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The Northeast Utilities System

JUN 26 2000

Docket No. 50-423
B17992

Re: 10 CFR 50.90

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

Millstone Nuclear Power Station, Unit No. 3
Proposed Revision to Technical Specifications
Elimination of Pressure Sensor Response Time Testing Requirements and
Elimination of Periodic Protection Channel Response Time Tests (TSCR 3-4-00)

Pursuant to 10 CFR 50.90, Northeast Nuclear Energy Company (NNECO) hereby proposes to amend Operating License NPF-49 by incorporating the attached proposed changes into the Technical Specifications (TS) of Millstone Unit No. 3. NNECO is proposing to change TS Definitions 1.13, "Engineered Safety Features Response Time" and 1.28, "Reactor Trip System Response Time," TS 3.3.1, "Instrumentation - Reactor Trip System Instrumentation," and 3.3.2, "Instrumentation - Engineered Safety Features Actuation System Instrumentation." The Bases for TS 3.3.1 and 3.3.2 will be modified to address the proposed changes.

Summary Description

The proposed Technical Specification changes are necessary to eliminate pressure sensor response time tests and periodic protection channel response time tests for the Reactor Trip System and the Engineered Safety Features Actuation System. NNECO has confirmed the applicability of the generic analyses in Westinghouse proprietary documents WCAP-13632-P-A, Revision 2, and WCAP-14036-P-A, Revision 1, as approved by the NRC. These proposed changes are similar to those approved for Vogtle Electric Generating Plant on February 8, 1999.[1]

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(1) D. H. Jaffey (USNRC) to J. B. Beasley, "Issuance of Amendments - Vogtle Electric Generating Plant, Units 1 and 2 (TAC Nos. MA2303 and MA2304)," dated February 8, 1999.

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Attachment 1 provides a discussion of the proposed changes and the Safety Summary. Attachment 2 provides the Significant Hazards Consideration. Attachment 3 provides the marked-up version of the appropriate pages of the current Technical Specifications, and Attachment 4 provides the retyped pages of the Technical Specifications.

Environmental Considerations

NNECO has reviewed the proposed License Amendment Request against the criteria of 10 CFR 51.22 for environmental considerations. The proposed changes will modify the requirements for the Reactor Trip System response time and the Engineered Safety Features response time surveillances to permit verification by means other than testing. These changes do not significantly increase the type and amounts of effluents that may be released off site. In addition, this amendment request will not significantly increase individual or cumulative occupational radiation exposures. Therefore, NNECO has determined the proposed changes will not have a significant effect on the quality of the human environment.

Conclusions

The proposed changes do not involve a significant impact on public health and safety (see the Safety Summary provided in Attachment 1) and do not involve a Significant Hazards Consideration pursuant to the provisions of 10 CFR 50.92 (see the Significant Hazards Consideration provided in Attachment 2). In addition, we have concluded the proposed changes are safe.

Plant Operations Review Committee and Nuclear Safety Assessment Board

The Plant Operations Review Committee and Nuclear Safety Assessment Board have reviewed and concurred with the determinations.

Schedule

We request issuance of this amendment for Millstone Unit No. 3 prior to November 30, 2000, with the amendment to be implemented within 60 days of issuance. This will allow Millstone Unit No. 3 to use the proposed changes during the next refueling outage, currently scheduled for the first quarter of 2001.

State Notification

In accordance with 10 CFR 50.91(b), a copy of this License Amendment Request is being provided to the State of Connecticut.

There are no regulatory commitments contained within this letter.

If you should have any questions on the above, please contact Mr. Ravi Joshi at (860) 440-2080.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Raymond P. Necci
Vice President - Nuclear Technical Services

Sworn to and subscribed before me

this 26 day of June, 2000

Notary Public

My Commission expires Jun 30 2004

Attachments (4)

cc: H. J. Miller, Region I Administrator
V. Nerses, NRC Senior Project Manager, Millstone Unit No. 3
A. C. Cerne, Senior Resident Inspector, Millstone Unit No. 3

Director
Bureau of Air Management
Monitoring and Radiation Division
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Attachment 1

Millstone Nuclear Power Station, Unit No. 3

Proposed Revision to Technical Specifications
Elimination of Pressure Sensor Response Time Testing Requirements and
Elimination of Periodic Protection Channel Response Time Tests (TSCR 3-4-00)
Discussion of Proposed Changes

Proposed Revision to Technical Specifications
Elimination of Pressure Sensor Response Time Testing Requirements and Elimination of Periodic Protection Channel Response Time Tests (TSCR 3-4-00)
Discussion of Proposed Changes

Northeast Nuclear Energy Company (NNECO) hereby proposes to amend Operating License NPF-49 by incorporating the attached proposed changes into the Technical Specifications (TS) of Millstone Unit No. 3. NNECO is proposing to change TS Definitions 1.13, "Engineered Safety Features Response Time" and 1.28, "Reactor Trip System Response Time," TS 3.3.1, "Instrumentation - Reactor Trip System Instrumentation," and TS 3.3.2, "Instrumentation - Engineered Safety Features Actuation System Instrumentation." The Bases for TS 3.3.1 and 3.3.2 will be modified to address the proposed changes.

