Tennessee Valley Authority, 1101 Market Street, Chattanooga, TN 37402

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U.S. Nuclear Regulatory Commission
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Sequoyah Nuclear Plant, Units 1 and 2
Renewed Facility Operating License Nos. DPR-77 and DPR-79
NRC Docket Nos. 50-327 and 50-328

Subject: **Denial of a Non-Cited Violation Involving the Qualification of Class 1E Electrical Equipment and Backfit Claim Proposing the NRC Action Constitutes a Plant-Specific Backfit**

Reference: Letter from NRC to TVA, Sequoyah Nuclear Plant - NRC Evaluation of Changes, Tests, and Experiments and Permanent Plant Modifications Inspection Report 05000327/2015007 and 05000328/2015007, dated September 14, 2015

On July 31, 2015, the Nuclear Regulatory Commission (NRC) completed an inspection at Sequoyah Nuclear Plant (SQN) for Evaluation of Changes, Tests, and Experiments and Permanent Plant Modifications as documented in the above reference. NRC inspectors documented four non-cited violations (NCV) of very low safety significance (green) and one Severity Level IV NCV.

In accordance with 10 CFR 50.4 and the NRC Enforcement Policy, Tennessee Valley Authority (TVA) hereby submits its basis for why NCV 05000327, 328/2015007-05, Failure to Identify Qualification Criteria Associated with Class 1E Electrical Component Static Performance Characteristics," (SQN NCV) as documented in the above Reference, should not have been issued.

TVA's position is that the SQN NCV, as discussed in the Enclosure, represents a new NRC Staff position that appears to significantly expand the equipment qualification requirements for SQN by requiring SQN to establish qualification criteria for design life and certain performance characteristics for Class 1E molded case circuit breakers (MCCBs) in mild environments, contrary to the Commission's regulation in 10 CFR 50.49(c)(3), regulatory guidance, industry standards, and SQN's licensing basis. SQN's equipment qualification program for Class 1E MCCBs in mild environments is consistent with the Commission's regulations, guidance, and SQN's licensing basis.

Following receipt of the reference noted above, TVA did not initially dispute the SQN NCV because TVA's understanding was that the issue raised by the SQN NCV would be addressed by the NRC generically in an NRC Regulatory Issue Summary (RIS) and because TVA was informed that Region II would revisit the SQN NCV upon completion of this RIS addressing equipment service life issues. TVA actively engaged with the industry and the NRC in an attempt to appropriately resolve the issue raised in the SQN NCV. TVA personnel participated in public meetings and provided comments on the draft RIS since 2015. On September 14, 2017, TVA participated in a public meeting with the NRC Committee to Review Generic Requirements (CRGR) to provide comments on the draft RIS. On October 17, 2017, the CRGR issued a letter to the NRC Executive Director for Operations and recommended that the draft RIS not be issued. TVA is now submitting this denial and Backfit Claim setting forth the reasons that the SQN NCV should not have been issued, and making a backfit claim to the NRC Staff if the SQN NCV is not withdrawn.

If the NCV is not withdrawn, this letter provides a Backfit Claim for the SQN NCV because NCV 05000327, 328/2015007-05 is a new NRC Staff position that would greatly expand the requirements for equipment qualification in mild environments. As discussed in the Enclosure, the NRC Staff is required to conduct a backfit analysis for new staff positions as required by 10 CFR 50.109(a)(3). That backfit analysis must demonstrate that the backfit would lead to a cost-justified, substantial increase in public health and safety before the new NRC Staff position can be imposed on SQN. The Enclosure describes the basis for denying NCV 05000327, 328/2015007-05 and the Backfit Claim.

There are no regulatory commitments contained in this submittal. If you have any questions, please call Michael McBrearty, SQN Site Licensing Manager at (423) 843-7170.

Sincerely,

J. W. Shea
Vice President, Nuclear Regulatory Affairs and Support Services

Enclosure: Denial for Violation Documented in NRC Inspection Report 05000327, 328/2015007 and Backfit Claim

cc: (Enclosure)

Director of the Office of Nuclear Reactor Regulation (NRR)
Director of the Office of Enforcement
Regional Administrator - Region II
NRC Branch Chief - Region II
NRC Senior Resident Inspector - Sequoyah Nuclear Plant
NRC Project Manager - Sequoyah Nuclear Plant

ENCLOSURE

TENNESSEE VALLEY AUTHORITY

DENIAL FOR VIOLATION DOCUMENTED IN

NRC INSPECTION REPORT 05000327, 328/2015007

AND BACKFIT CLAIM

ENCLOSURE
DENIAL FOR VIOLATION DOCUMENTED IN NRC INSPECTION REPORT
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Executive Summary

On July 31, 2015, the Nuclear Regulatory Commission (NRC) completed an inspection at Sequoyah Nuclear Plant (SQN) for Evaluation of Changes, Tests, and Experiments and Permanent Plant Modifications as documented in Inspection Report 05000327/2015007 and 05000328/2015007, dated September 14, 2015. NRC inspectors documented a non-cited violation (NCV) of very low safety significance (green) involving the failure to identify qualification criteria associated with Class 1E electrical component static performance characteristics (SQN NCV).

The violation specifically involved safety-related Class 1E replacement breakers located in mild environments at SQN installed under Design Change Notices (DCNs) 23085 and 23082. The breakers from DCN 23085 are molded case circuit breakers (MCCBs) for the normal and alternate supply to the 480 Volt (V) Essential Raw Cooling Water (ERCW) Motor Control Centers (MCCs); the replacement breaker was necessitated by equipment obsolescence. The breaker from DCN 23082 is a MCCB associated with the 480V reactor vent boards that feed the ice condenser air handling units; the replacement breaker was evaluated as equivalent to the original breaker.

Tennessee Valley Authority (TVA) has reviewed the broad base of regulatory requirements and guidance and related industry standards as well as the SQN plant specific licensing basis; e.g. 10 CFR 50.49, NUREG-0800, RG 1.89, GL 82-09, and relevant IEEE standards. The applicable SQN Supplemental Safety Evaluation Reports (SSERs), as developed and approved by the Office of Nuclear Reactor Regulation (NRR) during original licensing, approved the SQN program and its alignment to the above regulations, standards, and guidance. TVA's review of the current SQN program found it to be consistent with the SSER approved program as originally reviewed and approved by NRR. Based on this review, TVA concluded that SQN programs and processes for qualification of Class 1E electrical equipment in mild environments are appropriate and consistent with SQN licensing basis, and regulatory requirements and guidance. Therefore, based on the understanding of and adherence to the program as originally approved, the SQN NCV represents a new NRC Staff position and new regulatory requirement.

