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RS-19-092

10 CFR 50.90

December 9, 2019

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Braidwood Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. 50-456 and 50-457

Byron Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. 50-454 and 50-455

Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Renewed Facility Operating License Nos. DPR-53 and DPR-69
NRC Docket Nos. 50-317 and 50-318

Subject: Application to Revise Technical Specifications to Adopt TSTF-569, "Revise Response Time Testing Definitions"

References:
1. TSTF-569, Revision 2, "Revise Response Time Testing Definition," dated June 25, 2019 (ML19176A034)
2. Final Safety Evaluation of Technical Specifications Task Force Traveler TSTF-569, Revision 2, "Revise Response Time Testing Definition," dated August 14, 2019 (EPID L-2018-PMP-0002)

Pursuant to 10 CFR 50.90, Exelon Generation Company, LLC (EGC) is submitting a request for an amendment to the Technical Specifications (TS) for Braidwood Station Units 1 and 2, Byron Station Units 1 and 2, and Calvert Cliffs Nuclear Power Plant Units 1 and 2.

EGC requests adoption of TSTF-569, "Revise Response Time Testing Definition," which is an approved change to the Improved Standard Technical Specifications (ISTS), into the Braidwood Station Units 1 and 2, Byron Station Units 1 and 2, and Calvert Cliffs Nuclear Power Plant Units 1 and 2 TS.

The proposed amendment revises the TS Definitions for Engineered Safety Feature (ESF) Response Time and Reactor Trip System (RTS) Response Time for Braidwood and Byron Stations and also revises Engineered Safety Feature (ESF) Response Time and Reactor Protective System (RPS) Response Time for Calvert Cliffs Nuclear Power Plant.

Attachment 1 provides a description and assessment of the proposed changes.
Attachment 2 provides the existing TS pages marked to show the proposed changes.

Attachment 3 provides existing TS Bases pages marked to show the proposed changes for information only.

Approval of the proposed amendment is requested by June 9, 2020. Once approved, the amendment shall be implemented within 30 days.

This letter contains no regulatory commitments.

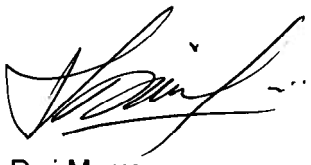
The proposed changes have been reviewed by the affected Plant Operations Review Committees in accordance with the EGC Quality Assurance Program.

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

Should you have any questions regarding this submittal, please contact Jason Taken at (630) 657-3660.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 9th day of December, 2019.

Respectfully,



Dwi Murray
Sr. Manager – Licensing
Exelon Generation Company, LLC

Attachments:
1. Description and Assessment
2a. Braidwood Station Units 1 and 2 Technical Specifications Markups
2b. Byron Station Units 1 and 2 Technical Specifications Markups
2c. Calvert Cliffs Nuclear Power Plant Units 1 and 2 Technical Specifications Markups
3a. Braidwood Station Units 1 and 2 Technical Specifications Bases Markups (for information only)
3b. Byron Station Units 1 and 2 Technical Specifications Bases Markups (for information only)
3c. Calvert Cliffs Nuclear Power Plant Units 1 and 2 Technical Specifications Bases Markups (for information only)

cc: NRC Regional Administrator, Region I
NRC Regional Administrator, Region III
NRC Senior Resident Inspector – Braidwood Station
NRC Senior Resident Inspector – Byron Station
NRC Senior Resident Inspector – Calvert Cliffs Nuclear Power Plant
NRC Project Managers – NRR (Braidwood, Byron, Calvert Cliffs, Fleet)
Illinois Emergency Management Agency – Division of Nuclear Safety
D. Tancabel, State of Maryland

ATTACHMENT 1
DESCRIPTION AND ASSESSMENT

1.0 DESCRIPTION

Exelon Generation Company, LLC (EGC) requests adoption of TSTF-569, "Revise Response Time Testing Definition," which is an approved change to the Improved Standard Technical Specifications (ISTS), into Braidwood (BWD) Station Units 1 and 2, Byron Station (BYR) Units 1 and 2, and Calvert Cliffs Nuclear Power Plant (CCNPP) Units 1 and 2 Technical Specifications (TS). The proposed amendment revises the TS Definitions for Engineered Safety Feature (ESF) Response Time and Reactor Trip System (RTS) Response Time for Braidwood and Byron Stations and Reactor Protective System (RPS) Response Time and Engineered Safety Feature (ESF) Response Time for Calvert Cliffs Nuclear Power Plant.

