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NL-24-0325  
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U. S. Nuclear Regulatory Commission  
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**Southern Nuclear Operating Company  
Vogtle Electric Generating Plant – Units 3 and 4  
License Amendment Request: Move Surveillance Requirements  
from Technical Specifications (TS) 3.3.15 and 3.3.16,  
Engineered Safety Feature Actuation System (ESFAS) Actuation Logic**

Pursuant to 10 CFR 52.98(c) and in accordance with 10 CFR 50.90, Southern Nuclear Operating Company (SNC) requests an amendment to the Combined License (COL) for Vogtle Electric Generating Plant (VEGP) Units 3 and 4 (License Numbers NPF-91 and NPF-92, respectively). The license amendment request (LAR) proposes revise COL Appendix A, Technical Specifications (TS), 3.3.15, Engineered Safety Feature Actuation System (ESFAS) Actuation Logic – Operating,” and TS 3.3.16, Engineered Safety Feature Actuation System (ESFAS) Actuation Logic – Shutdown,” to move Surveillance Requirements to other limiting conditions for operation to more appropriately address the scope and the required Actions for the various components.

These changes were previously discussed with the NRC Staff on a public presubmittal conference call on November 18, 2024 [ADAMS Accession Number ML24315A001]. SNC has incorporated information into the request to address topics discussed during the above call.

The Enclosure to this letter provides the description, technical evaluation, regulatory evaluation (including the Significant Hazards Consideration Determination), and environmental considerations for the proposed changes.

This letter contains no regulatory commitments. This letter has been reviewed and determined not to contain security-related information.

SNC requests NRC staff review and approval of this LAR no later than twelve months from acceptance. SNC expects to implement the proposed amendment within 90 days of approval of the LAR.

In accordance with 10 CFR 50.91, SNC is notifying the State of Georgia by transmitting a copy of this letter and its enclosure to the designated State Official.

If you have any questions, please contact Ryan Joyce at (205) 992-6468.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 24<sup>th</sup> of January 2025.

Respectfully submitted,

A handwritten signature in black ink that reads "Jamie Coleman". The signature is written in a cursive, flowing style.

Jamie M. Coleman  
Director, Regulatory Affairs  
Southern Nuclear Operating Company

Enclosure: Evaluation of Proposed Changes

cc: NRC Regional Administrator, Region II  
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**Enclosure to NL-24-0325**  
**Evaluation of Proposed Changes**

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1. Technical Specification Marked-up Pages
2. Revised Technical Specification Pages
3. Technical Specification Bases Marked-up Pages (for information only)

## 1. SUMMARY DESCRIPTION

The proposed change would revise the Combined License (COLs) for Vogtle Electric Generating Plant (VEGP) Units 3 and 4 by revising COL Appendix A Technical Specification (TS) 3.3.15, Engineered Safety Feature Actuation System (ESFAS) Actuation Logic – Operating,” and TS 3.3.16, Engineered Safety Feature Actuation System (ESFAS) Actuation Logic – Shutdown,” to move Surveillance Requirements to other limiting conditions for operation (LCOs) to more appropriately address the scope and the required Actions for the various components.

## 2. DETAILED DESCRIPTION

### 2.1 System Design and Operation

#### Protection and Safety Monitoring System (PMS)

As described in further detail in WCAP-16675 (ML21179A098), “AP1000 Protection and Safety Monitoring System Architecture Technical Report,” the Engineered Safety Feature Actuation System (ESFAS) portion of the PMS initiates necessary safety systems, based upon the values of selected unit parameters, to protect against violating core design limits and the Reactor Coolant System (RCS) pressure boundary, and to mitigate accidents. Each division consists of:

- Field Transmitters and Sensors: operability is addressed by TS 3.3.8, “ESFAS Instrumentation”
- Bistable Processor Logic (BPL) System: operability is addressed by TS 3.3.8, “ESFAS Instrumentation”
- Engineered Safety Feature (ESF) Coincidence Logic Function (i.e., Local Coincidence Logic (LCL)) - 2 LCL subsystems (redundant): operability is addressed by TS 3.3.15 and TS 3.3.16, “ESFAS Actuation Logic Functions”
- ESF Actuation Logic Function - 2 subsystems with Integrated Logic Processors (ILP) and Safety Remote Node Controller (SRNC) (redundant): operability is addressed by TS 3.3.15 and TS 3.3.16, “ESFAS Actuation Logic Functions”
- Component Interface Modules (CIM) (non-redundant): operability associated with the operability of the actuated component

Within each PMS division, the sensor signals and setpoint bistables are processed in the BPL. The results of the bistable logic (partial ESF actuation signals) are communicated to the LCL subsystems in all divisions. The LCL subsystems perform the divisional ESF Coincidence Logic voting (e.g., two-out-of-four (2oo4) logic) and other associated logic.

ESF system-level actuation outputs from the LCL are inputs to the ESF Actuation Logic performed by redundant ILPs and SRNCs (which comprise the ESF Actuation Logic subsystems), and non-redundant CIMs. The ILPs decode the system commands, transmit the commands via the SRNCs, and actuate the final equipment through the CIM interlocking logic specific to each component.

The CIMs provide divisional actuation signals to each of the actuated components. While the PMS boundary ends at the output terminals of the CIMs, individual CIM inoperability only impacts operability of the actuated component. Therefore, the CIMs and the actuated components are outside the scope of TS 3.3.15 and TS 3.3.16 logic operability. Each component is actuated from one division. For the scope of this proposed change the designed divisional assignments for each are described below.

#### Pressurizer Heater Circuit Breakers

Electrical immersion heaters, located in the lower section of the pressurizer vessel, keep the water in the pressurizer at saturation temperature and maintain a constant operating pressure. Power to the pressurizer heaters is blocked when the core makeup tanks are actuated. This action reduces the potential for steam generator overfill for a steam generator tube rupture accident.

As described in Updated Safety Analysis Report (UFSAR) subsection 7.3.1.2.23, Division A of PMS provides actuation signals to five load center circuit breakers which provide the power feed to five pressurizer heater electrical control centers. When these five power feed breakers are opened, the electrical power is removed from the pressurizer heaters. In addition, each division of PMS provides a separate signal to the plant control system, which are voted two-out-of-four and the result used to open the pressurizer heater circuits at the motor control center. This provides redundant breakers to trip the pressurizer heaters.

#### Reactor Coolant Pump (RCP) Breakers

As described in UFSAR Section 6.3, Core Makeup Tank (CMTs) provide sufficient borated water to assure Reactor Coolant System (RCS) reactivity and inventory control for all design basis accidents (DBAs), including both loss of coolant accident (LOCA) events and non LOCA events. Flow from the core makeup tank increases if the reactor coolant pumps (RCPs) have coasted down, therefore, the RCP breakers are required to trip open after time delay to support the assumptions for CMT injection. Each RCP is provided with redundant series breakers; one from Division B and the second from Division C.

