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U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

Subject: Oconee Nuclear Station
Docket Numbers 50-269, 270, and 287
Technical Specification Bases (TSB) Change

Please see attached revisions to Tech Spec Bases 3.7.2, Turbine Stop Valves,which were implemented on October 13, 2003.

Attachment 1 contains the new TSB pages and Attachment 2 contains the markup version of the Bases pages.

If any additional information is needed, please contact Larry E. Nicholson, at (864-885-3292).

Very truly yours,

R. A. Jones, Vice President
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A001

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Attachment 1

B 3.7 PLANT SYSTEMS

B 3.7.2 Turbine Stop Valves (TSVs)

BASES

BACKGROUND

The TSVs partially isolate steam flow from the secondary side of the steam generators following a high energy line break (HELB). TSV closure partially terminates flow from the unaffected (intact) steam generator.

Two TSVs are provided for each main steam line and are located outside of containment. The TSVs are downstream from the main steam safety valves (MSSVs) and emergency feedwater pump turbine's steam supply to prevent the MSSVs and EFW pump's steam supply from being isolated from the steam generators by TSV closure. Closing the TSVs partially isolates each steam generator from the other, and isolates the turbine from the steam generators.

TSV Closure is initiated by a reactor trip. To keep from rapidly cooling down the primary plant by drawing off too much steam, the turbine is tripped when the reactor trips. Two independent and redundant "Reactor Trip Confirmed" signals in the form of contact closures from the control rod drive system will energize two independent turbine trip mechanisms. The Channel A and B trip circuits will close all four TSVs within a maximum of 1 second.

A discussion of the TSV's function is found in the UFSAR, Section 10.3 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The design basis of the TSVs is established by the analysis for the main steam line break (MSLB) as discussed in the UFSAR, Section 15.13 (Ref. 2). TSV closure is necessary to stop steam flow to the turbine (to prevent overcooling) following all reactor trips. Another failure considered is the loss of one switchgear.

The accident analysis compares several different MSLB events. The main SLB outside containment upstream of the TSV is limiting for offsite dose. The MSLB with ICS low level control and no operator action prior to ten minutes is the limiting case for a post-trip return to power. With offsite power available, the reactor coolant pumps continue to circulate coolant through the steam generators, maximizing the Reactor Coolant System (RCS) cooldown. With a loss of offsite power, the response of mitigating systems, such as the High Pressure Injection (HPI) System pumps, is delayed.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The TSVs remain open during power operation. These valves close upon a reactor trip.

a. For an HELB or an MSLB inside containment, steam is discharged into containment from both steam generators until closure of the TSVs. After TSV closure, steam is discharged into containment only from the affected steam generator.

b. An MSLB outside of containment and upstream from the TSVs is not a containment pressurization concern. The uncontrolled blowdown of both steam generators must be prevented to limit the potential for uncontrolled RCS cooldown and positive reactivity addition. Closure of the TSVs isolates the break and limits the blowdown to a single steam generator.

c. Steam flow to the turbine if not controlled by the turbine control valves will terminate on closing the TSVs.

d. Following a steam generator tube rupture, closure of the TSVs isolates the ruptured steam generator from the intact steam generator.

The TSVs satisfy Criterion 3 of 10 CFR 50.36, (Ref. 3).

LCO

This LCO requires that the two TSVs in each steam line be OPERABLE. The TSVs are considered OPERABLE when the isolation times are within limits and they close on an isolation actuation signal.

This LCO provides assurance that the TSVs will perform their design safety function to mitigate the consequences of accidents that could result in offsite exposures comparable to the 10 CFR 100 limits (Ref. 4).

APPLICABILITY

The TSVs must be OPERABLE in MODES 1, 2 and 3 with any TSVs open. In these conditions when there is significant mass and energy in the RCS and steam generators, the TSVs must be OPERABLE or closed. When the TSVs are closed, they are already performing the safety function.

In MODE 4, the steam generator energy is low. Therefore, the TSVs are not required to be OPERABLE.

BASES

APPLICABILITY (continued)

In MODES 5 and 6, the steam generators do not contain a significant amount of energy because their temperature is below the boiling point of water; therefore, the TSVs are not required for isolation of potential high energy secondary system pipe breaks in these MODES.

