Omaha Public Power District
444 South 16th Street Mall
Omaha, NE 68102-2247

LIC-15-0014

10 CFR 50.90

July 24, 2015

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

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

Subject: License Amendment Request (LAR) 15-01; Application to Revise Technical Specifications to Adopt TSTF-522, "Revise Ventilation System Surveillance Requirements to Operate for 10 Hours per Month," Using the Consolidated Line Item Improvement Process

In accordance with the provisions of 10 CFR 50.90, the Omaha Public Power District (OPPD), is submitting a request for an amendment to the Technical Specifications (TS) for Fort Calhoun Station (FCS), Unit No. 1.

The proposed amendment would modify TS requirements to operate ventilation systems with charcoal filters for 10 hours, at a monthly frequency with heaters operating (if so equipped), in accordance with TSTF-522, Revision 0, "Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month."

The enclosure contains a description of the proposed changes, the supporting technical analyses, and the significant hazards consideration determination. Attachment 1 of the enclosure provides the existing TS pages marked-up to show the proposed changes. Attachment 2 of the enclosure provides the existing TS Bases pages marked up to show the proposed changes. Attachments 3 and 4 of the enclosure provide retyped (clean) pages with the changes proposed by Attachments 1 and 2 incorporated and denoted by revision bars in the margin.

The proposed changes have been reviewed and approved by the Fort Calhoun Station Plant Operations Review Committee (PORC) and by the Nuclear Safety Review Board (NSRB).

OPPD requests approval of the proposed license amendment by August 1, 2016, with the amendment being implemented within 90 days of approval.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated State of Nebraska official.

There are no regulatory commitments contained within this letter.

If you should have any questions regarding this submittal or require additional information, please contact Mr. Bill R. Hansher at (402) 533-6894.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 24, 2015.

Respectfully,

Louis P. Cortopassi
Site Vice President and CNO

LPC/STM/mle

Enclosure: OPPD's Evaluation of the Proposed Change

c: M. L. Dapas, NRC Regional Administrator, Region IV
C. F. Lyon, NRC Senior Project Manager
S. M. Schneider, NRC Senior Resident Inspector
Director of Consumer Health Services, Department of Regulation and Licensure, Nebraska Health and Human Services, State of Nebraska

OPPD's Evaluation of the Proposed Change

License Amendment Request (LAR) 15-01, Application to Revise Technical Specifications to Adopt TSTF-522, "Revise Ventilation System Surveillance Requirements to Operate for 10 Hours per Month," Using the Consolidated Line Item Improvement Process

1.0 DESCRIPTION

The proposed change revises the Surveillance Requirements (SR), which currently require operating ventilation systems with charcoal filters for a 10-hour period at a monthly frequency. The Surveillance Requirements are revised to require operation of the systems for 15 continuous minutes at a monthly frequency.

The proposed amendment is consistent with TSTF-522, Revision 0, "Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month."

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

The Omaha Public Power District (OPPD) has reviewed the model safety evaluation published September 20, 2012, as part of the Federal Register Notice for Availability (i.e., 77 FR 58421, September 20, 2012). This review included a review of the NRC's evaluation, as well as the information provided in TSTF-522. As described in the subsequent paragraphs, OPPD has concluded that the justifications presented in the TSTF-522 proposal and the model safety evaluation prepared by the NRC are applicable to Fort Calhoun Station (FCS), Unit No. 1, and justify this amendment for the incorporation of the changes to the FCS Technical Specifications (TS).

The model safety evaluation discusses the applicable regulatory requirements and guidance, including applicable 10 CFR 50, Appendix A, General Design Criteria (GDC). Fort Calhoun Station 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). A review has determined that the plant-specific requirements described in Appendix G of the FCS USAR are sufficiently similar to the 10 CFR 50, Appendix A GDC concerning the changes proposed in TSTF-522 and therefore, the TSTF is applicable to FCS.

2.2 Optional Changes and Variations

The FCS SRs described below require each system to be run for at least ten (10) hours on a monthly frequency whereas STS requires a 31-day frequency. Although the terminology is different, the frequency is the same as FCS SR 3.0.2 defines monthly surveillance intervals as "at least once per 31 days." In addition, FCS has plant-specific Technical Specifications and as such, system names and TS numbering differs from the Standard Technical Specification (STS) format. These differences do not affect the applicability of TSTF-522 to the FCS TS as shown below:

Control Room Air Filtration System (CRAFS)

The FCS TS equivalent to Combustion Engineering (CE) STS 3.7.11, "Control Room Emergency Air Conditioning System (CREACS)" is TS 2.12, titled "Control Room Ventilation System (CRVS)." The CRAFS discussed in TS 2.12.1 and the FCS control room air conditioning system discussed in TS 2.12.2 make up the CRVS. The FCS SR equivalent to CE

STS SR 3.7.11.1 is TS 3.2, Table 3-5, Item 10a.3.a. In accordance with the change proposed to CE STS SR 3.7.11.1, TS 3.2, Table 3-5, Item 10a.3.a is being revised from a 10 hour continuous run every month to require the system be operated for ≥ 15 continuous minutes every month with heaters operating. In accordance with Regulatory Guide (RG) 1.52, Revision 3, and ASTM D3803-1989, the CRAFS is tested at a relative humidity of 70% (TS 3.2, Table 3-5, Item 10a.2). The Bases of FCS TS 2.12.1 and FCS TS 3.2 regarding the CRAFS is revised to incorporate the changes to the Bases of CE STS 3.7.11 and CE STS SR 3.7.11.1 made by TSTF-522.