The proposed TS changes will modify the requirements for the Reactor Trip System (RTS) response time and the Engineered Safety Features Actuation System (ESFAS) response time surveillances to permit verification by means other than testing. These changes are applicable to selected components, provided that both the components and the methodology for verification have been previously reviewed and approved by the NRC.

Background

The verification of response time at the specified frequencies provides assurance that the reactor trip and the engineered safety features actuation associated with each credited channel meets the response time performance requirements assumed in the plant safety analysis. Response time may be verified by actual response time tests in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel.

The Westinghouse Owners Group performed two analyses to assess the impact of elimination of response time testing (RTT) for instruments and instrument loops. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements" was approved by the NRC on September 5, 1995. WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests" was approved by the NRC on October 6, 1998. Both of these WCAPs are Westinghouse proprietary documents.

Allocations for sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise, or power interrupt tests), (2) inplace, onsite, or offsite (e.g. vendor) test measurements, or (3) utilizing vendor engineering specifications. WCAP-13632-P-A, Revision 2, 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 WCAP. Response time

verification for other sensor types must be demonstrated by test. Detector response times may be measured by the in-situ online noise analysis-response time degradation method described in the Westinghouse Topical Report, "The Use of Process Noise Measurements to Determine Response Characteristics of Protection Sensors in U.S. Plants," dated August 1983.

WCAP-14036-P-A, Revision 1, 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 WCAP-14036-P-A may be replaced without verification testing. One example where response time could be adversely affected is replacement of the sensing assembly of a transmitter.

Description of Technical Specification Changes

The proposed changes will revise TS Definitions 1.13 and 1.28, and TS Surveillance Requirements 4.3.1.2 and 4.3.2.2 to incorporate the philosophy approved in WCAP-13632-P-A, Revision 2, and WCAP-14036-P-A, Revision 1. Specifically, this change revises the Definitions to permit verification as opposed to measurement of response time, and replaces the words "demonstrated," "testing" and "tested" in the Surveillance Requirements with the words "verified" and "verification." A discussion of the proposed changes will be added to Bases sections B 3/4.3.1 and B 3/4.3.2. These changes are applicable to selected components provided both the components and the methodology for verification meet the criteria reviewed and approved by the NRC in the WCAPs.

The proposed changes will eliminate the requirement to physically measure RTS and ESFAS channel response times and allow response times to be verified by summing allocated times for sensors, the process protection system, the nuclear instrumentation system, and the logic system. NNECO has determined acceptance criteria for all devices which will continue to be response time tested and, has verified that the sum of allocated response times and the acceptance criteria are within the safety analysis limits.

SAFETY SUMMARY

In this proposed change, there are two separate but related requests. The first is to eliminate periodic pressure sensor RTT in accordance with WCAP-13632-P-A, Revision 2. The second is to eliminate periodic protection channel RTT in accordance with WCAP-14036-P-A, Revision 1.

The proposed amendment would modify Technical Specifications Definitions 1.13,

"Engineered Safety Features Response Time" and 1.28, "Reactor Trip System Response Time," Surveillance Requirements 4.3.1.2 and 4.3.2.2 of Technical Specifications 3/4.3.1 - "Reactor Trip System Instrumentation," and 3/4.3.2 - "Engineered Safety Feature Actuation System Instrumentation," and Bases B 3/4.3.1 and B 3/4.3.2 - "Reactor Trip System Instrumentation and Engineered Safety Features Actuation System Instrumentation," to indicate that the response time for the pressure sensors, process racks and trip logic will be determined based on the analysis and testing presented in WCAP-13632-P-A, Revision 2, and WCAP-14036-P-A, Revision 1, for these systems.

Basis for Pressure Sensor Change

WCAP-13632-P-A, Revision 2, contains the technical basis and methodology for eliminating RTT requirements on selected pressure sensing instruments. This WCAP was approved by the NRC on September 5, 1995.[1] The NRC safety evaluation stipulates that when submitting a plant-specific license amendment request, the licensee must confirm the applicability of the generic analysis to their plant and must commit to the following actions:

a) Perform a hydraulic RTT prior to installation of a new transmitter/switch or following refurbishment of the transmitter/switch (e.g., sensor cell or variable damping components) to determine an initial sensor-specific response time value.

b) For transmitters and switches that use capillary tubes, perform a RTT after initial installation and after any maintenance or modification activity that could damage the capillary tubes.

c) If variable damping is used, implement a method to assure that the potentiometer is at the required setting and cannot be inadvertently changed or perform hydraulic RTT of the sensor following each calibration.

d) Perform periodic drift monitoring of all Model 1151, 1152, 1153, and 1154 Rosemount pressure and differential pressure transmitters, for which RTT elimination is proposed, in accordance with the guidance contained in Rosemount Technical Bulletin No. 4 and continue to remain in full compliance with any prior commitments to Bulletin 90-01, Supplement 1. As an alternative to performing periodic drift monitoring of Rosemount transmitters, licensees may complete the following actions: (1) ensure that operators and technicians are aware of the Rosemount transmitter loss of fill-oil issue and make provisions to ensure that technicians monitor for sensor response time degradation during the performance of calibrations and functional tests of these transmitters, and (2) review and revise

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[1] B. A. Boger (USNRC) letter to R. A. Newton (Westinghouse Owners Group), "Review of Westinghouse Electric Corporation Topical Report WCAP-13632, Revision 2 - Elimination of Pressure Sensor Response Time Testing Requirements," dated September 5, 1995.

surveillance testing procedures, if necessary, to ensure that calibrations are being performed using equipment designed to provide a step function or fast ramp in the process variable and that calibrations and functional tests are being performed in a manner that allows simultaneous monitoring of both the input and output response of the transmitter under test, thus allowing, with reasonable assurance, the recognition of significant response time degradation.