#### Main Feedwater (MFW) Pump Breakers

As described in UFSAR subsection 10.4.7 the main feedwater isolation valves (MFIVs) isolate main feedwater (MFW) flow to the secondary side of the steam generators following a high energy line break. The safety related function of the main feedwater control valves (MFCVs) is to provide the second isolation of MFW flow to the secondary side of the steam generators following a high energy line break. Closure of the MFIVs or MFCVs terminates flow to the steam generators, terminating the event for feedwater line breaks occurring upstream of the MFIVs or MFCVs. The MFIVs and MFCVs are addressed by TS 3.7.3.

The consequences of events occurring in the main steam lines or in the MFW lines downstream from the MFIVs will be mitigated by their closure and the MFW pump trip. Closure of the MFIVs or MFCVs, and trip of the MFW pumps, effectively terminates the addition of main feedwater to an affected steam generator, limiting the mass and energy release for steam or feedwater line breaks inside containment, and reducing the cooldown effects for steam line breaks (SLB).

Each main feedwater pump is provided with one breaker and the three main feedwater pump breakers are actuated from a single PMS Division.

#### Startup Feedwater (SFW) Pump Breakers

As described in UFSAR subsection 10.4.9 the SFW system consists of two SFW pumps, which are headered at the pump discharge, and a separate flow path to each of the steam generators. Each flow path consists of two series SFW valves to provide feedwater control for low feedwater demand conditions. The SFW isolation and control valves are addressed by TS 3.7.7.

Feedwater can be supplied to the startup SFW line via either the MFW or SFW pumps. The basis for the requirement to isolate the SFW system is established by the analysis for large steam line break (SLB) inside containment. It is also based on the analysis for a large feedwater line break (FLB) and a steam generator tube rupture. Failure to isolate the SFW system following a SLB or FLB can lead to additional mass and energy being delivered to the steam generators, resulting in excessive cooldown and additional mass and energy release in containment. Failure to isolate the SFW following a steam generator tube rupture may result in overfilling the steam generator.

Each startup feedwater pump is provided with one breaker and both startup feedwater pump breakers are actuated from a single PMS Division.

#### Auxiliary Spray and Purification Line Isolation Valves

As described in UFSAR subsection 9.3.6 the Chemical and Volume Control System (CVS) maintains the reactor coolant system (RCS) fluid purity and activity level within acceptable limits. The CVS purification line receives flow from the discharge of the reactor coolant pumps (RCPs). The CVS also provides auxiliary spray to the pressurizer. To preserve the reactor coolant inventory in the event of a break in the CVS loop piping, the auxiliary spray line and purification line are isolated on Pressurizer Water Level – Low to help maintain reactor coolant system inventory.

The single active isolation valve in the auxiliary spray line is actuated from PMS Division C. The purification line is provided with three isolation valves; two valves actuated from Division A and the third valve from Division C.

#### Chemical and Volume Control System Letdown Isolation Valves

As described in UFSAR subsection 3.9.6 the CVS provides letdown to the liquid radwaste system to maintain the pressurizer level and to help maintain RCS inventory in the event of a LOCA. As described in UFSAR subsection 19E.2.1.2.4 letdown isolation assists the operators when draining the RCS to a mid-loop level. If the operators fail to isolate letdown, Hot Leg Level – Low 2 channels send a signal to close the letdown valves and stop the draining process.

The CVS letdown flow path is isolated by two valves; one actuated from PMS Division A and the second from PMS Division D.

## 2.2 Current Requirements

TS 3.3.15 and TS 3.3.16 provide Surveillance Requirements (SR) to verify that various components actuate “on an actual or simulated actuation,” including:

- SR 3.3.15.1 for pressurizer heater circuit breakers
- SR 3.3.15.2 and SR 3.3.16.1 for reactor coolant pump breakers
- SR 3.3.15.3 for main feedwater and startup feedwater pump breakers
- SR 3.3.15.4 for auxiliary spray and purification line isolation valves
- SR 3.3.16.2 for CVS letdown isolation valves

## 2.3 Reason for Proposed Change

TS 3.3.15 and TS 3.3.16 16, Engineered Safety Feature Actuation System (ESFAS) Actuation Logic, is designed to address only the ESF Coincident Logic function and the ESF Actuation Logic function. Consistent with this scope, the Actions only allow a 6 hour Completion Time for restoration prior to commencing a plant shutdown. While this Completion Time is appropriate for an entire PMS division that might not be capable of performing its function, it is overly restrictive for failures of the Surveillance Requirements within TS 3.3.15 and TS 3.3.16 that verify actuation of certain components (RCP Breakers, Pressurizer Heater Circuit Breakers, CVS Letdown isolation Valves, Auxiliary Spray and Purification Line Isolation Valves, and Main Feedwater and Startup Feedwater Pump Trip Breakers). In accordance with SR 3.0.1 any failure of one of these Surveillances requires declaring TS 3.3.15 and/or TS 3.3.16 not met (i.e., ESF Actuation Logic inoperable) when one or more of these actuated components become inoperable – leading to excessively restrictive 6 hour restoration time followed by shutdown or other default actions if the actuated component is not restored. The more appropriate presentation is to move these SRs (and the associated operability requirement) out of TS 3.3.15 and TS 3.3.16 and into new or existing TSs where more appropriate requirements consistent with the safety function approved for those systems or components can be applied. Because these individual components are down stream of the PMS logic, the format for operability and surveillance testing are more appropriately presented similar to other actuated components via separate TSs.

The proposed changes clarify the scope of TS 3.3.15 and TS 3.3.16 and the appropriate requirements for inoperabilities of actuated components that are not the result of inoperable PMS logic.

## 2.4 Description of Proposed Change

The requested changes to TS 3.3.15 and TS 3.3.16 move all the SRs as follows:

- SR 3.3.15.1 is moved to new TS 3.4.18, “Pressurizer Heater Circuit Breakers” as SR 3.4.18.1. New TS 3.4.18 Applicability and Actions align with current requirements in TS 3.3.15. Additionally, TS 3.4.18 includes an Actions Note that allows separate Condition entry for each pressurizer heater and the moved SR includes an exception to exclude the requirement for the circuit breaker to be verified to trip open when the circuit breaker is maintained in the tripped condition.