As discussed above, SQN is in compliance with its approved licensing basis consistent with applicable Commission guidance, standards, and regulations, and SQN's design basis is in compliance with the Commission's regulations. The replacement breakers at issue were procured in accordance with TVA specifications and standards for safety-related electrical equipment, including environmental and seismic qualification requirements appropriate to equipment located in mild environments. As part of the review of DCNs 23085 and 23082, TVA determined that, consistent with the original breakers, the replacement breakers are not susceptible to significant degradation because they are installed in mild environments (as defined in 10 CFR 50.49(c)(3)), and, therefore, a qualified life is not required to be established, provided that the breakers are procured and maintained appropriately for the application. The replacement breakers were determined to be functionally equivalent to the originally installed breakers. The breakers are maintained and tested in accordance with the SQN breaker program, consistent with licensing and design requirements for safety-related Class 1E breakers located in mild environments.

TVA believed that the issue related to qualification criteria associated with Class 1E electrical component static performance characteristics would be addressed through a Regulatory Issue Summary (RIS), “Disposition of Information Related to the Time Period that Safety-Related Structures, Systems or Components are Installed”. On September 14, 2017, TVA participated in a public meeting with the NRC Committee to Review Generic Requirements (CRGR) to provide comments on the draft RIS. On October 17, 2017, the CRGR issued a letter to the NRC Executive Director for Operations and recommended that the draft RIS not be issued due to the “risk of unintended backfit” and the potential to “cause backfit problems during implementation of the inspection program.” Consequently, TVA is submitting a denial of the NCV and requests that the NRC withdraw the NCV. Should the NRC not withdraw the NCV, TVA is concurrently submitting a backfit claim so that the NRC Staff, in accordance with 10 CFR 50.109, “Backfitting,” and the policy reflected in NUREG-1409, “Backfitting Guidelines,” will review the NRC Staff position in the SQN NCV as a plant-specific backfit. As a backfit, the NRC Staff cannot impose the position until it has performed the required backfitting analysis pursuant to 10 CFR 50.109(a)(3) and determined the backfit is justified.

I. NRC NON-CITED VIOLATION 05000327, 328/2015007-05: Failure to Identify Qualification Criteria Associated with Class 1E Electrical Component Static Performance Characteristics

NRC Inspection Report 05000327, 328/2015007, dated September 14, 2015, states non-cited violation (NCV) 05000327, 328/2015007-05 as follows (emphasis added):

10 CFR Part 50, Appendix B, Criterion III, "Design Control," stated, in part, that "Measures shall be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components." *Contrary to the above, since 2013, the licensee failed to establish measures for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components. Specifically, the licensee failed to establish measure for the selection and review for suitability of static and dynamic performance characteristics used in the design and qualification of Class 1E electrical equipment.* Because the finding was of very low safety significance (Green) and was entered into the licensee's corrective action program as CR 1064785, this violation will be treated as an NCV consistent with section 2.3.2 of the NRC enforcement policy. This violation is identified as NCV 05000327, 328/2015007-05, Failure to Identify Qualification Criteria Associated with Class 1E Electrical Component Static Performance Characteristics.

In describing this violation, NRC Inspection Report (IR) 2015-007, also stated, "The inspectors identified that the licensee did not establish qualification criteria for design life," and "[t]he inspectors determined that, the static and dynamic performance characteristics over normal service conditions described conditions related to shelf life and design life."

TVA Position

TVA's position is that 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was appropriately applied to the design, selection and installation of the safety-related molded case circuit breakers described in the violation. The replacement breakers described in the NCV are functionally equivalent to the original breakers installed in the plant, and comply with the same design requirements as the original breakers. Consistent with the original breakers, once installed, station surveillance and preventive maintenance programs, through implementing procedures, provide continued review of the circuit breakers for suitability and quality. This practice is consistent with SQN's approved licensing basis, and with long-established NRC rules and guidance for safety-related electrical equipment located in mild environments, and with industry practice for such equipment. The NRC finding effectively treats safety-related electrical equipment located in mild environments similarly to the treatment of such equipment located in a harsh environment. The NRC finding requires the replacement breakers to satisfy a different requirement than the original breakers; i.e., the requirements for equipment installed in harsh environments. 10 CFR Part 50.49, establishes requirements for environmental qualification of electrical equipment important to safety for nuclear power plants, and 10 CFR Part 50.49(c) specifically states, "[r]equirements for (1) dynamic and seismic qualification of electric equipment important to safety, (2) protection of electric equipment important to safety against other natural phenomena and external events, and (3) environmental qualification of electric equipment important to safety located in a mild environment are not included within the scope of this section."

When TVA replaced the subject equipment described in the SQN NCV, the procurement specifications were consistent with the procurement specifications for the original equipment during initial plant licensing. TVA's program for safety-related equipment located in a mild environment is consistent with the NRC position/requirements delineated in Generic Letter 82-09.(GL 82-09), Question and Answer (Q&A) 4, which was issued during promulgation of the rule specified in 10 CFR Part 50.49, "Environmental Qualification of Safety Related Electrical Equipment." GL 82-09, Q&A 4 states:

> Q. Can periodic surveillance, testing and maintenance programs adequately demonstrate qualification of electrical equipment in mild environments?
>
> "A. For existing equipment located in mild environments, equipment environmental qualification can be adequately demonstrated and maintained by the use of the following three programs:
>
> "1. A periodic maintenance, inspection, and/or replacement program based on sound engineering practice and recommendations of the equipment manufacturer which is updated as required by the results of an equipment surveillance program;
>
> "2. A periodic testing program to verify operability of safety related equipment within its performance specification requirements (system level testing of the type typically required by the plant technical specifications may be used); and
>
> "3. An equipment surveillance program which includes periodic inspections, analysis of equipment and component failures, and a review of the results of preventive maintenance and periodic testing programs.
>
> "For replacement and new equipment, the licensee must also establish and document the environmental design basis for the equipment locations. The purchase specifications must reflect those design basis environmental conditions that are bounding for all applicable equipment locations."