ACTIONS

A.1

With one or both TSVs for one main steam line inoperable in MODE 1, action must be taken to restore the components to OPERABLE status within 8 hours. Some repairs can be made to the TSV with the unit hot. The 8 hour Completion Time is reasonable, considering the probability of an accident that would require actuation of the TSVs occurring during this time interval. The turbine control valves may be available to provide the isolation for the postulated accidents although control valve response is not as rapid.

The Completion Time is reasonable because the TSVs isolate a closed system which provides an additional barrier against releases.

B.1

If the TSVs cannot be restored to OPERABLE status within 8 hours, the unit must be placed in MODE 2 and the inoperable TSVs closed within the next 6 hours. The Completion Time is reasonable, based on operating experience, to reach MODE 2.

C.1 and C.2

Condition C is modified by a Note indicating that separate Condition entry is allowed for each TSV.

Since the TSVs are required to be OPERABLE in MODES 2 and 3, the inoperable TSVs may either be restored to OPERABLE status or closed. When closed, the TSVs are already in the position required by the assumptions in the safety analysis.

The 8 hour Completion Time is reasonable, considering the low probability of an accident occurring during this time period that would require closure of the TSVs.

BASES

ACTIONS

C.1 and C.2 (continued)

Inoperable TSVs that cannot be restored to OPERABLE status within the specified Completion Time, but are closed, must be verified on a periodic basis to be closed. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of TSV status indications available in the control room, and other administrative controls, to ensure these valves are in the closed position.

D.1 and D.2

If the TSV cannot be restored to OPERABLE status or closed in the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 18 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from MODE 2 conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1 and SR 3.7.2.2

These SRs verify that TSV closure time of each TSV is $\leq$ 1.0 second on an actual or simulated actuation signal from Channel A and Channel B. The 1.0 second TSV closure time is assumed in the accident and containment analyses. This Surveillance is normally performed upon returning the unit to operation following a refueling outage.

The Frequency for this SR is 18 months. The 18 month Frequency to demonstrate valve closure time is based on the refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

This test is conducted in MODE 3, with the unit at operating temperature and pressure, as discussed in the Reference 5 exercising requirements. This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This allows delaying testing until MODE 3 in order to establish conditions consistent with those under which the acceptance criterion was generated.

BASES

REFERENCES

1. UFSAR, Section 10.3.

2. UFSAR, Section 15.13.

3. 10 CFR 50.36.

4. 10 CFR 100.11.

Attachment 2

FOR INFORMATION ONLY
NO CHANGE THIS PAGE

B 3.7 PLANT SYSTEMS

B 3.7.2 Turbine Stop Valves (TSVs)

BASES

BACKGROUND

The TSVs partially isolate steam flow from the secondary side of the steam generators following a high energy line break (HELB). TSV closure partially terminates flow from the unaffected (intact) steam generator.

Two TSVs are provided for each main steam line and are located outside of containment. The TSVs are downstream from the main steam safety valves (MSSVs) and emergency feedwater pump turbine's steam supply to prevent the MSSVs and EFW pump's steam supply from being isolated from the steam generators by TSV closure. Closing the TSVs partially isolates each steam generator from the other, and isolates the turbine from the steam generators.

TSV Closure is initiated by a reactor trip. To keep from rapidly cooling down the primary plant by drawing off too much steam, the turbine is tripped when the reactor trips. Two independent and redundant "Reactor Trip Confirmed" signals in the form of contact closures from the control rod drive system will energize two independent turbine trip mechanisms. The Channel A *and B* trip circuit*s* will close all four TSVs within a maximum of 1 second.

A discussion of the TSV's function is found in the UFSAR, Section 10.3 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The design basis of the TSVs is established by the analysis for the main steam line break (MSLB) as discussed in the UFSAR, Section 15.13 (Ref. 2). TSV closure is necessary to stop steam flow to the turbine (to prevent overcooling) following all reactor trips. Another failure considered is the loss of one switchgear.

The accident analysis compares several different MSLB events. The main SLB outside containment upstream of the TSV is limiting for offsite dose. The MSLB with ICS low level control and no operator action prior to ten minutes is the limiting case for a post-trip return to power. With offsite power available, the reactor coolant pumps continue to circulate coolant through the steam generators, maximizing the Reactor Coolant System (RCS) cooldown. With a loss of offsite power, the response of mitigating systems, such as the High Pressure Injection (HPI) System pumps, is delayed.