Millstone Unit No. 3 (MP3) utilizes only Rosemount Model 1153 and Model 1154 pressure and differential pressure transmitters for sensing pressure in the RTS and ESFAS instrumentation loops. These sensors are bounded by the generic analysis contained in WCAP-13632-P-A, Revision 2, however, an allocated response time for these instruments is not provided in Table 9-1 of the WCAP. As directed in the WCAP, baseline response time values for these transmitters have been determined by evaluating data obtained from previous plant response time testing.

As part of the implementation of the approved license amendment, NNECO will satisfy the NRC required actions as follows:

a) Consistent with the proposed changes to TS 3.3.1 and TS 3.3.2 (including the associated Bases) and EPRI Report NP-7243, Revision 1,[2] "Investigation of Response Time Testing Requirements," the applicable plant procedures will include requirements that pressure sensor response times be verified by performance of an appropriate response time test prior to placing a sensor into operational service and re-verified following maintenance that may adversely affect sensor response time.

b) MP3 does not utilize any transmitters or switches that use capillary tubes in any RTS or ESFAS application for which RTT is required. Therefore, no MP3 procedure changes or enhanced administrative controls will be necessary. Should MP3 replace any of these sensors in the future with ones using capillary tubes, plant procedures (and/or other administrative controls) would be revised prior to application of the WCAP methodology to require that they be subject to RTT after initial installation and after any maintenance or modification activity that could damage the capillary tubes.

c) MP3 does not utilize any pressure transmitters with variable damping in any RTS or ESFAS application for which RTT is required. Therefore, no MP3 procedure changes or enhanced administrative controls will be necessary. Should MP3 replace any of these transmitters in the future with ones having variable damping, plant procedures (and/or other administrative controls) would be revised prior to application of the WCAP methodology to assure the variable damping potentiometer could not be inadvertently changed.

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[2] EPRI NP-7243, "Investigation of Response Time Testing Requirements," dated May 1991 and revised by incorporation of Revision 1 pages issued March 18, 1994.

d) NNECO provided responses on behalf of MP3 to NRC Bulletins 90-01 and 90-01, Supplement 1, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount," by submittals dated July 3, 1990, March 26, 1991, February 2, 1993, March 4, 1993, and August 12, 1994. These submittals address the actions taken by MP3 with respect to the loss of fill-oil for the Rosemount transmitters. MP3 will perform periodic drift monitoring of all Model 1153 and 1154 Rosemount pressure and differential pressure transmitters for which RTT elimination is proposed in accordance with the guidance contained in Rosemount Technical Bulletin No. 4, and will continue to remain in full compliance with prior commitments to NRC Bulletin 90-01, Supplement 1.

Basis for Protection Channel Change

WCAP-14036-P-A contains the technical basis and methodology for eliminating periodic RTT requirements on RTS and ESFAS functions. This document provides justification that any failure that significantly degrades response time will be detectable during surveillance testing such as calibration and channel checks, or the total response time allocation will be modified to include an allowance for those failures that are not specifically detectable by these tests. This WCAP was approved by the NRC on October 6, 1998.[3] The NRC safety evaluation requires that when submitting a plant-specific license amendment request, the licensee must verify that the FMEA performed by the Westinghouse Owners Group is applicable to the equipment actually installed in the licensee facility, and that the analysis is valid for the versions of the boards used in the protection system.

NNECO has confirmed that the FMEA presented in WCAP-14036 is applicable to and valid for the equipment actually installed at MP3. Therefore, the TSs are being revised to indicate that the system response time shall be verified utilizing system response times justified by the methodology described in WCAP-14036. Allocations for system response times may be obtained from the bounding criteria in WCAP-14036 or plant specific configurations.

The following Tables and associated notes identify the functions and response time allocations for MP3 components subject to RTT elimination.

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[3] T. H. Essig (USNRC) letter to L. Liberatori (Westinghouse Owners Group), "Safety Evaluation Related to Topical Report WCAP-14036, Revision 1 - Elimination of Periodic Protection Channel Response Time Tests (TAC No. MA0863)," dated October 6, 1998.

