Industry/TSTF Standard Technical Specification Change Traveler

Reword Bases for Turbine Stop Valve (TSV) Closure function of RPS Instrumentation LCO

Classification: 4) Change Bases

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

Description:

The Bases to Specification 3.3.1.1, RPS Instrumentation, for the Turbine Stop Valve Closure function are modified to replace "if any three TSVs should close" with "even if one TSV should fail to close".

Justification:

The current Bases are technically misleading. The TSV closure function causes a reactor scram if the TSVs shut. The circuitry logic is designed such that any single failure will not preclude a scram initiation should a TSV closure occur. The design is such that any single failure will not preclude a scram initiation should a TSV closure occur. The circuitry logic is arranged so that no single failure can prevent a turbine stop valve closure scram. Consequently, should a single TSV fail to close, a scram signal will still be initiated. The TSV closure function initiates a scram if a TSV closure event (all 4 valves close) occurs. The TSV closure logic is such that any single failure, including the failure of a TSV to close, will not prevent the scram function from initiating. The wording "any three" on page B 3.3-18 (NUREG-1433) and B 3.3-17 (NUREG-1434) is incorrect in that it describes the function as three TSVs closing causing a scram initiation. Rather, the Function is that a full (all 4 valves) TSV closure will initiate a scram even if a single failure (only 3 TSVs shutting) should occur.

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Revision History

OG Revision 0 Revision Status: Closed

Revision Proposed by: River Bend

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 19-May-97

Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 19-May-97

TSTF Review Information

TSTF Received Date: 21-Jul-97 Date Distributed for Review 01-Dec-97

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

TSTF Comments:

The present Bases is technically misleading. Modify the justification. BWR/4 and 6 only.

TSTF Resolution: Approved Date: 05-Feb-98

NRC Review Information

OG Revision 0 Revision Status: Closed

NRC Received Date: 10-Mar-98

NRC Comments:

8/4/99 - NRC Comments: Instead of revising to replace "any three" with "the", modify the phrase to read, "...no single instrument failure will preclude a scram from this Function even if one TSV should fail to close."

Final Resolution: Superceded by Revision Final Resolution Date: 04-Aug-99

TSTF Revision 1 Revision Status: Active Next Action: NRC

Revision Proposed by: NRC

Revision Description:
NRC requested changes to the Bases to clarify that a single failure will not preclude a scram initiation even if one TSV should fail to close.

TSTF Review Information

TSTF Received Date: 30-Aug-99 Date Distributed for Review 30-Aug-99

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

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 30-Aug-99

NRC Review Information

NRC Received Date: 31-Aug-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

S/A 3.3.1.1 Bases RPS Instrumentation

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

8. Turbine Stop Valve—Closure (continued)

stage pressure; therefore, to consider this Function OPERABLE, the turbine bypass valves must remain shut at THERMAL POWER ≥ 30% RTP.

The Turbine Stop Valve—Closure Allowable Value is selected to be high enough to detect imminent TSV closure, thereby reducing the severity of the subsequent pressure transient.

even if one TSV should fail to close.

Eight channels of Turbine Stop Valve—Closure Function, with four channels in each trip system, are required to be OPERABLE to ensure that no single instrument failure will preclude a scram from this Function if any three TSVs should close. This Function is required, consistent with analysis assumptions, whenever THERMAL POWER is ≥ 30% RTP. This Function is not required when THERMAL POWER is < 30% RTP since the Reactor Vessel Steam Dome Pressure—High and the Average Power Range Monitor Fixed Neutron Flux—High Functions are adequate to maintain the necessary safety margins.

9. Turbine Control Valve Fast Closure, Trip Oil Pressure—Low

Fast closure of the TCVs results in the loss of a heat sink that produces reactor pressure, neutron flux, and heat flux transients that must be limited. Therefore, a reactor scram is initiated on TCV fast closure in anticipation of the transients that would result from the closure of these valves. The Turbine Control Valve Fast Closure, Trip Oil Pressure—Low Function is the primary scram signal for the generator load rejection event analyzed in Reference 7. For this event, the reactor scram reduces the amount of energy required to be absorbed and, along with the actions of the EOC-RPT System, ensures that the MCPR SL is not exceeded.

Turbine Control Valve Fast Closure, Trip Oil Pressure—Low signals are initiated by the electrohydraulic control (EHC) fluid pressure at each control valve. One pressure transmitter is associated with each control valve, and the signal from each transmitter is assigned to a separate RPS logic channel. This Function must be enabled at THERMAL POWER ≥ 30% RTP. This is normally accomplished

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

9. Turbine Stop Valve Closure, Trip Oil Pressure—Low (continued)

bypass valves must remain shut at THERMAL POWER ≥ 40% RTP. The setpoint is feedwater temperature dependent as a result of the subcooling changes that affect the turbine first stage pressure/reactor power relationship. For RTP operation with feedwater temperature ≥ 420°F, an allowable setpoint of ≤ 26.9% of control valve wide open turbine first stage pressure is provided by the bypass function. The allowable setpoint is reduced to ≤ 22.5% of control valve wide open turbine first stage pressure for RTP operation with feedwater temperature > 370°F and < 420°F.

The Turbine Stop Valve Closure, Trip Oil Pressure—Low Allowable Value is selected to be high enough to detect imminent TSV closure thereby reducing the severity of the subsequent pressure transient.

even if one TSV should fail to close.

Eight channels of Turbine Stop Valve Closure, Trip Oil Pressure—Low Function, with four channels in each trip system, are required to be OPERABLE to ensure that no single instrument failure will preclude a scram from this Function ~~if any three TSVs should close~~. This Function is required, consistent with analysis assumptions, whenever THERMAL POWER is ≥ 40% RTP. This Function is not required when THERMAL POWER is < 40% RTP since the Reactor Vessel Steam Dome Pressure—High and the Average Power Range Monitor Fixed Neutron Flux—High Functions are adequate to maintain the necessary safety margins.

10. Turbine Control Valve Fast Closure, Trip Oil Pressure—Low

Fast closure of the TCVs results in the loss of a heat sink that produces reactor pressure, neutron flux, and heat flux transients that must be limited. Therefore, a reactor scram is initiated on TCV fast closure in anticipation of the transients that would result from the closure of these valves. The Turbine Control Valve Fast Closure, Trip Oil Pressure—Low Function is the primary scram signal for the generator load rejection event analyzed in Reference 4. For this event, the reactor scram reduces the amount of energy required to be absorbed and, along with the actions of the EOC-RPT System, ensures that the MCPR SL is not exceeded.

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