Team Specialist	No change	No
EP-FC-112-400	EOF Technical Liaison	No change	No
EP-FC-112-400	EOF Clerical Assistant	**Eliminated**	No
EP-FC-112-400	Emergency Director Secretary	**Eliminated**	No
EP-FC-112-400	Des Moines Site Representative	No change	No
EP-FC-112-400	IT Specialist	**Eliminated**	No
EP-FC-112-400	EOF CHP Communicator	**Eliminated**	No
EP-FC-112-400	Communications Specialist	**Eliminated**	No
EP-FC-112-400	Emergency Response Coordinator	**Eliminated**	No
EP-FC-112-400	EOF Secretary	**Eliminated**	No
EP-FC-112-400	EOF Dose Assessment Assistant	**Eliminated**	No
EP-FC-112-400	EOF Status Board Keeper	**Eliminated**	No

In Section 4.2.1.3 of Attachment 1 of the letter dated September 2, 2016, the licensee stated, in part, that:

> When activated, the Emergency Director reports to the EOF and directs the activities of the ERO throughout the emergency and until the recovery activities have been terminated. The Emergency Director, or a designated alternate, is notified of all emergency conditions occurring at the plant and issues periodic status reports of the event to the responding offsite representatives. The EOF serves as the primary interface with the various offsite support agencies. The proposed changes to the FCS RERP do not reduce the ability of FCS to provide the necessary information regarding the status and progression of an event or in the frequency at which event information updates are provided. Nor do the changes impact the ability to dispatch additional technical support to the [Emergency Operations Centers]. As a result, the proposed changes do not impact the ability of FCS to communicate with the offsite response organizations.

Centralized coordination of the offsite radiological assessment effort with all organizations interested in, and/or performing, assessments is necessary to ensure that the data and its interpretation are reviewed by FCS and offsite response organizations with monitoring and assessment responsibilities... The proposed changes to the FCS RERP do not involve changes to offsite radiological assessment capabilities or coordination of these efforts with offsite response organizations, and as a result, do not impact the ability of offsite agencies to effectively implement their emergency plans.

FCS will continue to maintain the capability to display plant and meteorological data in the EOF, maintain offsite monitoring equipment at the EOF and maintain the current dose assessment capabilities at the EOF. Additionally, FCS will maintain a goal of approximately sixty (60) minutes after declaration of an emergency to activate the EOF.

The proposed staffing changes would eliminate one ERO position in the EOF described in FCS RERP as a minimum staff position. FCS EPIPs identify the Dose Assessment Coordinator or the Protective Measures Manager as required minimum staff position. The Protective Measures Manager position is retained in the post-shutdown ERO.

The following EOF positions are proposed for elimination following permanent cessation of power operations and permanent removal of fuel from the reactor vessel:

- Emergency Response Coordinator
- EOF Secretary
- EOF Dose Assessment Assistant
- EOF Status Board Keeper
- Dose Assessment Coordinator
- EOF Clerical Assistant
- Emergency Director Secretary
- IT Specialist
- EOF CHP Communicator
- Communications Specialist

The proposed EOF staffing changes described above do not impact the capabilities of the on-shift staffing or augmented response. The positions can be eliminated without placing an undue burden on the remaining ERO positions in the EOF and without increasing the risk to public health and safety. Attachment 5 [to the licensee's letter dated September 2, 2016] contains an analysis of all ERO positions being eliminated and evaluates the transfer of tasks to remaining ERO positions following permanent cessation of power operations and permanent removal of fuel from the reactor vessel. The EOF will continue to be activated at an Alert or higher declaration. Functional responsibilities of the positions eliminated as a result of the changes will be reassigned to remaining positions. The proposed ERO staffing reductions continue to address the risks to public health and safety, comply with the FCS RERP, site commitments, and applicable regulations.

Operating power reactor licensees' emergency plans are developed for a level of effectiveness commensurate with the potential consequences to public health and safety for a wide spectrum of accident scenarios. With the permanent cessation of operations and the permanent removal of the fuel from the reactor vessel at FCS, most of the accident scenarios postulated for an operating power reactor are no longer possible. The irradiated fuel is now stored in the SFP and ISFSI and will remain on-site until it can be moved offsite for long-term storage or disposal. The reactor, RCS, and reactor support systems are no longer in operation, and have no function related to the storage of the irradiated fuel. Therefore, postulated accidents involving failure or malfunction of the reactor, RCS, or reactor support systems are no longer applicable. Applicable DBAs (i.e., fuel handling accident in the spent fuel storage facility, accidental waste gas system releases, and cask handling accident (for non-single-failure-proof cranes)) are the only postulated DBA that will remain applicable to the permanently defueled FCS. During reactor decommissioning, the principal public safety concerns involve the radiological risks associated with the storage of spent fuel on-site.

Because these proposed changes are the reassignment of functional and administrative responsibilities, and with the limited activities required for post-shutdown condition, the NRC staff concludes that the proposed level of EOF staffing will continue to provide management of overall licensee emergency response (including coordination with Federal, State, and local officials), coordination of radiological and environmental assessments, and determination of recommended public protective actions for the level of support required for the remaining DBAs and for mitigative actions in response to an SFP accident.

Based on the NRC staff's review of the information in this section, the staff finds that the proposed level of on-shift and augmented EOF staffing, as described above, continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) and the requirements of Section IV.A and D of Appendix E to 10 CFR Part 50, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the FCS facility. As such, the proposed changes in EOF staffing for the positions listed above for this functional area do not impact the ability of the ERO to perform the required functions and are acceptable.

3.8.4 Joint Information Center

The FCS JIC is located at the OPPD Energy Plaza, 444 South 16th Street Mall, in Omaha, Nebraska. The JIC meets the intent of the guidance in Planning Standard G of NUREG-0654. Following permanent cessation of power operations, the JIC will continue to be located at the OPPD Energy Plaza in Omaha. The proposed changes to the FCS RERP do not involve any physical modifications to, or layout/configuration changes in, the JIC.

The proposed staffing changes do not eliminate any position in the JIC described in the Corporate Crisis Communication Plan as a minimum staff position. The minimum staff position includes the JIC Manager, JIC Technical Liaison, and Corporate Spokesperson, specifically referenced in Section G.3.0 of the FCS RERP.

The proposed staffing changes eliminates the following ERO positions in the JIC:

- One Executive Liaison,
- One Internal Information Liaison (Spokesperson),
- One Public Inquiry Supervisor, and
- Five of 10 Public Inquiry Specialists.

The following table illustrates the proposed changes to the JIC staffing in the post-shutdown emergency plan:

Joint Information Center			
Procedure(s)	**Current Positions**	**Proposed Positions in the Post-Shutdown Emergency Plan**	**Current FCS RERP 1-Hour Augmentation Minimum Requirements**
Crisis Communication Plan	Company Spokesperson	No change	Yes
Crisis Communication Plan	JIC Manager	No change	Yes
Crisis Communication Plan	Executive Liaison	**Eliminated**	No
Crisis Communication Plan	Internal Information Liaison (Spokesperson)	**Eliminated**	No
Crisis Communication Plan	JIC Media Information Specialist	No change	Yes
Crisis Communication Plan	JIC Technical Liaison	No change	Yes
Crisis Communication Plan	Public Inquiry Supervisor	**Eliminated**	No
Crisis Communication Plan	Public Inquiry Specialist (10)	Public Inquiry Specialist reduced to 5	No
Crisis Communication Plan	JIC Clerical Supervisor	No change	Yes

In Section 4.2.1.4 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> In the permanently shut down and defueled condition, media briefings and rumor control will continue to be conducted regularly during an emergency to provide accurate and timely information to the public. The proposed JIC staffing changes described above do not impact the capabilities of the on-shift staffing or augmented response. The positions can be eliminated without placing an undue burden on the remaining ERO positions in the JIC and without increasing the risk to public health and safety... The JIC will continue to be activated at Site Area Emergency or higher declaration. Functional responsibilities of the positions eliminated as a result of the changes will be reassigned to remaining positions. The proposed ERO staffing reductions continue to address the risks to public health and safety, comply with the FCS RERP, site commitments, and applicable regulations.

As described in Section G of the FCS RERP, the JIC provides a location for the news media to receive information from all involved agencies and companies during an emergency and provide it to the general public. The JIC is equipped to accommodate the news media for large briefings and conferences and contains extensive communications systems. Media monitoring and rumor control is also accomplished at the JIC, allowing FCS and State representatives to address incorrect information or rumors. Responses to media telephone inquiries are also addressed at the JIC. Functional responsibilities of the positions eliminated as a result of the proposed changes will be reassigned to remaining positions in the JIC.

Operating power reactor licensees' emergency plans are developed for a level of effectiveness commensurate with the potential consequences to public health and safety for a wide spectrum of accident scenarios. With the permanent cessation of operations and the permanent removal of the fuel from the reactor vessel at FCS, most of the accident scenarios postulated for an operating power reactor are no longer possible. The irradiated fuel is now stored in the SFP and ISFSI and will remain on-site until it can be moved offsite for long-term storage or disposal. The reactor, RCS, and reactor support systems are no longer in operation, and have no function related to the storage of the irradiated fuel. Therefore, postulated accidents involving failure or malfunction of the reactor, RCS, or reactor support systems are no longer applicable. Applicable DBAs (i.e., fuel handling accident in the spent fuel storage facility, accidental waste gas system releases, and cask handling accident (for non-single-failure-proof cranes)) are the only postulated DBA that will remain applicable to the permanently defueled FCS. During reactor decommissioning, the principal public safety concerns involve the radiological risks associated with the storage of spent fuel on-site. Because of the reassignment of functional and administrative responsibilities, and the limited post-shutdown activities, the remaining positions at JIC will continue to disseminate information to the public for the level of support required for the remaining DBAs and for mitigative actions in response to an SFP accident.

Based on the NRC staff's review of the information in this section, the staff finds that the proposed level of augmented JIC staffing, as described above, continues to meet the planning standards of 10 CFR 50.47(b)(1) and (2) and the requirements of Section `A and D of Appendix E to 10 CFR Part 50, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition of the FCS facility. As such, the proposed changes in JIC staffing for the positions listed above for this functional area do not impact the ability of the JIC to perform the required functions and are acceptable.

3.9 Potential Impact of Staff Changes on Off-site Emergency Response Organizational Interfaces

In Section 4.2.1 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> The proposed changes to the FCS RERP, including the changes made to develop the post-shutdown ERO, have been evaluated for impacts on the ERO and for the ability of offsite response organizations to implement their Federal Emergency Management Agency (FEMA) approved Radiological Emergency Preparedness (REP) Plans. Potential impacts on the ability of the State and local response organizations to effectively implement their FEMA-approved REP Plans do not exist because no tasks that require interfacing with State and local response organizations are proposed for elimination. FCS has appropriately addressed elimination of ERO positions that interface with offsite representatives by transferring the necessary tasks to remaining post-shutdown ERO positions.

> In addition, the FCS ERO will continue to include technical support staff that have dedicated responsibilities for interfacing with State and local representatives.

In Section 4.2.1.5 of Attachment 1 of the letter dated March 3, 2017, the licensee stated, in part, that:

> Section [F, "Emergency Communications,"] of the FCS RERP describes the extensive communications network maintained between FCS, the States, and local agencies as a means of promptly notifying and maintaining communications with appropriate authorities... The proposed changes to the FCS RERP do not involve changes to this communications network, and as a result, do not impact the ability of FCS to promptly notify and initiate coordination with the offsite authorities.
>
> Formal offsite REP plans, approved by FEMA in accordance with 44 CFR 350, are required to be maintained in effect until such time as the NRC approves an exemption to formal offsite emergency preparedness requirements. Because the changes proposed by FCS, specifically in regards to ERO staffing of the EOF and JIC, have the potential to adversely impact the effective implementation of the State and local REP plans, the proposed changes to the FCS RERP were evaluated [by the licensee] for impacts on the ability of the State and local response organizations to effectively implement their FEMA-approved REP Plans. No specific change recommendations were identified; however, FCS will provide the offsite response organizations with the proposed post shutdown ERO positions so that they may revise their procedures as necessary.
>
> Decommissioning-related emergency plan submittals for FCS have been discussed with offsite response organizations since OPPD provided notification that it would permanently cease power operations... These discussions have addressed future changes to onsite and offsite emergency preparedness throughout the decommissioning process.
>
> As stated previously, State, local, and Federal response organizations will be provided the opportunity to participate in or observe drills prior to implementation of the post-shutdown RERP.

Attachment 5, "Emergency Response Organization Task Analysis," of the licensee's letter dated September 2, 2016, contains an analysis of all ERO positions being eliminated and evaluates the transfer of tasks to remaining ERO positions following permanent cessation of power operations. The discussion also addresses the potential impacts the proposed changes to the FCS RERP have on the EOF and the JIC and the potential impacts on the ability of the offsite response organizations to implement their FEMA-approved REP Plans.

By letter dated December 1, 2016 (Reference 14), the NRC staff requested FEMA's review of staffing changes proposed in the LAR against the current FEMA-approved State and local REP plans to verify that no potential adverse impacts exist that would preclude the effective implementation of State and local REP plans. In a letter dated February 1, 2017 (Reference 15), FEMA responded that the FEMA Region VII REP staff, in coordination with the States of Nebraska and Iowa and the applicable local jurisdictions, conducted and completed a review of the proposed FCS Post-Shutdown Emergency Plan against the current FEMA-approved State and local REP plans and, based on the review, FEMA determined that

no potential adverse impacts exist that would preclude the effective implementation of State and local REP plans as a result of the proposed RERP.

Based on the NRC staff's review of the information addressed above, and evaluation by FEMA on potential, unintended impacts on offsite ERO Interface REP plans, the staff finds that the proposed changes to the FCS RERP staffing continue to meet the planning standards of 10 CFR 50.47(b)(1) and (2), commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition at the FCS facility.

3.10 Summary

Based on the evaluation above, the NRC staff finds that the proposed emergency plan changes meet the planning standards in 10 CFR 50.47(b)(1) and (2) and the requirements in Section IV.A and D of Appendix E to 10 CFR Part 50, and provide reasonable assurance that adequate protective measures can and will continue to be taken in the event of a radiological emergency, commensurate with the reduced spectrum of credible accidents in the permanently shutdown and defueled condition.

4.0 REGULATORY COMMITMENTS

In its letter dated September 2, 2016, the licensee made the following regulatory commitments that are still open:

Commitment 1

Prior to implementation of ERO changes, revise applicable fuel handling procedures to require that a Chemistry Technician be on-site or the radiation monitors listed in the gaseous effluent EALs are in service as a prerequisite to handling or moving spent fuel.

Commitment 2

Prior to implementation of ERO changes, training and procedures will be developed and in place prior to performing post-shutdown ERO drills. The drill scenarios will include spent fuel pool events and be designed to test the major elements of the FCS post shutdown emergency plan. Major elements to be tested will include communications and coordination with offsite response organizations, including the Joint Information Center.

The NRC staff concludes that reasonable controls for the implementation and for subsequent evaluation of proposed changes pertaining to the above regulatory commitments are best provided by the licensee's administrative processes, including its commitment management program. The above regulatory commitments do not warrant the creation of regulatory requirements (items requiring prior NRC approval of subsequent changes).

5.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Nebraska State official was notified of the proposed issuance of the amendment on June 6, 2017. The State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding published in the *Federal Register* on November 8, 2016 (81 FR 78650). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

7.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

8.0 REFERENCES

1. Burke, Timothy J., Omaha Public Power District, letter to U.S. Nuclear Regulatory Commission, "Certification of Permanent Cessation of Power Operations," dated June 24, 2016 (ADAMS Accession No. ML16176A213).

2. Burke, Timothy J., Omaha Public Power District, letter to U.S. Nuclear Regulatory Commission, "Certification of Permanent Cessation of Power Operations," dated August 25, 2016 (ADAMS Accession No. ML16242A127).

3. Burke, Timothy J., Omaha Public Power District, letter to U.S. Nuclear Regulatory Commission, "Certification of Permanent Removal of Fuel from the Reactor Vessel," dated November 13, 2016 (ADAMS Accession No. ML16319A254).

4. Marik, Shane M., Omaha Public Power District, letter to U.S. Nuclear Regulatory Commission, "License Amendment Request (LAR) 16-02: Revise the Fort Calhoun Station Emergency Plan to Address the Permanently Defueled Condition," dated September 2, 2016 (ADAMS Accession No. ML16246A321).

5. Fisher, Mary J., Omaha Public Power District, letter to U.S. Nuclear Regulatory Commission, "Response to Request for Additional Information, Fort Calhoun Station, Unit No. 1 – Final Request for Additional Information Concerning Post-Shutdown EPlan Amendment (CAC MF8326)," dated March 3, 2017 (ADAMS Accession No. ML17062A887).

6. Fisher, Mary J., Omaha Public Power District, letter to U.S. Nuclear Regulatory Commission, "Supplemental Response to Request for Additional Information, Fort Calhoun Station, Unit No. 1 – Final Request for Additional Information Concerning Post-Shutdown EPlan Amendment (CAC MF8326)," dated April 5, 2017 (ADAMS Accession No. ML17095A949).

7. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.101, Revision 2, "Emergency Planning and Preparedness for Nuclear Power Reactors," October 1981 (ADAMS Accession No. ML090440294).

8. U.S. Nuclear Regulatory Commission/Federal Emergency Management Agency, NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980 (ADAMS Accession No. ML040420012).

9. U.S. Nuclear Regulatory Commission, NSIR/DPR-ISG-01, "Interim Staff Guidance – Emergency Planning for Nuclear Power Plants," November 2011 (ADAMS Accession No. ML113010523).

10. Nuclear Energy Institute, NEI 10-05, Revision 0, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," June 2011 (ADAMS Accession No. ML111751698).

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Principal Contributor: Richard Kinard, NSIR/DPR

Date: July 27, 2017

SUBJECT: FORT CALHOUN STATION, UNIT 1 - ISSUANCE OF AMENDMENT RE: REVISE EMERGENCY PLAN TO ADDRESS THE PERMANENTLY DEFUELED CONDITION (CAC NO. MF8326) DATED JULY 27, 2017

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OFFICE	NRR/DORL/LSPB/PM	NRR/DORL/LSPB/LAiT	NRR/DORL/LSPB/LA
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OFFICE	NSIR/DPR/RLB/BC*	OGC – NLO w/ edits	NRR/DORL/LSPB/BC
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DATE	04/25/17	7/10/17	7/25/17
OFFICE	NRR/DORL/DD	NRR/D	NRR/DORL/LSPB/PM
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