Spent Fuel Pool Storage Area Filtration System (SFPSAFS)

The FCS TS Limiting Conditions for Operation (LCO) equivalent to CE STS 3.7.14, "Fuel Building Air Cleanup System (FBACS)" is TS 2.8.3(4), "Spent Fuel Pool Ventilation." The FCS SR equivalent to CE STS SR 3.7.14.1 for testing the SFPSAFS is TS 3.2, Table 3-5, Item 10b.3.a. In accordance with the change proposed to CE STS SR 3.7.14.1, TS 3.2, Table 3-5, Item 10b.3.a is being revised from a 10 hour run each month to require the system be operated for ≥ 15 continuous minutes every month. The Bases of TS 3.2 regarding the SFPSAFS is revised to incorporate the changes to the Bases of CE STS SR 3.7.14.1 made by TSTF-522. The SFPSAFS does not contain heaters. As noted in Regulatory Position 4.9 of RG 1.52, Revision 3, plants that test ventilation system adsorption at a relative humidity of 95% do not require heaters for the ventilation system to perform its specified safety function. The SFPSAFS is tested at a relative humidity of 95% in accordance with ASTM D3803-1989 as specified in TS 3.2, Table 3-5, Item 10b.2.

Safety Injection Pump Room Air Filtration System (SIPRAFS)

FCS does not have a TS LCO equivalent to CE STS 3.7.13, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)." The FCS SR equivalent to SR 3.7.13.1 is TS 3.2, Table 3-5, Item 10c.3.a, which tests the SIPRAFS. TS 3.2, Table 3-5, Item 10c.3.a is being revised from a 10 hour run every month to require the system be operated for ≥ 15 continuous minutes every month. The Bases of TS 3.2 regarding the SIPRAFS is revised to incorporate the changes to the Bases of CE STS SR 3.7.13.1 made by TSTF-522. The SIPRAFS does not contain heaters. As noted in RG 1.52, Revision 3, plants that test ventilation system adsorption at a relative humidity of 95% do not require heaters for the ventilation system to perform its specified safety function. The SIPRAFS is tested at a relative humidity of 95% in accordance with ASTM D3803-1989 as specified in TS 3.2, Table 3-5, Item 10c.2.

Containment Air Cooling and Filtering System (CACFS)

The FCS TS LCO equivalent to CE STS 3.6.10, "Iodine Cleanup System (ICS) (Atmospheric and Dual)" for the CACFS is TS 2.4, titled "Containment Cooling." The FCS SR equivalent to SR 3.6.10.1 is TS 3.6(3)c, which is being revised from a 10 hour run every month to instead require that the CACFS be operated for ≥ 15 continuous minutes every month. The Bases of TS 3.6 regarding monthly operation of the CACFS is revised to be more similar to the Bases of CE STS SR 3.6.10.1 and includes the changes made by TSTF-522 to CE STS SR 3.6.10.1. However, that portion of the Bases of CE STS SR 3.6.10.1 alluding to the iodine removal capability of the containment spray (CS) system independent of the ICS is not added to the Bases of TS 3.6. As discussed below, with the approval of Amendment No. 255 (Reference 5.5) in May 2008, mitigation of airborne radioactivity following a loss-of-coolant accident (LOCA) is by the CACFS HEPA filters and iodine plateout on the surface of the containment sump

water. Containment pressure control during a LOCA is now accomplished by the containment air coolers (CAC), which are part of the CACFS. Automatic CS actuation occurs only for a main steam line break (MSLB).

OPPD is noting the following variations between CE STS 3.6.10 and FCS TS 3.6(3):

As stated in USAR Section 6.4, "Containment Air Cooling and Filtering System," the CACFS is designed to limit the leakage of airborne activity from the containment and provide long-term core cooling in the event of a LOCA. The CACFS does not contain heaters for humidity control. However, unlike the Technical Specifications for the SFPSAFS and the SIPRAFS, which also do not contain heaters, TS 3.6(3) does not require testing the CACFS charcoal adsorbers at a relative humidity of 95% in accordance with ASTM D3803-1989. This is acceptable because the CACFS charcoal adsorbers are not credited for the removal of radioiodines. As summarized in USAR Section 14.15, "Loss-of-Coolant Accident," the activity transport model credits aerosol removal by the CACFS high-efficiency particulate air (HEPA) filters and credits plateout on the surface of the containment sump water for elemental iodine removal. Although not required by TS 3.6(3), each refueling outage, samples from the CACFS charcoal adsorbers are tested in accordance with ASTM D3803-1989 by Procedure SE-PM-VA-0201 "Containment Charcoal Filter VA-6A and VA-6B Methyl Iodine Removal Efficiency Test." Laboratory testing of representative samples from the charcoal adsorbers is conducted at a relative humidity of 95%, which meets the criteria of Regulatory Position 4.9 of RG 1.52, Revision 3.

A description of the CACFS taken from Updated Safety Analysis Report (USAR), Section 6.4 is provided below followed by a discussion of the current licensing basis (CLB) associated with post-LOCA iodine removal subsequent to Amendment No. 255.

Containment Air Cooling and Filtering (CACF) Unit

CACF units comprise, in flow sequence, inlet face dampers, baffle type moisture separators, media type mist eliminators, HEPA filters, charcoal filters and cooling coils, all contained in a single housing. Bypass dampers located between the charcoal filters and the cooling coils and the inlet face dampers have been permanently failed in their accident position (i.e., bypass dampers closed, face dampers open) causing the CACFS to operate exclusively in filtered air mode.

The filter banks of each CACF unit are split in two parallel and separate trains. The common exhaust flows from each train are drawn through coil banks by axial, air-over-motor fans and discharged into a plenum. Backdraft dampers are installed in the duct sections downstream of the fans. The arrangement of the units on the platform at elevation 1060'-0" is shown in USAR Figure 6.4-2. Each unit was designed for inlet airflow of 110,000 CFM when cooling the containment atmosphere at LOCA conditions of 60 psig, 288°F and 100 percent relative humidity to remove 140 x 10^6 Btu/hour.