Reactor Trip System
Response Time Allocations for Components Subject to RTT

RTS Function	Sensor (Time)	7300 / NIS String + SSPS Input Relay	Time	SSPS	Time
NIS PR, High & Low SP	Note 1	NIS+IR	0.085	Logic	0.001
OTΔT / ΔT	Note 2	NRA+NSA+NSA+NLL+NAL+IR	0.355	Logic	0.001
OTΔT / Tavg	Note 2	NRA+NSA+NSA+NLL+NSA+NAL+IR	0.393	Logic	0.001
OTΔT / Press	0.100	NRA+NSA+NSA+NAL+IR	0.160	Logic	0.001
OTΔT / Flux	Note 1	PLANT HISTORICAL DATA	0.300	Logic	0.001
OPΔT / ΔT	Note 2	NRA+NSA+NSA+NLL+NAL+IR	0.355	Logic	0.001
OPΔT / Tavg	Note 2	NRA+NSA+NSA+NLL+NSA+NAL+IR	0.520	Logic	0.001
Pzr Press Low	0.100	NLP+NAL+IR	0.085	Logic	0.001
Pzr Press High	0.100	NLP+NAL+IR	0.085	Logic	0.001
Pzr Level High	0.200	NLP+NAL+IR	0.085	Logic	0.001
RCS Flow Low	0.200	NLP+NAL+IR	0.085	Logic	0.001
S/G Level Low	0.500	NLP+NAL+IR	0.085	Logic	0.001
RCP Low Speed	Note 1	ANALYSIS+IR	0.100	Logic	0.001

Engineered Safety Features Actuation System
Response Time Allocations for Components Subject to RTT

ESFAS Function	Sensor (Time)	7300 String + SSPS Input Relay	Time	SSPS	Time
Ctmt Press Hi 1	0.120	NLP+NAL+IR	0.085	Logic+Master+Slaves	0.135
Pzr Pressure Low	0.100	NLP+NAL+IR	0.085	Logic+Master+Slaves	0.099
Stm Press Low	0.100	NLP+NAL+IR	0.085	Logic+Master+Slaves	0.099
Ctmt Press Hi 3	0.120	NLP+NAL+IR(EN)	0.091	Logic+Master+Slaves	0.099
Ctmt Press Hi 2	0.120	NLP+NAL+IR	0.085	Logic+Master+Slaves	0.099
Stm Line Hi Neg Rate	0.100	NLP+NLL+NAL+IR	0.127	Logic+Master+Slaves	0.063
S/G Level High	0.500	NLP+NAL+IR	0.085	Logic+Master+Slaves	0.063
S/G Level Low	0.500	NLP+NAL+IR	0.085	Logic+Master+Slaves	0.063
Tavg Low w/P-4	Note 2	NRA+NSA+NSA+NAL+IR	0.313	Logic+Master+Slaves	0.063

Notes:
1) NIS and RCP speed sensors are currently exempt from response time testing.
2) Response time testing of RTDs will continue.
3) ESFAS functions allow for sequential operation of MDR auxiliary relays: CBI (2), CIA/B (1) & CDA (1).

Conclusion

The proposed changes to the Technical Specifications and associated Bases will not adversely affect the availability or operation of the equipment used to mitigate design basis accidents. The plant response to the design basis accidents will not change. Therefore, there will be no adverse impact on public health and safety. Thus, the proposed changes are safe.

Attachment 2

Millstone Nuclear Power Station, Unit No. 3

Proposed Revision to Technical Specifications
Elimination of Pressure Sensor Response Time Testing Requirements and
Elimination of Periodic Protection Channel Response Time Tests (TSCR 3-4-00)
Significant Hazards Consideration

Proposed Revision to Technical Specifications
Elimination of Pressure Sensor Response Time Testing Requirements and Elimination of Periodic Protection Channel Response Time Tests (TSCR 3-4-00)
Significant Hazards Consideration

Description of License Amendment Request

The proposed changes will revise Technical Specifications Definitions 1.13 and 1.28, and Surveillance Requirements 4.3.1.2 and 4.3.2.2 to incorporate the philosophy approved in WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements" and WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests." Specifically, this change revises the Definitions to permit verification as opposed to measurement of response time, and replaces the words "demonstrated," "testing" and "tested" in the Surveillance Requirements with the words "verified" and "verification." A discussion of the proposed changes will be added to Bases sections B 3/4.3.1 and B 3/4.3.2. These changes are applicable to selected components provided both the components and the methodology for verification meet the criteria reviewed and approved by the NRC in the WCAPs.

The proposed changes will eliminate the requirement to physically measure RTS and ESFAS channel response times and allow response times to be verified by summing allocated times for sensors, the process protection system, the nuclear instrumentation system, and the logic system. These allocated values will be added to the measured times for the actuated devices for comparison to the plant safety analysis limits.

Basis for No Significant Hazards Consideration

In accordance with 10 CFR 50.92, NNECO has reviewed the proposed changes and has concluded that they do not involve a significant hazards consideration (SHC). The basis for this conclusion is that the three criteria of 10 CFR 50.92(c) are not compromised. The proposed changes do not involve an SHC because the changes would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   This change to the Technical Specifications does not result in a condition where the design, material, and construction standards that were applicable prior to the change are altered. The same RTS and ESFAS instrumentation is being used; the time response allocations/modeling assumptions in the Chapter 15 analyses are still the same; only the method of verifying time response is changed. The proposed change will not modify any system interface and could not increase the likelihood of an accident since these events are independent of this change. The proposed activity will not change, degrade or prevent actions or alter any assumptions

previously made in evaluating the radiological consequences of an accident described in the SAR. Therefore, there will be no significant increase in the probability or consequences of an accident previously evaluated.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

   This change does not alter the performance of the pressure and differential pressure transmitters, Process Protection racks, Nuclear Instrumentation, and Logic Systems used in the plant protection systems. These sensors and systems will still have response time verified by test before being placed in operational service. Changing the method of periodically verifying instrument response for these sensors and systems (assuring equipment operability) from time response testing to calibration and channel checks will not create any new accident initiators or scenarios. Periodic surveillance of these sensors and systems will continue and may be used to (a) detect significant degradation in the sensor response characteristic, and (b) other degradation that could cause the response time characteristic to exceed the total allowance. The total time response allowance for each function bounds all degradation that cannot be detected by periodic surveillance. Therefore, the proposed changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Involve a significant reduction in a margin of safety.

   This change does not affect the total system response time assumed in the safety analysis. The periodic system response time verification method for selected pressure and differential pressure sensors, the Process Protection racks, Nuclear Instrumentation, and Logic Systems is modified to allow use of actual test data or engineering data. The method of verification still provides assurance that the total system response is within that defined in the safety analysis, since calibration tests will continue to be performed and may be used to detect any degradation which (a) might significantly affect sensor response time, or (b) might cause the response time to exceed the total allowance. The total system time response allowance for each function bounds all degradation that cannot be detected by periodic surveillance. Based on the above, it is concluded that the proposed license amendment request does not result in a significant reduction in margin with respect to plant safety.

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Attachment 3

Millstone Nuclear Power Station, Unit No. 3

Proposed Revision to Technical Specifications
Elimination of Pressure Sensor Response Time Testing Requirements and
Elimination of Periodic Protection Channel Response Time Tests (TSCR 3-4-00)
Marked Up Pages

1.12 DELETED

ENGINEERED SAFETY FEATURES RESPONSE TIME

1.13 The ENGINEERED SAFETY FEATURES (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.

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1.14 Deleted

FREQUENCY NOTATION

1.15 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.1.

IDENTIFIED LEAKAGE

1.1 IDENTIFIED LEAKAGE shall be:

a. Leakage (except CONTROLLED LEAKAGE) into closed systems, such as pump seal or valve packing leaks that are captured and conducted to a sump or collecting tank, or

b. Leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of Leakage Detection Systems or not to be PRESSURE BOUNDARY LEAKAGE, or

c. Reactor Coolant System leakage through a steam generator to the Secondary Coolant System.

MASTER RELAY TEST

1.17 A MASTER RELAY TEST shall be the energization of each master relay and verification of OPERABILITY of each relay. The MASTER RELAY TEST shall include continuity check of each associated slave relay.

QUADRANT POWER TILT RATIO

1.24 QUADRANT POWER TILT RATIO 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. With one excore detector inoperable, the remaining three detectors shall be used for computing the average.

RADIOACTIVE WASTE TREATMENT SYSTEMS

1.25 RADIOACTIVE WASTE TREATMENT SYSTEMS are those liquid, gaseous and solid waste systems which are required to maintain control over radioactive material in order to meet the Limiting Conditions for Operation (LCOs) set forth in these specifications.

RADIOLOGICAL EFFLUENT MONITORING AND OFFSITE DOSE CALCULATION MANUAL (REMODCM)

1.26 A RADIOLOGICAL EFFLUENT MONITORING MANUAL shall be a manual containing the site and environmental sampling and analysis programs for measurements of radiation and radioactive materials in those exposure pathways and for those radionuclides which lead to the highest potential radiation exposures to individuals from station operation. An OFFSITE DOSE CALCULATION MANUAL shall be a manual containing the methodology and parameters to be used in the calculation of offsite doses due to radioactive gaseous and liquid effluents and in the calculation of gaseous and liquid effluent monitoring instrumentation alarm/trip setponts. Requirements of the REMODCM are provided in Specification 6.13.

RATED THERMAL POWER

1.27 RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant of 3411 MWt.

REACTOR TRIP SYSTEM RESPONSE TIME

1.28 The REACTOR TRIP SYSTEM RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its Trip Setpoint at the channel sensor until loss of stationary gripper coil voltage.

INSERT A

REPORTABLE EVENT

1.29 A REPORTABLE EVENT shall be any of those conditions specified in Section 50.73 of 10 CFR Part 50.

SHUTDOWN MARGIN

1.30 SHUTDOWN MARGIN 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 rod cluster assemblies (shutdown and control) are fully inserted except for the single rod cluster assembly of highest reactivity worth which is assumed to be fully withdrawn.

3-4-00

INSERT A

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 the methodology for verification have been previously reviewed and approved by the NRC.

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.1 As a minimum, the Reactor Trip System instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

4.3.1.1 Each Reactor Trip System instrumentation channel and interlock and the automatic trip logic shall be demonstrated OPERABLE by the performance of the Reactor Trip System Instrumentation Surveillance Requirements specified in Table 4.3-1.

4.3.1.2 The REACTOR TRIP SYSTEM RESPONSE TIME of each Reactor trip function shall be ~~demonstrated~~ verified to be within its limit at least once per 18 months. Neutron detectors and speed sensors are exempt from response time ~~testing.~~ verification Each ~~test~~ verification shall include at least one train such that both trains are ~~tested~~ verified at least once per 36 months and one channel (to include input relays to both trains) per function such that all channels are ~~tested~~ verified at least once every N times 18 months where N is the total number of redundant channels in a specific Reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.

INSTRUMENTATION [No changes - for information only]

3/4.3.2 ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2 The Engineered Safety Features Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their Trip Setpoints set consistent with the values shown in the Nominal Trip Setpoint column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With an ESFAS Instrumentation Channel or Interlock Channel Nominal Trip Setpoint inconsistent with the value shown in the Nominal Trip Setpoint column of Table 3.3-4, adjust the Setpoint consistent with the Nominal Trip Setpoint value.

b. With an ESFAS Instrumentation Channel or Interlock Channel found to be inoperable, declare the channel inoperable and apply the applicable ACTION statement requirements of Table 3.3-3 until the channel is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

verified

4.3.2.1 Each ESFAS instrumentation channel and interlock and the automatic actuation logic and relays shall be demonstrated OPERABLE by performance of the ESFAS Instrumentation Surveillance Requirements specified in Table 4.3-2.

4.3.2.2 The ENGINEERED SAFETY FEATURES RESPONSE TIME* of each ESFAS function shall be ~~demonstrated~~ to be within the limit at least once per 18 months. Each ~~test~~ shall include at least one train such that both trains are ~~tested~~ at least once per 36 months and one channel (to include input relays to both trains) per function such that all channels are ~~tested~~ at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" column of Table 3.3-3.

verification

verified

verification

*The provisions of Specification 4.0.4 are not applicable for response time ~~testing~~ of steam line isolation for entry into MODE 4 and MODE 3 and turbine driven auxiliary feedwater pump for entry into MODE 3.

[No change - for information only]

3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM INSTRUMENTATION and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

The OPERABILITY of the Reactor Trip System and the Engineered Safety Features Actuation System instrumentation and interlocks ensures that: (1) the associated action and/or Reactor trip will be initiated when the parameter monitored by each channel or combination thereof reaches its setpoint, (2) the specified coincidence logic is maintained, (3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and (4) sufficient system functional capability is available from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy, and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the safety analyses. The Surveillance Requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.

The Engineered Safety Features Actuation System Nominal Trip Setpoints specified in Table 3.3-4 are the nominal values of which the bistables are set for each functional unit. The Allowable Values (Nominal Trip Setpoints ± the calibration tolerance) are considered the Limiting Safety System Settings as identified in 10CFR50.36 and have been selected to mitigate the consequences of accidents. A Setpoint is considered to be consistent with the nominal value when the measured "as left" Setpoint is within the administratively controlled (±) calibration tolerance identified in plant procedures (which specifies the difference between the Allowable Value and Nominal Trip Setpoint). Additionally, the Nominal Trip Setpoints may be adjusted in the conservative direction provided the calibration tolerance remains unchanged.

Measurement and Test Equipment accuracy is administratively controlled by plant procedures and is included in the plant uncertainty calculations as defined in WCAP-10991. Operability determinations are based on the use of Measurement and Test Equipment that conforms with the accuracy used in the plant uncertainty calculation.

The Allowable Value specified in Table 3.3-4 defines the limit beyond which a channel is inoperable. If the process rack bistable setting is measured within the "as left" calibration tolerance, which specifies the difference between the Allowable Value and Nominal Trip Setpoint, then the channel is considered to be operable.

3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM INSTRUMENTATION and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

The methodology, as defined in WCAP-10991 to derive the Nominal Trip Setpoints, is based upon combining all of the uncertainties in the channels. Inherent in the determination of the Nominal Trip Setpoints are the magnitudes of these channel uncertainties. Sensors and other instrumentation utilized in these channels should be capable of operating within the allowances of these uncertainty magnitudes. Occasional drift in excess of the allowance may be determined to be acceptable based on the other device performance characteristics. Device drift in excess of the allowance that is more than occasional, may be indicative of more serious problems and would warrant further investigation.

The above Bases do not apply to the two radiation monitors in the ESF Table (Item 3C and Item 7E). For these radiation monitors the allowable values are essentially nominal values. Due to the uncertainties involved in radiological parameters, the methodologies of WCAP-10991 were not applied. Actual trip setpoints will be reestablished below the allowable value based on calibration accuracies and good practices.

~~The measurement for response time at the specified frequencies provides assurance that the Reactor trip and the Engineered Safety Features actuation associated with each channel is completed within the time limit assumed in the safety analyses. The RTS and ESF response times are included in the "Technical Requirements Manual." Any changes to the RTS and ESF response times shall be in accordance with Section 50.59 of 10CFR50 and approved by the Plant Operations Review Committee. No credit was taken in the analyses for those channels with response times indicated as not applicable. Response time may be demonstrated by any series of sequential, overlapping, or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either: (1) in place, onsite, or offsite test measurements, or (2) utilizing replacement sensors with certified response time. Detector response times may be measured by the in situ on line noise analysis-response time degradation method described in the Westinghouse Topical Report, "The Use of Process Noise Measurements To Determine Response Characteristics of Protection Sensors in U.S. Plants," August 1983.~~

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The verification of response time at the specified frequencies provides assurance that the reactor trip and the engineered safety features actuation associated with each channel is completed within the time limit assumed in the safety analysis. No credit is taken in the analysis for those channels with response times indicated as not applicable (i.e., N.A.).

Response time may be verified by actual response time tests in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel. Allocations for sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise, or power interrupt tests), (2) inplace, onsite, or offsite (e.g. vendor) test measurements, or (3) utilizing vendor engineering specifications. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements" 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 WCAP. Response time verification for other sensor types must be demonstrated by test. Detector response times may be measured by the in-situ online noise analysis-response time degradation method described in the Westinghouse Topical Report, "The Use of Process Noise Measurements to Determine Response Characteristics of Protection Sensors in U.S. Plants," dated August 1983.

WCAP-14036 Revision 1, "Elimination of Periodic Protection Channel Response Time Tests" 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.

[No change - for information only] 3-4-00

8/12/94

REACTOR TRIP SYSTEM INSTRUMENTATION and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

The Engineered Safety Features Actuation System senses selected plant parameters and determines whether or not predetermined limits are being exceeded. If they are, the signals are combined into logic matrices sensitive to combinations indicative of various accidents, events, and transients. Once the required logic combination is completed, the system sends actuation signals to those Engineered Safety Features components whose aggregate function best serves the requirements of the condition. As an example, the following actions may be initiated by the Engineered Safety Features Actuation System to mitigate the consequences of a steam line break or loss-of-coolant accident: (1) Safety Injection pumps start and automatic valves position, (2) Reactor trip, (3) feedwater isolation, (4) startup of the emergency diesel generators, (5) quench spray pumps start and automatic valves position, (6) containment isolation, (7) steam line isolation, (8) Turbine trip, (9) auxiliary feedwater pumps start, (10) service water pumps start and automatic valves position, and (11) Control Room isolates.

REACTOR TRIP BREAKERS

This trip function applies to the reactor trip breakers (RTBs) exclusive of individual trip mechanisms. The LCO requires two operable trains of trip breakers. A trip breaker train consists of all trip breakers associated with a single RTS logic train that are racked in, closed, and capable of supplying power to the control rod drive (CRD) system. Thus, the train may consist of the main breaker, bypass breaker, or main breaker and bypass breaker, depending upon the system configuration. Two OPERABLE trains ensure no single random failure can disable the RTS trip capability.

These trip functions must be OPERABLE in MODE 1 or 2 when the reactor is critical. In MODE 3, 4, or 5, these RTS trip functions must be OPERABLE when the RTBs or associated bypass breakers are closed, and the CRD system is capable of rod withdrawal.

[No change - for information only] 3-4-00

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REACTOR TRIP SYSTEM INSTRUMENTATION and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

The Engineered Safety Features Actuation System interlocks perform the following functions:

P-4 Reactor tripped - Actuates Turbine trip, closes main feedwater valves on T_{avg} below Setpoint, prevents the opening of the main feedwater valves which were closed by a Safety Injection or High Steam Generator Water Level signal, allows Safety Injection block so that components can be reset or tripped.

Reactor not tripped - prevents manual block of Safety Injection.

P-11 On increasing pressurizer pressure, P-11 automatically reinstates Safety Injection actuation on low pressurizer pressure and low steam line pressure. On decreasing pressure, P-11 allows the manual block of Safety Injection actuation on low pressurizer pressure and low steam line pressure.

P-12 On increasing reactor coolant loop temperature, P-12 automatically provides an arming signal to the Steam Dump System. On decreasing reactor coolant loop temperature, P-12 automatically removes the arming signal from the Steam Dump System.

P-14 On increasing steam generator water level, P-14 automatically trips all feedwater isolation valves, main feed pumps and main turbine, and inhibits feedwater control valve modulation.

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING FOR PLANT OPERATIONS

The OPERABILITY of the radiation monitoring instrumentation for plant operations ensures that: (1) the associated action will be initiated when the radiation level monitored by each channel or combination thereof reaches its Setpoint, (2) the specified coincidence logic is maintained, and (3) sufficient redundancy is maintained to permit a channel to be out-of-service for testing or maintenance. The radiation monitors for plant operations senses radiation levels in selected plant systems and locations and determines whether or not predetermined limits are being exceeded. If they are, the signals are combined into logic matrices sensitive to combinations indicative of various accidents and abnormal conditions. Once the required logic combination is completed, the system sends actuation signals to initiate alarms.

Docket No. 50-423
B17992

Attachment 4

Millstone Nuclear Power Station, Unit No. 3

Proposed Revision to Technical Specifications
Elimination of Pressure Sensor Response Time Testing Requirements and
Elimination of Periodic Protection Channel Response Time Tests (TSCR 3-4-00)
Retyped Pages

1.12 DELETED

ENGINEERED SAFETY FEATURES RESPONSE TIME

1.13 The ENGINEERED SAFETY FEATURES (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 the methodology for verification have been previously reviewed and approved by the NRC.

1.14 Deleted

FREQUENCY NOTATION

1.15 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.1.

IDENTIFIED LEAKAGE

1.1 IDENTIFIED LEAKAGE shall be:

a. Leakage (except CONTROLLED LEAKAGE) into closed systems, such as pump seal or valve packing leaks that are captured and conducted to a sump or collecting tank, or

b. Leakage into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of Leakage Detection Systems or not to be PRESSURE BOUNDARY LEAKAGE, or

c. Reactor Coolant System leakage through a steam generator to the Secondary Coolant System.

