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U.S. Nuclear Regulatory Commission (NRC)
Washington, D.C. 20555-0001

ATTENTION: Document Control Desk

Duke Energy Carolinas, LLC
McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369 and 50-370
Renewed Facility Operating Licenses NPF-9 and NPF-17

SUBJECT: License Amendment Request to Revise Technical Specification 3.3.1, "Reactor Trip System (RTS) Instrumentation"

Pursuant to 10 CFR 50.90, enclosed is a Duke Energy Carolinas, LLC (Duke Energy) License Amendment Request (LAR) for the McGuire Nuclear Station Renewed Facility Operating Licenses and Technical Specifications (TS). The proposed LAR is required to resolve an Operable But Degraded Non-conforming (OBDN) issue associated with the Reactor Coolant Pump Under-frequency trip setpoint Allowable Value (AV). Because this LAR is required to correct a non-conservative TS, it is not a voluntary request. As such, this LAR is not subject to "forward fit" considerations (July 14, 2010, letter, ML101960180).

The proposed LAR affects TS 3.3.1, "Reactor Trip System (RTS) Instrumentation" for McGuire Nuclear Station Units 1 and 2. Applicable aspects of Technical Specification Task Force Traveler TSTF-493, Revision 4, "Clarify Application of Setpoint Methodology for [Limiting Safety System Setting] LSSS Functions," are incorporated in the scope of the proposed changes.

Duke Energy requests approval of this LAR within one calendar year of the submittal date. The requested approval time-frame supports timely resolution of an OBDN issue. Once approved, this amendment would be implemented within 60 days.

The Enclosure provides a description of the proposed change, the technical justification, an evaluation of significant hazards consideration pursuant to 10 CFR 50.92(c), a statement of environmental consideration, and the following attachments:

- Attachment 1 provides the existing TS pages marked to show the proposed changes for the McGuire Nuclear Station.
- Attachment 2 provides existing TS Bases pages marked to show the proposed changes for the McGuire Nuclear Station. These pages are provided for information only.

A001
NRR

In accordance with Duke Energy's administrative procedures and Quality Assurance Program, this LAR has been reviewed and approved by the McGuire Plant Operations Review Committee.

Pursuant to 10 CFR 50.91, a copy of this LAR is being sent to the designated official of the State of North Carolina.

No regulatory commitments are associated with this LAR.

If there are any questions or if additional information is needed, please contact Brian Richards at 980-875-5171.

I declare under the penalty of perjury that the foregoing is true and correct. Executed on July 9, 2015.

Sincerely,

Steven D. Capps

Enclosure

1. Evaluation of the Proposed Change

xc with enclosure:

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ENCLOSURE 1

Evaluation of the Proposed Change

Subject: License Amendment Request to Revise Technical Specification 3.3.1, Reactor Trip System (RTS) Instrumentation

1. SUMMARY DESCRIPTION

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   4.3 Conclusions

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ATTACHMENTS:

1. McGuire Units 1 and 2 Technical Specification Page Markups
2. McGuire Units 1 and 2 Technical Specification Bases Page Markups (pages included for information only)

1. SUMMARY DESCRIPTION

This evaluation supports a request to amend Renewed Facility Operating Licenses NPF-9 and NPF-17 for McGuire Nuclear Station Units 1 and 2.

The proposed change would revise the McGuire Technical Specification (TS) 3.3.1, "Reactor Trip System (RTS) Instrumentation," (Reference 3) to resolve an Operable But Degraded Non-Conforming (OBDN) issue regarding the TS Allowable Value for the Reactor Coolant Pump (RCP) under-frequency reactor trip setpoint (Reference 5).

The proposed amendment modifies the allowable value for Function 11 and incorporates Option A of TSTF-493, Revision 4, "Clarify Application of Setpoint Methodology for LSSS Functions," calibration requirements for Functions 11 and 12 within Table 3.3.1-1, Reactor Trip System Instrumentation. The changes are required to resolve a latent design error, which resulted when the RCP under-frequency and under-voltage relays were replaced with more accurate relays.

