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

10 CFR 50.90

LIC-14-0128
November 7, 2014

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

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

Reference: 1. Letter from OPPD (L. P. Cortopassi) to NRC (Document Control Desk), *License Amendment Request (LAR) 14-01, One-Time Extension of Technical Specification Surveillance Requirement 3.2, Table 3-5, Item 3,* dated February 10, 2014 (LIC-14-0011) (ML14041A408)

SUBJECT: License Amendment Request (LAR) 14-10; One-Time Extension of Technical Specification Surveillance Requirements

Pursuant to 10 CFR 50.90, the Omaha Public Power District (OPPD) hereby requests an amendment to Renewed Facility Operating License No. DPR-40 for Fort Calhoun Station (FCS), Unit No. 1. The proposed amendment revises a limited number of Technical Specification (TS) Surveillance Requirements (SRs) by adding a note or footnote permitting a one-time extension from a refueling frequency (i.e., at least once per 18 months) to a maximum of 28 months. Recently it was identified that the SRs that are the subject of this LAR will expire before the 2015 refueling outage (RFO) scheduled to begin on April 11, 2015, which was unknown when OPPD submitted a similar LAR (Reference 1) in February 2014 to revise the surveillance frequency for the pressurizer safety valves.

The proposed change is necessary due to the extended shutdown of FCS for the RFO that began in April 2011 and ended in December 2013. Many of these TS SRs were completed early in the outage or re-performed in early 2013 with the expectation of startup in late spring of 2013. Thus, even with the maximum allowable 25% extension of the surveillance interval permitted by TS 3.0.1, they will expire before the next planned RFO. It must also be noted that these TS SRs cannot be performed while the unit is at power for a variety of reasons as explained in the enclosure.

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 retyped (clean) TS pages.

OPPD has determined that this LAR does not involve a significant hazards consideration as determined per 10 CFR 50.92. Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of this amendment.

Although this LAR is neither exigent nor emergency, prompt staff review is requested with approval by December 11, 2014. The amendment will be implemented upon issuance.

No regulatory commitments are contained in this submittal.

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

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 November 7, 2014

Louis P. Cortopassi
Site Vice President and CNO

LPC/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
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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) 14-10
One-Time Extension of Technical Specification Surveillance Requirements

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ATTACHMENTS:

1. Technical Specification Page Markups
2. Retyped ("Clean") Technical Specifications Pages

1.0 SUMMARY DESCRIPTION

License amendment request (LAR) 14-10 proposes a change to Renewed Facility Operating License No. DPR-40 for Fort Calhoun Station (FCS), Unit No. 1. Specifically, a one-time extension of surveillance intervals from a refueling frequency (i.e., at least once per 18 months) to a maximum of 28 months is requested for the following Technical Specification (TS) Surveillance Requirements (SRs):

1. Manual containment isolation actuation (i.e., TS 3.1, Table 3-2, Item 8.a and 8.b),

2. Manual recirculation actuation and recirculation actuation logic (i.e., TS 3.1, Table 3-2, Items 19.a and 20.b respectively),

3. Steam generator level calibration (i.e., TS 3.1, Table 3-1, Item 6.c; TS 3.1, Table 3-2, Item 23.c.1; TS 3.1, Table 3-3A, Item 7.b and 8.b),

4. Visual examination of the high-efficiency particulate air (HEPA) and charcoal filters in the containment recirculating air cooling and filtering system (i.e., TS 3.6(3)d),

5. Emergency diesel generators (i.e., TS 3.7(1)c.ii(2)),

6. Residual heat removal (RHR) system integrity (i.e., TS 3.16(1)b).

An extension is necessary because even with the maximum allowable 25% extension of the surveillance interval permitted by TS 3.0.1, these tests will expire before the next refueling outage (RFO) begins on April 11, 2015.

2.0 DETAILED DESCRIPTION

The proposed TS changes for LAR 14-10 are as follows:

1. TS 3.1, Table 3-2, Item 8.a and 8.b

   Add note “During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval for valves PCV-1849A&B shall not exceed 28 months.”

2. TS 3.1, Table 3-2, Items 19.a and 20.b

   Add note “During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.”

3. TS 3.1, Table 3-1, Item 6.c; TS 3.1, Table 3-2, Item 23.c.1; TS 3.1, Table 3-3A, Item 7.b and 8.b

   Add footnote “During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.”

4. TS 3.6(3)d

   Add footnote “During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval for the charcoal filters shall not exceed 28 months.”

5. TS 3.7(1)c.ii(2)

   Add footnote “During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.”

6. TS 3.16(1)b

   Add footnote “During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.”

Please note that PLANT OPERATING CYCLE is defined in the FCS Technical Specifications as, “The time period from a REFUELING SHUTDOWN to the next REFUELING SHUTDOWN.”

3.0 TECHNICAL EVALUATION

The proposed one-time surveillance interval extension would allow the following TS SRs to be performed during the next refueling outage scheduled to begin April 11, 2015.

1. Manual Containment Isolation Actuation (i.e., TS 3.1, Table 3-2, Item 8.a and 8.b)

Description

TS 3.1, Table 3-2, Items 8.a and 8.b surveillance method requires observation that isolation valves close and includes a channel functional test. The affected surveillance involves the refueling outage functional test of instrument air to containment pressure switches Loop PC-1849. The test procedure provides verification of operability of PC-1849A&B (Containment Instrument Air Pressure Switches) and PCV-1849A&B (Containment Instrument Air Isolation Valves). This is completed by simulation of a containment instrument air header low pressure signal coincident with a Containment Isolation Actuation Signal (CIAS).

Background

The surveillance test (IC-ST-IA-0001) was last performed satisfactorily on March 15, 2013. The next required due date including the 25% allowed extension time is January 31, 2015.

Performance of this surveillance requires isolation of instrument air to air operated valves inside containment. The fail-safe position of these valves support safe shutdown of the plant, but do not support continued safe power operation of the plant. The loss of instrument air would result in a possible plant trip; therefore, the extension request was deemed more prudent than performing the surveillance on-line.

The containment penetration isolation valves must isolate the instrument air header from the containment to prevent the release of radioactivity during an accident (Updated Safety Analysis Report (USAR) Appendix G, Criterion 53). PCV-1849A and PCV-1849B automatically close upon receipt of a CIAS coincident with a low instrument air pressure signal (70 psig). In the event that a design basis accident occurs and the instrument air system remains available, protection against out leakage is provided by the air pressure in the instrument airline. The containment penetration isolation valves fail closed on a loss of instrument air.

As the above is the only safety related function that PC-1849A&B and PCV-1849A&B provide, only this surveillance test's (STs) results are affected.

Testing and Reliability of Affected Components

In addition to the specific surveillance test for PCV-1849A and PCV-1849B, other surveillance tests have been performed which satisfy TS 3.1, Table 3-2, Manual Containment Isolation Actuation, Items 8.a and 8.b. These tests include the automatic and manual engineered safeguard actuation test (OP-ST-ESF-0011), which includes testing the CIAS for automatic engineered safeguards initiation and manual containment isolation (Item 8.a and 8.b), and the Steam Generator Isolation Signal (SGIS) isolation test (Item 8.b) (OP-ST-ESF-0013).