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- SR 3.3.15.2 and SR 3.3.16.1 are moved to new TS 3.5.9, “Reactor Coolant Pump (RCP) Breakers” as new SR 3.5.9.1. New TS 3.5.9 Applicability aligns with the requirements of Core Makeup Tank (CMT) operability in TS 3.5.2, “CMT - Operating,” and TS 3.5.3, “CMT – Shutdown, RCS Intact.” The new TS 3.5.9 Action A requires the same 6 hour restoration time as TS 3.3.15 Action A for RCPs with one inoperable breaker in Mode 1, 2, 3, or 4 and TS 3.5.9 Action C requires the same 72 hour restoration time as TS 3.3.16 Action A for RCPs with one inoperable breaker in Mode 5. New TS 3.5.9 Action B aligns with the same default Actions as TS 3.3.15 for Mode 1, 2, 3, or 4. New TS 3.5.9 Action D provides the default action for Mode 5 to immediately initiate action to place the inoperable RCP breaker(s) in the tripped condition in lieu of the existing TS 3.3.16 default Action B for Mode 5. Additionally, TS 3.5.9 includes an Actions Note that allows separate Condition entry for each RCP and the moved SRs include an exception to exclude the requirement for the breaker to be verified to trip open when the breaker is maintained in the tripped condition.
- SR 3.3.15.3 for main feedwater pump breaker trip verification is moved to new SR 3.7.3.2 and TS 3.7.3 title revised to “Main Feedwater Isolation Valves (MFIVs), and Main Feedwater Control Valves (MFCVs), and Main Feedwater (MFW) Pump Breakers.” TS 3.7.3 Applicability and new Action C align with current requirements in TS 3.3.15. Additionally, TS 3.7.3 includes an Actions Note that allows separate Condition entry for each feedwater flow path and the moved SR includes an exception to exclude the requirement for the pump breaker to be verified to trip open when the pump breaker is maintained in the tripped condition.
- SR 3.3.15.3 for startup feedwater pump breaker trip verification is moved to new SR 3.7.7.3 and TS 3.7.7 title revised to “Startup Feedwater (SFW) Isolation Valves, and Control Valves, and Pump Breakers.” TS 3.7.7 Applicability and new Action C align with current requirements in TS 3.3.15. Additionally, TS 3.7.7 includes two Actions Notes that allow flow paths to be unisolated intermittently under administrative control and separate Condition entry for each feedwater flow path. Moved SR includes proposed exception to exclude the requirement for the breaker to be verified to trip open when the breaker is maintained in the tripped condition.
- SR 3.3.15.4 is moved to new TS 3.4.19, “Auxiliary Spray and Purification Line Isolation Valves” as SR 3.4.19.1. New TS 3.4.19 Applicability aligns with requirements in the SR 3.3.15.4 Note. New TS 3.4.19 Action A requires the same 6 hour restoration time as TS 3.3.15 Action A. New TS 3.4.19 Required Action B.2 requires the same shutdown to Mode 3 as required within 6 hours. New TS 3.4.19 Required Action B.2 is proposed to allow an alternative to isolate the affected flow path by use of at least one closed and deactivated automatic valve. Additionally, TS 3.4.19 includes two Actions Notes that allow flow paths to be unisolated intermittently under administrative control and separate Condition entry for each feedwater flow path.
- SR 3.3.16.2 is moved to new TS 3.4.20, “Chemical and Volume Control System (CVS) Letdown Isolation Valves” as new SR 3.4.20.1. New TS 3.4.20 Applicability aligns with the requirements of SR 3.3.16.2. The new TS 3.4.20 Action A requires the same 72 hour restoration time as TS 3.3.16 Action A for one inoperable CVS letdown isolation valve. New TS 3.4.20 Action B is proposed to require isolating the CVS letdown flow path by use of at least one closed and deactivated automatic valve in the event that one

inoperable CVS letdown valve is not restored within 72 hours or in the event two CVS letdown valves are inoperable. New TS 3.4.20 Action B replaces TS 3.3.16 Actions B and C for the same conditions. Additionally, TS 3.4.20 includes an Actions Note that allow flow paths to be unisolated intermittently under administrative control.

- The Surveillance Requirements Tables for TS 3.3.15 and TS 3.3.16 are revised to reflect “None.”

Markups showing the TS changes are provided in Attachment 1.

### 3. TECHNICAL EVALUATION

The proposed Surveillance Requirements relocations from TS 3.3.15 and TS 3.3.16 for RCP Breakers, Pressurizer Heater Circuit Breakers, CVS Letdown Isolation Valves, Auxiliary Spray and Purification Line Isolation Valves, and Main Feedwater and Startup Feedwater Pump Trip Breakers, do not change the required surveillance testing or operability requirements for these individual components. Similar to other surveillances for testing actuated components on an “actual or simulated actuation signal” these surveillances will continue to be performed with the actual or simulated signal processed through the component interface module to verify the continuity between the output of the component interface module and the actuated component as described in the TS Bases for these and other similar surveillances.

In accordance with SR 3.0.1 any failure of one of these Surveillances requires declaring the associated TS LCO not met (i.e., in these cases, ESF Actuation Logic inoperable) when one or more of these actuated components become inoperable – leading to excessively restrictive restoration times followed by shutdown actions and/or Modes 5 and 6 default actions if the actuated component is not restored to operable status. The more appropriate presentation is to move these SRs (and the associated operability requirement) out of TS 3.3.15 and TS 3.3.16 and into new or existing TSs where more appropriate requirements consistent with the safety function approved for those systems or components can be applied. Since these individual components are down stream of the PMS logic, operability and surveillance testing are more appropriately controlled similar to other actuated components in TSs separate from PMS actuation logic. Relocating these surveillances from TS 3.3.15 and TS 3.3.16 will eliminate the current prescriptive requirement to declare the PMS Actuation Logic inoperable on failure of the surveillance. PMS Actuation Logic is unaffected by inoperability of an actuated component since the individual components are down stream of the PMS logic.

For each of the moved SRs:

- SR 3.3.15.1: Pressurizer Heater Circuit Breakers

A proposed new TS 3.4.18, “Pressurizer Heater Circuit Breakers,” includes the moved SR 3.3.15.1 as SR 3.4.18.1. The new TS 3.4.18 Applicability and Actions align with current requirements in TS 3.3.15. Note that SR 3.3.15.1 Note limits the Applicability to only when all four cold leg temperatures are > 275°F and therefore new TS 3.4.18 Required Action B.2 only requires being in Mode 4 with at least one cold leg temperature

≤ 275°F, which exits the Applicability. This has the same effect as the current TS 3.3.15 Required Action B.2 when applied to an inoperability of pressurizer heater circuit breakers once the Applicability of the SR 3.3.15.1 Note is exited. With each pressurizer heater provided with redundant means to trip power, the application of TS 3.3.15 Action A for one inoperable breaker, provided the redundant breaker is operable, and application of TS 3.3.15 Action B when both redundant breakers are inoperable, is translated into proposed TS 3.4.18 Actions A and B respectively. As such, this proposed change is an administrative presentation preference with no technical change in TS requirements.

TS 3.4.18 includes an Actions Note that allows separate Condition entry for each pressurizer heater. This is acceptable, since the Required Actions provide appropriate compensatory actions for each heater depending on whether one or two circuit breakers for a pressurizer heater is inoperable. Subsequent inoperable circuit breakers are governed by subsequent Condition entry and application of associated Required Actions. As such, this change does not adversely impact a safety function assumed in the safety analyses.

SR 3.4.18.1 includes an exception to exclude the requirement for the circuit breaker to be verified to trip open when the circuit breaker is maintained in the tripped condition. A tripped open pressurizer heater circuit breaker is already performing the safety function. This provision allows that verification of the ability for the circuit breaker to trip on an actuated signal is not necessary if it is already performing its safety function (i.e., is tripped). The SR must be verified to be met within its required Frequency after returning the circuit breaker to service (i.e., reclosing the circuit breaker). As stated in the proposed TS Bases, SNC acknowledges for breaker(s) where the SR allowance is utilized, the SR will be verified to have been met within its required Frequency after reclosing the circuit breaker. If the SR exception is utilized and the specified Frequency of the SR is exceeded without testing the component, the SR will be performed on the component when it is returned to service in order to meet the SR prior to declaring the circuit breaker operable. As such, this change does not adversely impact a safety function assumed in the safety analyses.