2.0 ASSESSMENT

2.1 Applicability of Safety Evaluation

EGC has reviewed the safety evaluation for TSTF-569 provided to the Technical Specifications Task Force (TSTF) in a letter dated August 14, 2019. This review included a review of the NRC staff's evaluation, as well as the information provided in TSTF-569. EGC has concluded that the justifications presented in TSTF-569 and the safety evaluation prepared by the NRC staff are applicable to BWD Units 1 and 2, BYR Units 1 and 2, and CCNPP Units 1 and 2, and justify this amendment for the incorporation of the changes to the BWD, BYR, and CCNPP TS.

2.2 Variations

The BWD, BYR, and CCNPP TS contain wording differences that do not affect the applicability of TSTF-569. Specifically, the definition of ESF Response Time in BWD, BYR, and CCNPP TS contains the phrase "ESF actuation setpoint" while the ISTS definitions has the phrase "actuation setpoint." Additionally, the CCNPP TS contains the definition of "Reactor Protective System" and the ISTS equivalent is "Reactor Protection System." These wording differences are administrative in nature and do not affect the applicability of TSTF-569.

Other than described above, EGC is not proposing any variations from the TS changes described in the TSTF-569 or the applicable parts of the NRC staff's safety evaluation dated August 14, 2019.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

Exelon Generation Company, LLC (EGC) requests adoption of TSTF-569, "Revise Response Time Testing Definition," which is an approved change to the Improved Standard Technical Specifications (ISTS), into the Braidwood Station (BWD) Units 1 and 2, Byron Station (BYR) Units 1 and 2, and Calvert Cliffs Nuclear Power Plant (CCNPP) Units 1 and 2 Technical Specifications (TS). The proposed amendment revises the TS Definitions for Engineered Safety Feature (ESF) Response Time and Reactor Trip System (RTS) Response Time for Braidwood and Byron Stations and Reactor Protective System (RPS) Response Time and Engineered Safety Feature (ESF) Response Time for Calvert Cliffs Nuclear Power Plant.

EGC has evaluated whether a significant hazards consideration is involved with the proposed amendment(s) 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 change revises the TS Definition of RTS, RPS, and ESF instrumentation response time to permit the licensee to evaluate using an NRC-approved methodology and apply a bounding response time for some components in lieu of measurement. The requirement for the instrumentation to actuate within the response time assumed in the accident analysis is unaffected. The response time associated with the RTS, RPS, and ESF instrumentation is not an initiator of any accident. Therefore, the proposed change has no significant effect on the probability of any accident previously evaluated. The affected RTS, RPS, and ESF instrumentation are assumed to actuate their respective components within the required response time to mitigate accidents previously evaluated. Revising the TS definition for RTS, RPS, and ESF instrumentation response times to allow an NRC-approved methodology for verifying response time for some components does not alter the surveillance requirements that verify the RTS, RPS, and ESF instrumentation response times are within the required limits. As such, the TS will continue to assure that the RTS, RPS, and ESF instrumentation actuate their associated components within the specified response time to accomplish the required safety functions assumed in the accident analyses. Therefore, the assumptions used in any accidents previously evaluated are unchanged and there is no significant increase in the consequences.

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 change revises the TS Definition of RTS, RPS, and ESF instrumentation response time to permit the licensee to evaluate using an NRC-approved methodology and apply a bounding response time for some components in lieu of measurement. The proposed change does not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed). The proposed change does not alter any assumptions made in the safety analyses. The proposed change does not alter the limiting conditions for operation for the RTS, RPS, or ESF instrumentation, nor does it change the Surveillance Requirement to verify the RTS, RPS, and ESF instrumentation response times are within the required limits. As such, the proposed change does not alter the operability requirements for the RTS, RPS, and ESF instrumentation, and therefore, does not introduce any new failure modes. Therefore, the proposed change does 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