The Statements of Consideration for the 10 CFR 50.49 rule (48 FR 1983) further note that, "[t]he final rule does not cover the electric equipment located in a mild environment. The Commission has concluded that the general quality and surveillance requirements applicable to electric equipment as a result of other Commission regulations, including 10 CFR Part 50, Appendix B (see for example, Regulatory Guide 1.33, 'Quality Assurance Requirements (Operation), Revision 3) are sufficient to ensure adequate performance of electrical equipment important to safety located in mild environments. Since it has been concluded that no further environmental qualification requirements are needed for such equipment provided they fully satisfy all other applicable regulations, the Commission has determined that no additional requirements are necessary with respect to electric equipment located in mild environments in order for licensees to satisfy, with respect to such equipment, existing license conditions or technical specifications calling for qualification of safety-related electric equipment in accordance with DOR Guidelines or NUREG-0588."

TVA's review showed evidence that TVA complies with its approved licensing basis, and with the NRC staff position established in GL 82-09, Q&A 4, and is consistent with the Statements of Consideration for 10 CFR Part 50.49 published at 48 FR 1983 associated with safety-related electrical equipment in a mild environment. For the replacement equipment described in the SQN NCV, the purchase specification reflected those design basis environmental conditions that are bounding for the equipment location.

In IR 2015-007, the NRC introduced a new staff position/interpretation regarding requirements for safety-related equipment located in a mild environment; specifically with respect to the NRC's interpretation that static and dynamic performance characteristics require specification of a shelf life and design life. This interpretation effectively extends the rules for safety-related equipment located in harsh environments to safety-related equipment located in mild environments. This new position conflicts with existing NRC rules and guidance specifically for equipment located in mild environments. The NRC violation described in IR 2015-007 conflicts with the staff position delineated in GL 82-09, and establishes new requirements for safety-related equipment located in a mild environment.

II. DENIAL AND BACKFIT CLAIM, NRC NON-CITED VIOLATION 05000327, 328/2015007-05 is a New Staff Position Which Requires a Backfit Analysis

1. Background

On May 7, 2015, NRC issued Task Interface Agreement (TIA) 2014-01 concerning inspections conducted during 2012 and 2013 at Monticello, D.C. Cook, and Palisades where NRC inspectors identified several safety-related structures, systems, or components (SSCs) in mild environments installed for periods greater than the period of time specified in vendor correspondence, vendor manuals, or Certificates of Compliance. The TIA specified that all SSCs require a determination of how long an installed SSC can be relied upon to perform its safety function.

On September 14, 2015, NRC issued Non-Cited Violation (NCV) 05000327, 328/2015007-05 documented in Inspection Report 05000327, 05000328/2015007 (SQN NCV) for SQN. The violation specifically involved safety-related Class 1E replacement breakers located in mild environments at SQN installed under Design Change Notices (DCNs) 23085 and 23082. The breakers from DCN 23085 are molded case circuit breakers (MCCBs) for the normal and alternate supply to the 480 Volt (V) Essential Raw Cooling Water (ERCW) Motor Control Centers (MCCs). The breaker from DCN 23082 is a MCCB for the 480V reactor vent boards that feed the ice condenser air handling units. During and after the onsite inspection at SQN, NRC Staff repeatedly referred to the staff position established in TIA 2014-01 to support the violation, and as a basis for not treating the issue as an Unresolved Item.

In an October 6, 2015, phone call with NRC Region II, SQN was granted an extension for providing a response to the NRC from the original 30-day response period to November 13, 2015. At that time, SQN's intent was to deny the NCV.

On October 1, 2015, the NRC rescinded TIA 2014-01 with the intent of developing a Regulatory Issue Summary (RIS) to communicate the NRC Staff's positions on service life. Even though TIA 2014-01 had been rescinded, the Nuclear Energy Institute (NEI) submitted a letter to the NRC on October 20, 2015 with subject, "Industry Position on the Role of Vendor Recommendations for Service Life of Safety-Related Components," that documented the industry's concerns with regulatory positions taken in TIA 2014-01. One of these concerns was that TIA 2014-01 appeared to change existing NRC positions on preventative maintenance requirements for safety-related equipment in mild environments. The letter submitted by NEI directly addressed the issue raised by the SQN NCV.

TVA discussed the SQN NCV with NRC Region II on November 3, 2015. The following individuals participated: TVA Vice President - Licensing, Senior Manager - Fleet Regulatory Operations, NRC - Director of Reactor Safety, Region II and NRC - Director of Reactor Projects, Region II. During the discussions, NRC indicated that, even if TVA did not deny the SQN NCV, NRC Region II would reexamine the SQN NCV after the agency completed its review of the October 20, 2015 NEI letter and issued the RIS. Following the discussions, a decision was made by TVA to delay submitting a formal letter contesting the SQN NCV at that time and work with the industry on review of the RIS to address the SQN NCV. TVA likewise decided not to contest or submit a clarification letter that had been drafted regarding the SQN NCV because TVA believed that the SQN NCV would be resolved through the RIS and that Region II would then reexamine the SQN NCV. TVA actively engaged with industry and the NRC on service life issues and development of the service life RIS.

Between December 2015 to present, the NRC issued preliminary drafts of the service life RIS, and held public meetings to solicit industry and public feedback. TVA actively participated in the industry efforts regarding the development of the RIS in order to support resolution of this generic industry issue regarding regulatory requirements for electrical equipment in mild environments. The most recent NRC public meeting was conducted on September 14, 2017, during which NEI (including a representative from TVA) presented the industry's position. On October 17, 2017, the CRGR issued a letter to the NRC Executive Director for Operations and recommended that the draft RIS not be issued.

The timeline table below provides a synopsis of the above discussion chronologically.

Service Life Interaction Timeline	
Date	**Activity**
May 7, 2015	NRC issues TIA 2014-01
September 14, 2015	SQN receives NCV for safety-related Class 1E components in mild environments
October 1, 2015	NRC rescinds TIA 2014-01
October 6, 2015	Teleconference between NRC Region II and TVA regarding response to SQN NCV
October 20, 2015	NEI submits letter to NRC regarding concerns with rescinded TIA 2014-01
November 3, 2015	Discussions between NRC Region II and TVA (addressed SQN NCV)
December 9, 2015	NRC issues preliminary draft of RIS 2016-XX on Service life
January 20, 2016	NRC Public Meeting on preliminary draft RIS 2016-XX
May 10, 2016	NRC issues revised draft RIS 2016-XX for public comment
June 1, 2016	Initial meeting of NEI Service life Focus Group to develop comments on draft RIS
June 23, 2016	NEI Service life Focus Group meeting to finalize comments
July 18, 2016	NEI submits draft RIS comment letter to NRC
July 21, 2016	NEI RITF meeting
October 19-20, 2016	NEI RITF and RIWG meetings
October 31, 2016	NRC issues draft RIS comment resolutions
November 18, 2016	NEI Service life Focus Group to review NRC comment resolutions
November 30, 2016	RUG II meeting
February 2, 2017	NEI RIWG meeting
September 14, 2017	NRC CRGR Public Meeting Regarding Draft RIS
October 17, 2017	CRGR recommends the RIS not be issued

Based on the above, TVA is submitting the backfit claim with respect to the SQN NCV with an explanation of why the NCV should not have been issued.