PCV-1849A and PCV-1849B are tested within the automatic and manual engineered safeguard actuation surveillance (OP-ST-ESF-0011) to ensure the valves properly close and isolate instrument air to Containment. This surveillance simulates a low air pressure signal to allow closure of these two valves with manual containment isolation initiation. This test was satisfactorily performed on June 22, 2013 and February 21, 2013. The SGIS test (OI-ST-ESF-0013) was satisfactorily performed on September 20, 2013 and December 11, 2009.

During performance of IC-ST-IA-0001 on June 3, 2011, PCV-1849A closed but failed to operate properly. It is required to close at 70 psig decreasing (66.5 to 73.5 psig) with a coincident CIAS but did not close until 62.4 psig decreasing. PCV-1849A was disassembled, inspected, and the valve plug guide machined during the 2011 outage. The cause of the failure was determined to be long-term side loading which resulted in mechanical binding and improper operation of the valve. A Flowscan test was performed after the valve and actuator were reassembled with acceptable results. Based on Flowscan results and successful post-maintenance testing performed, there is reasonable assurance that PCV-1849A will perform as designed. Applicable portions of the surveillance test were re-performed for PCV-1849A in June 2011 following maintenance with acceptable results.

Surveillance test IC-ST-IA-0001 was re-performed March 15, 2013 with acceptable results for both PCV-1849A and PCV-1849B.

Conclusion

These valves perform no safety function in the open position, but do perform an active safety function in the closed position. Based on the Flowscan diagnostics, surveillance test and maintenance history for PCV-1849A and PCV-1849B, there is confidence that these valves will perform their design function during the requested surveillance interval extension.

2. <u>Manual Recirculation Actuation and Recirculation Actuation Logic (i.e., TS 3.1, Table 3-2, Items 19.a and 20.b)</u>

Description

TS 3.1, Table 3-2, Items 19.a and 20.b surveillance method requires channel functional tests of the manual recirculation actuation and recirculation actuation logic. The surveillance test (OP-ST-ESF-0019) involves the refueling outage functional testing of valves receiving a recirculation actuation signal (RAS) and cycling open the two low pressure safety injection (LPSI) pump (i.e., SI-1A and SI-1B) breakers.

Background

The surveillance test (OP-ST-ESF-0019) was last performed on February 20, 2013. The TS function was demonstrated during the performance of the surveillance test. The next required due date including the 25% allowed extension time is January 8, 2015.

There are two independent circuits for the recirculation actuation function. Performance of this surveillance requires manual recirculation actuation initiated by manual actuation of the lockout relays 86A/CPHS test switch, manual actuation of the lockout relays 86A/PPLS test switch (Engineered Safeguards Feature (ESF) Channel A) by manual actuation of the lockout relays 86B/CPHS test switch and then by manual actuation of the lockout relays 86B/PPLS test switch (ESF Channel B). The surveillance test actuates the two channels individually and separately, each time recirculation actuation is verified. Only one of the two channels is needed for the recirculation actuation function to be completed. During the surveillance test, ESF functions not required to be tested are blocked (safety injection and containment spray).

In addition to the listed equipment, the following equipment must be bypassed or otherwise disabled:

- Channel A safety injection actuation and its entire function, including containment isolation
- Channel B safety injection actuation and its entire function including containment isolation
- Channel A pressurizer pressure low signal and its entire function, including both diesel generators start signals
- Channel B pressurizer pressure low signal and its entire function, including both diesel generators start signals

For the reasons previously described, OP-ST-ESF-0019 is not performed online.

Testing and Reliability of Affected Components

The interval extension for performing OP-ST-ESF-0019 was evaluated based on the following:

- OP-ST-ESF-0011 [Channel A and B Automatic and Manual Engineered Safeguard Actuation Signal Test] verifies that the same test switches are actuated and that the same lockout relays are tripped as OP-ST-ESF-0019. LPSI pumps SI-1A and SI-1B breaker trip functions are not checked in this test, however the lockout relays that cause the breakers to trip are tested. This surveillance is performed at a refueling frequency. Data from the last six surveillance tests was reviewed and it was found that the lockout relays associated with recirculation actuation were successfully tested without exception [86A/CPHS, 86A/CIAS, 86A/STLS, 86A/RAS, 86B/CPHS, 86B/CIAS, 86B/STLS, 86B/RAS].
- OP-ST-ESF-0002 [Diesel Generators 1 and 2 Auto Operations] verifies that the breakers for LPSI pumps SI-1A and SI-1B cycle open. This procedure was performed in June 2013 after the performance of OP-ST-ESF-0019.
- OP-ST-ESF-0019 is performed at a refueling frequency. The past six performances were reviewed and the TS function was successfully demonstrated.
- Defense-in-depth is provided through redundancy and diversity of the ESF system design, construction, and testing. The actuation logic for each circuit is designed to provide complete recirculation testing as required by TS 3.1, Table 3-2, Items 19.a and 20.b. However, there are no provisions for performing this test while at power.
- The ESF system employs derived signal actuation which ensures that automatic actuation of one channel would result in actuation of the redundant channel.

Conclusion

TS 3.1, Table 3.2, Items 19.a and 20.b require that channel functional test of recirculation actuation be performed by testing. Past performances of the surveillance test OP-ST-ESF-0019 provide confidence that recirculation actuation would occur. In addition, surveillance OP-ST-ESF-0011 and OP-ST-ESF-0002 provide additional assurance of recirculation actuation

while redundant design, construction, and testing of the ESF system provide confidence of recirculation actuation when required.

3. <u>Steam Generator Level Calibration (i.e., TS 3.1, Table 3-1, Item 6.c; TS 3.1, Table 3-2, Item 23.c.1); TS 3.1, Table 3-3A, Item 7.b and 8.b)</u>

Description

a. TS 3.1, Table 3-1, Item 6.c, IC-ST-MS-0018 involves the refueling frequency split-loop calibration for Steam Generator RC-2A Narrow Range Level Loop A/L-901. The instrument components located outside containment can be calibrated prior to refueling outage. The instrument located inside containment calibrated during the outage is A/LT-901, Steam Generator RC-2A Narrow Range Level Transmitter.

   The Steam Generator RC-2A Narrow Range Level Loop A/L-901 provides signals to the following functions: the Reactor Protective System Channel "A" Trip Unit 4 Steam Generator RC-2A Low Level and Control Room Level Indication Meter (A/LI-901).

b. The TS 3.1, Table 3-2, Item 23.c.1) and TS 3.1, Table 3-3A, Item 7.b, IC-ST-MS-0005 involves the refueling frequency 18-month split-loop calibration for Steam Generator (SG) RC-2A Wide Range Level Loop D/L-911. The instrument located inside containment calibrated during the outage is D/LT-911, SG RC-2A wide range level transmitter.

