Industry/TSTF Standard Technical Specification Change Traveler

Revise Bases for SRs 3.3.1.16 and 3.3.2.10 to eliminate pressure sensor response time testing

Classification: 1) Correct Specifications

NUREGs Affected: ☐ 1430 ☑ 1431 ☐ 1432 ☐ 1433 ☐ 1434

Description:

WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," dated January, 1996, justified the elimination of the pressure sensor response time testing requirements. This change revises the Bases for RTS and ESF response time Surveillances to incorporate the elimination of pressure sensor response time testing and revises the definition of ESF and RTS Response Time to state that response time may be verified instead of measured for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC. WCAP-14036-P, 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.

Justification:

This change is justified by the NRC acceptance letter, Review of Westinghouse Electric Corporation Topical Report WCAP-13632, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," Dated August 1995 - Westinghouse Owners Group Program MUHP-3040, Revision 1, from Boger (NRC) to Newton (WOG) dated September 5, 1996 , and WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests."

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Revision History

OG Revision 0 Revision Status: Closed

Revision Proposed by:

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 09-May-96

Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 09-May-96

TSTF Review Information

TSTF Received Date: 09-May-96 Date Distributed for Review 31-May-96

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:
NA CEOG, BWOG, BWROG

TSTF Resolution: Approved Date: 16-Jun-96

NRC Review Information

OG Revision 0 Revision Status: Closed

NRC Received Date: 01-Aug-96

NRC Comments:

9/18/96 - Review pending.
3/13/97 - NRC approved.
3/18/97 - NRC informed by TSTF of need to revise Traveler. Revision forthcoming.

Final Resolution: Superceded by Revision Final Resolution Date: 07-Apr-97

TSTF Revision 1 Revision Status: Closed

Revision Proposed by: WOG

Revision Description:
Added changes to the definition of ESF Response Time and RPS Response Time to be consistent with the approving SE.

TSTF Review Information

TSTF Received Date: 19-Nov-96 Date Distributed for Review 03-Feb-97

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:

(No Comments)

TSTF Resolution: Approved Date: 21-Mar-97

NRC Review Information

NRC Received Date: 07-Apr-97

NRC Comments:

4/10/97 - Forwarded to reviewer.
10/1/97 - ICSB greatly concerned over the use of verified. Internal NRC discussion to decide what action to take.
4/21/98 - Jerry Vermeil to have discussion of this issue and HICB to resolve.
8/17/98 - Recommend modification with additional inserts as follows:

Revise 1.1 ESF Response Time

In the last sentence of the paragraph, retain "measured" and insert "or" before "verified by means..." and replace "measured" at the end of the last sentence with "determined" so that the entire sentence reads: "The response time may be measured or verified by means of any series of sequential overlapping, or total steps so that the entire response time is determined."

Insert the following at the end of the paragraph: "The response time of each step must be specifically measured, except in those cases specified in the surveillance requirement where a verification of the response time, through some other surveillance requirement, is performed in accordance with a plant specific NRC approved alternative."

Revise 1.1 RTS Response Time

Same comment as ESF Response Time, above.

TSTF Revision 1 Revision Status: Closed

Modify Insert 1 for SR 3.3.1.16 and Insert 3 for SR 3.3.2.10 as follows:

Place following Reviewer's Note before Insert 1 for SR 3.3.1.16 and Insert 3 for SR 3.3.2.10 as follows: "[Reviewer's Note: The following Bases are applicable for plants adopting WCAP-1 3632-P-A.]"

Revise Insert 1 for SR 3.3.1.16 and Insert 3 for SR 3.3.2.10 to read: "In some instances, response time may be verified either by actual response time tests in any series of sequential, overlapping or total channel measurements or by the summation of allocated sensor response times with actual response time tests on the remainder of the channel. These instances are specifically listed in the surveillance requirement. 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-1 3632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirement," dated January 1996, 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. The allocations for sensor response times must be verified prior to placing the component in operational service and re-verified following maintenance that may adversely affect response time. If the allocation is from prior measurement data, and not from the vendor design data, that allocation must be a statistically valid value by using the mean value of the measurements and a 2 sigma standard deviation value of the measured response times to determine the one or two sided tolerance limit factor for a normal distribution for a 95/95% confidence level. NUREG-1475, Table T-11a or T-11b may be used."
Add the following new insert after the last paragraph of SR 3.3.1.16 and SR 3.3.2.10 as follows: "[Reviewer's Note: The following Bases apply if SR 3.3.1.16 is modified by a Note specifying sensors exempt from specific response time testing.]"

"This Surveillance Requirement is also modified by an additional note specifying which sensors are exempt from specific response time test, and whose response time may be verified through some other surveillance requirement, as performed in accordance with an NRC approved plant specific alternative."
Revise Insert 2 for SR 3.3.1.16 and Insert 4 for SR 3.3.2.10 to add new Reference as follows: "10. NUREG-1475."

Final Resolution: Superceded by Revision Final Resolution Date: 17-Aug-98

TSTF Revision 2 Revision Status: Closed

Revision Proposed by: WOG

Revision Description:
Revision based on tentative agreement between Vogtle and the NRC on a change to the definition.

Owners Group Review Information

Date Originated by OG: 23-Jun-98

Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 01-Sep-98

TSTF Review Information

TSTF Received Date: 02-Sep-98 Date Distributed for Review

OG Review Completed: ___ BWOG ___ WOG ___ CEOG ___ BWROG

TSTF Revision 2 Revision Status: Closed

TSTF Comments:

9/24/98 - TSTF to provide revison of TSTF-111 based on Vogtle SER (to be issued 10/1/98) by 10/15/98.
10/6/98 - Superceded by new revision based on Vogtle SER.

TSTF Resolution: Superceeded Date:

TSTF Revision 3 Revision Status: Closed

Revision Proposed by: WOG

Revision Description:
Editorial changes made to Insert 1 and Insert 3 based on verbal comments from NRC (Carl Schulten)

TSTF Review Information

TSTF Received Date: 09-Oct-98 Date Distributed for Review 09-Oct-98

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:

Withdrawn prior to submittal to NRC to make editorial corrections.

TSTF Resolution: Superceeded Date: 09-Oct-98

TSTF Revision 4 Revision Status: Active Next Action:

Revision Proposed by: WOG

Revision Description:
Two changes were made in order for TSTF-111 to be consistent with the Vogtle SER. First, the date of WCAP-13632-P-A, Revision 2, Elimination of Pressure Sensor Response Time Testing Requirements, was eliminated from Inserts 1 and 3 (the date remains in Insert 4), and the sentence, "Specific components identified in the WCAP may be replaced without verification testing" which appears in Insert 3 was added to Insert 1.

TSTF Review Information

TSTF Received Date: 10-Oct-98 Date Distributed for Review 10-Oct-98

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:

Changes approved by Westinghouse chairman. Other ITS NUREGs are not affected.

TSTF Resolution: Approved Date: 26-Oct-98

NRC Review Information

NRC Received Date: 28-Oct-98

NRC Comments:

11/12/98 - NRC noticed number of typos. Wants TSTF to correct. TSTF to respond by 11/16/98.

Final Resolution: Superceded by Revision Final Resolution Date: 16-Nov-98

TSTF Revision 5 — Revision Status: Active — Next Action:

Revision Proposed by: TSTF

Revision Description:
This revision corrects editorial errors which appeared in Revision 4. Specifically, information was missing from the Description and quote symbols were replaced with other characters in Inserts 3 and 4. These errors have been corrected.

TSTF Review Information

TSTF Received Date: 12-Nov-98 Date Distributed for Review 16-Nov-98

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:
TSTF agreed to correct editorial errors on the 11/12/98 conference call with the NRC.

TSTF Resolution: Approved Date: 16-Nov-98

NRC Review Information

NRC Received Date: 23-Nov-98

NRC Comments:
(No Comments)

Final Resolution: NRC Approves Final Resolution Date: 11-Jan-99

TSTF Revision 6 — Revision Status: Active — Next Action: NRC

Revision Proposed by: WOG

Revision Description:
Revised Inserts 1 and 3 to include a Reviewer's Note stating, "Reviewers Note: Applicable portions of the following Bases are applicable for plants adopting WCAP-13632-P-A. and/or WCAP-14036-P]". Inserts 2 and 4, which are the WCAP references, are bracketed.

TSTF Review Information

TSTF Received Date: 28-Apr-99 Date Distributed for Review 28-Apr-99

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 28-Apr-99

NRC Review Information

NRC Received Date: 30-Apr-99

NRC Comments:
(No Comments)

Final Resolution: NRC Action Pending Final Resolution Date:

Incorporation Into the NUREGs

File to BBS/LAN Date: TSTF Informed Date: TSTF Approved Date:

NUREG Rev Incorporated:

Affected Technical Specifications

1.1	Definition - ESF Response Time
1.1	Definition - RTS Response Time
Ref. 3.3.1 Bases	RTS Instrumentation
SR 3.3.1.16 Bases	RTS Instrumentation
Ref. 3.3.2 Bases	ESFAS Instrumentation
SR 3.3.2.10 Bases	ESFAS Instrumentation

INSERT Definition

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.