- SR 3.3.15.2 and SR 3.3.16.1: Reactor Coolant Pump Breakers

A proposed new TS 3.5.9, "Reactor Coolant Pump (RCP) Breakers" includes the moved SR 3.3.15.2 and SR 3.3.16.1 as SR 3.5.9.1. The new TS 3.5.9 Applicability aligns with current requirements for CMT operability in TS 3.5.2, "CMT - Operating," and TS 3.5.3, "CMT – Shutdown, RCS Intact." Since the safety function for the RCP trip is to support the assumed CMT injection, the CMT Applicability represents the appropriate Applicability for operability of the RCP breaker support function. Current SR 3.3.16.1 Note requires the surveillance verifying the actuation of the RCP breakers in all of Mode 5; however, TS 3.5.3 Applicability only requires CMT operability in Mode 5 if the RCS is not Vented. The Applicability for the moved SR 3.3.16.2 is therefore revised to remove the required surveillance when the RCS is Vented. This aligns the Applicability with that assumed in the safety analysis and therefore does not reflect an adverse change.

The new TS 3.5.9 Action A requires the same 6 hour restoration time as TS 3.3.15 Action A for RCPs with one inoperable breaker (i.e., equivalent to one ESF actuation

division inoperable) in Mode 1, 2, 3, or 4 and TS 3.5.9 Action C requires the same 72 hour restoration time as TS 3.3.16 Action A for RCPs with one inoperable breaker (i.e., equivalent to one ESF actuation division inoperable) in Mode 5. As such, these proposed changes reflect an administrative presentation preference with no technical change in TS requirements.

New TS 3.5.9 default Action B (also applicable for RCPs with two redundant breakers equivalent to two ESF actuation divisions inoperable) aligns with the same default actions as TS 3.3.15 for Mode 1, 2, 3, or 4. The existing TS 3.3.16 default Action B for Mode 5 are not retained in new TS 3.5.9 since the proposed TS 3.5.9 default Action D requires initiating immediate action to place the inoperable RCP breaker(s) in the tripped condition and further actions (e.g., those in TS 3.3.16 Action B) would not be required. Once in Mode 5 with the affected RCP breaker(s) tripped, the RCP breaker trips no longer perform a safety function. The Actions of TS 3.3.16 Action B, with the exception of Required Action B.2 to open the RCS pressure boundary, do not provide compensatory actions specifically applicable to supporting CMT injection, which is the safety function provided by the RCP trip. TS 3.3.16 Required Action B.2 would exit the Applicability, which is always an option if operationally supported; however, for operational flexibility, the proposed TS 3.5.9 Required Action D.1 to place the inoperable RCP breaker(s) in the tripped condition supports CMT operability without imposing an unnecessary plant operational transient.

TS 3.5.9 includes an Actions Note that allows separate Condition entry for each RCP. This is acceptable, since the Required Actions provide appropriate compensatory actions for each RCP depending on whether one or two pump breakers are inoperable. Subsequent inoperable circuit breakers are governed by subsequent Condition entry and application of associated Required Actions. As such, this change does not adversely impact a safety function assumed in the safety analyses.

SR 3.5.9.1 includes an exception to exclude the requirement for the pump breaker to be verified to trip open when the pump breaker is maintained in the tripped condition. A tripped open pump breaker is already performing the safety function. This provision allows that verification of the ability for the pump breaker to trip on an actuated signal is not necessary if it is already performing its safety function (i.e., is tripped). The SR must be verified to be met within its required Frequency after returning the pump breaker to service (i.e., reclosing the pump breaker). As stated in the proposed TS Bases, SNC acknowledges for breaker(s) where the SR allowance is utilized, the SR will be verified to have been met within its required Frequency after reclosing the pump breaker. If the SR exception is utilized and the specified Frequency of the SR is exceeded without testing the component, the SR will be performed on the component when it is returned to service in order to meet the SR prior to declaring the pump breaker operable.

As such, the changes that move SR 3.3.15.2 and SR 3.3.16.1 and provide new TS 3.5.9 do not adversely impact a safety function assumed in the safety analyses.

- SR 3.3.15.3: Main Feedwater Pump Breakers

The current TS 3.7.3 title is revised to “Main Feedwater Isolation Valves (MFIVs), and Main Feedwater Control Valves (MFCVs), and Main Feedwater (MFW) Pump Breakers,” and is proposed to include the moved SR 3.3.15.3 (main feedwater pump breaker

portion) as new SR 3.7.3.2. The current TS 3.7.3 Applicability aligns with current requirements in TS 3.3.15. A new TS 3.7.3 Action C requires the same 6 hour restoration time as TS 3.3.15 Action A for main feedwater flow paths with inoperable main feedwater pump breaker(s). As such, these proposed changes reflect an administrative presentation preference with no technical change in TS requirements.

In the event that an inoperable breaker is not restored to operable status in 6 hours, the default action in TS 3.7.3 is similar to that in TS 3.3.15 (i.e., to be in Mode 3 in 6 hours and Mode 5 in 36 hours) but includes a more restrictive requirement to be in Mode 4 with the RCS cooling provided by the Normal Residual Heat Removal System (RNS) within 24 hours. This more restrictive action is a normal conduct of operations when proceeding from Mode 3 to Mode 5 and therefore does not reflect an adverse impact to safety. Since MFW pump breakers are tripped from a single ESF actuation division, there is no equivalent to TS 3.3.15 Action B for two or more ESF actuation divisions inoperable added to TS 3.7.3.

Also TS 3.7.3 Actions Note allows new Action C to be entered separately for each feedwater flow path. This is acceptable, since each pump's feedwater flow path is independently tripped on an actuation signal. As such, the Required Action provides the appropriate compensatory actions for each inoperable flow path and application of this Note to the main feedwater pump breaker does not reflect an adverse impact to safety.

An additional change adds an exception to the moved SR 3.3.15.3 (new SR 3.7.3.2) if the MFW pump breaker is in the tripped condition. A tripped open MFW pump breaker is already performing the safety function. This provision allows that verification of the ability for the pump breaker to trip on an actuated signal is not necessary if it is already performing its safety function (i.e., is tripped). The SR must be verified to be met within its required Frequency after returning the pump breaker to service (i.e., reclosing the pump breaker). As stated in the proposed TS Bases, SNC acknowledges for breaker(s) where the SR allowance is utilized, the SR will be verified to have been met within its required Frequency after reclosing the pump breaker. If the SR exception is utilized and the specified Frequency of the SR is exceeded without testing the component, the SR will be performed on the component when it is returned to service in order to meet the SR prior to declaring the breaker operable. As such, this change does not adversely impact a safety function assumed in the safety analyses.

- SR 3.3.15.3: Startup Feedwater Pump Breakers

The current TS 3.7.7 title is revised to "Startup Feedwater (SFW) Isolation Valves, and Control Valves, and Pump Breakers," and is proposed to include the moved SR 3.3.15.3 (startup feedwater breaker portion) as new SR 3.7.7.3. The current TS 3.7.7 Applicability aligns with current requirements in TS 3.3.15. A new TS 3.7.7 Action C requires the same 6 hour restoration time as TS 3.3.15 Action A for startup feedwater flow paths with inoperable startup feedwater pump breaker(s). As such, these proposed changes reflect an administrative presentation preference with no technical change in TS requirements.

In the event that an inoperable breaker is not restored to operable status in 6 hours, the default action in TS 3.7.7 is similar to that in TS 3.3.15 (i.e., to be in Mode 3 in 6 hours and Mode 5 in 36 hours) but includes a more restrictive requirement to be in Mode 4 with

the RCS cooling provided by the RNS within 24 hours. This more restrictive action is a normal conduct of operations when proceeding from Mode 3 to Mode 5 and therefore does not reflect an adverse impact to safety. Since SFW pump breakers are tripped from a single ESF actuation division, there is no equivalent to TS 3.3.15 Action B for two or more ESF actuation divisions inoperable added to TS 3.7.7.

Also TS 3.7.7 Actions Note 2 allows new Action C to be entered separately for each flow path. This is acceptable, since each startup feedwater pump's flow path is independently isolated and its supply pump tripped on an actuation signal. As such, the Required Action provides the appropriate compensatory actions for each inoperable flow path and application of this Note to the startup feedwater pump breaker does not reflect an adverse impact to safety.

An additional change adds an exception to the moved SR 3.3.15.3 (new SR 3.7.7.3) if the SFW pump breaker is in the tripped condition. A tripped open SFW pump breaker is already performing the safety function. This provision allows that verification of the ability for the pump breaker to trip on an actuated signal is not necessary if it is already performing its safety function (i.e., is tripped). The SR must be verified to be met within its required Frequency after returning the pump breaker to service (i.e., reclosing the pump breaker). As stated in the proposed TS Bases, SNC acknowledges for breaker(s) where the SR allowance is utilized, the SR will be verified to have been met within its required Frequency after reclosing the pump breaker. If the SR exception is utilized and the specified Frequency of the SR is exceeded without testing the component, the SR will be performed on the component when it is returned to service in order to meet the SR prior to declaring the breaker operable. As such, this change does not adversely impact a safety function assumed in the safety analyses.

- SR 3.3.15.4: Auxiliary Spray and Purification Line Isolation Valves

A proposed new TS 3.4.19, "Auxiliary Spray and Purification Line Isolation Valves," includes the moved SR 3.3.15.4 as SR 3.4.19.1. The new TS 3.4.19 Applicability of Modes 1 and 2 aligns with current requirements from the SR 3.3.15.4 Note. The current TS 3.3.15 Actions for an inoperable ESF actuation division (i.e., ESF Actuation Logic inoperable; Action A) could reflect two inoperable auxiliary spray and/or purification line isolation valves, which requires restoration to operable status in 6 hours or a plant shutdown to Mode 3 within the following 6 hours (Required Action B.1) if not restored. TS 3.3.15 Required Action B.2 is not included since completing Required Action B.1 exits the TS 3.4.19 Applicability. The proposed new Action A of TS 3.4.19 is provided for the auxiliary spray valve or one or two purification line valves inoperable and requires the same 6 hour restoration time as TS 3.3.15 Action A. In the event that restoration is not accomplished within 6 hours or with all three purification flow path isolation valves inoperable (i.e., valves actuated from two divisions), the proposed new Required Action B.2 of TS 3.4.19 require the same action from TS 3.3.15 Required Action B.1 to be in Mode 3 within 6 hours. As such, these proposed changes are an administrative presentation preference with no technical change in TS requirements.

As an alternative to the required plant shutdown to Mode 3 (new TS 3.4.19 Required Action B.2) new TS 3.4.19 Required Action B.1 is proposed to allow isolating the affected flow path by use of at least one closed and deactivated automatic valve within the same 6 hours. Since isolating the flow path accomplishes the safety function, it

provides an equivalent level of safety to the existing Applicability and allows for continued efforts to restore the valve(s) to operable status without imposing an unnecessary plant shutdown transient. This action is similar to that for other CVS isolation valves (refer to TS 3.1.9, "CVS Demineralized Water Isolation Valves and Makeup Line Isolation Valves"). As such, this change does not adversely impact a safety function assumed in the safety analyses.

Also similar to the TS 3.1.9 actions allowing continued operation with an isolated flow path providing the safety function, the proposed TS 3.4.19 Actions include two Notes. Note 1 allows the auxiliary spray flow path and purification line flow path to be unisolated intermittently under administrative control. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way the flow path can be rapidly isolated when a need for auxiliary spray and purification line isolation is indicated. Note 2 provides clarification that, for this LCO, separate Condition entry is allowed for each flow path. This is acceptable, since the Required Actions provide appropriate compensatory actions for each flow path. Complying with the Required Actions may allow for continued operation, and subsequent inoperable isolation valves are governed by subsequent Condition entry and application of associated Required Actions. As such, this change does not adversely impact a safety function assumed in the safety analyses.

- SR 3.3.16.2: Chemical and Volume Control System (CVS) Letdown Isolation Valves

A proposed new TS 3.4.20, "Chemical and Volume Control System (CVS) Letdown Isolation Valves," includes the moved SR 3.3.16.2 as new SR 3.4.20.1. The new TS 3.4.20 Applicability of MODE 5 below the P-12 (Pressurizer Level) interlock and MODE 6 with the water level < 23 feet above the top of the reactor vessel flange aligns with the requirements of SR 3.3.16.2. The proposed new TS 3.4.20 Action A requires the same 72 hour restoration time as TS 3.3.16 Action A for one inoperable CVS letdown isolation valve. As such, these proposed changes reflect an administrative presentation preference with no technical change in TS requirements. With the letdown line provided with redundant isolation valves actuated from separate divisions (CVS-V045 from Division A and CVS-V047 from Division D), the application of TS 3.3.15 Action A for one inoperable division and application of TS 3.3.15 Action B when both redundant divisions are inoperable, is translated into proposed TS 3.4.20 Actions A and B respectively, as one or two CVS letdown isolation valves inoperable.

New TS 3.4.20 Action B replaces TS 3.3.16 Actions B and C for the same conditions. The current TS 3.3.16 Actions B and C if an inoperable letdown isolation valve is not restored to operable within 72 hours, or if two or more divisions are inoperable, broadly address the actions for inoperable PMS Actuation Logic for Modes 5 and 6 respectively. However, new TS 3.4.20 Action B is proposed to require isolating the CVS letdown flow path by use of at least one closed and deactivated automatic valve in the event that one inoperable CVS letdown valve is not restored within 72 hours or in the event two CVS letdown valves are inoperable. These Actions are revised to be more specifically applicable to an inoperable isolation valve where isolating the flow path accomplishes the safety function. The Actions of TS 3.3.16 Action B do not provide compensatory actions specifically applicable to supporting maintaining RCS inventory in the event of a LOCA, which is the safety function provided by the CVS letdown isolation. As such, it provides an equivalent level of safety to restoring the valve to operable status but allows

for continued efforts to restore the valve(s) to operable status without imposing unnecessary additional actions that could impact outage operations. This action is similar to that for other CVS isolation valves (refer to TS 3.1.9, "CVS Demineralized Water Isolation Valves and Makeup Line Isolation Valves"). These changes do not adversely impact a safety function assumed in the safety analyses.

Also similar to the TS 3.1.9 actions allowing continued operation with an isolated flow path providing the safety function, the proposed TS 3.4.20 Actions includes a Note allowing the CVS letdown flow path to be unisolated intermittently under administrative control. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way the flow path can be rapidly isolated when a need for CVS letdown line isolation is indicated. As such, this change does not adversely impact a safety function assumed in the safety analyses.

#### Surveillance Requirements Tables for TS 3.3.15 and TS 3.3.16

With moving the Surveillance Requirements from TS 3.3.15 and TS 3.3.16, there no longer remain any remain Surveillance Requirements and the Surveillance Requirements Tables are revised to reflect "None" as is also found in TS 3.3.6 Surveillance Requirements (Note: approved in a previous TS amendment per ADAMS Accession Number ML19297C791).

In conclusion, the proposed changes provide an equivalent level of safety while providing a more consistent presentation for Technical Specification requirements for actuated components. Therefore, there is reasonable assurance that the health and safety of the public, and the MCR staff, will not be endangered by operation in the proposed manner.

## 4 REGULATORY EVALUATION

### 4.1 Applicable Regulatory Requirements/Criteria

In conformance with 10 CFR 50.36(c)(2) the VEGP Units 3 and 4 Combined License (COL) Appendix A Technical Specifications (TS) provides a Limiting Condition for Operation (LCO) for equipment required for safe operation of the facility. Each of the Surveillance Requirements moved from TS LCO 3.3.15 and TS LCO 3.3.16 are retained within new or existing TSs. Also, in conformance with 10 CFR 50.36(c)(2), when any or the new or existing TSs are not met the TS provide for associated remedial actions until the condition can be met. Thus, the proposed changes are consistent with the requirements of 10 CFR 50.36. Also in conformance with 10 CFR 50.36(c)(3) the existing surveillance requirements are retained to provide the necessary quality of systems and components is maintained, facility operation will be within safety limits, and the limiting conditions for operation will be met. The proposed revisions continue to fulfill this regulation. Thus, the proposed changes are consistent with the requirements of 10 CFR 50.36.

In conformance with 10 CFR Part 50, Appendix A, General Design Criteria (GDC) Criterion 20 — Protection system functions, Criterion 21 — Protection system reliability and testability, and Criterion 22 — Protection system independence, the PMS design is

unaffected and continues to initiate automatically the operation of appropriate systems, provide the necessary redundancy and independence, and prevent loss of the protection function under assumed conditions.

#### 4.2 Precedent

None.

#### 4.3 Significant Hazards Consideration

Southern Nuclear Operating Company (SNC) is requesting an amendment to Combined License (COL) Nos. NPF-91 and NPF-92 for Vogtle Electric Generating Plant (VEGP) Units 3 and 4, respectively. The license amendment request (LAR) proposes to revise the Combined License (COL) Appendix A, Technical Specification (TS), 3.3.15, Engineered Safety Feature Actuation System (ESFAS) Actuation Logic – Operating,” and TS 3.3.16, Engineered Safety Feature Actuation System (ESFAS) Actuation Logic – Shutdown,” to move Surveillance Requirements to other limiting conditions for operation (LCOs) to more appropriately address the scope and the required Actions for the various components.

An evaluation to determine whether or not a significant hazards consideration is involved with the proposed amendment was completed by focusing on the three standards set forth in 10 CFR 50.92(c), “Issuance of amendment,” as discussed below.

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed changes do not affect the previously evaluated accident probability because there are no changes to the plant. The proposed changes do not adversely affect the operation of any structures, systems, or components (SSCs) associated with an accident initiator or initiating sequence of events. The proposed changes continue to maintain the initial conditions, operating limits, and safety function assumed during normal operation and in the analysis of accidents and anticipated operational occurrences. Therefore, the proposed changes do not result in any increase in probability of an analyzed accident occurring.

The proposed changes do not involve a change to any initial condition, operating limits, or mitigation sequence. Thus, the consequences of the accidents previously evaluated are not adversely affected.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed changes continue to provide the required functional capability of the safety systems for previously evaluated accidents and anticipated operational occurrences. The proposed changes do not adversely impact the function of any related systems, and thus, the changes do not introduce a new failure mode, malfunction, or sequence of events that could adversely affect safety or safety-related equipment.

Therefore, the proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The proposed changes continue to provide the required functional capability of the safety systems for previously evaluated accidents and anticipated operational occurrences while operating within the allowed Completion Time for conditions where single failure protection is not provided, but safety function is maintained. The proposed changes do not change the function of the related systems nor significantly affect the margins provided by the systems. No safety analysis or design basis acceptance limit/criterion is challenged or exceeded by the requested changes.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, it is concluded that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of “no significant hazards consideration” is justified.

#### 4.4 Conclusions

Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission’s regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public. Therefore, it is concluded that the requested amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of “no significant hazards consideration” is justified.

## 5 ENVIRONMENTAL CONSIDERATION

The proposed changes to the Technical Specifications (TS) are described in Section 2 of this Enclosure, which require a license amendment. SNC has evaluated this license amendment request against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21.

Enclosure to NL-24-0325  
Evaluation of Proposed Changes

The requested amendment would change a surveillance requirement; however, meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9), in that the amendment would not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure.

Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

## 6 REFERENCES

None.

Attachment 1  
Technical Specification Marked-up Pages

**Attachment 1**

**Technical Specification Marked-up Pages**

Insertions Denoted by underlined Blue text and Deletions by ~~Red Strikethrough~~  
Omitted text is identified by three asterisks ( \* \* \* )

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<a href="#">None</a>	
<p><del>SR 3.3.15.1</del></p> <hr/> <p style="text-align: center;"><del><b>-NOTE-</b></del></p> <p style="text-align: center;"><del>Only required to be met when all four cold leg temperatures are &gt; 275°F.</del></p> <hr/> <p><del>Verify pressurizer heater circuit breakers trip open on an actual or simulated actuation signal.</del></p>	<p><del>24 months</del></p>
<p><del>SR 3.3.15.2</del></p> <p><del>Verify reactor coolant pump breakers trip open on an actual or simulated actuation signal.</del></p>	<p><del>24 months</del></p>
<p><del>SR 3.3.15.3</del></p> <p><del>Verify main feedwater and startup feedwater pump breakers trip open on an actual or simulated actuation signal.</del></p>	<p><del>24 months</del></p>
<p><del>SR 3.3.15.4</del></p> <hr/> <p style="text-align: center;"><del><b>-NOTE-</b></del></p> <p style="text-align: center;"><del>Only required to be met in MODES 1 and 2.</del></p> <hr/> <p><del>Verify auxiliary spray and purification line isolation valves actuate to the isolation position on an actual or simulated actuation signal.</del></p>	<p><del>24 months</del></p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies.</p> <p><u>OR</u></p> <p>One or more Functions within two or more required divisions inoperable during movement of irradiated fuel assemblies.</p>	<p>D.1 Suspend movement of irradiated fuel assemblies.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p><u>None</u></p>	
<p><del>SR 3.3.16.1</del></p> <p style="text-align: center;"><del><b>-NOTE-</b></del></p> <p style="text-align: center;"><del>Only required to be met in MODE 5.</del></p> <p style="text-align: center;"><del>Verify reactor coolant pump breakers trip open on an actual or simulated actuation signal.</del></p>	<p><del>24 months</del></p>

~~SURVEILLANCE REQUIREMENTS (continued)~~

SURVEILLANCE	FREQUENCY
<p>SR <del>3.3.16.2</del></p> <hr/> <p style="text-align: center;"><del>-NOTES-</del></p> <p><del>1. Not required to be met in MODE 5 above the P-12 (Pressurizer Level) interlock.</del></p> <p><del>2. Not required to be met in MODE 6 with water level <math>\geq</math> 23 feet above the top of the reactor vessel flange.</del></p> <hr/> <p><del>Verify CVS letdown isolation valves actuate to the isolation position on an actual or simulated actuation signal.</del></p>	<p>24 months</p>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.18 Pressurizer Heater Circuit Breakers

LCO 3.4.18 Each pressurizer heater circuit breaker shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,  
MODE 4 with all four cold leg temperatures > 275°F.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each pressurizer heater.

<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>COMPLETION TIME</u>
<u>A. One or more pressurizer heaters with one circuit breaker inoperable.</u>	<u>A.1 Restore pressurizer heater circuit breaker to OPERABLE status.</u>	<u>6 hours</u>
<u>B. Required Action and associated Completion Time of Condition A not met.</u>	<u>B.1 Be in MODE 3.</u>	<u>6 hours</u>
<u>OR</u>	<u>AND</u>	
<u>One or more pressurizer heaters with two circuit breakers inoperable.</u>	<u>B.2 Be in MODE 4 with at least one cold leg temperature ≤ 275°F.</u>	<u>36 hours</u>

SURVEILLANCE REQUIREMENTS

<u>SURVEILLANCE</u>		<u>FREQUENCY</u>
<u>SR 3.4.18.1</u>	<u>Verify each pressurizer heater circuit breaker trips open on an actual or simulated actuation signal, except for circuit breaker maintained in the tripped condition.</u>	<u>24 months</u>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.19 Auxiliary Spray and Purification Line Isolation Valves

LCO 3.4.19      Each auxiliary spray and purification line isolation valve shall be OPERABLE.

APPLICABILITY:    MODES 1 and 2.

ACTIONS

- NOTES -

1. Flow path(s) may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each flow path.

<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>COMPLETION TIME</u>
<u>A. Auxiliary spray flow path isolation valve inoperable.</u>  <u>OR</u>  <u>One or two purification line flow path isolation valves inoperable.</u>	<u>A.1</u> <u>Restore isolation valve(s) to OPERABLE status.</u>	<u>6 hours</u>
<u>B. Required Action and associated Completion Time of Condition A not met.</u>  <u>OR</u>  <u>Three purification line flow path isolation valves inoperable.</u>	<u>B.1</u> <u>Isolate affected flow path by use of at least one closed and deactivated automatic valve.</u>  <u>OR</u>  <u>B.2</u> <u>Be In MODE 3.</u>	<u>6 hours</u>   <u>6 hours</u>

SURVEILLANCE REQUIREMENTS

<u>SURVEILLANCE</u>		<u>FREQUENCY</u>
<u>SR 3.4.19.1</u>	<u>Verify each auxiliary spray and purification line isolation valve actuate to the isolation position on an actual or simulated actuation signal.</u>	<u>24 months</u>

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.20 Chemical and Volume Control System (CVS) Letdown Isolation Valves

LCO 3.4.20 Each CVS letdown isolation valve shall be OPERABLE.

APPLICABILITY: MODE 5 below P-12 (Pressurizer Level) interlock.  
MODE 6 with water level < 23 feet above the top of the reactor vessel flange.

ACTIONS

**- NOTE -**

CVS letdown flow path may be unisolated intermittently under administrative controls.

<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>COMPLETION TIME</u>
<u>A. One CVS letdown isolation valve inoperable.</u>	<u>A.1 Restore CVS letdown isolation valve to OPERABLE status.</u>	<u>72 hours</u>
<u>B. Required Action and associated Completion Time of Condition A is not met.</u>  <u>OR</u> <u>Two CVS letdown isolation valves inoperable.</u>	<u>B.1 Initiate action to isolate CVS letdown flow path by use of at least one closed and deactivated automatic valve.</u>	<u>Immediately</u>

SURVEILLANCE REQUIREMENTS

<u>SURVEILLANCE</u>	<u>FREQUENCY</u>
<u>SR 3.4.20.1 Verify CVS letdown isolation valves actuate to the isolation position on an actual or simulated actuation signal.</u>	<u>24 months</u>

3.5 PASSIVE CORE COOLING SYSTEM (PXS)

3.5.9 Reactor Coolant Pump (RCP) Breakers

LCO 3.5.9 Two RCP breakers for each RCP shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.  
MODE 5 with the RCS not VENTED.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each RCP.

<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>COMPLETION TIME</u>
<u>A. One or more RCPs with one breaker inoperable in MODE 1, 2, 3 or 4.</u>	<u>A.1 Restore RCP breaker to OPERABLE status.</u>	<u>6 hours</u>
<u>B. Required Action and associated Completion Time of Condition A is not met.</u>  <u>OR</u> <u>One or more RCPs with two breakers inoperable in MODE 1, 2, 3 or 4.</u>	<u>B.1 Be in MODE 3.</u>  <u>AND</u> <u>B.2 Be in MODE 5.</u>	<u>6 hours</u>  <u>36 hours</u>
<u>C. One or more RCPs with one breaker inoperable in MODE 5.</u>	<u>C.1 Restore RCP breaker to OPERABLE status.</u>	<u>72 hours</u>

ACTIONS (continued)

<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>COMPLETION TIME</u>
<u>D. Required Action and associated Completion Time of Condition C is not met.</u>  <u>OR</u>  <u>One or more RCPs with two breakers inoperable in MODE 5.</u>	<u>D.1 Initiate action to trip affected RCP breaker(s).</u>	<u>Immediately</u>

SURVEILLANCE REQUIREMENTS

<u>SURVEILLANCE</u>	<u>FREQUENCY</u>
<u>SR 3.5.9.1 Verify each RCP breaker trips open on an actual or simulated actuation signal, except for breaker maintained in the tripped condition.</u>	<u>24 months</u>

3.7 PLANT SYSTEMS

3.7.3 Main Feedwater Isolation Valves (MFIVs), ~~and~~ Main Feedwater Control Valves (MFCVs),  
and Main Feedwater (MFW) Pump Breakers