The proposed change revises the TS Definition of RTS, RPS, and ESF instrumentation response time to permit the licensee to evaluate using an NRC-approved methodology and apply a bounding response time for some components in lieu of measurement. The proposed change has no effect on the required RTS, RPS, and ESF instrumentation response times or setpoints assumed in the safety analyses and the TS requirements to verify those response times and setpoints. The proposed change does not alter any Safety Limits or analytical limits in the safety analysis. The proposed change does not alter the TS operability requirements for the RTS, RPS, and ESF instrumentation. The RTS, RPS, and ESF instrumentation actuation of the required systems and components at the required setpoints and within the specified response times will continue to accomplish the design basis safety functions of the associated systems and components in the same manner as before. As such, the RTS, RPS, and ESF instrumentation will continue to perform the required safety functions as assumed in the safety analyses for all previously evaluated accidents.

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

Based on the above, EGC concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

3.2 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.

4.0 ENVIRONMENTAL EVALUATION

The proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

Attachment 2a

Braidwood Station Units 1 and 2 Technical Specifications Markups

1.1 Definitions

DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries per gram) that alone would produce the same dose when inhaled as the combined activities of iodine isotopes I-131, I-132, I-133, I-134, and I-135 actually present. The determination of DOSE EQUIVALENT I-131 shall be performed using the Committed Effective Dose Equivalent (CEDE) dose conversion factors from Table 2.1 of EPA Federal Guidance Report No. 11, 1988, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion."
DOSE EQUIVALENT XE-133	DOSE EQUIVALENT XE-133 shall be that concentration of Xe-133 (microcuries per gram) that alone would produce the same acute dose to the whole body as the combined activities of noble gas nuclides Kr-85m, Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135, and Xe-138 actually present. If a specific noble gas nuclide is not detected, it should be assumed to be present at the minimum detectable activity. The determination of DOSE EQUIVALENT XE-133 shall be performed using effective dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12, 1993, "External Exposure to Radionuclides in Air, Water, and Soil."
ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC~~.~~ or the components have been evaluated in accordance with an NRC approved methodology.

1.1 Definitions

PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)	The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits including heatup and cooldown rates, and the pressurizer Power Operated Relief Valve (PORV) lift settings for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.6.
QUADRANT POWER TILT RATIO (QPTR)	QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3645 MWt.
REACTOR TRIP SYSTEM (RTS) RESPONSE TIME	The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.
RECENTLY IRRADIATED FUEL	Fuel that has occupied part of a critical reactor core within the previous 48 hours. Note that all fuel that has been in a critical reactor core is referred to as irradiated fuel.

Attachment 2b

Byron Station Units 1 and 2 Technical Specifications Markups

1.1 Definitions

DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries per gram) that alone would produce the same dose when inhaled as the combined activities of iodine isotopes I-131, I-132, I-133, I-134, and I-135 actually present. The determination of DOSE EQUIVALENT I-131 shall be performed using the Committed Effective Dose Equivalent (CEDE) dose conversion factors from Table 2.1 of EPA Federal Guidance Report No. 11, 1988, "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion."
DOSE EQUIVALENT XE-133	DOSE EQUIVALENT XE-133 shall be that concentration of Xe-133 (microcuries per gram) that alone would produce the same acute dose to the whole body as the combined activities of noble gas nuclides Kr-85m, Kr-85, Kr-87, Kr-88, Xe-131m, Xe-133m, Xe-133, Xe-135m, Xe-135, and Xe-138 actually present. If a specific noble gas nuclide is not detected, it should be assumed to be present at the minimum detectable activity. The determination of DOSE EQUIVALENT XE-133 shall be performed using effective dose conversion factors for air submersion listed in Table III.1 of EPA Federal Guidance Report No. 12, 1993, "External Exposure to Radionuclides in Air, Water, and Soil."
ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.

1.1 Definitions

PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)	The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits including heatup and cooldown rates, and the pressurizer Power Operated Relief Valve (PORV) lift settings for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.6.
QUADRANT POWER TILT RATIO (QPTR)	QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3645 MWt.
REACTOR TRIP SYSTEM (RTS) RESPONSE TIME	The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.
RECENTLY IRRADIATED FUEL	Fuel that has occupied part of a critical reactor core within the previous 48 hours. Note that all fuel that has been in a critical reactor core is referred to as irradiated fuel.