HEPA Filters

The high efficiency particulate air (HEPA) filters are located upstream of the charcoal filters to prevent the latter from becoming loaded with particulates, which would reduce their efficiency. The HEPA filter banks consist of individual filter cells 24 inches wide by 24 inches high by 12 inches deep supported by a holding frame. Each cooling and filtering unit contains 96 HEPA filter cells. The cell casings are of cadmium plated steel construction. The filter medium is

pleated fiberglass separated by aluminum spacers and is suitable for the environmental operating conditions of a LOCA. The filters are removable and are retained in the holding frame by latches. Cell-to-frame flanges and gaskets prevent air bypass. All materials are corrosion and fire resistant. The filters meet the requirements of the historical Military Specification MIL-F-51068E, "Filter, Particulate, High Efficiency, Fire Resistant" and current requirements as specified in ASME AG-1, "Code on Nuclear Air and Gas Treatment." OPPD calculation FC07059 (Reference 5.8) assumes replacement of the HEPA filters every 10 years as approved in Amendment No. 260 (Reference 5.6).

Charcoal Filters

The charcoal filter banks consist of individual filter cells approximately 24 inches wide by 6 inches high by 26 inches deep supported by a holding frame. Each cooling and filtering unit contains 288 charcoal filter cells. Each filter cell contains two horizontal adsorber beds, each 2 inches thick, of activated, dust-free, charcoal. The airflow path is baffled for horizontal intake and discharge. The cell frames and perforated charcoal bed screens are stainless steel. The cells are arranged in groups of three in removable filter frames. These filter frames are retained in the housing holding frames by screwed clamps; cell-to-frame flanges and gaskets prevent air bypass. Although the charcoal filters remove gaseous radioactive iodine by adsorption from the containment air, they are not credited for this function following a LOCA. It should be noted that during both normal operating conditions and accident conditions, the Off-Site Dose Calculation Manual (ODCM) (Reference 5.11) continues to assume (Step 4.2.4B2.b.3) that containment air passes through at least one of the redundant CACF units (i.e., both sets of filters, HEPA and charcoal) prior to purging. This LAR does not impact the assumed flowpath and the ODCM assumption is maintained.

Containment Air Cooling (CAC) Units

CAC units are similar in design to the CACF units but do not include the mist eliminators, face damper, bypass dampers, HEPA filters, or the charcoal filters found in the CACF units. The moisture separators and cooling coils of each CAC unit are arranged in a single flow train as shown in USAR Figure 6.4-3. The CAC units are located on the operating floor at elevation 1045'-0". Each unit was designed for inlet airflow of 66,000 CFM to remove 70 x 10^6 Btu/hour at design basis accident (DBA) conditions.

Current Licensing Basis Associated with Post-LOCA Iodine Removal Capability

<u>Amendment No. 255</u>

To support resolution of Generic Safety Issue (GSI)-191, "Technical Assessment: Parametric Evaluations for Pressurized Water Reactor Recirculation Sump Performance," OPPD elected to implement a water management strategy for FCS to minimize the transport and accumulation of debris in the containment sump following a LOCA. Accordingly, a LAR was submitted in July 2007 (Reference 5.2) proposing to modify CS actuation logic to preclude automatic start of the CS system in response to a LOCA. The intent was to increase the amount of water delivered to the core during the injection phase of a LOCA while reducing the amount of debris carried to the containment sump strainers to preclude sump strainer clogging and resultant adverse impact on long-term recirculation. The LAR proposed to change containment pressure control during a

LOCA from the CS system to the CACFS. Mitigation of control room and offsite doses was changed from the CS system to the CACFS HEPA filters.

In October 2007, OPPD submitted a separate LAR (Reference 5.3) that proposed changing TS 3.6(3)a, which verified operability of the remotely operated (i.e., emergency mode) dampers in the CACFS on a refueling frequency. OPPD had determined that it was preferable to permanently place these dampers in their accident positions for all plant operating modes such that the dampers became passive components causing the CACFS to operate in filtered air mode at all times. This precludes the buildup of background radiation and eliminates the possibility of damper linkage failures from interfering with CACFS operation. The LAR proposed to revise TS 3.6(3)a by requiring that the dampers be verified to be in their accident position (i.e., face dampers open, bypass dampers closed) each refueling outage. The Reference 5.3 LAR was later revised (Reference 5.4) to clarify the number of damper assemblies affected by the LAR and the manner in which their position (e.g., open/closed) was indicated in the control room. Reference 5.4 also noted that a commitment associated with RG 1.97 regarding monitoring of the emergency ventilation damper positions was being deleted because it was unnecessary with the dampers permanently placed in their accident positions.

OPPD supplemented the two LARs described above several times over the ensuing months, and in May 2008, the NRC combined its approval of both LARs into Amendment No. 255 (Reference 5.5). The following discussion focuses on those aspects of Amendment No. 255 that are relevant to the change proposed for TS 3.6(3)c reducing CACF run time to 15 minutes every month.

<u>Containment Release Filtration</u>

For Amendment No. 255, OPPD proposed to remove credit for the CS system to mitigate post-LOCA iodine in the containment atmosphere based on a new analysis of record (AOR) (Reference 5.9) and activity transport model that credited the CACFS HEPA filters for aerosol removal. The new AOR assumed 50 percent particulate filter efficiency. To support this assumption, the existing HEPA installation and maintenance inspection procedures were credited in conjunction with additional requirements for HEPA filter replacement, and a calculation estimating the maximum potential bypass leakage following a DBA (with a conservative safety factor of 2 applied to bound filter performance). The staff noted that the assumed 50 percent particulate removal efficiency attributed to the HEPA filter was generally conservative and therefore was acceptable. OPPD also committed to submit a LAR to add HEPA filter testing and replacement criteria to the FCS TS. This commitment was added to Appendix B of the TS as an additional condition for approval of Amendment No. 255.

<u>Iodine Plateout</u>

OPPD also credited water surfaces in the containment sump for removal of elemental iodine by plateout. Since CS no longer automatically actuates for a LOCA, condensation or spray is not assumed to occur on the containment walls. Thus, the surface of the sump water is credited as the renewable wetted surface. The NRC noted that this is consistent with the Standard Review Plan (SRP) 6.5.2 allowance for elemental iodine plateout on wetted surfaces.

The Safety Evaluation Report (SER) also noted that structurally, the containment directs water to the sump, which avoids water holdups and isolated water sections, and works to extend the area of influence for the convective and momentum-driven flow. For additional conservatism,

and to address uncertainty, OPPD only credits half of the available containment sump surface area (3000 square feet) until the recirculation phase for core injection is initiated at 3.25 hours. OPPD assumed a maximum decontamination factor (DF) for elemental iodine of 200, based on SRP 6.5.2. The NRC noted that the approach was conservative, consistent with applicable regulatory guidance, and therefore was acceptable.

Engineered Safety Features (ESF) System Leakage

With the exception of noble gases, OPPD assumed that all activity released from the core during the gap and early in-vessel release phases is instantaneously and homogeneously mixed in the containment sump water at the time of release from the fuel. This is a conservative model of activity transport and consistent with the guidance of RG 1.183 (Reference 5.10). Also, consistent with the CLB, OPPD used a minimum sump volume in the analysis of activity transport through this pathway. This assumption maximizes the activity concentration in the sump water. With the exception of iodine, all radioactive materials in the recirculating coolant are assumed to be retained in the liquid phase. At FCS, the total post-LOCA ESF leakage is defined as the maximum allowed leakage from the equipment carrying sump fluids and located outside containment, and back-leakage of sump water into the safety injection refueling water tank (SIRWT). OPPD postulated both of these leakage sources to release into the auxiliary building beginning after the initiation of recirculation mode at 20.4 minutes into the accident.

The TS limited, combined leakage value of 3800 cubic centimeters per hour (cm^3/hour) assumed in the DBA analysis is doubled, for conservatism in accordance with the guidance of RG 1.183, to 7600 cm^3/hr. The coolant that leaks into the auxiliary building is assumed to flash and exhaust 10 percent of the available activity directly to the environment without credit for mixing, holdup, or filtration. The assumed 10 percent flashing fraction is conservative because of calculated sump coolant temperatures below 212°F. OPPD assumed that the chemical form of the iodine released from the sump water is 97 percent elemental and 3 percent organic. The SER stated that OPPD's assumptions used to model this ESF system activity release pathway were reasonable, conservative, and consistent with the guidance of RG 1.183.

Control Room Habitability and Modeling

The DBA LOCA dose consequence analysis modeling of the FCS control room design and operation is unchanged from that accepted for the Alternate Source Term (AST) amendment approved on December 5, 2001 (Reference 5.1).

Atmospheric Dispersion

OPPD used atmospheric dispersion factors (x/Q values) from the CLB for the control room (CR), exclusion area boundary (EAB), and low population zone (LPZ) dose estimates. The x/Q values were those previously reviewed and approved for the AST amendment (Reference 5.1).

Amendment No. 260

By letter dated October 31, 2008 (Reference 5.6), OPPD submitted a LAR that proposed several changes to TS 3.6(3) adding CACFS HEPA filter testing and replacement criteria to ensure that the filters are tested appropriately and replaced at an appropriate interval (i.e., not to exceed 10 years). As discussed above, this LAR was required by the additional conditions added to Appendix B of the TS by Amendment No. 255 (Reference 5.5).

The proposed changes provided additional margin to ensure that airflow through the CACFS is maintained under accident conditions. As noted in the LAR, American Society of Mechanical Engineers (ASME) testing (i.e., AG-1 Non-mandatory Appendix FK-A; draft) demonstrates that HEPA filters can have a longer replacement interval when operated in a dry atmosphere. The 10-year filter replacement interval proposed by the LAR was also supported by operating experience as OPPD has historically operated the FCS CACFS with the dampers aligned to draw air through the filters continuously without exceeding allowable limits or experiencing filter deterioration.

In its SER (Reference 5.7), the NRC concluded that the proposed changes met the requirements of 10 CFR 50.36(c)(3) and were conservative as they provided additional margin ensuring that adequate airflow through the cooling unit fans is maintained during normal operations and accident conditions. The NRC also concluded that FCS operating experience and the aforementioned ASME testing provided a sufficient basis for extending the filter replacement interval beyond the standard provided in ANSI N510-1975.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

Fort Calhoun Station (FCS), Unit No. 1 requests adoption of an approved change to the Standard Technical Specifications (STS) and plant-specific Technical Specifications (TS). This change will revise TS 3.2, Table 3-5, Surveillance Requirement (SR) Items 10a.3.a, "Control Room Air Filtration System (CRAFS)," 10b.3.a, "Spent Fuel Pool Storage Area Filtration System (SFPSAFS)," 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).

TS 3.2, Table 3-5, SR Item 10a.3.a is revised to require operation of the CRAFS with heaters operating for 15 continuous minutes every month. The SFPSAFS, the SIPRAFS, and the CACFS do not require heaters to perform their specified safety function. The SRs for these systems are revised to require operation for 15 continuous minutes every month. Charcoal adsorbers in the SFPSAFS and the SIPRAFS are tested at a relative humidity of 95% as stated in Regulatory Position 4.9 of Regulatory Guide (RG) 1.52, Revision 3. The high-efficiency particulate air (HEPA) filters in the CACFS and iodine plateout on the containment sump water are credited for the mitigation of radioactivity in the containment atmosphere following a design basis loss-of-coolant accident, which negates the need for a SR on the CACFS charcoal adsorbers, as they are not credited for this purpose.

As required by 10 CFR 50.91(a), an analysis of the issue of no significant hazards consideration is presented below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed change replaces an existing SR to operate the CRAFS for ten (10) continuous hours every month with heaters operating with a requirement to operate the system for 15 continuous minutes every month with heaters operating. The proposed change also replaces

existing SRs to operate the SFPSAFS, the SIPRAFS, and the CACFS for ten (10) hours every month with a requirement to operate these systems for 15 continuous minutes every month.