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1.1 Definitions

DOSE EQUIVALENT I-131 (continued)	192-212, Table titled, "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity"].
$\bar{E}$ - 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 noniodine 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.
L_a	The maximum allowable primary containment leakage rate, L_a, shall be [ ]% of primary containment air weight per day at the calculated peak containment pressure (P_a).
LEAKAGE	LEAKAGE shall be: a. Identified LEAKAGE 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank; 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection

INSERT Definition

(continued)

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1.1 Definitions

PHYSICS TESTS (continued)	a. Described in Chapter [14, Initial Test Program] of the FSAR; b. Authorized under the provisions of 10 CFR 50.59; or c. Otherwise approved by the Nuclear Regulatory Commission.
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, 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. Plant operation within these operating limits is addressed in LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," and LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System."
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 [2893] 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.
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:

INSERT Definition

(continued)

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.16 (continued)

The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor to the point at which the equipment reaches the required functional state (i.e., control and shutdown rods fully inserted in the reactor core).

For channels that include dynamic transfer Functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer Function set to one, with the resulting measured response time compared to the appropriate FSAR response time. Alternately, the response time test can be performed with the time constants set to their nominal value, provided the required response time is analytically calculated assuming the time constants are set at their nominal values. The response time may be measured by a series of overlapping tests such that the entire response time is measured.

Insert 1 →

As appropriate, each channel's response must be verified every [18] months on a STAGGERED TEST BASIS. Testing of the final actuation devices is included in the testing. Response times cannot be determined during unit operation because equipment operation is required to measure response times. Experience has shown that these components usually pass this surveillance when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.3.1.16 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. FSAR, Chapter [7].

2. FSAR, Chapter [6].

3. FSAR, Chapter [15].

4. IEEE-279-1971.

(continued)

Insert 1

---------- Reviewer's Note ----------

Applicable portions of the following Bases are applicable for plants adopting WCAP-13632-P-A. and/or WCAP-14036-P.

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) in place, 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.

[WCAP-14036-P, 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.

Insert 2

9. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," January 1996.

10. WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," December 1995.

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REFERENCES
(continued)

5. 10 CFR 50.49.
6. RTS/ESFAS Setpoint Methodology Study.
7. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.
8. Technical Requirements Manual, Section 15, "Response Times."

Insert 2.

BASES

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SURVEILLANCE REQUIREMENTS

SR 3.3.2.10 (continued)

accident analysis. Response Time testing acceptance criteria are included in the Technical Requirements Manual, Section 15 (Ref. 9). Individual component response times are not modeled in the analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the Trip Setpoint value at the sensor, to the point at which the equipment in both trains reaches the required functional state (e.g., pumps at rated discharge pressure, valves in full open or closed position).

For channels that include dynamic transfer functions (e.g., lag, lead/lag, rate/lag, etc.), the response time test may be performed with the transfer functions set to one with the resulting measured response time compared to the appropriate FSAR response time. Alternately, the response time test can be performed with the time constants set to their nominal value provided the required response time is analytically calculated assuming the time constants are set at their nominal values. The response time may be measured by a series of overlapping tests such that the entire response time is measured.

Insert 3 →

ESF RESPONSE TIME tests are conducted on an [18] month STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. The final actuation device in one train is tested with each channel. Therefore, staggered testing results in response time verification of these devices every [18] months. The [18] month Frequency is consistent with the typical refueling cycle and is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.

This SR is modified by a Note that clarifies that the turbine driven AFW pump is tested within 24 hours after reaching [1000] psig in the SGs.

SR 3.3.2.11

SR 3.3.2.11 is the performance of a TADOT as described in SR 3.3.2.8, except that it is performed for the P-4 Reactor

(continued)

Insert 3

---------- Reviewer's Note ----------

Applicable portions of the following Bases are applicable for plants adopting WCAP-13632-P-A. and/or WCAP-14036-P.

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," dated January 1996, 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.

[WCAP-14036-P, 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.

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SURVEILLANCE REQUIREMENTS

SR 3.3.2.11 (continued)

Trip Interlock, and the Frequency is once per RTB cycle. This Frequency is based on operating experience demonstrating that undetected failure of the P-4 interlock sometimes occurs when the RTB is cycled.

The SR is modified by a Note that excludes verification of setpoints during the TADOT. The Function tested has no associated setpoint.

REFERENCES

1. FSAR, Chapter [6].
2. FSAR, Chapter [7].
3. FSAR, Chapter [15].
4. IEEE-279-1971.
5. 10 CFR 50.49.
6. RTS/ESFAS Setpoint Methodology Study.
7. NUREG-1218, April 1988.
8. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.
9. Technical Requirements Manual, Section 15, "Response Times."

Insert 4 →

Insert 4

10. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," January 1996.

11. WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," December 1995.