2. SQN Licensing and Design Basis

2.1 SQN Updated Final Safety Analysis Report (UFSAR)

The licensing basis for SQN is delineated in the SQN UFSAR, which references NRC Regulatory Guide (RG) 1.89, and Institute of Electrical and Electronics Engineers (IEEE) standards IEEE 323-1971 and IEEE 323-1974. The UFSAR identifies equipment and systems subject to 10 CFR 50.49 and the SQN implementing procedures for environmental qualification. For Engineered Safety Features (ESF) equipment located in a mild environment, the SQN UFSAR Section 3.11.2.3, Environmental Design of ESF Components, states:

> ESF Systems and RPS components have established industrial ratings equal to or in excess of the required environmental capabilities. These environmental capabilities are demonstrated by testing or by appropriate analyses. The 10 CFR 50.49 scope equipment is addressed under the harsh environment qualification program (see Section 3.11.2.4).
>
> Qualification of other equipment important to safety is addressed by design/purchase specifications, functional requirements, and associated environmental conditions. Periodic maintenance and surveillance adequately demonstrates qualification of equipment in mild environments.

As described in this enclosure, the SQN UFSAR prescribes qualifying ESF equipment located in a mild environment that is consistent with industry-accepted practices, and NRC requirements and guidance. The SQN UFSAR, Section 8.1.5 states:

> Although the design of the electric power system for the Sequoyah Nuclear Plant preceded the publication of several of the standards and regulatory guides referenced below, it is TVA's belief that the design meets the intent of those standards and guides.

The standards and guides listed in the SQN UFSAR include IEEE 279-1971, IEEE 308-1971, and IEEE 323-1971, which SQN applied to the MCCBs described in the SQN NCV. Equipment qualification requirements from each of these IEEE standards are provided below.

IEEE 279-1971, Criteria for Protection Systems for Nuclear Power Generating Stations, Section 4.4, discusses equipment qualification as follows: “Type test data or reasonable engineering extrapolation based on test data shall be available to verify that protection system equipment shall meet, on a continuing basis, the performance requirements determined to be necessary for achieving the system requirements.”

IEEE 308-1971, Criteria for Class 1E Electric Systems for Nuclear Power Generating Stations, Section 4.7, discusses equipment qualification as follows: “Each type of Class 1E electric equipment shall be qualified by analysis, successful use under similar conditions, or by actual test to demonstrate its ability to perform its function under normal and design basis events.”

IEEE 323-1971, Qualifying Class 1 Electric Equipment for Nuclear Power Generating Stations, Sections 3, 5.1, and 5.2, discusses equipment qualification as follows: "Each type of equipment is qualified for its application. Type test data shall contain equipment specifications, identification of specific features to be demonstrated by the type test, test program outline (typically includes service conditions and design basis event conditions to be simulated, static and dynamic performance characteristics, etc.), and test results. Service conditions are defined as environmental, power and signal conditions expected as a result of normal operating requirements, expected extremes in operating requirements and postulated conditions appropriate for the design basis events of the station."

2.2 Regulatory Requirements and Applicable Guidance

The NRC's requirements with respect to environmental qualification are set forth in 10 CFR 50.49. 10 CFR 50.49, Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants, establishes qualification requirements for equipment ***only*** in non-mild environments. Of note, 10 CFR 50.49(c)(3) states:

> Requirements for environmental qualification of electric equipment important to safety located in a mild environment are not included within the scope of this section. A mild environment is an environment that would at no time be significantly more severe than the environment that would occur during normal plant operation, including anticipated operational occurrences.

In addition, the NRC guidance in NUREG-0800, Standard Review Plan, Revision 3, March 2007, Section 3.11, Environmental Qualification of Mechanical and Electrical Equipment, states for mild environments:

> For electrical and mechanical equipment located in a mild environment, acceptable environmental design can be demonstrated by the "design/purchase" specifications for the equipment. The specifications must contain a description of the functional requirements for a specific environmental zone during normal environmental conditions and anticipated operational occurrences.
>
> A well-supported maintenance/surveillance program, in conjunction with a good preventive maintenance program, is sufficient to ensure that equipment that meets the design/purchase specifications is qualified for the designed life. Compliance with 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," and associated guidance in Regulatory Guide 1.160 are sufficient to provide reasonable assurance that environmental considerations established during design are reviewed every refueling outage and maintained on a continuing basis to ensure that the qualified design life has not been reduced by thermal, radiation, and/or cyclic degradation resulting from unanticipated operational occurrences or service conditions. Modification to the replacement program and/or replacement of equipment should be based on the review of maintenance/surveillance data.

Design specifications will be discussed in Section 3.3.

Generic Letter 82-09.(GL 82-09), Question and Answer (Q&A) 4, states:

> Q. Can periodic surveillance, testing and maintenance programs adequately demonstrate qualification of electrical equipment in mild environments?
>
> A. For existing equipment located in mild environments, equipment environmental qualification can be adequately demonstrated and maintained by the use of the following three programs:
>
> 1. A periodic maintenance, inspection, and/or replacement program based on sound engineering practice and recommendations of the equipment manufacturer which is updated as required by the results of an equipment surveillance program;
>
> 2. A periodic testing program to verify operability of safety related equipment within its performance specification requirements (system level testing of the type typically required by the plant technical specifications may be used); and
>
> 3. An equipment surveillance program which includes periodic inspections, analysis of equipment and component failures, and a review of the results of preventive maintenance and periodic testing programs.
>
> For replacement and new equipment, the licensee must also establish and document the environmental design basis for the equipment locations. The purchase specifications must reflect those design basis environmental conditions that are bounding for all applicable equipment locations.