Attachment 2c

Calvert Cliffs Nuclear Power Plant Units 1 and 2 Technical Specifications Markups

1.1 Definitions

	Air Concentration and Dose Conversion Factors for Inhalation, Submersion, and Ingestion."
$\bar{E}$-AVERAGE DISINTEGRATION ENERGY	$\bar{E}$ shall be the average (weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling) of the sum of the average beta and gamma energies per disintegration (in MeV) for isotopes, other than iodines, with half lives > 15 minutes, making up at least 95% of the total non-iodine activity in the coolant.
ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).
L_a	The maximum allowable containment leakage rate, L_a, shall be 0.16% of containment air weight per day at the calculated peak containment pressure (P_a).

1.1 Definitions

OPERABLE-OPERABILITY	A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
PHYSICS TESTS	PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are: a. Described in Chapter 13, Initial Tests and Operation of the Updated Final Safety Analysis Report; b. Authorized under the provisions of 10 CFR 50.59; or c. Otherwise approved by the Nuclear Regulatory Commission.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 2737 MWt.
REACTOR PROTECTIVE SYSTEM (RPS) RESPONSE TIME	The RPS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RPS trip setpoint at the channel sensor until electrical power to the CEAs drive mechanism is interrupted. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for

1.1 Definitions

	verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.
SHUTDOWN MARGIN (SDM)	SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all full length control element assemblies (CEAs) (shutdown and regulating) are fully inserted except for the single CEA of highest reactivity worth, which is assumed to be fully withdrawn. However, with all CEAs verified fully inserted by two independent means, it is not necessary to account for a stuck CEA in the SDM calculation. With any CEAs not capable of being fully inserted, the reactivity worth of these CEAs must be accounted for in the determination of SDM.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

Attachment 3a

Braidwood Station Units 1 and 2 Technical Specifications Bases Markups

(for information only)

BASES

SURVEILLANCE REQUIREMENTS (continued)

The response time may be verified for components that replace the components that were previously evaluated in Ref. 8 and Ref. 12, provided that the components have been evaluated in accordance with the NRC approved methodology as discussed in Attachment 1 to TSTF-569, "Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing," (Ref. 16).

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.1.15 is modified by a Note stating that neutron detectors are excluded from RTS RESPONSE TIME testing. This Note is necessary because of the difficulty in generating an appropriate detector input signal. Excluding the detectors is acceptable because the principles of detector operation ensure a virtually instantaneous response.

REFERENCES

1. UFSAR, Chapter 7.

2. UFSAR, Chapter 6.

3. UFSAR, Chapter 15.

4. IEEE-279-1971.

5. Technical Requirements Manual.

6. WCAP-12523, "Bases Document for Westinghouse Setpoint Methodology for Protection System, Zion/Byron/Braidwood Units," October 1990.

7. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

8. WCAP-13632, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," August 1995.

9. UFSAR, Section 7.2.

10. WCAP-12583, "Westinghouse Setpoint Methodology For Protection Systems, Byron/Braidwood Stations," May 1990.

11. ComEd NES-EIC-20.04, Revision 0, "Analysis of Instrument Channel Setpoint Error and Instrument Loop Accuracy," October 14, 1997.

12. WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," October 1998.

13. Regulatory Guide 1.105, Revision 3, "Setpoints for Safety Related Instrumentation."

14. WCAP-14333-P-A, Revision 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," October 1998.

15. WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," March 2000.

16. Attachment 1 to TSTF-569, "Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing."

BASES

SURVEILLANCE REQUIREMENTS (continued)

Reference 11 provides the basis and methodology for using allocated signal processing and actuation logic response times in the overall verification of the protection system channel response time. The allocations for sensor, signal conditioning, and actuation logic response times must be verified prior to placing the component in operational service and re-verified following maintenance that may adversely affect response time. In general, electrical repair work does not impact response time provided the parts used for repair are of the same type and value. Specific components identified in the WCAP may be replaced without verification testing. One example where response time could be affected is replacing the sensing assembly of a transmitter.

The response time may be verified for components that replace the components that were previously evaluated in Ref. 8 and Ref. 11, provided that the components have been evaluated in accordance with the NRC approved methodology as discussed in Attachment 1 to TSTF-569, "Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing," (Ref. 17).