These systems are not accident initiators and therefore, these changes do not involve a significant increase in the probability of an accident. The proposed system and filter testing changes are consistent with current regulatory guidance for these systems. The proposed changes continue to ensure that these systems perform their design function, which may include mitigating accidents. Thus, the change does not involve a significant increase in the consequences of an accident.

Therefore, it is concluded that this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed change replaces an existing SR to operate the CRAFS for ten (10) continuous hours every month with heaters operating with a requirement to operate the system for 15 continuous minutes every month with heaters operating. The proposed change also replaces existing SRs to operate the SFPSAFS, the SIPRAFS, and the CACFS for ten (10) hours every month with a requirement to operate these systems for 15 continuous minutes every month.

The change proposed for these ventilation systems does not change any system operations or maintenance activities. Testing requirements will be revised and will continue to demonstrate that the Limiting Conditions for Operation are met and/or the system components are capable of performing their intended safety functions. The change does not create new failure modes or mechanisms and no new accident precursors are generated.

Therefore, it is concluded that this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The proposed change replaces an existing SR to operate the CRAFS for ten (10) continuous hours every month with heaters operating with a requirement to operate the system for 15 continuous minutes every month with heaters operating. The proposed change also replaces existing SRs to operate the SFPSAFS, the SIPRAFS, and the CACFS for ten (10) hours every month with a requirement to operate these systems for 15 continuous minutes every month.

The design basis for the CRAFS heaters is to heat the incoming air, which reduces the relative humidity. The heater testing change proposed for the CRAFS will continue to demonstrate that the heaters are capable of heating the air and will perform their design function. The SFPSAFS, and the SIPRAFS are tested for adsorption at a relative humidity of 95% in accordance with RG 1.52, Revision 3, and do not require heaters for these systems to perform their specified safety function. The CACFS does not need to be tested similarly because the CACFS charcoal filters

are not credited for the removal of radioiodines. The proposed change is consistent with regulatory guidance.

Therefore, it is concluded that this change does not involve a significant reduction in a margin of safety. Based on the above, OPPD concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4.0 ENVIRONMENTAL EVALUATION

The proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9).

Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

5.0 REFERENCES

5.1 Letter from NRC (A. B. Wang) to OPPD (S. K. Gambhir), *Fort Calhoun Station, Unit No. 1 - Issuance of Amendment (TAC No. MB1221)*, dated December 5, 2001 (ML013030027) (NRC-01-0112)

5.2 Letter from OPPD (D. J. Bannister) to NRC (Document Control Desk), *Fort Calhoun Station Unit No. 1 License Amendment Request (LAR), Modification of the Containment Spray System Actuation Logic*, dated July 30, 2007 (ML072150293) (LIC-07-0052)

5.3 Letter from OPPD (D. J. Bannister) to NRC (Document Control Desk), *Fort Calhoun Station, Unit No.1 License Amendment Request (LAR) Modification of Surveillance Requirements for Emergency Mode (Remotely Operated) Dampers in Containment Air Cooling and Filtering System*, dated October 19, 2007 (LIC-07-0092)

5.4 Letter from OPPD (D. J. Bannister) to NRC (Document Control Desk), *Revision to Technical Evaluation of Fort Calhoun Station, Unit No.1 License Amendment Request (LAR) Modification of Surveillance Requirements for Emergency Mode (Remotely Operated) Dampers in Containment Air Cooling and Filtering System*, dated December 12, 2007 (ML073461006) (LIC-07-0104)

5.5 Letter from NRC (M. T. Markley) to OPPD (D. J. Bannister), *Fort Calhoun Station, Unit No. 1 - Issuance of Amendment Re: Modification of Containment Spray Actuation Logic and Dampers in Containment Air Cooling and Filtering System (TAC Nos. MD6204 and MD7043)*, dated May 2, 2008 (ML081140390) (NRC-08-0049)

5.6 Letter from OPPD (J. A. Reinhart) to NRC (Document Control Desk), Fort Calhoun Station, Unit No. 1 License Amendment Request (LAR), "Modification of Surveillance Requirements for Containment Air Cooling and Filtering System and Removal of License Conditions," dated October 31, 2008 (ML083080006) (LIC-08-0108)

5.7 Letter from NRC (A. B. Wang) to OPPD (D. J. Bannister), Fort Calhoun Station, Unit No.1 - Issuance of Amendment RE: Modification of Surveillance Requirements for Containment Air Cooling and Filtering System and Removal of License Conditions (TAC No. ME0051), dated July 22, 2009 (ML091280102) (NRC-09-0051)

5.8 OPPD Calculation FC07059, Rev. 0, *Justification of the Containment Ventilation HEPA Filter Efficiency for Use in Design Basis Dose Consequences Analysis*

5.9 OPPD Calculation FC06959, Rev. 2, *Site Boundary and Control Room Doses Following a Loss of Coolant Accident using Alternative Source Term*

5.10 Regulatory Guide (RG) 1.183, *Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors*, July 2000

5.11 CH-ODCM-0001, *Off-Site Dose Calculation Manual (ODCM)*, Revision 24

Fort Calhoun Station, Unit No. 1
Renewed Facility Operating License No. DPR-40

Mark-up of Technical Specification Pages

3.2 – Page 10
3.2 – Page 11
3.6 – Page 3

TABLE 3-5
MINIMUM FREQUENCIES FOR EQUIPMENT TESTS

	Test	Frequency	USAR Section Reference
10a. (continued)	3. Overall System Operation		
	a. Each train shall be operated.	~~Ten~~ 15 continuous ~~hours~~ 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 ± 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. In-Place Testing[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 a ventilation zone communicating with the system.	6.2 9.10
	2. Laboratory Testing 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 methyliodide 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.	

TABLE 3-5
MINIMUM FREQUENCIES FOR EQUIPMENT TESTS

		Test	Frequency	USAR Section Reference
10b.	(continued)	3. Overall System Operation		
		a. Operation of each circuit shall be demonstrated.	~~Ten hours~~ 15 continuous minutes every month.	
		b. Volume flow rate through charcoal filter shall be shown to be between 4500 and 12,000 cfm.	R	
		4. Manual initiation of the system shall be demon-strated.	R	
10c.	Charcoal Adsorbers for S.I. Pump Room	1. In-Place Testing[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. Laboratory Testing 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 methyliodide 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. Overall System Operation		
		a. Operation of each circuit shall be demonstrated.	~~Ten hours~~ 15 continuous minutes every month.	
		b. Volume flow rate shall be shown to be between 3000 and 6000 cfm.	R	

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 ~~10 hours~~ 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.

Fort Calhoun Station, Unit No. 1
Renewed Facility Operating License No. DPR-40

Mark-up of Technical Specification Bases Pages

2.0 **LIMITING CONDITIONS FOR OPERATION**
2.12 Control Room Ventilation System

Bases (Continued)

2.12 Control Room Ventilation System (Continued)

The radiation monitoring system provides an airborne radiation monitor (RM-065), which starts after a ventilation isolation actuation signal (VIAS) to verify control room habitability following a design basis accident. The air entering the CRE is continuously monitored by toxic gas detectors. One detector output above the setpoint will cause actuation of the toxic gas isolation state. The actions of the toxic gas isolation state are more restrictive, and will override the actions of the emergency radiation state.

The CRVS provides protection from smoke and hazardous chemicals to the CRE occupants. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 3). The evaluation of a smoke challenge demonstrates that it will not result in the inability of the CRE occupants to control the reactor either from the control room or from the remote shutdown panels (Ref. 4).

The worst case single active failure of a component of the CRVS, assuming a loss of offsite power, does not impair the ability of the system to perform its design function.

The CRVS satisfies Criterion 3 of 10 CFR 50.36(d)(2)(ii).

2.12.1 Control Room Air Filtration System - Operating

Each control room air filtration system (CRAFS) train contains a heater and demister, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, doors, barriers, and instrumentation also form part of the system, as well as demisters that remove water droplets from the air stream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provides back-up in case of failure of the main HEPA filter bank.

The CRAFS is an emergency system, part of which may also operate during normal unit operations in the standby mode of operation. Upon receipt of a VIAS, normal air supply to the CRE is diverted to the filter trains, and the stream of ventilation air is recirculated through the filter trains of the system. The demisters remove any entrained water droplets present to prevent excessive loading of the HEPA filters and charcoal adsorbers. ~~Continuous operation of each train for at least 10 hours per month, with the heaters on, reduces moisture buildup on the HEPA filters and adsorbers.~~ Both the demister and heater are important to the effectiveness of the charcoal adsorbers.

3.0 **SURVEILLANCE REQUIREMENTS**

3.2 Equipment and Sampling Tests

Applicability

Applies to plant equipment and conditions related to safety.

Objective

To specify the minimum frequency and type of surveillance to be applied to critical plant equipment and conditions.

Specifications

Equipment and sampling tests shall be conducted as specified in Tables 3-4 and 3-5.

Basis

The equipment testing and system sampling frequencies specified in Tables 3-4 and 3-5 are considered adequate, based upon experience, to maintain the status of the equipment and systems so as to assure safe operation. Thus, those systems where changes might occur relatively rapidly are sampled frequently and those static systems not subject to changes are sampled less frequently.

The control room air filtration system (CRAFS) consists of redundant high efficiency particulate air filters (HEPA) and charcoal adsorbers. HEPA filters are installed before and after the charcoal adsorbers. The charcoal adsorbers are installed to reduce the potential intake of iodine to the control room. The in-place test results will confirm system integrity and performance. The laboratory carbon sample test results should indicate methyl iodide removal efficiency of at least 99.825 percent for expected accident conditions.

CRAFS standby systems should be checked periodically to ensure that they function properly. Since the environment and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system. ~~Monthly heater operations dry out any moisture accumulated in the charcoal from humidity in the ambient air. Each CRAFS train must be operated for ≥ 10 continuous hours with the heaters energized.~~ Operation with the heaters on for ≥ 15 continuous minutes demonstrates operability of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The monthly Frequency is based on the known reliability of the equipment, and the two train redundancy available.

Each CRAFS train is verified to start and operate on an automatic and manual actuation signal. The Frequency of 18 months is based on industry operating experience and is consistent with the typical refueling cycle.

3.0 **SURVEILLANCE REQUIREMENTS**

3.2 Equipment and Sampling Tests (continued)

The spent fuel storage-decontamination areas air treatment system is designed to filter the building atmosphere to the auxiliary building vent during refueling operations. The charcoal adsorbers are installed to reduce the potential release of radioiodine to the environment. In-place testing is performed to confirm the integrity of the filter system. Operation for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. The charcoal adsorbers are periodically sampled to insure capability for the removal of radioactive iodine.

The Safety Injection (SI) pump room air treatment system consists of charcoal adsorbers which are installed in normally bypassed ducts. This system is designed to reduce the potential release of radioiodine in SI pump rooms during the recirculation period following a DBA. Operation for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. The in-place and laboratory testing of charcoal adsorbers will assure system integrity and performance.

Pressure drops across the combined HEPA filters and charcoal adsorbers, of less than 9 inches of water for the control room filters (VA-64A & VA-64B) and of less than 6 inches of water for each of the other air treatment systems will indicate that the filters and adsorbers are not clogged by amounts of foreign matter that would interfere with performance to established levels.

If significant painting, fire or chemical release occurs such that the HEPA filters or charcoal adsorbers could become contaminated from the fumes, chemicals or foreign materials, testing will be performed to confirm system performance.

Demonstration of the automatic and/or manual initiation capability will assure the system's availability.

Verifying Reactor Coolant System (RCS) leakage to be within the LCO limits ensures the integrity of the Reactor Coolant Pressure Boundary (RCPB) is maintained. Pressure boundary leakage would at first appear as unidentified leakage and can only be positively identified by inspection. Unidentified leakage is determined by performance of an RCS water inventory balance. Identified leakage is then determined by isolation and/or inspection. Since Primary to Secondary Leakage of 150 gallons per day cannot be measured accurately by an RCS water inventory balance, footnote 3 for line item 8a on Table 3-5 states that the Reactor Coolant System Leakage surveillance is not applicable to Primary to Secondary Leakage. Primary to secondary leakage is measured by performance of effluent monitoring within the secondary steam and feedwater systems.

3.0 **SURVEILLANCE REQUIREMENTS**

3.6 Safety Injection and Containment Cooling Systems Tests (Continued)

The unit housing, exhaust plenum and interconnecting ductwork were constructed from reinforced galvanized carbon steel and are designed to withstand an external pressure differential of 2 psi. Relief ports are provided in the housing and plenum to open and relieve the pressure differential should it exceed 1 psi. These ports close when pressure equilibrium is restored.

The containment atmosphere temperature increase at the commencement of the DBA melts the fusible links on the plenum hatches allowing them to spring open. Should the pressure transient across the unit housings exceed 1 psi, the relief ports open automatically.

Pressure drop across the HEPA filter bank of less than 2 inches of water will indicate that the filters are not clogged by excessive amounts of foreign matter.

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 2.5 inches of water will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter.

Relief ports protect the CACF unit housing from a rapid pressure increase within the containment building during design basis accidents. The relief ports are exercised to verify that they open manually and close with gravity on a refueling surveillance interval.

HEPA filters are periodically replaced and new filters are tested prior to installation. Visual inspection of the HEPA filters periodically meets industry standards for testing of recirculation systems. The CACFS HEPA filters will be replaced at an interval not to exceed 10 years.

~~Operation of the system for 10 hours every month will demonstrate operability of the filters and adsorbers and remove excessive moisture build-up on the adsorbers.~~

Operating each CACFS train for ≥ 15 minutes ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The monthly Frequency was developed considering the known reliability of fan motors and controls and the two train redundancy available.

Demonstration of the automatic initiation capability will assure system availability.

Determination of the volume of buffering agent in containment must be performed due to the possibility of leaking valves and components in the containment building that could cause dissolution of the buffering agent during normal operation.

A refueling frequency shall be utilized to visually determine that the volume of buffering agent contained in the buffering agent baskets is within the area of acceptable operation based on the buffering agent volume required by Figure 2-3. A measured value or the Technical Data Book (TDB) II, "Reactivity Curves" may be used to obtain a hot zero power (HZP) critical boron concentration (CBC). The "as found" volume of buffering agent must be within the area of acceptable operation of Figure 2-3 using this HZP CBC value.

Fort Calhoun Station, Unit No. 1
Renewed Facility Operating License No. DPR-40

Clean Technical Specification Pages

3.2 – Page 10
3.2 – Page 11
3.6 – Page 3

TABLE 3-5
MINIMUM FREQUENCIES FOR EQUIPMENT TESTS

	Test	Frequency	USAR Section Reference
10a. (continued)	3. Overall System Operation		
	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 ± 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. In-Place Testing[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 a ventilation zone communicating with the system.	6.2 9.10
	2. Laboratory Testing 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 methyliodide 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.	

TABLE 3-5
MINIMUM FREQUENCIES FOR EQUIPMENT TESTS

		Test	Frequency	USAR Section Reference
10b.	(continued)	3. Overall System Operation		
		a. Operation of each circuit shall be demonstrated.	15 continuous minutes every month.	
		b. Volume flow rate through charcoal filter shall be shown to be between 4500 and 12,000 cfm.	R	
		4. Manual initiation of the system shall be demonstrated.	R	
10c.	Charcoal Adsorbers for S.I. Pump Room	1. In-Place Testing[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. Laboratory Testing 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 methyliodide 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. Overall System Operation		
		a. Operation of each circuit shall be demonstrated.	15 continuous minutes every month.	
		b. Volume flow rate shall be shown to be between 3000 and 6000 cfm.	R	

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.

Fort Calhoun Station, Unit No. 1
Renewed Facility Operating License No. DPR-40

<u>Clean Technical Specification Bases Pages</u>

2.12 – Page 4
3.2 – Page 1
3.2 – Page 2
3.6 – Page 6

2.0 **LIMITING CONDITIONS FOR OPERATION**
2.12 Control Room Ventilation System

Bases (Continued)

2.12 Control Room Ventilation System (Continued)

The radiation monitoring system provides an airborne radiation monitor (RM-065), which starts after a ventilation isolation actuation signal (VIAS) to verify control room habitability following a design basis accident. The air entering the CRE is continuously monitored by toxic gas detectors. One detector output above the setpoint will cause actuation of the toxic gas isolation state. The actions of the toxic gas isolation state are more restrictive, and will override the actions of the emergency radiation state.

The CRVS provides protection from smoke and hazardous chemicals to the CRE occupants. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 3). The evaluation of a smoke challenge demonstrates that it will not result in the inability of the CRE occupants to control the reactor either from the control room or from the remote shutdown panels (Ref. 4).

The worst case single active failure of a component of the CRVS, assuming a loss of offsite power, does not impair the ability of the system to perform its design function.

The CRVS satisfies Criterion 3 of 10 CFR 50.36(d)(2)(ii).

2.12.1 Control Room Air Filtration System - Operating

Each control room air filtration system (CRAFS) train contains a heater and demister, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, doors, barriers, and instrumentation also form part of the system, as well as demisters that remove water droplets from the air stream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provides back-up in case of failure of the main HEPA filter bank.

The CRAFS is an emergency system, part of which may also operate during normal unit operations in the standby mode of operation. Upon receipt of a VIAS, normal air supply to the CRE is diverted to the filter trains, and the stream of ventilation air is recirculated through the filter trains of the system. The demisters remove any entrained water droplets present to prevent excessive loading of the HEPA filters and charcoal adsorbers. Both the demister and heater are important to the effectiveness of the charcoal adsorbers.

3.0 **SURVEILLANCE REQUIREMENTS**

3.2 Equipment and Sampling Tests

Applicability

Applies to plant equipment and conditions related to safety.

Objective

To specify the minimum frequency and type of surveillance to be applied to critical plant equipment and conditions.

Specifications

Equipment and sampling tests shall be conducted as specified in Tables 3-4 and 3-5.

Basis

The equipment testing and system sampling frequencies specified in Tables 3-4 and 3-5 are considered adequate, based upon experience, to maintain the status of the equipment and systems so as to assure safe operation. Thus, those systems where changes might occur relatively rapidly are sampled frequently and those static systems not subject to changes are sampled less frequently.

The control room air filtration system (CRAFS) consists of redundant high efficiency particulate air filters (HEPA) and charcoal adsorbers. HEPA filters are installed before and after the charcoal adsorbers. The charcoal adsorbers are installed to reduce the potential intake of iodine to the control room. The in-place test results will confirm system integrity and performance. The laboratory carbon sample test results should indicate methyl iodide removal efficiency of at least 99.825 percent for expected accident conditions.

CRAFS standby systems should be checked periodically to ensure that they function properly. Since the environment and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system. Operation with the heaters on for ≥ 15 continuous minutes demonstrates operability of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The monthly Frequency is based on the known reliability of the equipment, and the two train redundancy available.

Each CRAFS train is verified to start and operate on an automatic and manual actuation signal. The Frequency of 18 months is based on industry operating experience and is consistent with the typical refueling cycle.

3.0 **SURVEILLANCE REQUIREMENTS**

3.2 Equipment and Sampling Tests (continued)

The spent fuel storage-decontamination areas air treatment system is designed to filter the building atmosphere to the auxiliary building vent during refueling operations. The charcoal adsorbers are installed to reduce the potential release of radioiodine to the environment. In-place testing is performed to confirm the integrity of the filter system. Operation for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. The charcoal adsorbers are periodically sampled to insure capability for the removal of radioactive iodine.

The Safety Injection (SI) pump room air treatment system consists of charcoal adsorbers which are installed in normally bypassed ducts. This system is designed to reduce the potential release of radioiodine in SI pump rooms during the recirculation period following a DBA. Operation for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. The in-place and laboratory testing of charcoal adsorbers will assure system integrity and performance.

Pressure drops across the combined HEPA filters and charcoal adsorbers, of less than 9 inches of water for the control room filters (VA-64A & VA-64B) and of less than 6 inches of water for each of the other air treatment systems will indicate that the filters and adsorbers are not clogged by amounts of foreign matter that would interfere with performance to established levels.

If significant painting, fire or chemical release occurs such that the HEPA filters or charcoal adsorbers could become contaminated from the fumes, chemicals or foreign materials, testing will be performed to confirm system performance.

Demonstration of the automatic and/or manual initiation capability will assure the system's availability.

Verifying Reactor Coolant System (RCS) leakage to be within the LCO limits ensures the integrity of the Reactor Coolant Pressure Boundary (RCPB) is maintained. Pressure boundary leakage would at first appear as unidentified leakage and can only be positively identified by inspection. Unidentified leakage is determined by performance of an RCS water inventory balance. Identified leakage is then determined by isolation and/or inspection. Since Primary to Secondary Leakage of 150 gallons per day cannot be measured accurately by an RCS water inventory balance, footnote 3 for line item 8a on Table 3-5 states that the Reactor Coolant System Leakage surveillance is not applicable to Primary to Secondary Leakage. Primary to secondary leakage is measured by performance of effluent monitoring within the secondary steam and feedwater systems.

3.0 **SURVEILLANCE REQUIREMENTS**

3.6 Safety Injection and Containment Cooling Systems Tests (Continued)

The unit housing, exhaust plenum and interconnecting ductwork were constructed from reinforced galvanized carbon steel and are designed to withstand an external pressure differential of 2 psi. Relief ports are provided in the housing and plenum to open and relieve the pressure differential should it exceed 1 psi. These ports close when pressure equilibrium is restored.

The containment atmosphere temperature increase at the commencement of the DBA melts the fusible links on the plenum hatches allowing them to spring open. Should the pressure transient across the unit housings exceed 1 psi, the relief ports open automatically.

Pressure drop across the HEPA filter bank of less than 2 inches of water will indicate that the filters are not clogged by excessive amounts of foreign matter.

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 2.5 inches of water will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter.

Relief ports protect the CACF unit housing from a rapid pressure increase within the containment building during design basis accidents. The relief ports are exercised to verify that they open manually and close with gravity on a refueling surveillance interval.

HEPA filters are periodically replaced and new filters are tested prior to installation. Visual inspection of the HEPA filters periodically meets industry standards for testing of recirculation systems. The CACFS HEPA filters will be replaced at an interval not to exceed 10 years.

Operating each CACFS train for ≥ 15 minutes ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The monthly Frequency was developed considering the known reliability of fan motors and controls and the two train redundancy available.

Demonstration of the automatic initiation capability will assure system availability.

Determination of the volume of buffering agent in containment must be performed due to the possibility of leaking valves and components in the containment building that could cause dissolution of the buffering agent during normal operation.

A refueling frequency shall be utilized to visually determine that the volume of buffering agent contained in the buffering agent baskets is within the area of acceptable operation based on the buffering agent volume required by Figure 2-3. A measured value or the Technical Data Book (TDB) II, "Reactivity Curves" may be used to obtain a hot zero power (HZP) critical boron concentration (CBC). The "as found" volume of buffering agent must be within the area of acceptable operation of Figure 2-3 using this HZP CBC value.