Resolving the latent design error requires a revision to the uncertainty analysis associated with the under-frequency relays. This reanalysis requires use of a different evaluation methodology, which in turn requires a license amendment to be utilized. Once the new methodology is applied, the existing under-frequency relay allowable value is acceptable, so no change is necessary. However, applying the new methodology to the under-voltage relays allows additional margin associated with operation of the relays to be realized, so the allowable value for Function 11 is revised as part of this License Amendment Request (LAR).

Because this LAR is required to correct a non-conservative TS, it is not a voluntary request. As such, this LAR is not subject to "forward fit" considerations (July 14, 2010, letter, ML101960180).

A methodology change is being used to resolve the non-conservative TS associated with the under-frequency relays. The current allowable values in Table 3.3.1-1 are more restrictive than the new values requested by this LAR.

2. DETAILED DESCRIPTION

Specifically, the proposed changes would revise the McGuire Nuclear Station Units 1 and 2 TS as follows:

1. Table 3.3.1-1 presently lists an Allowable Value entry for Function 11 "Undervoltage RCPs", of ≥ 5016 V. It is proposed to change the listed TS Allowable Value (TSAV) to ≥ 4870 V.

2. Table 3.3.1-1 Functions 11 and 12 (Undervoltage RCPs and Underfrequency RCPs, respectively) Surveillance Requirement 3.3.1.10 for each function is further modified to reference existing TSTF-493 related notes (j) and (k).

Further Discussion

As described above, the TS 3.3.1 Table 3.3.1-1 Function 11 allowable value magnitude is revised to reflect an updated setpoint calculation, which determined a lower allowable value magnitude for the more accurate relay.

Also included in the scope of the proposed changes is the addition of references to existing TS Table 3.3.1-1 footnotes (j) and (k) for TS Table 3.3.1-1 Functions 11 and 12. These footnotes are consistent with TS Task Force Traveler TSTF-493, Revision 4 (Reference 1), Option A.

Attachment 1 provides a marked-up version of the affected pages of TS 3.3.1 for the McGuire Nuclear Station showing the proposed changes. Attachment 2, provided for information only, shows the planned revisions to the Bases for TS 3.3.1.

Circumstances Establishing Need for the Proposed Amendment

A historical modification replaced the RCP under-frequency and under-voltage relays with more precise models. The modification failed to revise the associated relay setpoint uncertainty calculation. This oversight was later discovered, and the associated setpoint calculation was revised to reflect the more precise relay models per the original Westinghouse setpoint methodology. At that point, the calculation concluded the existing TSAV for RCP under-frequency was no longer conservative for the more precise replacement relays. The more precise relays afford more margin to the safety analyses limit. The calibration procedures were previously revised to specify the more limiting Allowable Value magnitude for RCP under-frequency instrumentation. A formal operability evaluation concluded the RCP under-frequency TSAV was OBDN with respect to the original licensing bases. This LAR is required to resolve the OBDN condition.

To support this LAR submittal, a new setpoint uncertainty calculation was performed for the RCP under-voltage and under-frequency relay setpoints per the methodology outlined in Reference 2. The methodology is described in detail in Section 3. The calculation via the new methodology concluded the following:

- the existing TS Allowable Value for the RCP under-frequency trip setpoint was acceptable as-is
- the existing TS Allowable Value for the RCP under-voltage trip setpoint required revision to a lower value

The uncertainty analyses performed per the updated methodology (Reference 2) will allow resolution of the original RCP under-frequency Allowable Value OBDN issue without revising the TSAV. The revision of the existing TSAV for the RCP under-voltage trip setpoint was required to accommodate the calculated TSTF-493 as-found tolerance allowance (refer to Section 3 for more detail).

3. TECHNICAL EVALUATION

General

The RTS instrumentation initiates functions to prevent violating the core fuel design limits and Reactor Coolant System (RCS) pressure boundary during anticipated operational occurrences

(AOOs) and to assist the Engineered Safety Features (ESF) Systems in mitigating accidents.

The protection and monitoring systems have been designed to assure safe operation of the reactor. This is achieved by specifying limiting safety system settings (LSSS) in terms of parameters directly monitored by the RTS, as well as specifying the Limiting Conditions for Operation (LCOs) on other reactor system parameters and equipment performance.

The LSSS, defined in this specification as the Allowable Values, in conjunction with the LCOs, establishes the threshold for protective system action to prevent exceeding acceptable limits during Design Basis Accidents (DBAs).

The RCP under-voltage and under-frequency trip features comprise the two RTS functions involved in this LAR. The RCP under-voltage reactor trip function ensures that protection is provided against violating the Departure from Nucleate Boiling Ratio (DNBR) limit due to a loss of flow in two or more RCS loops. The RCP under-frequency reactor trip function ensures that protection is provided against violating the DNBR limit due to a loss of flow in two or more RCS loops from a major network frequency disturbance.

The existing TSAV was determined based on the original Westinghouse setpoint methodology and was based on the prior model relays. When a revision to this setpoint calculation was prepared for the more precise replacement relays, using the original setpoint methodology, it concluded that the existing TS RCP under-frequency AV was no longer conservative. To address this non-conservatism, a new setpoint uncertainty calculation was developed based on the more current setpoint methodology and TSTF-493 as outlined below.

Instrument Uncertainty Calculation Changes

Introduction

Setpoint calculation revisions were performed in support of the proposed changes to the TS Table 3.3.1-1, " Reactor Trip System Instrumentation," as described in Section 2 above. These setpoint calculations were performed in accordance with Duke Energy Engineering Directives Manual (EDM)-102, "Instrument Setpoint/Uncertainty Calculations," Revision 4. The methodology described in EDM-102 is consistent with the intent of Instrument Society of America (ISA) Standard RP67.04-1994 Part II, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation."

Basic Methodology – EDM-102

The loop uncertainty methodology is primarily based on the "Square-Root-Sum-of-the-Squares" (SRSS) technique for combination of random-independent uncertainty terms. Random-dependent and bias uncertainty terms must be addressed through a combination of the SRSS and/or algebraic techniques.

The overall methodology requires identification of applicable sources of instrument uncertainty and categorization of each as a random-independent (x,y), random-dependent (w,u), or bias/abnormal distribution (v,t) term. The magnitude of each term is then combined to determine the "Total Loop Uncertainty" (TLU) as depicted below. The "+" and "-" convention represents the positive or negative uncertainty limits within the measured setpoint or indication.

$$+ TLU = +\{x^2 + y^2 + (w + u)^2\}^{1/2} + v + t$$
$$- TLU = -\{x^2 + y^2 + (w + u)^2\}^{1/2} - v - t$$

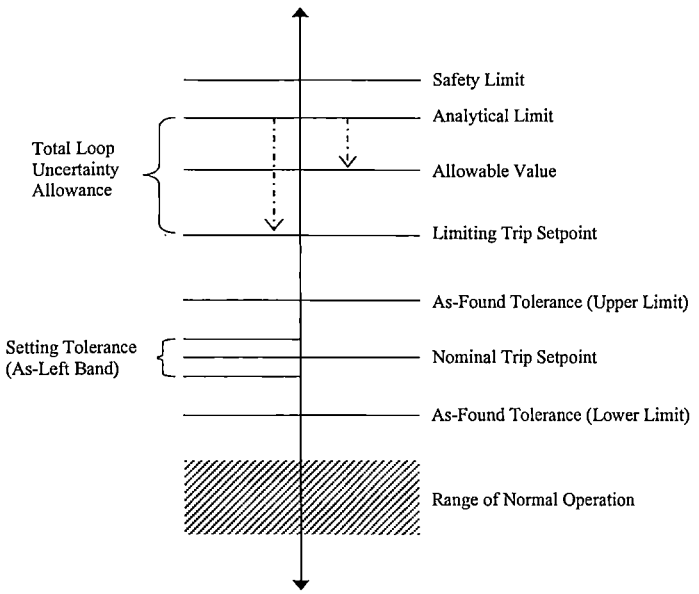
The treatment of bias/abnormal distribution terms requires additional discussion. Bias terms are typically based on conservative estimates and are predictable. Bias terms would normally be applied only in an additive manner to the respective "+" or "-" TLU component. Biases of unknown direction would be applied in an additive manner to both the -TLU and +TLU determinations. Application of a non-recurring bias term shall not be applied so as to decrease a TLU value. Proper application of a bias would normally result in reduced margin for the setpoint limit of interest. Terms that have an abnormal distribution cannot be combined with normally distributed terms using SRSS and must therefore be added as a limit of error in both directions.

The RCP under-voltage and under-frequency instrumentation uncertainty analyses included the following device uncertainty contributions:

Uncertainty Contribution	RCP Under-frequency Uncertainty (±%span)	RCP Under-voltage Uncertainty (±%span)
Accuracy	±0.09	±3.6
Drift	±0.09	±3.6
Measuring and Test Equipment (M&TE)	±0.39	±3.2
Calibration Setting Tolerance	±0.40	±4.8

The device uncertainty contributions were treated as random-independent effects. These magnitudes could vary in the future based on the installed model relay, demonstrated drift, and available M&TE.

Evaluation of setpoint acceptability requires comparison of the total loop uncertainty against the operational ranges and the protected limits (process, analytical, and/or safety limits). This setpoint relationship is based on guidance in Regulatory Guide (RG) 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation." The typical reactor protection and/or safeguard setpoint relationship, depicting a high process setpoint, is depicted as follows:



Safety Limits (SL) are the values chosen to reasonably protect the integrity of physical barriers that guard against the uncontrolled release of radioactivity. Analytical Limits (AL) typically are values utilized in the safety analyses, which were specifically chosen to allow the equipment time to act and prevent exceeding the SL.

The revised RCP under-voltage and under-frequency setpoint calculation concluded the existing TS Nominal Trip Setpoints (NTSPs) were acceptable.

The Limiting Trip Setpoint is the limiting value for the Nominal Trip Setpoint and represents the AL plus or minus the TLU. The Limiting Trip Setpoint is the minimum total uncertainty allowance adjustment required to ensure trip actuation prior to the AL. The NTSP represents the trip setpoint at which the device is actually set in the plant and is greater than or equal to the Limiting Trip Setpoint.

The Allowable Value (AV) represents an acceptable benchmark (specified by TS) for which periodic calibrations/checks must fall within to ensure operability. When a channel "as-found" condition is determined to be less conservative than the AV, the channel must be declared inoperable. The AV determination is based on expected uncertainty influences for the portion of the loop not tested. Uncertainty magnitudes must be representative of the surveillance interval duration. Examples of typical uncertainty influences are transmitter reference accuracy, calibration uncertainty and temperature effects, process measurement allowances and biases. The AV was determined as follows:

$$AV = AL \pm(RU_{NT} + Biases) = AL + / - \{[(TLU - Biases)^2 - RU_{T-cal}{}^2]^{1/2} \pm Biases\}$$

where:
- TLU = Total loop uncertainty
- AL = limit of a measured or calculated variable established by the safety analyses to ensure that a safety limit is not exceeded
- + / - = "+" or "-" sign convention dictated by whichever is in the direction setpoint (i.e. towards setpoint)
- RU_{NT} = denotes uncertainty associated with the portion of the loop not tested during the channel check, calibration, etc.
- RU_{T-cal} = denotes uncertainty associated with the portion of the loop tested during the channel check, calibration, etc.

The setpoint/uncertainty calculation determined the TS AVs to be the following:

	Calculated AV	Current TS AV	Desired TS AV
RCP Under-frequency	55.0 Hz	55.9 Hz	no change, use current TS value 55.9 Hz
RCP Under-voltage	4800 V	5016 V	New value of 4870 V

The current TS AV for RCP under-frequency was conservatively retained as it provided adequate margin for the TSTF-493 as-found tolerance. The current TS AV for the RCP under-voltage required modification since it did not accommodate the TSTF-493 as-found tolerance. The AV for the RCP under-voltage was conservatively specified to envelop the calculated AV and selected to provide margin from the TSTF-493 as-found tolerance.

TSTF-493 As-Found/As-Left Tolerance

The channel as-found and as-left acceptable tolerances are established in accordance with TSTF-493, Revision 4. This method for determination of allowable calibration tolerances serves to assure that the instrument channels are operating within the bounds defined in the Safety Analysis.

As-Found Tolerance

"As-Found" is the condition in which a channel, or portion of a channel, is found after a period of operation and before recalibration (if necessary). The As-Found Tolerance is the allowance the channel or portion thereof is expected to be within based on calculations that ensure the channel is capable of actuating prior to reaching the AL. Values recorded during a channel as-found surveillance which are within the As-Found Tolerance would clearly indicate a channel is operating as intended. Values recorded during a channel as-found surveillance which exceed the As-Found Tolerance would require a more detailed review to determine the effects of the increased uncertainty on the operability of the channel. Uncertainties which make up the As-Found Tolerance typically include the SRSS combination of reference accuracy, drift, and M&TE. The setpoint/uncertainty calculation determined the maximum allowed as-found calibration setting tolerance to be the following:

	As-found Tolerance
RCP Under-frequency setpoint	±0.037 Hz
RCP Under-voltage setpoint	±179.72 volts

These magnitudes could vary in the future based on the installed model relay, demonstrated drift, and available M&TE.

As-Left Tolerance

"As-Left" is the condition in which a channel, or portion of a channel, is left after calibration or final setpoint device setpoint verification. The As-Left Tolerance is the acceptable setting variation about the setpoint that the technician may leave the setting following calibration. Uncertainty terms which make up the As-Left Tolerance for the portion of the channel under surveillance would typically include the SRSS combination of reference accuracy and M&TE. The setpoint calculation determined the maximum allowed as-left calibration setting tolerance to be the following:

	As-left Tolerance
RCP Under-frequency setpoint	±0.036 Hz
RCP Under-voltage setpoint	±143.65 volts

These magnitudes could vary in the future based on the installed model relay and available M&TE.

Included in the scope of the proposed changes is the reference to two existing lettered footnotes applicable to the affected Surveillance Requirements listed in Table 3.3.1-1 for the RCP under-frequency and under-voltage trip setpoints. These footnotes are consistent with TSTF-493, Revision 4.

The footnote reference for these channels serves to ensure that unexpected as-found conditions are evaluated prior to returning the channel to service and to ensure that as-left settings provide sufficient margin for uncertainties. These changes will have no adverse effect on plant safety.

4. REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

Following implementation of proposed TS changes, the McGuire Nuclear Station will remain in compliance with applicable regulations and requirements. Discussion of the NRC General Design Criteria (GDC) is provided in various sections of the Updated Final Safety Analysis Report (UFSAR) Chapter 7, "Instrumentation and Controls," where a particular GDC is applicable. Applicable GDCs include Criteria 13, 20, 21, 22, 23, 24, and 25 of the 1971 General Design Criteria, as outlined by UFSAR Sections 3.1 and 7.2.2.2.3. The Reactor Protection System (RPS) compliance with various Institute of Electrical and Electronics Engineers (IEEE) Standards and regulatory guides is outlined in UFSAR Section 7.1.2. UFSAR Sections 3.1 and 7.2.2.2.3 document that the RPS is in compliance with IEEE 279-1971. Compliance with Regulatory Guide 1.47 is discussed in Section 7.8.2 of the UFSAR.

The proposed LAR involves lowering the existing RCP under-voltage ALLOWABLE VALUE, and it also involves adopting TSTF-493 provisions for as-found and as-left calibration tolerances on both the under-frequency and under-voltage reactor trip features. These proposed changes have no impact on the RTS design or on compliance with GDCs 13, 20, 21, 22, 23, 24, and 25. Similarly, the proposed LAR does not impact the RTS design or compliance with IEEE 279-1971. The proposed LAR will continue to ensure the RCP under-frequency and under-voltage reactor trip features will properly function as credited in the safety analyses. The proposed changes to adopt TSTF-493 as-found and as-left tolerance requirements further serve to ensure that the RTS instrumentation will operate within the bounds defined in the safety analyses.

4.2 No Significant Hazards Consideration

The proposed amendment affects McGuire Nuclear Station TS 3.3.1, "Reactor Trip System (RTS) Instrumentation." Specifically, Table 3.3.1-1 is revised to reflect a new allowable value for the RCP under-voltage trip setpoint. Applicable aspects of TS Task Force Traveler TSTF-493 are incorporated within Table 3.3.1-1 for the RCP under-voltage and under-frequency trip setpoint calibration surveillance requirements.

An evaluation has been performed to determine whether or not a significant hazards consideration is involved with the proposed amendments 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 proposed TS changes involve lowering the existing RCP under-voltage ALLOWABLE VALUE and adopting TSTF-493 provisions for as-found and as-left calibration tolerances. The proposed TS changes serve to further ensure the Reactor Trip RCP under-frequency and under-voltage trip instrumentation will properly function as credited in the safety analyses. The proposed changes do not alter any assumptions previously made in the radiological consequences evaluations nor do they affect mitigation of the radiological consequences of an accident previously evaluated. The proposed TS changes do not affect the probability of accident initiation.

In summary, the proposed changes will not involve any increase in the probability or consequences of an accident previously evaluated.

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 TS changes involve lowering the existing RCP under-voltage ALLOWABLE VALUE and adopting TSTF-493 provisions for as-found and as-left calibration tolerances. No new accident scenarios, failure mechanisms, or single failures are introduced as a result of any of the proposed changes.

The Reactor Trip System is not an accident initiator. No changes to the overall manner in which the plant is operated are being proposed. Therefore, the proposed changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

Response: No

Margin of safety is related to the confidence in the ability of the fission product barriers to perform their intended functions. These barriers include the fuel cladding, the reactor coolant system pressure boundary, and the containment barriers. The proposed TS changes serve to ensure proper operation of the Reactor Trip RCP under-frequency and under-voltage trip instrumentation and that the instrumentation will properly function as credited in the safety analyses. The proposed TS changes will not have any effect on the margin of safety of fission product barriers. No accident mitigating equipment will be adversely impacted as a result of the

modification. Therefore, existing safety margins will be preserved. None of the proposed changes will involve a significant reduction in a margin of safety.

Based on the above, it is concluded 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.

4.3 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. 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 effluents 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. REFERENCES

1. Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-493, Revision 4, "Clarify Application of Setpoint Methodology for LSSS Functions"

2. Duke Energy Engineering Directives Manual, EDM-102, Revision 4, "Instrument Setpoint/Uncertainty Calculations"

3. McGuire Nuclear Station Units 1 and 2 Technical Specifications, Amendments 268/248, Technical Specification 3.3.1, "Reactor Trip System (RTS) Instrumentation"

4. McGuire Nuclear Station Updated Final Safety Analysis Report, Revision 18, Section 7.1.2.4, "Instrument Range Design Criteria"

5. McGuire Nuclear Station Problem Identification Process (PIP), PIP M-11-8672 / NCR 01903757, Operable but Degraded Non-Conforming issue regarding Reactor Coolant Pump Under-frequency Allowable Value