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

REFERENCES

1. UFSAR, Chapter 6.

2. UFSAR, Chapter 7.

3. UFSAR, Chapter 15.

4. IEEE-279-1971.

5. Technical Requirements Manual.

6. WCAP-12523, "Bases Document for Westinghouse Setpoint Methodology for Protection Systems, Zion/Byron/Braidwood Units" October 1990.

7. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

8. WCAP-13632 Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," August 1995.

9. UFSAR, Section 7.3.

10. WCAP-12583, "Westinghouse Setpoint Methodology For Protection Systems, Byron/Braidwood Stations," May 1990.

11. WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," October 1998.

12. Not used.

13. Not used.

14. Not used.

15. WCAP-14333-P-A, Revision 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," October 1998.

16. WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," March 2000.

17. Attachment 1 to TSTF-569, “Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing.”

Attachment 3b

Byron Station Units 1 and 2 Technical Specifications Bases Markups

(for information only)

BASES

SURVEILLANCE REQUIREMENTS (continued)

Reference 12 provides the basis and methodology for using allocated signal processing and actuation logic response times in the overall verification of the protection system channel response time. The allocations for sensor, signal conditioning, and actuation logic response times must be verified prior to placing the component in operational service and re-verified following maintenance that may adversely affect response time. In general, electrical repair work does not impact response time provided the parts used for repair are of the same type and value. Specific components identified in the WCAP may be replaced without verification testing. One example where response time could be affected is replacing the sensing assembly of a transmitter.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

The response time may be verified for components that replace the components that were previously evaluated in Ref. 8 and Ref. 12, provided that the components have been evaluated in accordance with the NRC approved methodology as discussed in Attachment 1 to TSTF-569, "Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing," (Ref. 15).

SR 3.3.1.15 is modified by a Note stating that neutron detectors are excluded from RTS RESPONSE TIME testing. This Note is necessary because of the difficulty in generating an appropriate detector input signal. Excluding the detectors is acceptable because the principles of detector operation ensure a virtually instantaneous response.

BASES

REFERENCES

1. UFSAR, Chapter 7.

2. UFSAR, Chapter 6.

3. UFSAR, Chapter 15.

4. IEEE-279-1971.

5. Technical Requirements Manual.

6. WCAP-12523, "RTS/ESFAS Setpoint Methodology Study," October 1990.

7. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

8. WCAP-13632, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," August 1995.

9. UFSAR, Section 7.2.

10. WCAP-12583, "Westinghouse Setpoint Methodology For Protection Systems, Byron/Braidwood Stations," May 1990.

11. ComEd NES-EIC-20.04, Revision 0, "Analysis of Instrument Channel Setpoint Error and Instrument Loop Accuracy," October 14, 1997.

12. WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," October 1998.

13. WCAP-14333-P-A, Revision 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," October 1998.

14. WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," March 2000.

15. Attachment 1 to TSTF-569, "Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing."

BASES

SURVEILLANCE REQUIREMENTS (continued)

Reference 11 provides the basis and methodology for using allocated signal processing and actuation logic response times in the overall verification of the protection system channel response time. The allocations for sensor, signal conditioning, and actuation logic response times must be verified prior to placing the component in operational service and re-verified following maintenance that may adversely affect response time. In general, electrical repair work does not impact response time provided the parts used for repair are of the same type and value. Specific components identified in the WCAP may be replaced without verification testing. One example where response time could be affected is replacing the sensing assembly of a transmitter.

The response time may be verified for components that replace the components that were previously evaluated in Ref. 8 and Ref. 11, provided that the components have been evaluated in accordance with the NRC approved methodology as discussed in Attachment 1 to TSTF-569, "Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing," (Ref. 17).

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. UFSAR, Chapter 6.

2. UFSAR, Chapter 7.

3. UFSAR, Chapter 15.

4. IEEE-279-1971.

5. Technical Requirements Manual.

6. WCAP-12523, "RTS/ESFAS Setpoint Methodology Study," October 1990.

7. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

8. WCAP-13632 Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," August 1995.

9. UFSAR, Section 7.3.

10. WCAP-12583, "Westinghouse Setpoint Methodology For Protection Systems, Byron/Braidwood Stations," May 1990.

11. WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," October 1998.

12. WCAP-13877, Revision 2-P, "Reliability Assessment of Westinghouse Type AR Relays Used as SSPS Slave Relays," October 1999.