   The SG RC-2A wide range level loop provides SG RC-2A level input to the auxiliary feedwater (AFW) actuation signal (AFAS) for automatic initiation of AFW flow to one or both steam generators upon sensing a low water level in the steam generator(s) if the absolute steam generator pressure criteria are satisfied. For fire protection purposes, SG RC-2A wide range level loop D/L-911 provides SG RC-2A wide range level indication at AI-179, the Auxiliary Feedwater Shutdown Panel.

c. TS 3.1, Table 3-3A, Item 8.b, IC-ST-MS-0034 involves a refueling interval calibration for Steam Generator RC-2A Narrow Range Level Loop L-903Y-1. The surveillance test ensures the accuracy of the loop by calibrating loop components located at AI-179 and in containment.

d. TS 3.1, Table 3-3A, Item 8.b, IC-ST-MS-0035 involves a refueling interval calibration of Steam Generator RC-2B Narrow Range Level Loop L-906Y-1. The surveillance test ensures the accuracy of the loop components located at AI-179 and in containment.

Background

The four steam generator level instrument surveillance tests/calibrations cannot be performed at power primarily for reasons of industrial safety. Due to high pressure (approximately 830 psia) in the SGs, double isolation is required to safely perform this calibration on line. This requires the closure of valves FW-159 and FW-160 which are located on the 1049' and the 1034' elevation of containment. These valves are not easily accessible and an individual must reach out approximately 3 feet into space from a high elevation to operate the valves in this manner. In order to safely access these valves, scaffolding must be erected near the SGs, which raises industrial safety and nuclear safety concerns when the unit is operating.

a. IC-ST-MS-0018 involves the refueling frequency split-loop calibration for one specific channel of Steam Generator RC-2A Narrow Range Level.

The surveillance was last performed on May 9, 2013. Its surveillance interval late date including 25% extension time is March 27, 2015.

b. IC-ST-MS-0005 involves the refueling frequency split-loop calibration for one specific channel of Steam Generator RC-2A Wide Range Level.

   The surveillance was last performed on April 19, 2013. Its surveillance interval late date including 25% extension time is March 7, 2015.

c. IC-ST-MS-0034 involves the refueling frequency loop calibration for one specific channel of Steam Generator RC-2A Narrow Range Level. This instrument provides the only narrow range level indication at AI-179, the Auxiliary Feedwater Shutdown Panel.

   The surveillance test was last performed on April 10, 2013. Its surveillance interval late date including 25% extension time is February 26, 2015.

d. IC-ST-MS-0035 involves the refueling frequency loop calibration for one specific channel of Steam Generator RC-2B Narrow Range Level. This instrument provides the only narrow range level indication at AI-179, the Auxiliary Feedwater Shutdown Panel.

   The surveillance test was last performed on April 10, 2013. Its surveillance interval late date including 25% extension time is February 26, 2015.

Testing and Reliability of Affected Components

Surveillances in addition to IC-ST-MS-0018, IC-ST-MS-0005, IC-ST-MS-0034, and IC-ST-MS-0035 provide additional assurance that the Steam Generator level instrumentation is operating satisfactory. Checks between different channels measuring the same process identify faulty or inaccurate equipment. Data from completed surveillances since 2007 was reviewed and it was found that the level instrumentation was successfully tested without exceptions.

Conclusion

The Steam Generator level instrumentation has a high level of redundancy which allows cross-channel comparisons to identify faulty or inaccurate equipment. A review of past surveillance tests demonstrates the stability of the instruments. Therefore, extending the testing interval does not present a hazard.

4. <u>Visual Examination of the High-efficiency Particulate Air (HEPA) and Charcoal Filters in the Containment Recirculating Air Cooling and Filtering System (i.e., TS 3.6(3)d)</u>

Description

TS 3.6(3)d surveillance requires a visual examination of the HEPA and charcoal filters in the containment recirculating air cooling and filtering system to ensure that leak paths do not exist. The affected surveillance involves physical inspection of these units.

Background

This surveillance test (SE-ST-VA-0002) was last performed satisfactorily on January 24, 2013. The next required due date including the 25% allowed extension time is December 12, 2014. Performance of the surveillance involves physical inspection of these units which are located above the reactor and above the bioshield inside containment and cannot be performed online

due to ALARA (As Low as Reasonably Achievable) dose concerns as this entails an estimated dose of 408 millirem.

The purpose of this surveillance is to ensure no appreciable leakage is present past the charcoal filters or gaskets. A separate surveillance performs visual examination of the HEPA filters.

During normal plant operations, the containment air cooling and filtering units are in operation. The HEPA and charcoal filters are used to reduce contamination levels within the containment.

As described in the NRC Safety Evaluation for Amendment 255 (Reference 6.5):

For dose calculations, the licensee assumes 50 percent filter efficiency. The justification for this efficiency is provided in the licensee's February 21, 2008, response to an NRC staff RAI. The 50 percent filter efficiency is based on a calculation that estimates the potential bypass leakage following a DBA with a factor of 2 applied.

The 50 percent filter efficiency is a highly conservative assumption used for the dose consequence analysis. The 50 percent filter efficiency is supported by a calculation that estimates that the maximum potential bypass leakage following a DBA does not exceed 25 percent (then a conservative factor of 2 is applied). In calculating the 25 percent bypass value, both the leakage around/through the HEPA filters at LOCA conditions, and the reduction of flow due to the increased head requirements across the fan were factored into the analysis. The calculation concludes that a filter efficiency greater than 50 percent can be achieved with an equivalent hole diameter of approximately 1.5 inches in each of the filter media or half of the gasket missing. on all the filter elements in the HEPA filter, at filter differential pressure as high as 5.5" wc (see Reference 2, Attachment 4, Page 11 of the licensee's July 30, 2007, letter to the NRC). HEPA filter elements, dampers, pressure relief ports, and other associated components are visually inspected during each refueling outage. Therefore, any source of significant bypass would be identified and corrected prior to start-up from the outage.

Testing and Reliability of Affected Components

The surveillance test performed in January 2013 was completed with acceptable results demonstrating that the system is robust and that there is no unacceptable leakage past the filters. System Engineering performed a visual inspection roughly equivalent to the performance of SE-ST-VA-0002 shortly before plant startup in December 2013. In addition, TS 3.6(3)e requires measurement of pressure drops across the HEPA and charcoal filters, which was successfully performed in October 2013.

Conclusion

The containment recirculating air cooling and filtering system is a robust system. The surveillance tests noted above provide reasonable assurance that no unacceptable leakage paths exist in the HEPA or charcoal filter banks.

5. <u>Emergency Diesel Generators (i.e., TS 3.7(1)c.ii(2))</u>

Description

TS 3.7(1)c.ii(2) surveillance requires initiation of a simulated simultaneous loss of 4.16 kV supplies to bus 1A3 (1A4) be verified by observation of load shedding from the 4160 V and 480 V busses.

Background

OP-ST-ESF-0015 was last performed satisfactorily on February 15, 2013. The next required due date including the 25% allowed extension time is January 2, 2015. The surveillance ensures that the main turbine electrohydraulic control (EHC) pumps, the hydrogen purge blowers, and the Waste Disposal System respond properly to the initiation of the SIAS.

There are two independent circuits for the load shed function. During surveillance testing load shed is initiated by manual actuation of the lockout relays 86B1X/SIAS and 86A1X/SIAS of the SIAS circuitry. The surveillance test actuates the two lockout relays individually and separately, each time the load shed is verified. Only one of the two lockout relays is needed for the load shed to be completed. During the surveillance test, electrical loads not required to shed are blocked from shedding.

The surveillance is scheduled to be performed during plant shutdown to avoid plant transients including plant trip and operation inhibit of plant systems. Performance of this surveillance therefore cannot be performed online.

If this surveillance were to be performed during power operations, it would be necessary to bypass or render inoperable a number of other functions to avoid actuation associated with the load shed circuitry. In addition to the listed equipment, the following equipment must be bypassed or otherwise disabled:

- Channel A safety injection actuation and its entire function, including containment Isolation
- Channel B safety injection actuation and its entire function including containment isolation

Testing and Reliability of Affected Components

The interval extension for performing OP-ST-ESF-0015 was evaluated based on the following:

- Surveillances in addition to the subject surveillance provide additional assurance. OP-ST-ESF-0002 [Diesel Generator Number 1 and Number 2 Auto Operation] verifies that the same load shed relays are actuated. This surveillance is performed at a refueling frequency. Data from the last six surveillance tests was reviewed and it was found that the load shed relays were functional and the load shed breakers were verified to cycle.
- OP-ST-ESF-0015 is performed at a refueling frequency. The last six surveillance tests were reviewed with acceptable load shed results.
- In addition, the ESF system employs derived signal actuation which ensures that automatic actuation of one channel would result in actuation of the redundant channel.
- Defense-in-depth is provided through redundancy and diversity of the ESF system design, construction, and testing. The actuation logic for each circuit is designed to provide complete load shed as required by TS 3.7(1)c. ii(2).
- Testing of the load shed circuit would require isolation of the SIAS circuits. However, isolation of SIAS functions while at power is not analyzed.
- There is no setpoint associated with the load shed circuit or logic.
- Each train of the load shed logic, if required, can be manually and separately performed at the lockout relays. Manual actuation of either lockout relays would complete the load shed.

Conclusion

Technical Specifications 3.7(1)c.ii(2) requires that proper operation be verified by observation of load shedding from bus. Past performances of OP-ST-ESF-0015 provide confidence that

480 V load shed would occur. In addition, OP-ST-ESF-0002 provides additional assurance of load shed while redundant design, construction, and testing of the ESF system provide confidence of load shed when required.

6. Residual Heat Removal (RHR) System Integrity (i.e., TS 3.16(1)b)

Description:

TS 3.16(1)b surveillance requires piping from the containment's sump isolation valves HCV-383-3 and HCV-383-4 to the suction isolation valves of the low pressure safety injection pumps, containment spray pumps, and the high pressure safety injection pumps to be examined for leakage at a pressure not less than 82 psig. To satisfy this requirement, SE-ST-SI-3027 performs a hydrostatic pressure test on the RHR piping between safety injection and refueling water tank (SIRWT) SI-5 isolation valves, LCV-383-1 and LCV-383-2, and containment sump isolation valves, HCV-383-3 and HCV-383-4.

TS 3.16(2)a surveillance consists of a series of leakage tests which measure and total observed leakage from the RHR headers. Per the TS, the total leakage shall not exceed 3800 cc/hr. To comply, in part, with TS 3.16(2)a, SE-ST-SI-3027 measures seat leakage across LCV-383-1 and LCV-383-2 as well as back leakage across RHR header check valves, SI-139 and SI-140. The quantified leakage found in SE-ST-SI-3027 is combined with the leakages measured from SE-ST-SDC-3003, and QC-ST-SI-3008 to verify TS 3.16(2)a compliance.

Background

The surveillance was last performed satisfactorily on April 26, 2013. The test was performed twice during the extended outage with the previous test being completed in May 2011. The next required due date including the 25% allowed extension is March 14, 2015.

The surveillance performs a hydrostatic pressure test on the RHR headers "A" and "B" piping between Safety Injection and Refueling Water Tank (SIRWT) SI-5 isolation valves, LCV-383-1 and LCV-383-2, and containment sump isolation valves, HCV-383-3 and HCV-383-4. The test also measures seat leakage across LCV-383-1 and LCV-383-2 as well as back leakage across RHR header check valves, SI-139 and SI-140.

This testing ensures pressure boundary integrity of the RHR piping and quantifies leakage past LCV-383-1, LCV-383-2, SI-139, and SI-140 to ensure that the combined leakage from components complies with TS 3.16(2)a.

The test aligns safety injection equipment such that the system cannot perform its normal safety functions and can only be performed when the refueling cavity is filled with water from the SIRWT and the SIRWT itself is empty. Therefore, this test must be performed when the plant is Refueling Shutdown (Mode 5).

Testing and Reliability of Affected Components

The RHR headers have primarily been in standby since Cycle 26 operations and the associated valves and piping see little active wear or degradation. A search of condition reports and work orders for valves LCV-383-1, LCV-383-2, SI-139, and SI-140 found no relevant recent history. Given the satisfactory recent performance of the subject valves and with the knowledge that the system has operated mostly in standby throughout operating Cycle 26, there is reasonable assurance that all tested components will continue to perform well until beyond the scheduled outage start date.

Conclusion

Surveillance tests performed prior to startup demonstrate that the RHR piping is robust and that the pressure boundary integrity of the RHR piping will be maintained to ensure that the combined leakage complies with TS 3.16(2)a.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

4.1.1 Regulations

10 CFR 50.36 sets forth the regulatory requirements for the content of the TSs. This regulation requires, in part, that the TS contain SRs. 10 CFR 50.36(c)(3), states that SRs to be included in the TS are those relating to test, calibration, or inspection which assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCO will be met. The proposed changes to the SRs are for a temporary extension of certain surveillance intervals, which are not specified in the regulations.

4.1.2 Design Basis

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met. OPPD has determined that the proposed changes do not require any exemptions or relief from regulatory requirements other than the TS, and do not affect conformance with any draft General Design Criterion (GDC) differently than described in Appendix G of the USAR.

4.1.3 Approved Methodologies

No methodologies are available to support the proposed amendment.

4.1.4 Analysis

No analyses were conducted in support of the proposed amendment.

4.2 Precedent

A number of plants have previously submitted LARs for extension of surveillance intervals due to extended refueling outages. Recently approved and/or submitted applications include the following:

4.2.1 License Amendment Request (LAR 2008-08) Surveillance Frequency Extension Request, River Bend Station, Unit 1, dated December 8, 2008 (Reference 6.1).

4.2.2 River Bend Station, Unit 1 – Issuance of Amendment 162 Re: One-time Surveillance Interval Extension (TAC No. ME0215), dated April 1, 2009 (Reference 6.2).

4.2.3 License Amendment Request No. 225 Regarding One-Time Extension for Unit 3 Technical Specification Surveillance Requirement 4.5.1.1.d, Turkey Point Unit 3, dated March 8, 2013 (Reference 6.3).

4.2.4 Turkey Point Nuclear Generating Unit No. 3 – Issuance of Amendment Regarding a One-Time Extension of Technical Specification Surveillance Requirement 4.5.1.1d for Unit 3 (TAC No. MF1041), dated September 10, 2013 (Reference 6.4).

4.3 Significant Hazards Consideration

The proposed change would allow a one-time extension of the surveillance frequency from a refueling frequency (18 months +25%) to a maximum of 28 months for the following surveillance requirements (SRs):

1. Manual containment isolation actuation,
2. Manual and automatic recirculation actuation,
3. Steam generator level calibration,
4. Visual examination of high-efficiency particulate air (HEPA) and charcoal filters in the containment recirculating air cooling and filtering system,
5. Load shedding from 480 Volt (V) bus, and
6. Residual heat removal (RHR) system integrity.

The manual containment isolation actuation surveillance includes two containment instrument air pressure switches and containment instrument air isolation valves. The surveillance is performed by simulation of a containment instrument air header low pressure signal, coincident with a containment isolation actuation signal (CIAS) to verify that the valves will go closed.

The recirculation actuation surveillance involves the functional test of valves receiving a recirculation actuation signal (RAS), and cycling the breakers for the two low pressure safety injection pumps.

The steam generator level calibration surveillances involve steam generator level indication in the control room and auxiliary feedwater shutdown panel, steam generator level input to the reactor protective system, and for steam generator level input to the auxiliary feedwater (AFW) actuation signal (AFAS) for automatic initiation of AFW flow to one or both steam generators.

High-efficiency particulate (HEPA) and charcoal filters are installed in the containment recirculating air cooling and filtering system. During normal plant operations, the containment air cooling and filtering units are in operation. These HEPA and charcoal filters are used to reduce contamination levels within the containment. The physical (visual) inspection of these filters is performed to ensure that leak paths do not exist.

The surveillance to initiate 480 V load shed ensures that the electrohydraulic control (EHC) pumps, the hydrogen purge blowers, and the waste disposal systems respond properly to the initiation of a safety injection actuation signal (SIAS).

Residual heat removal system integrity is verified by hydrostatic and leakage tests on the residual heat removal (RHR) header piping between safety injection and refueling water tank (SIRWT) header level control valves, containment sump recirculation isolation valves, and the RHR header pump suction valves.

The Omaha Public Power District (OPPD) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, “Issuance of amendment,” as discussed below:

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

   Response: No.

   The requested action is a one-time extension to the performance interval of certain TS surveillance requirements. The performance of the surveillances, or the failure to perform the surveillances, is not a precursor to an accident. Performing the surveillances or failing to perform the surveillances does not affect the probability of an accident. Therefore, the proposed delay in performance of the surveillance requirements in this amendment request does not increase the probability of an accident previously evaluated.

   A delay in performing the surveillances does not result in a system being unable to perform its required function. Additionally, the defense-in-depth of the system design provides additional confidence that the safety function is maintained. In the case of this one-time extension request, the relatively short period of additional time that the systems and components will be in service before the next performance of the surveillance will not affect the ability of those systems to operate as designed. Therefore, the systems required to mitigate accidents will remain capable of performing their required function. No new failure modes have been introduced because of this action and the consequences remain consistent with previously evaluated accidents.

   Therefore, the proposed delay in performance of the surveillance requirement in this amendment request does not involve a significant increase in the consequences of an accident.

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

   Response: No.

   The proposed amendment does not involve a physical alteration of any system, structure, or component (SSC), or a change in the way any SSC is operated. The proposed amendment does not involve operation of any SSCs in a manner or configuration different from those previously recognized or evaluated. No new failure mechanisms will be introduced by the one-time surveillance extension being requested.

   Therefore, the proposed change does not create the possibility of a new or different kind, of accident from any previously evaluated.

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

   Response: No.

   The proposed amendment is a one-time extension of the performance-interval of certain TS surveillance requirements. Extending the surveillance requirements does not involve a modification of any TS Limiting Conditions for Operation. Extending the surveillance frequency does not involve a change to any limit on accident consequences specified in the license or regulations. Extending the surveillance frequency does not involve a change to how accidents are mitigated or a significant increase in the consequences of an accident. Extending the surveillance frequency does not involve a change in a methodology used to evaluate the consequences of an accident. Extending the surveillance frequency does not involve a change in any operating procedure or process.

The systems and components involved in this request have exhibited reliable operation based on the results of the most recent performances of their 18-month surveillance requirements and the associated functional surveillances. Based on the limited additional period of time that the systems and components will be in service before the surveillance is next performed, as well as FCS operating experience provides reasonable assurance these surveillances will be successful when performed. Thus, it is reasonable to conclude that the margin of safety associated with the surveillance requirement will not be affected by the requested extension.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, OPPD concludes that the proposed amendment 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.

4.4 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) 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.

5.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment 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 amendment 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 amendment 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 amendment.

6.0 REFERENCES

6.1 Letter from Entergy (J. C. Roberts) to NRC (Document Control Desk), "License Amendment Request (LAR 2008-08) Surveillance Frequency Extension Request, River Bend Station - Unit 1," dated December 8, 2008 (ML083460043)

6.2 Letter from NRC (C. F. Lyon) to Entergy (Vice President, Operations), "River Bend Station, Unit 1 – Issuance of Amendment Re: One-time Surveillance Interval Extension (TAC No. ME0215)," dated April 1, 2009 (ML090270163)

6.3 Letter from Florida Power & Light (M. Kiley) to NRC (Document Control Desk), "License Amendment Request No. 225 Regarding One-Time Extension for Unit 3 Technical Specification Surveillance Requirement 4.5.1.1.d," dated March 8, 2013 (ML13071A469)

6.4 Letter from NRC (F. E. Saba) to NextEra Energy (M. Nazar), "Turkey Point Nuclear Generating Unit No. 3 – Issuance of Amendment Regarding a One-Time Extension of

Technical Specification Surveillance Requirement 4.5.1.1d for Unit 3 (TAC NO. MF1041)," dated September 10, 2013

6.5 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 (NRC-08-0049)

Technical Specification Page Markups

[Word-processor mark-ups using "double underline/~~strikeout~~" feature for "new text/deleted text" respectively.]

TABLE 3-1 (Continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF REACTOR PROTECTIVE SYSTEM

Channel Description	Surveillance Function	Frequency	Surveillance Method
6. Steam Generator Level	a. Check	S	a. CHANNEL CHECK
	b. Test	Q(1)	b. CHANNEL FUNCTIONAL TEST
	c. Calibrate	R(4)	c. CHANNEL CALIBRATION
7. Steam Generator Pressure	a. Check	S	a. CHANNEL CHECK
	b. Test	Q(1)	b. CHANNEL FUNCTIONAL TEST
	c. Calibrate	R	c. CHANNEL CALIBRATION
8. Containment Pressure	a. Test	Q(1)	a. CHANNEL FUNCTIONAL TEST
	b. Calibrate	R	b. CHANNEL CALIBRATION
9. Loss of Load	a. Test	P	a. CHANNEL FUNCTIONAL TEST
10. Manual Trips	a. Test	P	a. CHANNEL FUNCTIONAL TEST
11. Steam Generator Differential Pressure	a. Check	S	a. CHANNEL CHECK
	b. Test	Q(1)	b. CHANNEL FUNCTIONAL TEST
	c. Calibrate	R	c. CHANNEL CALIBRATION

TABLE 3-1 (Continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF REACTOR PROTECTIVE SYSTEM

Channel Description	Surveillance Function	Frequency	Surveillance Method
12. Reactor Protection System Logic Units	a. Test	Q(1)	a. CHANNEL FUNCTIONAL TEST
13. Axial Power Distribution	a. Check:	S	a.
	1) Axial Shape Index Indication		1) CHANNEL CHECK
	2) Upper Trip Setpoint Indication		2) CHANNEL CHECK
	3) Lower Trip Setpoint Indication		3) CHANNEL CHECK
	b. Test	Q(1)	b. CHANNEL FUNCTIONAL TEST
	c. Calibrate	R	c. CHANNEL CALIBRATION

NOTES:

(1) The quarterly tests will be done on only one of four channels at a time to prevent reactor trip.

(2) Calibrate using built-in simulated signals.

(3) Not required unless the reactor is in the power operating condition and is therefore not required during plant startup and shutdown periods.

(4) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.

TABLE 3-2 (continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF ENGINEERED SAFETY FEATURES, INSTRUMENTATION AND CONTROLS

Channel Description	Surveillance Function	Frequency	Surveillance Method
6. (continued)	b. Test	Q	b. CHANNEL FUNCTIONAL TEST
	c. Calibrate	R	c. Secondary and Electronic Calibration performed at refueling frequency. Primary calibration performed with exposure to radioactive sources only when required by the secondary and electronic calibration.
7. Manual Safety Injection Actuation	a. Test	R	a. CHANNEL FUNCTIONAL TEST
8. Manual Containment Isolation Actuation	a. Check	R(9)	a. Observe isolation valves closure.
	b. Test	R(9)	b. CHANNEL FUNCTIONAL TEST
9. Manual Containment Spray Actuation	a. Test	R	a. CHANNEL FUNCTIONAL TEST
10. Automatic Load Sequencers	a. Test	Q	a. CHANNEL FUNCTIONAL TEST
11. Diesel Testing	See Technical Specification 3.7		

TABLE 3-2 (continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF ENGINEERED SAFETY FEATURES, INSTRUMENTATION AND CONTROLS

Channel Description	Surveillance Function		Frequency	Surveillance Method	
18. SIRW Tank Temperature	a.	Check	D(6)	a.	Verify that temperature is within limits.
	b.	Test	R	b.	Measure temperature of SIRW tank with standard laboratory instruments.
19. Manual Recirculation Actuation	a.	Test	R(10)	a.	CHANNEL FUNCTIONAL TEST
20. Recirculation Actuation Logic	a.	Test	Q	a.	CHANNEL FUNCTIONAL TEST
	b.	Test	R(7)(10)	b.	CHANNEL FUNCTIONAL TEST
21. 4.16 KV Emergency Bus Low Voltage (Loss of Voltage and Degraded Voltage) Actuation Logic	a.	Check	S	a.	Verify voltage readings are above alarm initiation on degraded voltage level - supervisory lights "on".
	b.	Test	Q	b.	CHANNEL FUNCTIONAL TEST (Undervoltage relay)
	c.	Calibrate	R	c.	CHANNEL CALIBRATION
22. Manual Emergency Off-site Power Low Trip Actuation	a.	Test	R	a.	CHANNEL FUNCTIONAL TEST

TABLE 3-2 (continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF ENGINEERED SAFETY FEATURES, INSTRUMENTATION AND CONTROLS

Channel Description	Surveillance Function	Frequency	Surveillance Method
23. Auxiliary Feedwater	a. Check:	S	a.
	1) Steam Generator Water Level Low (Wide Range)		1) CHANNEL CHECK
	2) Steam Generator Pressure Low		2) CHANNEL CHECK
	b. Test:	QR(7)	b.
	1) Actuation Logic		1) CHANNEL FUNCTIONAL TEST
	c. Calibrate:	R	c.
	1) Steam Generator Water Level Low (Wide Range)(10)		1) CHANNEL CALIBRATION
	2) Steam Generator Pressure Low		2) CHANNEL CALIBRATION
	3) Steam Generator Differential Pressure High		3) CHANNEL CALIBRATION
24. Manual Auxiliary Feedwater Actuation	a. Test	R	a. CHANNEL FUNCTIONAL TEST
25. Manual Steam Generator Blowdown Isolation	a. Test	R	a. CHANNEL FUNCTIONAL TEST
26. Automatic Steam Generator Blowdown Isolation	a. Test	R	a. CHANNEL FUNCTIONAL TEST

NOTES: (1) Not required unless pressurizer pressure is above 1700 psia.
(2) CRHS monitors are the containment atmosphere gaseous radiation monitor and the Auxiliary Building Exhaust Stack gaseous radiation monitor.
(3) Not required unless steam generator pressure is above 600 psia.
(4) QP - Quarterly during designated modes and prior to taking the reactor critical if not completed within the previous 92 days (not applicable to a fast trip recovery).
(5) Not required to be done on a SIT with inoperable level and/or pressure instrumentation.
(6) Not required when outside ambient air temperature is greater than 50°F and less than 105°F.
(7) Tests backup channels such as derived circuits and equipment that cannot be tested when the plant is at power.
(8) SGLS is required for containment spray pump actuation only. SGLS lockout relays are not actuated for this test.
(9) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval for valves PCV-1849A&B shall not exceed 28 months.
(10) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.

TABLE 3-3A (Continued)
MINIMUM FREQUENCY FOR CHECKS, CALIBRATIONS AND FUNCTIONAL TESTING OF ALTERNATE SHUTDOWN PANELS (AI-185 AND AI-212) AND EMERGENCY AUXILIARY FEEDWATER PANEL (AI-179) INSTRUMENTATION AND CONTROL CIRCUITS

Channel Description	Surveillance Function	Frequency	Surveillance Method
7. STEAM GENERATOR LEVEL, WIDE RANGE (AI-179)	a. CHECK	M	a. CHANNEL CHECK
	b. CALIBRATE	R(1)	b. CHANNEL CALIBRATION
8. STEAM GENERATOR LEVEL, NARROW RANGE (AI-179)	a. CHECK	M	a. CHANNEL CHECK
	b. CALIBRATE	R(1)	b. CHANNEL CALIBRATION
9. STEAM GENERATOR PRESSURE (AI-179)	a. CHECK	M	a. CHANNEL CHECK
	b. CALIBRATE	R	b. CHANNEL CALIBRATION
10. PRESSURIZER PRESSURE (AI-179)	a. CHECK	M	a. CHANNEL CHECK
	b. CALIBRATE	R	b. CHANNEL CALIBRATION
11. EAFW CONTROL CIRCUITS (AI-179)	a. TEST	R	a. CHANNEL FUNCTIONAL TEST

(1) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.

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 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.(1)

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.

(1) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval for the charcoal filters shall not exceed 28 months.

3.0 **SURVEILLANCE REQUIREMENTS**
3.7 Emergency Power System Periodic Tests (Continued)

i. Initiation of a simulated auto-start signal to verify that the diesel starts.

ii. Initiation of a simulated simultaneous loss of 4.16 KV supplies to bus 1A3 (1A4). Proper operation will be verified by observation of:

(1) De-energization of bus 1A3 (1A4).
(2) Load shedding from bus (both 4160 V and 480 V).(*)
(3) Energization of bus 1A3 (1A4).
(4) Automatic sequence start of emergency load, and
(5) Operation of ≥ 5 minutes while its generator is loaded with the emergency load.

iii. Verification that emergency loads do not exceed the 2000-HR KW rating of the engine.(2)

d. Manual control of diesel generators and breakers shall also be verified during refueling shutdowns.

e. The fuel oil transfer pumps shall be verified to be operable each month.

(2) Station Batteries

a. Every month the voltage of each cell (to the nearest 0.01 volt), the specific gravity, and temperature of a pilot cell in each battery shall be measured and recorded.(3)(4)

b. Every three months the specific gravity of each cell, the temperature reading of every fifth cell, and the amount of water added shall be measured and recorded. During the first refueling outage and every third refueling outage thereafter the batteries shall be subjected to a rated load discharge test.

c. At monthly intervals the third battery charger, which is capable of being connected to either of the two D.C. distribution buses, shall be paralleled in turn to each D.C. bus. In each case, load shall be transferred to this reserve battery charger by switching out the normal charger. The reserve charger shall be run on load for 30 minutes on each bus and the system shall finally be returned to normal.

(*) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.

3.0 **SURVEILLANCE REQUIREMENTS**

3.16 Residual Heat Removal System Integrity Testing

Applicability

Applies to determination of the integrity of the residual heat removal (RHR) systems and associated components.

Objective

To verify that the leakage from the residual heat removal system components is within acceptable limits.

Specifications

(1) a. The portion of the shutdown cooling system that is outside the containment, and the piping between the containment spray pump suction and discharge isolation valves, shall be examined for leakage at a pressure no less than 300 psig. This shall be performed on a refueling frequency.

b. Piping from valves HCV-383-3 and HCV-383-4 to the suction isolation valves of the low pressure safety injection pumps and containment spray pumps and to the high pressure safety injection pumps shall be examined for leakage at a pressure no less that 82 psig. This shall be performed at the testing frequency specified in (1)a. above.(1)

c. The portion of the high pressure safety injection (HPSI) system that is located outside the containment and downstream of the HPSI pumps shall be examined for leakage when subjected to the discharge pressure of a HPSI pump operating in the minimum recirculation mode. This test shall be performed at the frequency specified in (1)a. above. The leakage contribution from this section shall be the observed leakage from this piping at the test pressure multiplied by the square root of the ratio 1500/P, where P is the test discharge pressure (in psig) of the operating HPSI pump.

d. An internal leakage test shall be performed on a refueling frequency. The test shall measure and quantify the leakage to the safety injection refueling water tank (SIRWT) from applicable water leakage paths.

e. Visual inspection of the system's components shall be performed at the frequency specified in (1)a. above to uncover any significant external leakage to atmosphere (including leakage from valve stems, flanges, and pump seals). The leakage shall be measured by collection and weighing or by any other equivalent method.

(2) a. The sum of leakages from section (1)a, (1)b, (1)c, and (1)d above shall not exceed 3800 cc/hour.

b. Repairs shall be made as required to maintain leakage within the acceptable limits.

(1) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.

Retyped ("Clean") Technical Specification Pages

TABLE 3-1 (Continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF REACTOR PROTECTIVE SYSTEM

Channel Description	Surveillance Function	Frequency	Surveillance Method
6. Steam Generator Level	a. Check	S	a. CHANNEL CHECK
	b. Test	Q(1)	b. CHANNEL FUNCTIONAL TEST
	c. Calibrate	R(4)	c. CHANNEL CALIBRATION
7. Steam Generator Pressure	a. Check	S	a. CHANNEL CHECK
	b. Test	Q(1)	b. CHANNEL FUNCTIONAL TEST
	c. Calibrate	R	c. CHANNEL CALIBRATION
8. Containment Pressure	a. Test	Q(1)	a. CHANNEL FUNCTIONAL TEST
	b. Calibrate	R	b. CHANNEL CALIBRATION
9. Loss of Load	a. Test	P	a. CHANNEL FUNCTIONAL TEST
10. Manual Trips	a. Test	P	a. CHANNEL FUNCTIONAL TEST
11. Steam Generator Differential Pressure	a. Check	S	a. CHANNEL CHECK
	b. Test	Q(1)	b. CHANNEL FUNCTIONAL TEST
	c. Calibrate	R	c. CHANNEL CALIBRATION

TABLE 3-1 (Continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF REACTOR PROTECTIVE SYSTEM

Channel Description	Surveillance Function	Frequency	Surveillance Method
12. Reactor Protection System Logic Units	a. Test	Q(1)	a. CHANNEL FUNCTIONAL TEST
13. Axial Power Distribution	a. Check:	S	a.
	1) Axial Shape Index Indication		1) CHANNEL CHECK
	2) Upper Trip Setpoint Indication		2) CHANNEL CHECK
	3) Lower Trip Setpoint Indication		3) CHANNEL CHECK
	b. Test	Q(1)	b. CHANNEL FUNCTIONAL TEST
	c. Calibrate	R	c. CHANNEL CALIBRATION

NOTES:

(1) The quarterly tests will be done on only one of four channels at a time to prevent reactor trip.

(2) Calibrate using built-in simulated signals.

(3) Not required unless the reactor is in the power operating condition and is therefore not required during plant startup and shutdown periods.

(4) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.

TABLE 3-2 (continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF ENGINEERED SAFETY FEATURES, INSTRUMENTATION AND CONTROLS

Channel Description	Surveillance Function	Frequency	Surveillance Method
6. (continued)	b. Test	Q	b. CHANNEL FUNCTIONAL TEST
	c. Calibrate	R	c. Secondary and Electronic Calibration performed at refueling frequency. Primary calibration performed with exposure to radioactive sources only when required by the secondary and electronic calibration.
7. Manual Safety Injection Actuation	a. Test	R	a. CHANNEL FUNCTIONAL TEST
8. Manual Containment Isolation Actuation	a. Check	R(9)	a. Observe isolation valves closure.
	b. Test	R(9)	b. CHANNEL FUNCTIONAL TEST
9. Manual Containment Spray Actuation	a. Test	R	a. CHANNEL FUNCTIONAL TEST
10. Automatic Load Sequencers	a. Test	Q	a. CHANNEL FUNCTIONAL TEST
11. Diesel Testing	See Technical Specification 3.7		

TABLE 3-2 (continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF ENGINEERED SAFETY FEATURES, INSTRUMENTATION AND CONTROLS

Channel Description	Surveillance Function		Frequency	Surveillance Method	
18. SIRW Tank Temperature	a.	Check	D(6)	a.	Verify that temperature is within limits.
	b.	Test	R	b.	Measure temperature of SIRW tank with standard laboratory instruments.
19. Manual Recirculation Actuation	a.	Test	R(10)	a.	CHANNEL FUNCTIONAL TEST
20. Recirculation Actuation Logic	a.	Test	Q	a.	CHANNEL FUNCTIONAL TEST
	b.	Test	R(7)(10)	b.	CHANNEL FUNCTIONAL TEST
21. 4.16 KV Emergency Bus Low Voltage (Loss of Voltage and Degraded Voltage) Actuation Logic	a.	Check	S	a.	Verify voltage readings are above alarm initiation on degraded voltage level - supervisory lights "on".
	b.	Test	Q	b.	CHANNEL FUNCTIONAL TEST (Undervoltage relay)
	c.	Calibrate	R	c.	CHANNEL CALIBRATION
22. Manual Emergency Off-site Power Low Trip Actuation	a.	Test	R	a.	CHANNEL FUNCTIONAL TEST

TABLE 3-2 (continued)

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TESTING OF ENGINEERED SAFETY FEATURES, INSTRUMENTATION AND CONTROLS

Channel Description	Surveillance Function	Frequency	Surveillance Method
23. Auxiliary Feedwater	a. Check:	S	a.
	1) Steam Generator Water Level Low (Wide Range)		1) CHANNEL CHECK
	2) Steam Generator Pressure Low		2) CHANNEL CHECK
	b. Test:	QR(7)	b.
	1) Actuation Logic		1) CHANNEL FUNCTIONAL TEST
	c. Calibrate:	R	c.
	1) Steam Generator Water Level Low (Wide Range)(10)		1) CHANNEL CALIBRATION
	2) Steam Generator Pressure Low		2) CHANNEL CALIBRATION
	3) Steam Generator Differential Pressure High		3) CHANNEL CALIBRATION
24. Manual Auxiliary Feedwater Actuation	a. Test	R	a. CHANNEL FUNCTIONAL TEST
25. Manual Steam Generator Blowdown Isolation	a. Test	R	a. CHANNEL FUNCTIONAL TEST
26. Automatic Steam Generator Blowdown Isolation	a. Test	R	a. CHANNEL FUNCTIONAL TEST

NOTES: (1) Not required unless pressurizer pressure is above 1700 psia.
(2) CRHS monitors are the containment atmosphere gaseous radiation monitor and the Auxiliary Building Exhaust Stack gaseous radiation monitor.
(3) Not required unless steam generator pressure is above 600 psia.
(4) QP - Quarterly during designated modes and prior to taking the reactor critical if not completed within the previous 92 days (not applicable to a fast trip recovery).
(5) Not required to be done on a SIT with inoperable level and/or pressure instrumentation.
(6) Not required when outside ambient air temperature is greater than 50°F and less than 105°F.
(7) Tests backup channels such as derived circuits and equipment that cannot be tested when the plant is at power.
(8) SGLS is required for containment spray pump actuation only. SGLS lockout relays are not actuated for this test.
(9) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval for valves PCV-1849A&B shall not exceed 28 months.
(10) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.

TABLE 3-3A (Continued)
MINIMUM FREQUENCY FOR CHECKS, CALIBRATIONS AND FUNCTIONAL TESTING OF ALTERNATE SHUTDOWN PANELS (AI-185 AND AI-212) AND EMERGENCY AUXILIARY FEEDWATER PANEL (AI-179) INSTRUMENTATION AND CONTROL CIRCUITS

Channel Description	Surveillance Function	Frequency	Surveillance Method
7. STEAM GENERATOR LEVEL, WIDE RANGE (AI-179)	a. CHECK	M	a. CHANNEL CHECK
	b. CALIBRATE	R(1)	b. CHANNEL CALIBRATION
8. STEAM GENERATOR LEVEL, NARROW RANGE (AI-179)	a. CHECK	M	a. CHANNEL CHECK
	b. CALIBRATE	R(1)	b. CHANNEL CALIBRATION
9. STEAM GENERATOR PRESSURE (AI-179)	a. CHECK	M	a. CHANNEL CHECK
	b. CALIBRATE	R	b. CHANNEL CALIBRATION
10. PRESSURIZER PRESSURE (AI-179)	a. CHECK	M	a. CHANNEL CHECK
	b. CALIBRATE	R	b. CHANNEL CALIBRATION
11. EAFW CONTROL CIRCUITS (AI-179)	a. TEST	R	a. CHANNEL FUNCTIONAL TEST

(1) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.

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 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.(1)

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.

(1) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval for the charcoal filters shall not exceed 28 months.

3.0 **SURVEILLANCE REQUIREMENTS**
3.7 Emergency Power System Periodic Tests (Continued)

i. Initiation of a simulated auto-start signal to verify that the diesel starts.

ii. Initiation of a simulated simultaneous loss of 4.16 KV supplies to bus 1A3 (1A4). Proper operation will be verified by observation of:

(1) De-energization of bus 1A3 (1A4).
(2) Load shedding from bus (both 4160 V and 480 V).(*)
(3) Energization of bus 1A3 (1A4).
(4) Automatic sequence start of emergency load, and
(5) Operation of ≥ 5 minutes while its generator is loaded with the emergency load.

iii. Verification that emergency loads do not exceed the 2000-HR KW rating of the engine.(2)

d. Manual control of diesel generators and breakers shall also be verified during refueling shutdowns.

e. The fuel oil transfer pumps shall be verified to be operable each month.

(2) Station Batteries

a. Every month the voltage of each cell (to the nearest 0.01 volt), the specific gravity, and temperature of a pilot cell in each battery shall be measured and recorded.(3)(4)

b. Every three months the specific gravity of each cell, the temperature reading of every fifth cell, and the amount of water added shall be measured and recorded. During the first refueling outage and every third refueling outage thereafter the batteries shall be subjected to a rated load discharge test.

c. At monthly intervals the third battery charger, which is capable of being connected to either of the two D.C. distribution buses, shall be paralleled in turn to each D.C. bus. In each case, load shall be transferred to this reserve battery charger by switching out the normal charger. The reserve charger shall be run on load for 30 minutes on each bus and the system shall finally be returned to normal.

(*) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.

3.0 **SURVEILLANCE REQUIREMENTS**

3.16 Residual Heat Removal System Integrity Testing

Applicability

Applies to determination of the integrity of the residual heat removal (RHR) systems and associated components.

Objective

To verify that the leakage from the residual heat removal system components is within acceptable limits.

Specifications

(1) a. The portion of the shutdown cooling system that is outside the containment, and the piping between the containment spray pump suction and discharge isolation valves, shall be examined for leakage at a pressure no less than 300 psig. This shall be performed on a refueling frequency.

b. Piping from valves HCV-383-3 and HCV-383-4 to the suction isolation valves of the low pressure safety injection pumps and containment spray pumps and to the high pressure safety injection pumps shall be examined for leakage at a pressure no less that 82 psig. This shall be performed at the testing frequency specified in (1)a. above.(1)

c. The portion of the high pressure safety injection (HPSI) system that is located outside the containment and downstream of the HPSI pumps shall be examined for leakage when subjected to the discharge pressure of a HPSI pump operating in the minimum recirculation mode. This test shall be performed at the frequency specified in (1)a. above. The leakage contribution from this section shall be the observed leakage from this piping at the test pressure multiplied by the square root of the ratio 1500/P, where P is the test discharge pressure (in psig) of the operating HPSI pump.

d. An internal leakage test shall be performed on a refueling frequency. The test shall measure and quantify the leakage to the safety injection refueling water tank (SIRWT) from applicable water leakage paths.

e. Visual inspection of the system's components shall be performed at the frequency specified in (1)a. above to uncover any significant external leakage to atmosphere (including leakage from valve stems, flanges, and pump seals). The leakage shall be measured by collection and weighing or by any other equivalent method.

(2) a. The sum of leakages from section (1)a, (1)b, (1)c, and (1)d above shall not exceed 3800 cc/hour.

b. Repairs shall be made as required to maintain leakage within the acceptable limits.

(1) During PLANT OPERATING CYCLE 27 only, the maximum allowed surveillance test interval shall not exceed 28 months.