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BASES

APPLICABLE SAFETY ANALYSES (continued)

The TSVs remain open during power operation. These valves close upon a reactor trip.

a. *For an HELB or an MSLB inside containment, steam is discharged into containment from both steam generators until closure of the TSVs. After TSV closure, steam is discharged into containment only from the affected steam generator.*

b. An MSLB outside of containment and upstream from the TSVs is not a containment pressurization concern. The uncontrolled blowdown of both steam generators must be prevented to limit the potential for uncontrolled RCS cooldown and positive reactivity addition. Closure of the TSVs isolates the break and limits the blowdown to a single steam generator.

c. Steam flow to the turbine if not controlled by the turbine control valves will terminate on closing the TSVs.

d. Following a steam generator tube rupture, closure of the TSVs isolates the ruptured steam generator from the intact steam generator.

The TSVs satisfy Criterion 3 of 10 CFR 50.36, (Ref. 3).

LCO

This LCO requires that the two TSVs in each steam line be OPERABLE. The TSVs are considered OPERABLE when the isolation times are within limits and they close on an isolation actuation signal.

This LCO provides assurance that the TSVs will perform their design safety function to mitigate the consequences of accidents that could result in offsite exposures comparable to the 10 CFR 100 limits (Ref. 4).

APPLICABILITY

The TSVs must be OPERABLE in MODES 1, 2 and 3 with any TSVs open. In these conditions when there is significant mass and energy in the RCS and steam generators, the TSVs must be OPERABLE or closed. When the TSVs are closed, they are already performing the safety function.

In MODE 4, the steam generator energy is low. Therefore, the TSVs are not required to be OPERABLE.

BASES

APPLICABILITY (continued)

In MODES 5 and 6, the steam generators do not contain a significant amount of energy because their temperature is below the boiling point of water; therefore, the TSVs are not required for isolation of potential high energy secondary system pipe breaks in these MODES.

ACTIONS

A.1

With one or both TSVs for one main steam line inoperable in MODE 1, action must be taken to restore the components to OPERABLE status within 8 hours. Some repairs can be made to the TSV with the unit hot. The 8 hour Completion Time is reasonable, considering the probability of an accident that would require actuation of the TSVs occurring during this time interval. The turbine control valves may be available to provide the isolation for the postulated accidents although control valve response is not as rapid.

The Completion Time is reasonable because the TSVs isolate a closed system which provides an additional barrier against releases.

B.1

If the TSVs cannot be restored to OPERABLE status within ~~12~~ *8* hours, the unit must be placed in MODE 2 and the inoperable TSVs closed within the next 6 hours. The Completion Time is reasonable, based on operating experience, to reach MODE 2.

C.1 and C.2

Condition C is modified by a Note indicating that separate Condition entry is allowed for each TSV.

Since the TSVs are required to be OPERABLE in MODES 2 and 3, the inoperable TSVs may either be restored to OPERABLE status or closed. When closed, the TSVs are already in the position required by the assumptions in the safety analysis.

The 8 hour Completion Time is reasonable, considering the low probability of an accident occurring during this time period that would require closure of the TSVs.

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BASES

ACTIONS

C.1 and C.2 (continued)

Inoperable TSVs that cannot be restored to OPERABLE status within the specified Completion Time, but are closed, must be verified on a periodic basis to be closed. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of TSV status indications available in the control room, and other administrative controls, to ensure these valves are in the closed position.

D.1 and D.2

If the TSV cannot be restored to OPERABLE status or closed in the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 18 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from MODE 2 conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1 *and SR 3.7.2.2*

These SR*s* verify that TSV closure time of each TSV is ≤ 1.0 second on an actual or simulated actuation signal from Channel A *and Channel B.* The 1.0 second TSV closure time is assumed in the accident and containment analyses. This Surveillance is normally performed upon returning the unit to operation following a refueling outage.

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BASES

REFERENCES

1. UFSAR, Section 10.3.
2. UFSAR, Section 15.13.
3. 10 CFR 50.36.
4. 10 CFR 100.11.