13. WCAP-13878-P, Revision 2, "Reliability Assessment of Potter & Brumfield MDR Series Relays," October 1999.

14. WCAP-13900, Revision 0, "Extension of Slave Relay Surveillance Test Intervals," April 1994.

15. WCAP-14333-P-A, Revision 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," October 1998.

16. WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times," March 2000.

17. Attachment 1 to TSTF-569, “Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing."

Attachment 3c

Calvert Cliffs Nuclear Power Plant Units 1 and 2 Technical Specifications Bases Markups

(for information only)

performed in one measurement or in overlapping segments, with verification that all components are tested.

Response time may be verified by any series of sequential, overlapping or total channel measurements, including allocated sensor response time, such that the response time is verified. Allocations for sensor response times may be obtained from records of test results, vendor test data, or vendor engineering specifications. Reference 9 provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the reference. The response time may be verified for components that replace the components that were previously evaluated in Ref. 9 provided that the components have been evaluated in accordance with the NRC approved methodology as discussed in Attachment 1 to TSTF-569, "Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing," (Ref. 10). Response time verification for other sensor types must be demonstrated by test. The allocation of sensor response times must be verified prior to placing a new component in operation and reverified after maintenance that may adversely affect the sensor response time.

Instrument loop or test cables and wiring add an insignificant response time and can be ignored.

A Note is added to indicate that the neutron detectors are excluded from RPS RESPONSE TIME testing because they are passive devices with minimum drift, and because of the difficulty of simulating a meaningful signal. Slow changes in detector sensitivity are compensated for by performing the daily calorimetric calibration (SR 3.3.1.3).

REFERENCES

1. Updated Final Safety Analysis Report
2. Title 10 Code of Federal Regulations
3. Institute of Electrical and Electronic Engineers (IEEE) No. 279, "Proposed IEEE Criteria for Nuclear Power Plant Protection Systems," August 1968
4. CCNPP Setpoint File
5. Letter from Mr. R. E. Denton (BGE) to NRC Document Control Desk, dated June 6, 1995, License Amendment Request: Extension of Instrument Surveillance Intervals

6. Combustion Engineering Topical Report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" dated June 2, 1986, including Supplement 1, March 3, 1989

7. Letter from Mr. D. G. McDonald (NRC) to Mr. R. E. Denton (BGE), dated October 19, 1995, "Issuance of Amendments for Calvert Cliffs Nuclear Power Plant, Unit No. 1 (TAC No. M92479) and Unit No. 2 (TAC No. M92480)

8. Calvert Cliffs Procedure EN-4-104, "Surveillance Testing"

9. Combustion Engineering Owners Group Topical Report CE NPSD 1167-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," July 3, 2000

10. Attachment 1 to TSTF-569, "Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing"

or in overlapping segments, which verification that all components are measured.

Response time may be verified by any series of sequential, overlapping or total channel measurements, including allocated sensor response time, such that the response time is verified. Allocations for sensor response times may be obtained from records of test results, vendor test data, or vendor engineering specifications. Reference 7 provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the reference. The response time may be verified for components that replace the components that were previously evaluated in Ref. 7 provided that the components have been evaluated in accordance with the NRC approved methodology as discussed in Attachment 1 to TSTF-569, "Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing," (Ref. 8). Response time verification for other sensor types must be demonstrated by test. The allocation of sensor response times must be verified prior to placing a new component in operation and reverified after maintenance that may adversely affect the sensor response time.

Instrument loop or test cables and wiring add an insignificant response time and can be ignored.

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REFERENCES

1. UFSAR
2. IEEE No. 279, "Proposed IEEE Criteria for Nuclear Power Plant Protection Systems," August 1968
3. Letter from Mr. R. E. Denton (BGE) to NRC Document Control Desk, dated June 6, 1995, License Amendment Request: Extension of Instrument Surveillance Intervals
4. 10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants"
5. CCNPP Setpoint File

6. Calvert Cliffs Procedure EN-4-104, “Surveillance Testing”

7. Combustion Engineering Owners Group Topical Report CE NPSD 1167-A, Revision 2, “Elimination of Pressure Sensor Response Time Testing Requirements”, July 3, 2000

8. Attachment 1 to TSTF-569, “Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing”