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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 a revision to Tech Spec Bases 3.7.3, Main Feedwater Control Valves (MFCVs) and Startup Feedwater Control Valves (SFCVs); 3.7.4, Atmospheric Dump Valves (ADV) Flow Paths; and 3.7.11, Fuel Storage Pool Water level, which were implemented on January 17, 2006.

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

If any additional information is needed, please contact Graham Davenport at 864-885-3044.

Very truly yours,

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Attachment 1

B 3.7 PLANT SYSTEMS

B 3.7.3 Main Feedwater Control Valves (MFCVs), and Startup Feedwater Control Valves (SFCVs)

BASES

BACKGROUND The main feedwater isolation valves (MFIVs) for each steam generator consist of the MFCVs and the SFCVs. The MFIVs isolate main feedwater (MFW) flow to the secondary side of the steam generators following a high energy line break (HELB). The consequences of events occurring in the main steam lines will be mitigated by their closure. Closing the MFCVs and associated SFCVs valves effectively terminates the addition of feedwater to an affected steam generator, limiting the mass and energy release for steam line breaks (SLBs) inside containment and reducing the cooldown effects for SLBs.

The MFIVs close on receipt of a MSLB detection signal generated by low steam header pressure. The MFIVs can also be closed manually.

APPLICABLE SAFETY ANALYSES The design basis of the MFIVs is established by the containment analysis for the main steam line break (MSLB).

Failure of an MFIV to close following an MSLB, can result in additional mass and energy being delivered to the steam generators, contributing to cooldown. This failure also results in additional mass and energy releases following an MSLB.

The MFIVs satisfy Criterion 3 of 10 CFR 50.36 (Ref. 1).

LCO This LCO ensures that the MFIVs will isolate MFW flow to the steam generators following a main steam line break.

Two MFCVs and two SFCVs are required to be OPERABLE. The MFIVs are considered OPERABLE when the isolation times are within limits and they close on a feedwater isolation actuation signal.

Automatic initiation instrumentation is not required to be OPERABLE in MODE 3 when main steam header pressure is < 700 psig in accordance with LCO 3.3.11, "Automatic Feedwater Isolation System (AFIS) Instrumentation."

BASES

LCO
(continued)

When automatic initiation circuitry is not required to be OPERABLE, the MFCVs and SFCVs are OPERABLE provided manual closure capability is OPERABLE. Automatic initiation is not required in this condition since additional time is available for the operator to manually close the valves if required.

Failure to meet the LCO requirements can result in excessive cooldown and additional mass and energy being released to containment following an MSLB inside containment.

APPLICABILITY

The MFCVs and SFCVs must be OPERABLE whenever there is significant mass and energy in the RCS and steam generators.

In MODES 1, 2, and 3, the MFCVs and SFCVs are required to be OPERABLE in order to limit the cooldown and the amount of available fluid that could be added to containment in the case of an MSLB inside containment. When the valves are closed, they are already performing their safety function.

In MODES 4, 5, and 6, feedwater and steam generator energy are low. Therefore, the MFCVs and SFCVs are not required for isolation of potential main steam pipe breaks in these MODES.

ACTIONS

The ACTIONS table is modified by a Note indicating that separate Condition entry is allowed for each valve.

A.1 and A.2

With one MFCV in one or more flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable affected valves within 8 hours. When these valves are closed or isolated, they are performing their required safety function.

The 8 hour Completion Time provides a reasonable time to restore an inoperable MFIV to OPERABLE status and is acceptable due to the low probability of an event occurring during this time period that would require isolation of the MFW flow paths.

BASES

ACTIONS

A.1 and A.2 (continued)

Inoperable MFCVs that are closed or isolated must be verified on a periodic basis that they are closed or isolated. 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 valve status indications available in the control room, and other administrative controls, to ensure that these valves are closed or isolated.

B.1 and B.2

With one SFCV in one or more flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable affected valves within 8 hours. When these valves are closed or isolated, they are performing their required safety function.

The 8 hour Completion Time provides a reasonable time to restore an inoperable MFIV to OPERABLE status and is acceptable due to the low probability of an event occurring during this time period that would require isolation of the MFW flow paths.

Inoperable SFCVs that are closed or isolated must be verified on a periodic basis that they are closed or isolated. 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 valve status indications available in the control room, and other administrative controls, to ensure that these valves are closed or isolated.

C.1 and C.2

If the Required Actions and associated Completion Time are not met, the unit must be 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 full power conditions in an orderly manner and without challenging unit systems.

BASES (continued)

**SURVEILLANCE
REQUIREMENTS**

SR 3.7.3.1

This SR verifies that the closure time of each MFCV and SFCV is ≤ 25 seconds on an actual or simulated actuation signal. The 25 seconds includes a 10 second signal delay and 15 seconds for valve movement.

The MFCV and SFCV closure time is assumed in the containment analyses. This Surveillance is normally performed upon returning the unit to operation following a refueling outage. The MFCV and SFCV should not be tested at power since even a part stroke exercise increases the risk of a valve closure with the unit generating power. This is consistent with the ASME Code, Section XI (Ref. 2) requirements during operation in MODES 1 and 2.

This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR.

The Frequency for this SR is in accordance with the Inservice Testing Program.

REFERENCES

1. 10 CFR 50.36.
 2. ASME, Boiler and Pressure Vessel Code, Section XI.
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B 3.7 PLANT SYSTEMS

B 3.7.4 Atmospheric Dump Valve (ADV) Flow Paths

BASES

BACKGROUND

The ADV flow paths provide a method for cooling the unit to decay heat removal (DHR) entry conditions, should the preferred heat sink via the Turbine Bypass System to the condenser not be available, as discussed in the UFSAR (Ref. 2). This is done in conjunction with the secondary cooling water from the Emergency Feedwater (EFW) System.

The steam generator tube rupture (SGTR) analysis (Ref. 3) credits operator action to depressurize the steam generators by opening each of the ADV flow paths.

In addition, the ADV flow path for each steam generator is credited as a compensatory measure in Technical Specification (TS) 3.5.2, "High Pressure Injection (HPI)." In certain HPI configurations, the ADV flow path for one steam generator is credited to depressurize the steam generator and enhance primary-to-secondary heat transfer during certain small break loss of coolant accidents (LOCAs).

For each steam generator, the ADV flow path is comprised of the atmospheric dump block valve bypass (1" bypass), the atmospheric vent valve (a 12" block valve), the atmospheric dump control valve (i.e., throttle valve), and the atmospheric vent block valve (i.e., isolation valve). The throttle valve and the isolation valve are in parallel and are located downstream of the atmospheric vent valve.

The atmospheric vent valve should be opened prior to opening the throttle valve or isolation valve. This is accomplished by first opening the atmospheric dump block valve bypass.

This equalizes the differential pressure across the atmospheric vent valve. Once the atmospheric vent valve is opened, the cool down rate is controlled using the throttle valve. If additional relief capacity is needed, the isolation valve can be opened. The capacity of the throttle or isolation valve exceeds decay heat loads and is sufficient to cool down the plant.

BASES

APPLICABLE
SAFETY ANALYSIS

The SGTR analysis credits operator action to depressurize the steam generators by opening both ADV flow paths (i.e., the ADV flow path for each steam generator) within 40 minutes of identifying the ruptured steam generator. Within this 40-minute time period, the operators are only required to open the bypass valve, the block valve, and the throttle valve. However, later in the event, the analysis also assumes that the operators will open the isolation valves in each ADV flow path.

Operator action to depressurize a steam generator via its ADV flow path is credited in the analysis of certain small break LOCAs with THERMAL POWER \leq 75% RTP and the plant operated with a degraded HPI System. This event credits operator action to open one ADV flow path within 25 minutes of an Engineered Safeguards Protective System (ESPS) actuation.

If enhanced steam generator cooling is not credited in the small break LOCA analysis, two HPI trains are required to mitigate specific small break LOCAs. However, if equipment not qualified as QA-1 (i.e., an ADV flow path for a steam generator) is credited for enhanced steam generator cooling, the safety analyses have determined that the capacity of one HPI train is sufficient to mitigate a small break LOCA on the discharge of the reactor coolant pumps if THERMAL POWER is \leq 75% RTP.

