Industry/TSTF Standard Technical Specification Change Traveler

Change Specification 3.3.4 SR to agree with CEN-327

Priority/Classification 1) Correct Specifications

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

Description:

Remove RTCBs from SR 3.3.4.1 and SR 3.3.3.1 (Digital) Channel Functional Tests and make CFT of the RTCBs on a 31 day frequency.

Justification:

CEN-327-A, RPS/ESFAS Extended Test Interval Evaluation, Supplement 1, Section 4.0 states that the SR extension to 92 days is applicable to the bistables, bistable relays, logic matrix relays, K relays, and manual trip. The SR for the RTCBs should have a 31 day frequency.

Revision History

OG Revision 0 Revision Status: Closed

Revision Proposed by: Palo Verde

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 14-Mar-96

Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 14-Mar-96

TSTF Review Information

TSTF Received Date: 12-Apr-96 Date Distributed for Review 12-Apr-96

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

TSTF Comments:
NA WOG, BWOG, BWRs

TSTF Resolution: Approved Date: 14-May-96

NRC Review Information

NRC Received Date: 17-Jul-96 NRC Reviewer: C. Schulten

NRC Comments:

9/18/96 - Review pending.
10/31/96 - Reference the topical report in the Bases insert to SR 3.3.4.1 (digital) and add the topical report to the list of references on Bases page B 3.3.78.
3/17/97 - Include Reference 4 in the proposed insert "CEN-327, June 2, 1986, including Supplement 1, March 3, 1989."
3/18/97 - TSTF agreed to make change.

Final Resolution: Superceded by Revision Final Resolution Date: 24-Jun-97

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TSTF Revision 1 **Revision Status: Active** **Next Action:**

Revision Proposed by: NRC

Revision Description:
Included references to CEN-327 in the digital spec insert and added CEN-327 to list of references for digital.

TSTF Review Information

TSTF Received Date: 11-Apr-97 Date Distributed for Review 17-Apr-97

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

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 13-May-97

NRC Review Information

NRC Received Date: 24-Jun-97 NRC Reviewer: C. Schulten

NRC Comments:
(No Comments)

Final Resolution: NRC Approves Final Resolution Date: 06-Oct-97

Incorporation Into the NUREGs

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

NUREG Rev Incorporated:

Affected Technical Specifications

SR 3.3.3.1	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Added new surveillance
SR 3.3.3.1	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Renumbered to 3.3.3.2
SR 3.3.3.1 Bases	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Added new surveillance
SR 3.3.3.1 Bases	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Renumbered to 3.3.3.2
SR 3.3.3.2	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Renumbered to 3.3.3.3
SR 3.3.3.2 Bases	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Renumbered to 3.3.3.3
SR 3.3.3.3	RPS Logic and Trip Initiation (Analog)	
	Change Description:	Renumbered to 3.3.3.4

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SR 3.3.3.3 Bases	RPS Logic and Trip Initiation (Analog) Change Description: Renumbered to 3.3.3.4
Ref. 3.3.4 Bases	RPS Logic and Trip Initiation (Digital)
SR 3.3.4.1	RPS Logic and Trip Initiation (Digital) Change Description: Renumbered to 3.3.4.2
SR 3.3.4.1	RPS Logic and Trip Initiation (Digital) Change Description: Added new surveillance
SR 3.3.4.1 Bases	RPS Logic and Trip Initiation (Digital) Change Description: Added new surveillance
SR 3.3.4.1 Bases	RPS Logic and Trip Initiation (Digital) Change Description: Renumbered to 3.3.4.2
SR 3.3.4.2	RPS Logic and Trip Initiation (Digital) Change Description: Renumbered to 3.3.4.3
SR 3.3.4.2 Bases	RPS Logic and Trip Initiation (Digital) Change Description: Renumbered to 3.3.4.3
SR 3.3.4.3	RPS Logic and Trip Initiation (Digital) Change Description: Renumbered to 3.3.4.4
SR 3.3.4.3 Bases	RPS Logic and Trip Initiation (Digital) Change Description: Renumbered to 3.3.4.4

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, or D not met. OR One or more Functions with two or more Manual Trip, Matrix Logic, Initiation Logic, or RTCB channels inoperable for reasons other than Condition A or D.	E.1 Be in MODE 3. AND E.2 Open all RTCBs.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.3.~~8~~2	Perform a CHANNEL FUNCTIONAL TEST on each RPS Logic channel. ~~and RTCB channel.~~	[92] days
SR 3.3.3.~~3~~3	Perform a CHANNEL FUNCTIONAL TEST on each RPS Manual Trip channel.	Once within 7 days prior to each reactor startup
[SR 3.3.3.~~3~~4	Perform a CHANNEL FUNCTIONAL TEST, including separate verification of the undervoltage and shunt trips, on each RTCB.]	[18] months]
SR 3.3.3.1	Perform a CHANNEL FUNCTIONAL TEST on each RTCB channel	[31] days

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BASES (continued)

SURVEILLANCE REQUIREMENTS

[Reviewer's Note: In order for a plant to take credit for topical reports as the basis for justifying Frequencies, topical reports must be supported by an NRC staff Safety Evaluation Report that establishes the acceptability of each topical report for that unit (Ref. 4).]

INSERT (Analog)

SR 3.3.3.~~1~~2

A CHANNEL FUNCTIONAL TEST on each RPS Logic channel ~~and RTCB channel~~ is performed every [92] days to ensure the entire channel will perform its intended function when needed.

In addition to power supply tests, the RPS CHANNEL FUNCTIONAL TEST consists of three overlapping tests as described in Reference 3. These tests verify that the RPS is capable of performing its intended function, from bistable input through the RTCBs. The first test, the bistable test, is addressed by SR 3.3.1.4 in LCO 3.3.1.

This SR addresses the two tests associated with the RPS Logic: Matrix Logic and Trip Path.

Matrix Logic Tests

These tests are performed one matrix at a time. They verify that a coincidence in the two input channels for each Function removes power from the matrix relays. During testing, power is applied to the matrix relay test coils and prevents the matrix relay contacts from assuming their de-energized state. The Matrix Logic tests will detect any short circuits around the bistable contacts in the coincidence logic such as may be caused by faulty bistable relay or trip channel bypass contacts.

Trip Path Tests

These tests are similar to the Matrix Logic tests, except that test power is withheld from one matrix relay at a time, allowing the initiation circuit to de-energize, opening the affected set of RTCBs. The RTCBs must then be closed prior to testing the other three initiation circuits, or a reactor trip may result.

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SURVEILLANCE REQUIREMENTS

Trip Path Tests (continued)

The Frequency of [92] days is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 5).

SR 3.3.3.~~2~~ 3

A CHANNEL FUNCTIONAL TEST on the Manual Trip channels is performed prior to a reactor startup to ensure the entire channel will perform its intended function if required. The Manual Trip Function can be tested either at power or shutdown. However, the simplicity of this circuitry and the absence of drift concern makes this Frequency adequate. Additionally, operating experience has shown that these components usually pass the Surveillance when performed once within 7 days prior to each reactor startup.

SR 3.3.3.~~3~~ 4

Each RTCB is actuated by an undervoltage coil and a shunt trip coil. The system is designed so that either de-energizing the undervoltage coil or energizing the shunt trip coil will cause the circuit breaker to open. When an RTCB is opened, either during an automatic reactor trip or by using the manual push buttons in the control room, the undervoltage coil is de-energized and the shunt trip coil is energized. This makes it impossible to determine if one of the coils or associated circuitry is defective.

Therefore, once every 18 months, a CHANNEL FUNCTIONAL TEST is performed that individually tests all four sets of undervoltage coils and all four sets of shunt trip coils. During undervoltage coil testing, the shunt trip coils shall remain de-energized, preventing their operation. Conversely, during shunt trip coil testing, the undervoltage coils shall remain energized, preventing their operation. This Surveillance ensures that every undervoltage coil and every shunt trip coil is capable of performing its intended function and that no single active failure of any RTCB component will prevent a reactor trip. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.3.~~6~~4 (continued)

were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the Frequency of once every 18 months.

If one set of RTCBs has been opened in response to a single RTCB channel, Initiation Logic channel, or Manual Trip channel failure, the affected set of RTCBs may be closed for up to 1 hour for Surveillance on the OPERABLE Initiation Logic, RTCB, and Manual Trip channels. In this case, the redundant set of RTCBs will provide protection if a trip should be required. It is unlikely that a trip will be required during the Surveillance, coincident with a failure of the remaining series RTCB channel. If a single matrix power supply or vital bus failure has opened two sets of RTCBs, Manual Trip and RTCB testing on the closed breakers cannot be performed without causing a trip.

REFERENCES

1. 10 CFR 50, Appendix A.
2. 10 CFR 100.
3. FSAR, Section [7.2].
4. NRC Safety Evaluation Report, [Date].
5. CEN-327, June 2, 1986, including Supplement 1, March 3, 1989.

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, or D not met. OR One or more Functions with more than one Manual Trip, Matrix Logic, Initiation Logic, or RTCB channel inoperable for reasons other than Condition A or D.	E.1 Be in MODE 3. AND E.2 Open all RTCBs.	6 hours 6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.4.~~1~~2	Perform a CHANNEL FUNCTIONAL TEST on each RPS Logic channel. ~~and RTCB channel.~~	[92] days
SR 3.3.4.~~2~~3	Perform a CHANNEL FUNCTIONAL TEST, including separate verification of the undervoltage and shunt trips, on each RTCB.	[18] months
SR 3.3.4.~~3~~4	Perform a CHANNEL FUNCTIONAL TEST on each RPS Manual Trip channel.	Once within 7 days prior to each reactor startup
SR 3.3.4.1	Perform a CHANNEL FUNCTIONAL TEST on each RTCB channel	[31] days

BASES

ACTIONS

D.1 (continued)

If the affected RTCB cannot be opened, Required Action E is entered. This would only occur if there is a failure in the Manual Trip circuitry or the RTCB(s).

E.1 and E.2

Condition E is entered if Required Actions associated with Condition A, B, or D are not met within the required Completion Time or, if for one or more Functions, more than one Manual Trip, Matrix Logic, Initiation Logic, or RTCB channel is inoperable for reasons other than Condition A or D.

If the RTCBs associated with the inoperable channel cannot be opened, the reactor must be shut down within 6 hours and all the RTCBs opened. A Completion Time of 6 hours is reasonable, based on operating experience, for reaching the required plant conditions from full power conditions in an orderly manner and without challenging plant systems and for opening RTCBs. All RTCBs should then be opened, placing the plant in a MODE where the LCO does not apply and ensuring no CEA withdrawal occurs.

SURVEILLANCE REQUIREMENTS

In order for a unit to take credit for topical reports as the basis for justifying Frequencies, topical reports must be supported by an NRC staff Safety Evaluation Report that establishes the acceptability of each topical report for that unit (Ref. 4).

Insert (digital)

SR 3.3.4.~~1~~2

A CHANNEL FUNCTIONAL TEST on each RPS Logic channel ~~and RTCB channel~~ is performed every [92] days to ensure the entire channel will perform its intended function when needed.

In addition to power supply tests, the RPS CHANNEL FUNCTIONAL TEST consists of three overlapping tests as described in Reference 3. These tests verify that the RPS is capable of performing its intended function, from

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SURVEILLANCE REQUIREMENTS

SR 3.3.4.~~1~~ 2 (continued)

bistable input through the RTCBs. The first test, the bistable test, is addressed by SR 3.3.1.7 in LCO 3.3.1.

This SR addresses the two tests associated with the RPS Logic: Matrix Logic and Trip Path.

Matrix Logic Tests

These tests are performed one matrix at a time. They verify that a coincidence in the two input channels for each Function removes power from the matrix relays. During testing, power is applied to the matrix relay test coils and prevents the matrix relay contacts from assuming their de-energized state. The Matrix Logic tests will detect any short circuits around the bistable contacts in the coincidence logic such as may be caused by faulty bistable relay or trip channel bypass contacts.

Trip Path Tests

These tests are similar to the Matrix Logic tests, except that test power is withheld from one matrix relay at a time, allowing the initiation circuit to de-energize, opening the affected set of RTCBs. The RTCBs must then be closed prior to testing the other three initiation circuits, or a reactor trip may result.

The Frequency of [92] days is based on the reliability analysis presented in topical report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation" (Ref. 5).

Additionally, operating experience has shown that these components usually pass the Surveillance when performed at a Frequency of once every 7 days prior to each reactor startup.

SR 3.3.4.~~2~~ 3

Each RTCB is actuated by an undervoltage coil and a shunt trip coil. The system is designed so that either de-energizing the undervoltage coil or energizing the shunt trip coil will cause the circuit breaker to open. When an RTCB is opened, either during an automatic reactor trip or

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.4.~~2~~3 (continued)

by using the manual push buttons in the control room, the undervoltage coil is de-energized and the shunt trip coil is energized. This makes it impossible to determine if one of the coils or associated circuitry is defective.

Therefore, once every [18] months, a CHANNEL FUNCTIONAL TEST is performed that individually tests all four sets of undervoltage coils and all four sets of shunt trip coils. During undervoltage coil testing, the shunt trip coils must remain de-energized, preventing their operation. Conversely, during shunt trip coil testing, the undervoltage coils must remain energized, preventing their operation. This Surveillance ensures that every undervoltage coil and every shunt trip coil is capable of performing its intended function and that no single active failure of any RTCB component will prevent a reactor trip. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the Frequency of once every [18] months.

SR 3.3.4.~~3~~4

A CHANNEL FUNCTIONAL TEST on the Manual Trip channels is performed prior to a reactor startup to ensure the entire channel will perform its intended function if required. The Manual Trip Function can only be tested at shutdown. However, the simplicity of this circuitry and the absence of drift concern make this Frequency adequate.

REFERENCES

1. 10 CFR 50, Appendix A.

2. 10 CFR 100.

3. FSAR, Section [7.2].

4. CEN-327, June 2, 1986, including Supplement 1, March 3, 1989.

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