ATTACHMENT 1

McGuire Units 1 and 2 Technical Specification Page Markups

Table 3.3.1-1 (page 3 of 7)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
9. Pressurizer Water Level - High	1(f)	3	M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10	≤ 93%	92%
10. Reactor Coolant Flow - Low						
a. Single Loop	1(g)	3 per loop	N	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 87%	88%
b. Two Loops	1(h)	3 per loop	M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 87%	88%
11. Undervoltage RCPs	1(f)	1 per bus	M	SR 3.3.1.9 SR 3.3.1.10(j)(k) SR 3.3.1.16	≥ ~~5016~~ 4870 V	5082 V
12. Underfrequency RCPs	1(f)	1 per bus	M	SR 3.3.1.9 SR 3.3.1.10(j)(k) SR 3.3.1.16	≥ 55.9 Hz	56.4 Hz
13. Steam Generator (SG) Water Level - Low Low	1,2	4 per SG	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.16	≥ 15%	16.7%
14. Turbine Trip						
a. Low Fluid Oil Pressure	1(g)	3	O	SR 3.3.1.10 SR 3.3.1.15	≥ 42 psig	45 psig
b. Turbine Stop Valve Closure	1(g)	4	P	SR 3.3.1.10 SR 3.3.1.15	≥ 1% open	≥ 1% open
15. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	Q	SR 3.3.1.5 SR 3.3.1.14	NA	NA

(continued)

(f) Above the P-7 (Low Power Reactor Trips Block) interlock.
(g) Above the P-8 (Power Range Neutron Flux) interlock.
(h) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) interlock.

(j) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(k) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in the UFSAR.

ATTACHMENT 2

McGuire Units 1 and 2 Technical Specification Bases Page Markup
(Provided for information only)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.1.9

SR 3.3.1.9 is the performance of a TADOT. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

The SR is modified by a Note that excludes verification of setpoints from the TADOT. Since this SR applies to RCP undervoltage and underfrequency relays, setpoint verification is accomplished during the CHANNEL CALIBRATION.

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SR 3.3.1.10

The CHANNEL CALIBRATION may be performed at power or during refueling based on testing capability. Channel unavailability evaluations in References 10 and 11 have conservatively assumed that the CHANNEL CALIBRAITON is performed at power with the channel in bypass.

CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to a measured parameter within the necessary range and accuracy.

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the setpoint methodology.

The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.3.1.10 is modified by a Note stating that this test shall include verification that the time constants are adjusted to the prescribed values where applicable. The applicable time constants are shown in Table 3.3.1-1.

INSERT 1

SR 3.3.1.11

SR 3.3.1.11 is the performance of a CHANNEL CALIBRATION, as described in SR 3.3.1.10. Two notes modify this SR. Note 1 states that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the power range neutron detectors consists of a normalization of the detectors based on a power calorimetric and flux map performed above 15% RTP. The high

McGuire Bases INSERTS

INSERT 1 (new paragraph)

For Functions for which TSTF-493, "Clarify Application of Setpoint Methodology for LSSS Functions" (Reference 12) has been implemented, this SR is modified by two Notes as identified in Table 3.3.1-1. The first Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its as-found tolerance but conservative with respect to the Allowable Value. Evaluation of channel performance will verify that the channel will continue to behave in accordance with safety analysis assumptions and the channel performance assumptions in the setpoint methodology. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. The performance of these channels will be evaluated under the station's Corrective Action Program. Entry into the Corrective Action Program will ensure required review and documentation of the condition for continued OPERABILITY. The second Note requires that the as-left setting for the channel be returned to within the as-left tolerance of the Nominal Trip Setpoint (NTSP). Where a setpoint more conservative than the NTSP is used in the plant surveillance procedures (field setting), the as-left and as-found tolerances, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit and/or Analytical Limit is maintained. If the as-left channel setting cannot be returned to a setting within the as-left tolerance of the NTSP, then the channel shall be declared inoperable. The second Note also requires that the methodologies for calculating the as-left and the as-found tolerances be in the UFSAR. The NOMINAL TRIP SETPOINT definition includes a provision that would allow the as-left setting for the channel to be outside the tolerance band, provided the setting is conservative with respect to the NTSP. This provision is not applicable to Functions for which the second NOTE applies.