MASTER RELAY TEST

1.17 A MASTER RELAY TEST shall be the energization of each master relay and verification of OPERABILITY of each relay. The MASTER RELAY TEST shall include continuity check of each associated slave relay.

QUADRANT POWER TILT RATIO

1.24 QUADRANT POWER TILT RATIO 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. With one excore detector inoperable, the remaining three detectors shall be used for computing the average.

RADIOACTIVE WASTE TREATMENT SYSTEMS

1.25 RADIOACTIVE WASTE TREATMENT SYSTEMS are those liquid, gaseous and solid waste systems which are required to maintain control over radioactive material in order to meet the Limiting Conditions for Operation (LCOs) set forth in these specifications.

RADIOLOGICAL EFFLUENT MONITORING AND OFFSITE DOSE CALCULATION MANUAL (REMODCM)

1.26 A RADIOLOGICAL EFFLUENT MONITORING MANUAL shall be a manual containing the site and environmental sampling and analysis programs for measurements of radiation and radioactive materials in those exposure pathways and for those radionuclides which lead to the highest potential radiation exposures to individuals from station operation. An OFFSITE DOSE CALCULATION MANUAL shall be a manual containing the methodology and parameters to be used in the calculation of offsite doses due to radioactive gaseous and liquid effluents and in the calculation of gaseous and liquid effluent monitoring instrumentation alarm/trip setponts. Requirements of the REMODCM are provided in Specification 6.13.

RATED THERMAL POWER

1.27 RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant of 3411 MWt.

REACTOR TRIP SYSTEM RESPONSE TIME

1.28 The REACTOR TRIP SYSTEM RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its 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 the methodological for verification have been previously reviewed and approved by the NRC.

REPORTABLE EVENT

1.29 A REPORTABLE EVENT shall be any of those conditions specified in Section 50.73 of 10 CFR Part 50.

SHUTDOWN MARGIN

1.30 SHUTDOWN MARGIN 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 rod cluster assemblies (shutdown and control) are fully inserted except for the single rod cluster assembly of highest reactivity worth which is assumed to be fully withdrawn.

3/4.3 INSTRUMENTATION

3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.1 As a minimum, the Reactor Trip System instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

SURVEILLANCE REQUIREMENTS

4.3.1.1 Each Reactor Trip System instrumentation channel and interlock and the automatic trip logic shall be demonstrated OPERABLE by the performance of the Reactor Trip System Instrumentation Surveillance Requirements specified in Table 4.3-1.

4.3.1.2 The REACTOR TRIP SYSTEM RESPONSE TIME of each Reactor trip function shall be verified to be within its limit at least once per 18 months. Neutron detectors and speed sensors are exempt from response time verification. Each verification shall include at least one train such that both trains are verified at least once per 36 months and one channel (to include input relays to both trains) per function such that all channels are verified at least once every N times 18 months where N is the total number of redundant channels in a specific Reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.

SURVEILLANCE REQUIREMENTS

4.3.2.1 Each ESFAS instrumentation channel and interlock and the automatic actuation logic and relays shall be demonstrated OPERABLE by performance of the ESFAS Instrumentation Surveillance Requirements specified in Table 4.3-2.

4.3.2.2 The ENGINEERED SAFETY FEATURES RESPONSE TIME* of each ESFAS function shall be verified to be within the limit at least once per 18 months. Each verification shall include at least one train such that both trains are verified at least once per 36 months and one channel (to include input relays to both trains) per function such that all channels are verified at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" column of Table 3.3-3.

*The provisions of Specification 4.0.4 are not applicable for response time verification of steam line isolation for entry into MODE 4 and MODE 3 and turbine driven auxiliary feedwater pump for entry into MODE 3.

3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM INSTRUMENTATION and ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

The methodology, as defined in WCAP-10991 to derive the Nominal Trip Setpoints, is based upon combining all of the uncertainties in the channels. Inherent in the determination of the Nominal Trip Setpoints are the magnitudes of these channel uncertainties. Sensors and other instrumentation utilized in these channels should be capable of operating within the allowances of these uncertainty magnitudes. Occasional drift in excess of the allowance may be determined to be acceptable based on the other device performance characteristics. Device drift in excess of the allowance that is more than occasional, may be indicative of more serious problems and would warrant further investigation.

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The verification of response time at the specified frequencies provides assurance that the reactor trip and the engineered safety features actuation associated with each channel is completed within the time limit assumed in the safety analysis. No credit is taken in the analysis for those channels with response times indicated as not applicable (i.e., N.A.).

Response time may be verified by actual response time tests in any series of sequential, overlapping or total channel measurements, or by the summation of allocated sensor, signal processing and actuation logic response times with actual response time tests on the remainder of the channel. Allocations for sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise, or power interrupt tests), (2) inplace, onsite, or offsite (e.g. vendor) test measurements, or (3) utilizing vendor engineering specifications. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements" 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 WCAP. Response time verification for other sensor types must be demonstrated by test. Detector response times may be measured by the in-situ online noise analysis-response time degradation method described in the Westinghouse Topical Report, "The Use of Process Noise Measurements to Determine Response Characteristics of Protection Sensors in U.S. Plants," dated August 1983.

WCAP-14036, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests" 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.