



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

April 5, 2016

Mr. Shane M. Marik
Site Vice President and Chief Nuclear Officer
Omaha Public Power District
Fort Calhoun Station
9610 Power Lane, Mail Stop FC-2-4
Blair, NE 68008

SUBJECT: FORT CALHOUN STATION, UNIT NO. 1 - ISSUANCE OF AMENDMENT RE:
REVISE TECHNICAL SPECIFICATIONS TO ADOPT TSTF-522, "REVISE
VENTILATION SYSTEM SURVEILLANCE REQUIREMENTS TO OPERATE
FOR 10 HOURS PER MONTH" (CAC NO. MF6513)

Dear Mr. Marik:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 287 to Renewed Facility Operating License No. DPR-40 for the Fort Calhoun Station, Unit No. 1. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated July 24, 2015.

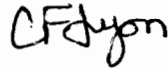
The amendment revises the TS Surveillance Requirements (SRs), which currently require operation of ventilation systems with charcoal filters for a 10-hour period at a monthly frequency. The SRs are revised to require operation of the systems for 15 continuous minutes at a monthly frequency. The amendment is consistent with NRC-approved Technical Specifications Task Force (TSTF) Traveler TSTF-522, Revision 0, "Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month," as published in the *Federal Register* on September 20, 2012 (77 FR 58428), with variations due to plant-specific nomenclature. The changes revise TS 3.2, Table 3-5; SR Items 10a.3.a, "Control Room Air Filtration System (CRAFS)", 10b.3.a, "Spent Fuel Pool Storage Area Filtration System (SFPSAFS)," and 10c.3.a, "Safety Injection Pump Room Air Filtration System (SIPRAFS)"; and TS 3.6(3)c, "Containment Recirculating Air Cooling and Filtering System," also known as the Containment Air Cooling and Filtering System (CACFS).

S. Marik

- 2 -

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,

A handwritten signature in black ink, appearing to read "CF Lyon".

Carl F. Lyon, Project Manager
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-285

Enclosures:

1. Amendment No. 287 to DPR-40
2. Safety Evaluation

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

OMAHA PUBLIC POWER DISTRICT

DOCKET NO. 50-285

FORT CALHOUN STATION, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 287
Renewed License No. DPR-40

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Omaha Public Power District (the licensee), dated July 24, 2015, 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, Renewed Facility Operating License No. DPR-40 is amended by changes as indicated in the attachment to this license amendment, and paragraph 3.B. of Renewed Facility Operating License No. DPR-40 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 287, are hereby incorporated in the license. Omaha Public Power District shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance and shall be implemented within 90 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert J. Pascarelli, Chief
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Facility
Operating License No. DPR-40
and Technical Specifications

Date of Issuance: April 5, 2016

ATTACHMENT TO LICENSE AMENDMENT NO. 287

RENEWED FACILITY OPERATING LICENSE NO. DPR-40

DOCKET NO. 50-285

Replace the following pages of the Renewed Facility Operating License No. DPR-40 and the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

License Page

REMOVE

INSERT

-3-

-3-

Technical Specifications

REMOVE

INSERT

3.2 - Page 10

3.2 - Page 10

3.2 - Page 11

3.2 - Page 11

3.6 - Page 3

3.6 - Page 3

- (4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form for sample analysis or instrument calibration or when associated with radioactive apparatus or components;
 - (5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by operation of the facility.
3. This renewed license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Section 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is, subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
 - A. Maximum Power Level

Omaha Public Power District is authorized to operate the Fort Calhoun Station, Unit 1, at steady state reactor core power levels not in excess of 1500 megawatts thermal (rate power).
 - B. Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 287 are hereby incorporated in the license. Omaha Public Power District shall operate the facility in accordance with the Technical Specifications.
 - C. Security and Safeguards Contingency Plans

The Omaha Public Power District shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The plans, which contain Safeguards Information protected under 10 CFR 73.21, are entitled: "Fort Calhoun Station Security Plan, Training and Qualification Plan, Safeguards Contingency Plan," submitted by letter dated May 19, 2006.

OPPD shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The OPPD CSP was approved by License Amendment No. 266 and modified by License Amendment No. 284.

TECHNICAL SPECIFICATIONS

**TABLE 3-5
MINIMUM FREQUENCIES FOR EQUIPMENT TESTS**

	<u>Test</u>	<u>Frequency</u>	<u>USAR Section Reference</u>
10a. (continued)	3. <u>Overall System Operation</u>		
	a. Each train shall be operated.	15 continuous minutes every month with heaters operating.	
	b. The pressure drop across the combined HEPA filters and charcoal adsorber banks shall be demonstrated to be less than 9 inches of water at system design flow rate.	R	
	c. Fan shall be shown to operate within \pm 10% design flow.	R	
	4. Automatic and manual initiation of each train shall be demonstrated.	R	
10b. Charcoal Adsorbers for Spent Fuel Storage Pool Area	1. <u>In-Place Testing</u> ⁵ Charcoal adsorbers shall be leak tested and shall show \geq 99% Freon (R-11 or R-112) removal.	On a refueling frequency or every 720 hours of system operation, or after each complete or partial replacement of the charcoal adsorber bank, or after any major structural maintenance on the system housing or following significant painting, fire or chemical release in a ventilation zone communicating with the system.	6.2 9.10
	2. <u>Laboratory Testing</u> Verify, within 31 days after removal, that a laboratory test of a sample of the charcoal adsorber, when obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows methyl iodide penetration less than 10% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and a relative humidity of 95%.	On a refueling frequency or every 720 hours of system operation or after any structural maintenance on the HEPA filter or charcoal adsorber housing or following significant painting, fire or chemical release in a ventilation zone communicating with the system.	

TECHNICAL SPECIFICATIONS

**TABLE 3-5
MINIMUM FREQUENCIES FOR EQUIPMENT TESTS**

	<u>Test</u>	<u>Frequency</u>	<u>USAR Section Reference</u>
10b. (continued)	3. <u>Overall System Operation</u> a. Operation of each circuit shall be demonstrated. b. Volume flow rate through charcoal filter shall be shown to be between 4500 and 12,000 cfm.	15 continuous minutes every month. R	
	4. Manual initiation of the system shall be demonstrated.	R	
10c. Charcoal Adsorbers for S.I. Pump Room	1. <u>In-Place Testing</u> ⁵ Charcoal adsorbers shall be leak tested and shall show ≥99% Freon (R-11 or R-112) removal.	On a refueling frequency or every 720 hours of system operation, or after each complete or partial replacement of the charcoal adsorber bank, or after any major structural maintenance on the system housing or following significant painting, fire or chemical release in any ventilation zone communicating with the system.	9.10 6.2
	2. <u>Laboratory Testing</u> Verify, within 31 days after removal, that a laboratory test of a sample of the charcoal adsorber, when obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows methyl iodide penetration less than 10% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and a relative humidity of 95%.	On a refueling frequency or following 720 hours of system operation or after any structural maintenance on the HEPA filter or charcoal adsorber housing or following significant painting, fire or chemical release in a ventilation zone communicating with the system.	
	3. <u>Overall System Operation</u> a. Operation of each circuit shall be demonstrated. b. Volume flow rate shall be shown to be between 3000 and 6000 cfm.	15 continuous minutes every month. R	

TECHNICAL SPECIFICATIONS

3.0 **SURVEILLANCE REQUIREMENTS**

3.6 **Safety Injection and Containment Cooling Systems Tests (Continued)**

(3) **Containment Recirculating Air Cooling and Filtering System**

- a. The emergency mode dampers will be verified to be in their accident positions and the automatic valve, fan, and fusible link automatic damper operation will be checked for operability on a refueling surveillance interval.
- b. Each fan required to function during accident conditions will be exercised monthly.
- c. Each air filtering circuit will be operated at least 15 continuous minutes every month.
- d. A visual examination of the HEPA and charcoal filters will be made on a refueling surveillance interval to ensure that leak paths do not exist.
- e. Measurement of pressure drop across the HEPA filter bank shall be performed on a refueling surveillance interval to verify a pressure drop of less than 2 inches of water at system design flow. Measurement of pressure drop across the combined HEPA and charcoal adsorber banks shall be performed on a refueling surveillance interval to verify a pressure drop of less than 2.5 inches of water at system design flow.
- f. The Containment Recirculating Air Cooling and Filtering Unit HEPA filters will be replaced at an interval not to exceed 10 years. The provisions of Technical Specification 3.0.1 do not apply.
- g. Fans shall be shown to operate within +/-10% design flow on a refueling surveillance interval.
- h. Containment Recirculating Air Cooling and Filtering Unit relief ports shall be exercised to verify operability on a refueling surveillance interval.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 287 TO RENEWED FACILITY

OPERATING LICENSE NO. DPR-40

OMAHA PUBLIC POWER DISTRICT

FORT CALHOUN STATION, UNIT NO. 1

DOCKET NO. 50-285

1.0 INTRODUCTION

By application dated July 24, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15205A276), Omaha Public Power District (OPPD) requested changes to the Technical Specifications (TSs, Appendix A to Renewed Facility Operating License No. DPR-40) for the Fort Calhoun Station, Unit No. 1 (FCS).

The proposed amendment would revise the TS Surveillance Requirements (SRs), which currently require operation of ventilation systems with charcoal filters for a 10-hour period at a monthly frequency. The SRs would be revised to require operation of the systems for 15 continuous minutes at a monthly frequency. The proposed amendment is consistent with U.S. Nuclear Regulatory Commission (NRC)-approved Technical Specifications Task Force (TSTF) Traveler TSTF-522, Revision 0, "Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month," as published in the *Federal Register* on September 20, 2012 (77 FR 58428), with variations due to plant-specific nomenclature.

Specifically, the changes would revise TS 3.2, Table 3-5; SR Items 10a.3.a, "Control Room Air Filtration System (CRAFS)," 10b.3.a, "Spent Fuel Pool Storage Area Filtration System (SFPSAFS)," and 10c.3.a, "Safety Injection Pump Room Air Filtration System (SIPRAFS)"; and TS 3.6(3)c, "Containment Recirculating Air Cooling and Filtering System," also known as the Containment Air Cooling and Filtering System (CACFS).

2.0 REGULATORY EVALUATION

One of the reasons air filtration and adsorption systems are required at nuclear power plants is to lower the concentration of airborne radioactive material that may be released from the site to the environment due to a design basis event. Lowering the concentration of airborne radioactive materials can mitigate doses to plant operators and members of the public in the event of a design basis event. A typical system consists of ventilation ductwork, fans, dampers,

valves, instrumentation, prefilters or demisters, high-efficiency particulate air (HEPA) filters, heaters, and activated charcoal adsorbers. These systems are tested by operating the systems and monitoring the response of the overall system as well as individual components. Laboratory tests of charcoal adsorbers are also performed to ensure the charcoal adsorbs an acceptable amount of radioactive gasses.

The regulatory requirements for design and testing of these systems are contained in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.67 and Part 100, as well as Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criteria (GDC) 19, 41, 42, 43, and 61. FCS was licensed for construction prior to May 21, 1971, and is committed to the 70 draft GDC published for comment in the *Federal Register* on July 11, 1967 (32 FR 10213). The draft GDC and the manner in which FCS complies with them are described in Appendix G of the FCS Updated Safety Analysis Report (USAR). For the purposes of FCS adoption of the TSTF-522 changes, the plant-specific requirements described in Appendix G of the FCS USAR are substantially similar to the GDC of 10 CFR Part 50, Appendix A.

Regulatory Guide (RG) 1.52, Revision 2, "Design, Testing, and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants" (ADAMS Accession No. ML003740139), was published in March 1978 to provide guidance and criteria acceptable to the NRC staff for licensees to implement the regulations in 10 CFR related to air filtration and adsorption systems.

Regulatory Position 4.d of Revision 2 of RG 1.52 states that, "Each ESF [engineered safety feature] atmosphere cleanup train should be operated at least 10 hours per month, with the heaters on (if so equipped), in order to reduce the buildup of moisture on the adsorbers and HEPA filters." The purpose of this position is to minimize the moisture content in the system and thereby enhance efficiency in the event the system is called upon to perform its design basis function.

Subsequently, the NRC staff was informed that 10 continuous hours of system operation would dry out the charcoal adsorber for a brief period of time but, following heater de-energization, the level of moisture accumulation in adsorbers would rapidly return to the pre-test level. The NRC staff found this information persuasive and subsequently issued NRC Generic Letter (GL) 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," dated June 3, 1999 (ADAMS Accession No. ML082350935 and errata sheet dated August 23, 1999, at Accession No. ML031110094). GL 99-02 requested licensees to confirm their charcoal testing protocols accurately reflect the adsorber gaseous activity capture capability. GL 99-02 also requested the licensees to account for the effects of moisture accumulation in adsorbers. Based on the information provided to the NRC, the staff updated RG 1.52 to include the new information (ADAMS Accession No. ML011710176). RG 1.52, Revision 3, Regulatory Position 6.1 states that, "Each ESF atmosphere cleanup train should be operated continuously for at least 15 minutes each month, with the heaters on (if so equipped), to justify the operability of the system and all its components."

One of the reasons for the previous 10-hour requirement for ventilation system operation with heaters operating was to minimize the effects of moisture on the adsorber's ability to capture gaseous activity. However, these effects can be accounted for by performing testing at a

relative humidity of 95 percent for systems without heaters or 70 percent for systems with heaters; therefore, the 10-hour requirement is not necessary.

The NRC's regulatory requirements related to the content of the TS are contained in 10 CFR 50.36. The regulations at 10 CFR 50.36 require that the TS include items in the following categories: (1) safety limits, limiting safety systems settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) SRs; (4) design features; and (5) administrative controls. SRs are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met.

3.0 TECHNICAL EVALUATION

The licensee proposed changes for the SRs for the Control Room Air Filtration, Spent Fuel Pool Storage Area Filtration, Safety Injection Pump Room Air Filtration and Containment Recirculating Air Cooling and Filtering Systems in TS 3.2, Table 3-5, Item 10a.3.a, TS 3.2, Table 3-5, Item 10b.3.a, TS 3.2, Table 3-5, Item 10c.3.a and TS 3.6(3)c, respectively.

- Table 3-5, Item 10a.3.a requires testing each train of the Control Room Air Filtration System for 10 continuous hours every month with heaters operating. The licensee proposed changing the requirement to test each train of the system for 15 continuous minutes every month with heater operating.
- Table 3-5, Item 10b.3.a requires testing each circuit of the Spent Fuel Pool Storage Area Filtration System for 10 hours every month. The licensee proposed changing the requirement to test each circuit of the system for 15 continuous minutes every month.
- Table 3-5, Item 10c.3.a requires testing each circuit of the Safety Injection Pump Room Air Filtration System for 10 hours every month. The licensee proposed changing the requirement to test each circuit of the system for 15 continuous minutes every month.
- TS 3.6(3)c requires testing each air filtering circuit in the Containment Recirculating Air Cooling and Filtering System for 10 hours every month. The licensee proposed changing the requirement to test each air filtering circuit for 15 continuous minutes every month.

The licensee stated that adsorbers for the Spent Fuel Pool Storage Area Filtration, Safety Injection Pump Room Air Filtration, and Containment Recirculating Air Cooling and Filtering Systems are tested at 95 percent relative humidity. Adsorbers for the Control Room Air Filtration System are tested at 70 percent relative humidity. Performing testing at an appropriate relative humidity accounts for the effects of moisture on the adsorber's ability to capture gaseous activity.

The NRC staff evaluated the licensee's proposed changes against the applicable regulatory guidance in RG 1.52, Revision 3, and the regulatory requirements of 10 CFR 50.36. The

proposed changes would require at least 15 minutes of system operation. The proposed change is consistent with guidance in RG 1.52, Revision 3.

The NRC staff compared the proposed change to the existing SRs and to the regulatory requirements of 10 CFR 50.36. The existing SRs provide assurance that the necessary quality of ventilation systems and components will be maintained and that the LCOs will be met. The proposed change reduces the amount of required system operational time from 10 hours to 15 minutes. The 10-hour operational requirement for heaters was based on using the SR to eliminate moisture that may have accumulated in the adsorbers and thus ensure the adsorbers would capture gaseous activity. As discussed in Section 2.0 above, the effects of moisture on the adsorber's ability to capture gaseous activity are accounted for by performing testing at an appropriate relative humidity.

Since the SRs are no longer relied upon to ensure the effects of moisture on the adsorber's ability to capture gaseous activity are accounted for, the 10-hour heater operational requirement is unnecessary. The NRC staff found that reducing the required minimum system operation time to 15 minutes, consistent with RG 1.52, Revision 3, is sufficient to justify operability of the system and all its components. The NRC staff found that the proposed SRs meet the regulatory requirements of 10 CFR 50.36 because they provide assurance that the necessary quality of ventilation systems and components will be maintained and that the LCOs will be met. Therefore, the NRC staff concludes that the proposed changes are acceptable.

The regulation at 10 CFR 50.36(a)(1) states, in part, that, "A summary statement of the bases or reasons for such specifications ... shall also be included in the application, but shall not become part of the technical specifications." The licensee may make changes to the TS Bases without prior NRC staff review and approval in accordance with the TS Bases Control Program TS 5.20. Accordingly, along with the proposed TS changes, the licensee also submitted TS Bases changes corresponding to the proposed TS changes. The NRC staff determined that TS Bases changes are consistent with the proposed TS changes and provide the purpose for each requirement in the specification consistent with the Commission's Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors, dated July 2, 1993 (58 FR 39132). Therefore, the NRC staff has no objections to the proposed changes to the TS Bases.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Nebraska State official, Ms. Julia Schmitt, was notified on March 24, 2016, of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes an inspection or surveillance requirement. 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 October 13, 2015 (80 FR 61485). 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.

6.0 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.

Principal Contributor: M. Hamm, NRR/DSS/STSB

Date: April 5, 2016

S. Marik

- 2 -

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,

/RA/

Carl F. Lyon, Project Manager
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-285

Enclosures:

1. Amendment No. 287 to DPR-40
2. Safety Evaluation

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