The analysis for degraded HPI credits an ADV flow path for one steam generator as a compensatory measure in the event an HPI train is inoperable and THERMAL POWER is \leq 75% RTP. During this situation, the ADV flow path for one steam generator is credited during certain small break LOCAs to depressurize the steam generator and enhance primary-to-secondary heat transfer. This is done in conjunction with the EFW System providing cooling water to the steam generator. The ADV flow path is comprised of manual valves. Operator action is credited for establishing the ADV flow path within 25 minutes of an ESPS signal.

Additionally, the ADV flow path for each steam generator is credited as a compensatory measure in TS 3.5.2, "High Pressure Injection (HPI)." Typically, single failures are not considered once the plant has entered a condition defined in the TS. However, the Completion Time permitted when the HPI system is degraded, is an extended period of time. In the event an accident occurred during this extended Completion Time and a single failure were to occur in the degraded HPI system, the ability of a plant to mitigate the consequences of specific small break LOCAs continues to be assured by the ADV flow path for one steam generator.

The ADV flow paths satisfy Criterion 3 of 10 CFR 50.36 (Ref. 1).

BASES

LCO

The ADV flow path for each steam generator is required to be OPERABLE. The failure to meet the LCO can result in the inability to depressurize the steam generators following a SGTR.

The ADV flow path for each steam generator is required to be OPERABLE. Failure to meet the LCO can result in the inability to depressurize a steam generator following a small break LOCA. This function is required to support operation with a degraded HPI System when THERMAL POWER is $\leq 75\%$ RTP.

An ADV flow path is considered OPERABLE when it is capable of providing a controlled relief of the main steam flow, and each valve which comprises the ADV flow path is capable of opening and closing.

APPLICABILITY

The ADV flow path for each steam generator is required to be OPERABLE in MODES 1, 2, and 3, and in MODE 4, when a steam generator is being relied upon for heat removal. In MODE 4, steam generators are relied upon for heat removal whenever an RCS loop is required to be OPERABLE or operating to satisfy LCO 3.4.5, "RCS Loops - MODE 4" or available to transfer decay heat to satisfy LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled." The steam generators do not contain a significant amount of energy in MODE 4 when the unit is not relying upon a steam generator for heat transfer, and MODES 5 and 6; therefore, the ADV flow paths are not required to be OPERABLE in these MODES and condition.

In addition, the ADV flow path for each steam generator is required to be OPERABLE when required by Required Actions of TS 3.5.2, "High Pressure Injection (HPI)." For all other conditions, the ADV flow paths for these Units are not credited in the analyses of any accident.

BASES

ACTIONS

A.1 and A.2

With one or both of the ADV flow path(s) inoperable, the Unit must be placed in a condition 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 at least MODE 4 without reliance on a steam generator for heat removal within 24 hours. The Completion Times are reasonable, based on operating experience, to reach the required Unit conditions from full power conditions in an orderly manner and without challenging Unit systems.

**SURVEILLANCE
REQUIREMENTS**

SR 3.7.4.1

To perform a controlled cool down of the RCS, the valves that comprise the ADV flow path for each steam generator must be able to perform the following functions:

- a) the atmospheric dump block valve bypass and the atmospheric vent valve must be capable of being opened and closed; and
- b) the atmospheric dump control valve and atmospheric vent block valve must be capable of being opened and throttled through their full range.

This SR ensures that the valves that comprise the ADV flow path for each steam generator are cycled through the full control range at least once per 18 months. Performance of inservice testing or use of an ADV flow path during a unit cool down satisfies this requirement. This surveillance does not require the valves to be tested at pressure. 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.

REFERENCES

- 1. 10 CFR 50.36.
 - 2. UFSAR, Section 10.3.
 - 3. UFSAR, Section 15.9.
 - 4. UFSAR, Section 15.12
 - 5. UFSAR, Section 15.14
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B 3.7 PLANT SYSTEMS

B 3.7.11 Spent Fuel Pool Water Level

BASES

BACKGROUND The minimum water level in the Spent Fuel Pool is consistent with the assumption of iodine decontamination factors following a fuel handling or cask drop accident. The water also provides shielding during the movement of spent fuel.

A general description of the Spent Fuel Pool design is given in the UFSAR, Section 9.1.2, Reference 1. The Spent Fuel Pool Cooling and Cleanup System is given in the UFSAR, Section 9.1.3 (Ref. 2). The assumptions of the fuel handling accident or cask drop are given in the UFSAR, Section 15.11.2 (Ref. 3).

APPLICABLE SAFETY ANALYSES During movement of irradiated fuel assemblies or crane operations with loads in the Spent Fuel Pool, the water level in the pool is an initial condition design parameter in the analysis of the fuel handling accident and cask drop accidents in the fuel pool. A minimum water level of 23 ft (Regulatory Position C.1.c of Ref. 4) allows a decontamination factor (DF) of 100 (Regulatory Position C.1.g of Ref. 4) to be used in the accident analysis for iodine. This relates to the assumption that 99% of the total iodine released from the pellet to cladding gap of all the damaged fuel assembly(ies) rods is retained by the Spent Fuel Pool water. The fuel pellet to cladding gap is assumed to contain 10% of the total fuel rod iodine inventory (Ref. 4).

The fuel handling accident and cask drop accident analysis in the Spent Fuel Pool is described in Reference 3. Since the minimum water level of 21.34 feet is less than 23 feet, the assumed iodine DF must be less than 100, according to Ref. 4, and calculated with comparable conservatism. Oconee's analysis assumes the top of the irradiated fuel assemblies as the top of the fuel pins (Refs. 4 and 8). An experimental test program described in WCAP-7828 (Ref. 6) evaluated the extent of removal of iodine released from a damaged irradiated fuel assembly. Using the analytical results from the test program described in WCAP-7828, with a water depth of 21.34 feet, a comparable DF of 89 was determined. With a minimum water level of 21.34 ft, and a minimum decay time of 72 hours prior to fuel handling, the analysis and test programs demonstrate that the iodine release due to a postulated fuel handling or cask drop accident is adequately captured by the water and offsite doses are maintained within allowable limits (Ref. 7).

BASES

APPLICABLE SAFETY ANALYSES The Spent Fuel Pool water level satisfies Criterion 2 and 3 of 10 CFR 50.36 (Ref. 7).

LCO The specified water level preserves the assumptions of the fuel handling and cask drop accident analyses (Ref. 3). As such, it is the minimum required for fuel storage and movement within the Spent Fuel Pool or movement of the cask over the Spent Fuel Pool.

APPLICABILITY This LCO applies during movement of irradiated fuel assemblies in the Spent Fuel Pool or movement of the cask over the Spent Fuel Pool since the potential for a release of fission products exists.

ACTIONS Required Actions A.1 and A.2 are modified by a Note indicating that LCO 3.0.3 does not apply.

If moving irradiated fuel assemblies or a cask while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies or a cask while in MODES 1, 2, 3, and 4, the fuel or cask movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies or a cask is not sufficient reason to require a reactor shutdown.

A.1

When the initial conditions for an accident cannot be met, immediate action must be taken to preclude the occurrence of an accident. With the Spent Fuel Pool at less than the required level, the movement of fuel assemblies in the Spent Fuel Pool is immediately suspended. This effectively precludes the occurrence of a fuel handling accident. In such a case, unit procedures control the movement of other (non cask) loads over the spent fuel. This does not preclude movement of a fuel assembly to a safe position.

BASES

ACTIONS
(continued)

A.2

When the initial conditions for an accident cannot be met, immediate action must be taken to preclude the occurrence of an accident. With the Spent Fuel Pool at less than the required level, movement of a cask over the Spent Fuel Pool is immediately suspended. This effectively precludes the occurrence of a cask drop accident. In such a case, unit procedures control the movement of other (non cask) loads over the spent fuel. This does not preclude movement of a cask to a safe position.

**SURVEILLANCE
REQUIREMENTS**

SR 3.7.11.1

This SR verifies that sufficient Spent Fuel Pool water is available in the event of a fuel handling or cask drop accident. The water level in the Spent Fuel Pool must be checked periodically. The 7 day Frequency is appropriate because the volume in the pool is normally stable. Water level changes are controlled by unit procedures and are acceptable, based on operating experience.

During refueling operations, the level in the Spent Fuel Pool is at equilibrium with that in the fuel transfer canal, and the level in the fuel transfer canal is checked daily in accordance with SR 3.9.6.1.

REFERENCES

1. UFSAR, Section 9.1.2.
 2. UFSAR, Section 9.1.3.
 3. UFSAR, Section 15.11.2.
 4. Regulatory Guide 1.25.
 5. 10 CFR 100.11.
 6. WCAP-7828, December 1971.
 7. 10 CFR 50.36
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Attachment 2

B 3.7 PLANT SYSTEMS

B 3.7.3 Main Feedwater Control Valves (MFCVs), and Startup Feedwater Control Valves (SFCVs)

BASES

BACKGROUND The main feedwater isolation valves (MFIVs) for each steam generator consist of the MFCVs and the SFCVs. The MFIVs isolate main feedwater (MFW) flow to the secondary side of the steam generators following a high energy line break (HELB). The consequences of events occurring in the main steam lines will be mitigated by their closure. Closing the MFCVs and associated SFCVs valves effectively terminates the addition of feedwater to an affected steam generator, limiting the mass and energy release for steam line breaks (SLBs) inside containment and reducing the cooldown effects for SLBs.

The MFIVs close on receipt of a MSLB detection signal generated by low steam header pressure. The MFIVs can also be closed manually.

APPLICABLE SAFETY ANALYSES The design basis of the MFIVs is established by the containment analysis for the main steam line break (MSLB).

Failure of an MFIV to close following an MSLB, can result in additional mass and energy being delivered to the steam generators, contributing to cooldown. This failure also results in additional mass and energy releases following an MSLB.

The MFIVs satisfy Criterion 3 of 10 CFR 50.36 (Ref. 1).

LCO This LCO ensures that the MFIVs will isolate MFW flow to the steam generators following a main steam line break.

Two MFCVs and two SFCVs are required to be OPERABLE. The MFIVs are considered OPERABLE when the isolation times are within limits and they close on a feedwater isolation actuation signal.

Automatic initiation instrumentation is not required to be OPERABLE in MODE 3 when main steam header pressure is < 700 psig in accordance with either LCO 3.3.11, "Automatic Feedwater Isolation System (AFIS) Instrumentation," or LCO 3.3.25, "Main Steam Line Break (MSLB) Detection

BASES

LCO
(continued)

~~and Main Feedwater (MFW) Isolation Instrumentation.~~ When automatic initiation circuitry is not required to be OPERABLE, the MFCVs and SFCVs are OPERABLE provided manual closure capability is OPERABLE. Automatic initiation is not required in this condition since additional time is available for the operator to manually close the valves if required.

Failure to meet the LCO requirements can result in excessive cooldown and additional mass and energy being released to containment following an MSLB inside containment.

APPLICABILITY

The MFCVs and SFCVs must be OPERABLE whenever there is significant mass and energy in the RCS and steam generators.

In MODES 1, 2, and 3, the MFCVs and SFCVs are required to be OPERABLE in order to limit the cooldown and the amount of available fluid that could be added to containment in the case of an MSLB inside containment. When the valves are closed, they are already performing their safety function.

In MODES 4, 5, and 6, feedwater and steam generator energy are low. Therefore, the MFCVs and SFCVs are not required for isolation of potential main steam pipe breaks in these MODES.

ACTIONS

The ACTIONS table is modified by a Note indicating that separate Condition entry is allowed for each valve.

A.1 and A.2

With one MFCV in one or more flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable affected valves within 8 hours. When these valves are closed or isolated, they are performing their required safety function.

The 8 hour Completion Time provides a reasonable time to restore an inoperable MFIV to OPERABLE status and is acceptable due to the low probability of an event occurring during this time period that would require isolation of the MFW flow paths.