The Statements of Consideration for the 10 CFR 50.49 rule (48 FR 1983) further note that, "[t]he final rule does not cover the electric equipment located in a mild environment. The Commission has concluded that the general quality and surveillance requirements applicable to electric equipment as a result of other Commission regulations, including 10 CFR Part 50, Appendix B (see for example, Regulatory Guide 1.33, 'Quality Assurance Requirements (Operation), Revision 3) are sufficient to ensure adequate performance of electrical equipment important to safety located in mild environments. Since it has been concluded that no further environmental qualification requirements are needed for such equipment provided they fully satisfy all other applicable regulations, the Commission has determined that no additional requirements are necessary with respect to electric equipment located in mild environments in order for licensees to satisfy, with respect to such equipment, existing license conditions or technical specifications calling for qualification of safety-related electric equipment in accordance with DOR Guidelines or NUREG-0588."

Regulatory Guide (RG) 1.89, Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants, Revision 1, Section A, provides additional regulatory guidance and positions regarding environmental qualification. RG 1.89 specifically states that (emphasis added):

> Section 50.49 does not include requirements for seismic and dynamic qualification, protection of electric equipment against other natural phenomena and external events, and ***equipment located in a mild environment***.

RG 1.89 endorses IEEE 323-1974, IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations, when applied in conjunction with RG 1.89.

The NRC's regulations and guidance, 10 CFR 50.49, NUREG-0800, RG 1.89, and other standards and guidance, specifically provide that equipment in mild environments are beyond the scope of the equipment qualification requirements of 10 CFR 50.49. Although earlier versions of IEEE 323 (1971 and 1974) do not specifically define mild and harsh environments, IEEE 323-1983 (and later versions) include definitions of those terms.

The forward to IEEE 323-1983 states that:

> Electrical equipment qualified in accordance with either IEEE Standard 323-1974 or IEEE Standard 323-1983 will meet the requirements of IEEE Standard 627-1980 which provides the basic principles for design qualification for all safety systems equipment for use in Nuclear Power Generating Stations. This revision to IEEE Standard 323-1974 was made to clarify its requirements and imposes no additional requirements for qualifying Class 1E equipment.
>
> This standard defines requirements that are adequate to qualify Class 1E equipment located in all areas of the Nuclear Power Generating Station including harsh and mild environment [sic] areas. At this time, it appears that seismic is the only design basis event with potential for common cause failure in otherwise mild environments; however, other environmental service conditions may also be contributors.

Specific guidance in IEEE 323-1983, Section 4 states the following:

> It is the primary role of qualification to ensure that Class 1E equipment can perform its safety function(s) with no failure mechanism that could lead to common cause failures under postulated service conditions.
>
> It is degradation with time (aging), followed by exposure to the environmental extremes of temperature, pressure, humidity, radiation, vibration, or chemical spray resulting from design basis events which presents a potential for causing common cause failures of Class 1E equipment. For this reason it is necessary to establish a qualified life for equipment with significant aging mechanisms unless aging is adequately addressed by periodic surveillance/maintenance. The qualified life determination shall be accomplished using the qualification methods described in the remainder of this standard. These methods include type testing, operating experience, analysis, or any combination thereof.
>
> For equipment located in mild environments and which has no significant aging mechanisms, a qualified life is not required. This equipment shall be selected for application to the specific service conditions based on sound engineering practices and manufacturer's recommendations.

3. TVA Position - Establishing Performance Characteristics

3.1 NRC Statement

The NRC Inspection Report stated:

> The licensee did not establish the Class 1E static and dynamic performance characteristics under the full range of service conditions as specified by IEEE 323-1971 and required by IEEE 279 and IEEE 308.

3.2 TVA Position

There is no requirement under NRC regulations or the SQN licensing basis to establish Class1E static and dynamic performance characteristics for the MCCBs referenced in the SQN NCV. The terms static and dynamic are not specifically defined in the IEEE standards. Static and dynamic performance characteristics are included in Section 5.2 of IEEE 323-1971 as elements of type test data that are used to demonstrate the qualification of equipment. IEEE 279-1971 and 308-1971 require equipment qualification to be performed in order to demonstrate its ability to perform its function under normal and design basis events. SQN meets these requirements as follows:

TVA procedure NPG-SPP-09.2, Equipment Environmental Qualification (EQ) Program, applies to electrical equipment located in a harsh environment in accordance with 10 CFR 50.49. The definitions of mild environment in this procedure are consistent with 10 CFR 50.49, NUREG-0800, RG 1.89, and IEEE 323. Specifically, electrical equipment important to safety that is located in a mild environment is not included in the 10 CFR 50.49(b) scope of equipment. A mild environment is defined in 10 CFR 50.49 as an environment that would at no time be significantly more severe than the environment that would occur during normal plant operation, including anticipated operational occurrences. For non-harsh (mild) environmental conditions, TVA understands the static and dynamic performance characteristics under the full range of service conditions per IEEE requirements is: functionality in a mild environment resulting from normal service conditions and extremes (abnormal) in service conditions where an earthquake is the only design basis event of consequence. The normal and abnormal service conditions were specified in the SQN procurement documents for the replacement MCCBs subject to the SQN NCV, and the equipment was certified to meet these specified requirements. As documented in procurement documents detailed in Section 3.3 below, SQN established characteristics and specifications that were appropriate for Class 1E electrical equipment located in a mild service environment.

The above approach is also consistent with NUREG-0800, Standard Review Plan, Revision 3, March 2007, Section 3.11, which states, in part; “For electrical and mechanical equipment located in a mild environment, acceptable environmental design can be demonstrated by the ‘design/purchase’ specifications for the equipment. The specifications must contain a description of the functional requirements for a specific environmental zone during normal environmental conditions and anticipated operational occurrences.”

As described in Section 3.3 below, the SQN procurement process is consistent with the NUREG-0800 guidance.

3.3 SQN Procurement Process

As a part of the design change process, SQN procurement specifications are provided to ensure applicable material and equipment standards, attributes, qualifications, etc., are met. For breakers such as those included in DCNs 23085 and 23082, TVA procedure NPG-SPP-09.2, Equipment Environmental Qualification (EQ) Program, and the applicable standards as described below were required to be met during the procurement process.

Standard SS-E18.10.01, Environmental Qualification Requirements for Safety Related Electrical Equipment, requires that electrical equipment designated Class 1E to be qualified to the requirements of IEEE Standards 323-1974. Qualification of Class 1E equipment in mild environments is specifically addressed in Section 2 of SS-E18.10.01, including the effects of aging on equipment. Standard CEB-SS-5.10, Seismic Qualification of Electrical, Mechanical, and I&C Devices, provides the seismic qualification requirements for the breakers. In the certificate of conformance, the vendor certified that the breakers were qualified in accordance with these standards.

In accordance with SS-E18.10.01, a datasheet provided the specific environmental requirements for the replacement breakers using the specification code “T3056-Nonharsh EQ Cond”. DS-M18.2.18, Standard Procurement Notes, defines T3056 as shown below.

T3056 - The following nonharsh environmental conditions are applicable:

Avg. Temperature	85°F (Normal)
Max. Temperature	120°F (will occur less than 1% of plant life)
Avg. Relative Humidity	55%
Max. Relative Humidity	90%
Normal Pressure	14.4 PSIA (ATM)
Tornado Pressure	11.25 PSIA for 5 seconds
Total 40-year Integrated dose	3.5 X 10 square rads
Integrated accident dose	Less than 1 X 10 to the 4th power rads

The Nuclear Logistics, Incorporated (NLI) Certificate of Conformance, CC-02110650-02 states: “Nuclear Logistics, Inc. certifies that the items identified above are qualified in accordance IEEE 323-1974, IEEE 344-1975, and TVA standard specification SS-E18.10.01 and CEB-SS-5.10, as documented in NLI Report QR-0219980-1, Rev. 2.”

Based on the above, SQN was in compliance with the SQN licensing basis. SQN had and has appropriate Class 1E static and dynamic performance characteristics for the replacement breakers under the full range of service conditions as specified by IEEE 323-1974 and required by IEEE 279 and IEEE 308. With respect to static and dynamic performance characteristics, the NRC interpretation described in IR 2015-007, represents a new staff position.

The NUREG-0800 aspect for maintenance/surveillance and preventive maintenance are discussed in section 4 below.

4. TVA Position - Establishing Qualification Criteria

4.1 NRC Statement

The NRC Inspection Report stated:

> The inspectors reviewed procurement packages for DCNs 23085 and 23082 that purchased Class 1E molded case circuit breakers (MCCBs) to assess the qualification criteria. The inspectors identified that the licensee did not establish qualification criteria for design life.

4.2 TVA Position

There is no requirement under NRC regulations or the SQN licensing basis to establish qualification criteria for design life for the Class 1E MCCBs cited in the NRC Inspection Report. As defined in IEEE 323-1983, design life is the time during which satisfactory performance can be expected for a specific set of service conditions. The IEEE provides that design life may be specified in several ways, including calendar time, operating time, number of operating cycles or some other performance interval, as appropriate. For equipment located in a mild environment, SQN utilizes a periodic surveillance/maintenance program to ensure that the equipment remains qualified. This SQN position is consistent with SQN's original licensing basis, long established NRC rules and guidance, and with industry practice for equipment located in mild environments. The MCCBs described in the NCV are installed in a mild environment, and a specific qualified life is not required. Preventive maintenance and testing frequencies for manual cycling and exercising of mechanical trip devices, detailed inspections and cleaning, electrical trip testing, and periodic replacement of MCCBs all consider age-related failure mechanisms. As documented in Section 4.3 below, the preventive maintenance and testing program established by SQN for the replacement breakers ensures these MCCBs remain qualified and will continue to operate under design basis conditions.

The above approach is consistent with the NRC guidance in GL 82-09, NUREG-0800, RG 1.89, and IEEE 323-1983. Specifically, NUREG-0800, Standard Review Plan, Revision 3, March 2007, Section 3.11, states that a well-supported maintenance/surveillance program in conjunction with a good preventive maintenance program is sufficient to ensure that equipment in a mild environment that meets the design/purchase specifications is qualified for the designed life. The NRC guidance does not provide for the establishment of qualification criteria for design life of such equipment.

4.3 SQN Preventive Maintenance and Testing

SQN has programs in place to comply with its licensing basis for MCCBs such as those MCCBs included in DCNs 23085 and 23082. For such MCCBs, the SQN breaker program requires periodic testing and preventive maintenance. Through preventive maintenance and breaker replacement, the SQN breaker program ensures the equipment will continue to operate under its design basis conditions. When SQN receives information (e.g., operating experience) from equipment vendors or industry OE that could challenge operability/functionality of such equipment, SQN evaluates the information to ensure continued operability/functionality of installed equipment, or else takes actions to replace the suspect equipment.

The replacement MCCBs described in the NRC NCV are maintained and tested as follows:

The reactor vent board breakers (from DCN 23082) are included in the Technical Requirements Manual (TRM) breaker population. A 10% population of each breaker catalog type is tested every fuel cycle (18 months) in accordance with surveillance instructions SI-258.2, Testing of Molded Case and Lower Voltage Containment Penetration Circuit Breakers, and SI-275.2, Testing of Non-Class 1E Load Circuit Breakers Fed From Class 1E Busses. If there are any failures during testing, an additional 10% population is tested until there are no failures or until the total catalog type population has been tested. There have been no testing failures that would have affected the design function of the reactor vent board breakers. In addition to testing, preventive maintenance on these breakers is performed every six years in accordance with surveillance instruction SI-266.2.3, 72-Month Inspection of Molded Case Circuit Breakers. [NOTE: TRM requirements as defined at the time the SQN NCV was issued]

The ERCW breakers (from DCN 23085) are included in the non-TRM breaker population. A 5% population of each breaker catalog type is tested every fuel cycle (18 months) in accordance with Technical Instruction 0-TI-SBR-000-001.0, Breaker Testing and Maintenance Program, Step 6.6.1. If there are any failures during testing, an additional 5% population is tested until there are no failures or until the total catalog type population has been tested. There have been no testing failures that would have affected the safety function of the ERCW breakers. In addition to testing, preventive maintenance on these breakers is performed when other MCC board preventive maintenance is performed. Preventive maintenance on the breakers is performed in accordance with Preventive Maintenance Work Instructions 057531001 for ERCW MCC 1A-A and 057532001 for ERCW MCC 2A-A. These preventive maintenance activities are scheduled to be performed every 15 years, but in practice are performed more frequently (every 5 years) as a result of other scheduled maintenance, such as swapping out the 6.9 kV supply breaker. When SQN tests a MCCB in the Breaker Testing and Maintenance Program, a new, pre-tested MCCB is installed and the existing MCCB is removed and tested for program requirements. Replacing the MCCB being sampled with a new MCCB minimizes equipment and system outage time. SQN has replaced close to half of the MCCBs that are included in the Breaker Testing and Maintenance Program. Replacements are ongoing at a rate of approximately 70 per year.

The Independent Qualified Review Maintenance Template for SQN MCCs and MCCBs addresses age-related failure mechanisms. Age-related failure mechanisms are considered and addressed in the preventive maintenance and testing frequencies for manual cycling and exercising of mechanical trip devices, detailed inspections and cleaning, electrical trip testing, and replacement of MCCBs. The Equipment Reliability Strategy incorporates age-related failure mechanisms and serves as the technical basis for the Preventative Maintenance (PM) program. Changes to the PM program are evaluated by engineering with respect to the strategy, which is developed and maintained in accordance with NPG-SPP-09.18.3, Equipment Reliability Program Component Strategy Development and Implementation Process.

As discussed above, the SQN preventive maintenance process and periodic testing/surveillance program for the replacement breakers comply with the licensing basis for SQN and regulatory guidance documents and regulations and are adequate to ensure the equipment will continue to operate under its design basis conditions. No additional qualified life specifications are required under SQN's licensing basis. Aging mechanisms are appropriately considered in the development of the preventive maintenance and periodic testing.

5. Change in NRC Staff Position Requires a Backfit Analysis

Section 50.109(a)(1) of Title 10 of the Code of Federal Regulations provides the following definition of backfitting:

> Backfitting is defined as the modification of or addition to systems, structures, components, or design of a facility; or the design approval or manufacturing license for a facility; or the procedures or organization required to design, construct or operate a facility; any of which may result from a new or amended provision in the Commission's regulations or the imposition of a regulatory staff position interpreting the Commission's regulations that is either new or different from a previously applicable staff position after:
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> * * * *
>
> (iii) The date of issuance of the operating license for the facility for facilities having operating licenses;

NRR Office Instruction, LIC-202, "Procedures for Managing Plant-Specific Backfits and 50.54(f) Information Requests," Revision 2 (LIC-202), Section 1 sets forth the Commission policy regarding backfits. In pertinent part:

> The Backfit Rule, Title 10 of the Code of Federal Regulations (10 CFR) 50.109, governs the requirements for backfitting of nuclear power plants. It requires that the Nuclear Regulatory Commission (NRC) justify each backfit with either a backfit analysis or a documented evaluation. The term backfit is used in these procedures to denote modification of or addition to (1) systems, structures, components, or design of a facility; (2) the design approval or manufacturing license for a facility; (3) the procedures or organization required to design, construct, or operate a facility if the modification or addition results from a new or amended provision in the Commission rules or from the imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previously applicable staff position. To be considered a backfit, these new or different positions must be taken after certain dates specified in 50.109(a)(1)(i-vii). Furthermore, a backfit is plant-specific when it involves the imposition of a position that is unique to a particular plant.

NUREG 1409, Backfitting Guidelines, Section 2.1.1, provides that "[t]he scope of the rule includes all design and hardware aspects of systems, structures, and components as well as supporting activities reflected by procedures and organization."

LIC-202, Appendix B, Section I provides that a staff position constitutes a backfit if it meets the following criteria:

- A staff position may be a proposed backfit if it would cause a licensee to change the design, construction, or operation of a facility from that consistent with already applicable regulatory staff positions as described below.
- A staff position, as described above, is a proposed backfit if it is first made known to the licensee after certain important design, construction, or operation milestones involving NRC approvals of various kinds have been reached. A new or revised staff position will be considered a backfit:

* * * *

After the date of issuance of the operating license (for the facility or facilities having operating licenses); or

* * * *

LIC-202, Appendix B, Section I further provides a definition of "applicable regulatory staff positions," as follows:

> Applicable Regulatory Staff Positions: The term "applicable regulatory staff positions" is used in these procedures to denote those requirements, commitments, or positions specifically imposed on a licensee or committed to by a licensee when the plant-specific backfit is identified:
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> • Legal requirements, as in regulations, orders, and plant licenses (including amendments, conditions, technical specifications). Some regulations have update features built into them; for example, 10 CFR 50.55a, "Codes of Standards." Such update features are applicable as described in the regulation.
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> * * * *
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> • NRC staff positions that explicitly interpret the more general regulations and that are approved and stated in such documents as standard review plans (SRPs), branch technical positions, regulatory guides, generic letters, and bulletins, and to which a licensee has previously committed or upon which a licensee has previously relied. Positions contained in these documents are not considered applicable regulatory staff positions with respect to a particular licensee unless the staff has, in a previous licensing or enforcement action, identified to the licensee part or all of the position.

The SQN NCV represents a change in NRC Staff position regarding Class 1E equipment qualification in mild environments. The Commission's regulations, SRP, and GL 82-09 are clear that there is no requirement to establish environmental qualification criteria for design such as the MCCBs in the SQN NCV because they are in mild environments, as 10 CFR 50.49(c)(3) states:

Requirements for environmental qualification of electric equipment important to safety located in a mild environment are not included within the scope of this section. A mild environment is an environment that would at no time be significantly more severe than the environment that would occur during normal plant operation, including anticipated operational occurrences.

GL 82-09, Q&A 4 states:

Q. Can periodic surveillance, testing and maintenance programs adequately demonstrate qualification of electrical equipment in mild environments?

A. For existing equipment located in mild environments, equipment environmental qualification can be adequately demonstrated and maintained by the use of the following three programs:

1. A periodic maintenance, inspection, and/or replacement program based on sound engineering practice and recommendations of the equipment manufacturer which is updated as required by the results of an equipment surveillance program;

2. A periodic testing program to verify operability of safety related equipment within its performance specification requirements (system level testing of the type typically required by the plant technical specifications may be used); and

3. An equipment surveillance program which includes periodic inspections, analysis of equipment and component failures, and a review of the results of preventive maintenance and periodic testing programs.

For replacement and new equipment, the licensee must also establish and document the environmental design basis for the equipment locations. The purchase specifications must reflect those design basis environmental conditions that are bounding for all applicable equipment locations.

The Statements of Consideration for the 10 CFR 50.49 rule (48 FR 1983) further note that, “[t]he final rule does not cover the electric equipment located in a mild environment. The Commission has concluded that the general quality and surveillance requirements applicable to electric equipment as a result of other Commission regulations, including 10 CFR Part 50, Appendix B (see for example, Regulatory Guide 1.33, ‘Quality Assurance Requirements (Operation), Revision 3) are sufficient to ensure adequate performance of electrical equipment important to safety located in mild environments. Since it has been concluded that no further environmental qualification requirements are needed for such equipment provided they fully satisfy all other applicable regulations, the Commission has determined that no additional requirements are necessary with respect to electric equipment located in mild environments in order for licensees to satisfy, with respect to such equipment, existing license conditions or technical specifications calling for qualification of safety-related electric equipment in accordance with DOR Guidelines or NUREG-0588.”

The NRC Inspection Report states the SQN NCV in part as:

> … the licensee failed to establish measures for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components. Specifically, the licensee failed to establish measures for the selection and review for suitability of static and dynamic performance characteristics used in the design and qualification of Class 1E electrical equipment.

In addition, the NRC Inspection Report noted that the NRC Staff believes that qualification criteria for design life were included in the characteristics that should be part of qualification of Class 1E MCCBs in a mild environment:

> The inspectors reviewed procurement packages for DCNs 23085 and 23082 that purchased Class 1E molded case circuit breakers (MCCBs) to assess the qualification criteria. The inspectors identified that the licensee did not establish qualification criteria for design life.

The qualification requirements set forth in the NRC Inspection Report is a new staff position that would constitute a modification or addition to the procedures required to operate SQN by requiring SQN to establish qualification criteria for design life and dynamic and static performance characteristics of Class 1E MCCBs in mild environments, contrary to 10 CFR 50.49, GL 82-09, and the SQN licensing basis, as discussed in Sections 3 and 4, *supra*.

Because TIA 2014-01 has been rescinded, no other plant, to TVA's knowledge, is subject to a similar requirement, so the backfit is plant-specific.

The NRC characterization of the regulatory basis related to service life in the SQN NCV appears to be based on an oversimplification of the many inputs that are required to develop effective maintenance programs and did not fully consider how TVA complies with the NRC's existing regulations, GL 82-09, the SRP, and the SQN licensing basis. As discussed above, SQN is in compliance with applicable regulations and its licensing basis contrary to the SQN NCV. As a result, the SQN NCV, as a new NRC Staff position, represents a significant expansion of regulatory requirements with respect to design basis information, maintenance programs, and mild environment equipment qualification, in excess of existing regulatory requirements for quality assurance programs. The SQN NCV effectively changes existing NRC rules by establishing an equipment qualification requirement for all SSCs located in mild environments beyond those specifically defined in 10 CFR 50.49, "Environmental qualification of electric equipment important to safety for nuclear power plants," contrary to the NRC Staff's position in GL82-09.

The regulatory precedent and licensing basis ramifications of this new NRC Staff position would be significant to SQN, the rest of the TVA nuclear fleet, and industry if the NCV is not withdrawn.

Under such a position, extensive evaluations and third-party testing would be required for components that are not subject to those evaluations or testing under current NRC regulations and the SQN licensing basis. For reference, the current Class 1E population with a qualified life per 10 CFR 50.49 (i.e., harsh environment) at SQN is approximately 3,500 components. Based on this potentially new licensing basis requirement, an additional approximately 22,730 Class 1E components in mild environments at SQN may require evaluation. The estimated cost to accomplish this extraordinary effort is approximately $205 million. This estimate only considers the top component categories (e.g., breakers, chillers, circuit boards, motors, switches, etc.), and includes developing a new program establishing end of service life replacement of non-EQ 1E equipment, cost of equipment evaluation, equipment replacement (material and labor), work order and PM processing, additional testing/evaluation to establish service life documentation for some equipment, and accounting for some obsolete equipment. The additional impact to TVA could include similar evaluations for the rest of the TVA fleet and possibly other utilities.

Because this change in NRC Staff position constitutes a backfit, the NRC Staff must satisfy the backfitting requirements of 10 CFR 50.109 before imposing the new NRC Staff position. The NRC staff must first perform a systematic and documented backfit analysis. The NRC staff must then determine that the backfit would constitute "a substantial increase in the overall protection of the public health and safety or the common defense and security" and that "the direct and indirect costs of implementation for that facility are justified in view of this increased protection." Only after making these findings can the NRC require TVA to implement the new NRC Staff position in the SQN NCV.

6. Conclusion

TVA performed qualification of the safety-related Class 1E replacement breakers included in DCNs 23085 and 23082 in accordance with the SQN design and licensing basis and NRC requirements. Appropriate measures were established for the selection and review for suitability of static and dynamic performance characteristics used in the design and qualification of the replacement breakers as delineated in the design/purchase specifications.

The SQN preventive maintenance process and periodic testing/surveillance program for these replacement breakers are adequate to ensure the equipment will continue to operate under their design basis conditions. Aging mechanisms were appropriately considered in the development of the preventive maintenance and periodic testing. Because the replacement equipment is located in a mild environment, no additional qualified life specifications were required.

TVA has actively followed the industry service life issue, including participation at the NRC September 14, 2017, Public Meeting, and industry forums involving service life issues to ensure due diligence in properly resolving the SQN NCV. The SQN service life issue as characterized in NCV 05000327, 328/2015007-05 documented in Inspection Report 05000327, 05000328/2015007 is not consistent with NRC regulatory requirements and associated guidance. Therefore, TVA respectfully requests that the SQN NCV be withdrawn and, if it is not, TVA requests that the NRC treat this as a new NRC Staff position, which requires that the NRC Staff conduct a backfitting analysis pursuant to 10 CFR 50.109(a)(3).

References

1. 10 CFR 50.49, Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants

2. 10 CFR 50.109, Backfitting

3. NUREG-0800, Standard Review Plan, Section 3.11, Environmental Qualification of Mechanical and Electrical Equipment

4. NUREG-1409, Backfitting Guidelines

5. Regulatory Guide (RG) 1.89, Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants, Revision 1

6. Institute of Electrical and Electronics Engineers (IEEE) 323-1971, Qualifying Class 1 Electric Equipment for Nuclear Power Generating Stations

7. IEEE 279-1971, Criteria for Protection Systems for Nuclear Power Generating Stations

8. IEEE 308-1971, Criteria for Class 1E Electric Systems for Nuclear Power Generating Stations

9. IEEE 323-1974 and -1983, Qualifying Class 1E Equipment for Nuclear Power Generating Stations

10. Task Interface Agreement (TIA) 2014-01, “Final Task Interface Agreement - Regulatory Position on Design Life of Safety-Related Structures, Systems, and Components Related to Unresolved Items at Donald C. Cook Nuclear Power Plant, Monticello Nuclear Generating Plant, and Palisades Nuclear Plant.”

11. LIC-202, Procedures for Managing Plant-Specific Backfits and 50.54(f) Information Requests