LCO 3.7.3 ~~The Each MFIV, and the MFCV, and MFW pump breaker for each Steam Generator~~ shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each feedwater flow path.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both feedwater flow paths with MFIV or MFCV inoperable.	A.1 Isolate the affected flow path.	72 hours
	<u>AND</u> A.2 Verify affected flow path is isolated.	Once per 7 days
B. One or both feedwater flow paths with associated MFIV and MFCV inoperable.	B.1 Isolate affected flow path.	8 hours
C. <u>One or more feedwater flow paths with MFW pump breaker inoperable.</u>	C.1 <u>Restore the affected MFW pump breaker to OPERABLE status.</u>	<u>6 hours</u>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D E. Required Action and associated Completion Time not met.	DE.1 Be in MODE 3.	6 hours
	AND	
	DE.2 Be in MODE 4 with the Reactor Coolant System (RCS) cooling provided by the Normal Residual Heat Removal System (RNS).	24 hours
	AND	
	DE.3 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.3.1 ----- <p style="text-align: center;"><b>- NOTE -</b></p> Only required to be performed prior to entry into MODE 2. ----- Verify the closure time of each MFIV and MFCV is within limits on an actual or simulated actuation signal.	In accordance with the Inservice Testing Program
<a href="#">SR 3.7.3.2</a> <a href="#">Verify each MFW pump breaker trips open on an actual or simulated actuation signal, except for pump breaker maintained in the tripped condition.</a>	<a href="#">24 months</a>

3.7 PLANT SYSTEMS

3.7.7 Startup Feedwater (SFW) Isolation Valves, ~~and~~ Control Valves, and Pump Breakers

LCO 3.7.7 Each ~~Startup Feedwater~~ SFW ~~Isolation Valve,~~ and ~~Control Valve,~~ and pump breaker shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

- NOTES -

1. Flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each flow path.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more flow paths with one inoperable valve.	A.1 Isolate the affected flow path.	72 hours
	<u>AND</u>	
	A.2 Verify affected flow path is isolated.	Once per 7 days
B. One flow path with two inoperable valves.	B.1 Isolate the affected flow path.	8 hours
C. <u>One or more flow paths with pump breaker inoperable.</u>	C.1 <u>Restore the affected pump breaker to OPERABLE status.</u>	<u>6 hours</u>

**Technical Specifications** ~~Startup Feedwater~~ SFW Isolation Valves,  
~~and Control Valves,~~  
and Pump Breakers  
 3.7.7

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<u>D</u> <del>E.</del> Required Action and associated Completion Time not met.	<u>DC.1</u> Be in MODE 3.  <u>AND</u>	6 hours
	<del>DC.2</del> Be in MODE 4 with the Reactor Coolant System (RCS) cooling provided by the Normal Residual Heat Removal System (RNS).  <u>AND</u>	24 hours
	<del>DC.3</del> Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.7.1 Verify each <del>startup feedwater</del> <u>SFW</u> isolation and control valve is OPERABLE.	In accordance with the Inservice Testing Program
SR 3.7.7.2 Verify each <del>startup feedwater</del> <u>SFW</u> isolation and control valve actuates to the isolation position on an actual or simulated actuation signal.	24 months
<u>SR 3.7.7.3</u> <u>Verify each SFW pump breaker trips open on an actual or simulated actuation signal, except for pump breaker maintained in the tripped condition.</u>	<u>24 months</u>

Attachment 2  
Revised Technical Specification Pages

**Attachment 2**

**Revised Technical Specification Pages**

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
None	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies.  <u>OR</u>  One or more Functions within two or more required divisions inoperable during movement of irradiated fuel assemblies.	D.1 Suspend movement of irradiated fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
None	

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.18 Pressurizer Heater Circuit Breakers

LCO 3.4.18 Each pressurizer heater circuit breaker shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,  
MODE 4 with all four cold leg temperatures > 275°F.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each pressurizer heater.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more pressurizer heaters with one circuit breaker inoperable.	A.1 Restore pressurizer heater circuit breaker to OPERABLE status.	6 hours
B. Required Action and associated Completion Time of Condition A not met.  <u>OR</u>  One or more pressurizer heaters with two circuit breakers inoperable.	B.1 Be in MODE 3.  <u>AND</u>  B.2 Be in MODE 4 with at least one cold leg temperature ≤ 275°F.	6 hours   36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.18.1	Verify each pressurizer heater circuit breaker trips open on an actual or simulated actuation signal, except for circuit breaker maintained in the tripped condition.	24 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.19 Auxiliary Spray and Purification Line Isolation Valves

LCO 3.4.19 Each auxiliary spray and purification line isolation valve shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

- NOTES -

1. Flow path(s) may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each flow path.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Auxiliary spray flow path isolation valve inoperable.  <u>OR</u>  One or two purification line flow path isolation valves inoperable.	A.1 Restore isolation valve(s) to OPERABLE status.	6 hours
B. Required Action and associated Completion Time of Condition A not met.  <u>OR</u>  Three purification line flow path isolation valves inoperable.	B.1 Isolate affected flow path by use of at least one closed and deactivated automatic valve.  <u>OR</u>  B.2 Be In MODE 3.	6 hours       6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.19.1	Verify each auxiliary spray and purification line isolation valve actuate to the isolation position on an actual or simulated actuation signal.	24 months

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.20 Chemical and Volume Control System (CVS) Letdown Isolation Valves

LCO 3.4.20 Each CVS letdown isolation valve shall be OPERABLE.

APPLICABILITY: MODE 5 below P-12 (Pressurizer Level) interlock,  
MODE 6 with water level < 23 feet above the top of the reactor vessel  
flange.

ACTIONS

- NOTE -

CVS letdown flow path may be unisolated intermittently under administrative controls.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CVS letdown isolation valve inoperable.	A.1 Restore CVS letdown isolation valve to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A is not met.  <u>OR</u>  Two CVS letdown isolation valves inoperable.	B.1 Initiate action to isolate CVS letdown flow path by use of at least one closed and deactivated automatic valve.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.20.1 Verify CVS letdown isolation valves actuate to the isolation position on an actual or simulated actuation signal.	24 months

3.5 PASSIVE CORE COOLING SYSTEM (PXS)

3.5.9 Reactor Coolant Pump (RCP) Breakers

LCO 3.5.9 Two RCP breakers for each RCP shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4,  
MODE 5 with the RCS not VENTED.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each RCP.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more RCPs with one breaker inoperable in MODE 1, 2, 3 or 4.	A.1 Restore RCP breaker to OPERABLE status.	6 hours
B. Required Action and associated Completion Time of Condition A is not met.  <u>OR</u>  One or more RCPs with two breakers inoperable in MODE 1, 2, 3 or 4.	B.1 Be in MODE 3.  <u>AND</u>  B.2 Be in MODE 5.	6 hours   36 hours
C. One or more RCPs with one breaker inoperable in MODE 5.	C.1 Restore RCP breaker to OPERABLE status.	72 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition C is not met.  <u>OR</u>  One or more RCPs with two breakers inoperable in MODE 5.	D.1 Initiate action to trip affected RCP breaker(s).	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.9.1 Verify each RCP breaker trips open on an actual or simulated actuation signal, except for breaker maintained in the tripped condition.	24 months

3.7 PLANT SYSTEMS

3.7.3 Main Feedwater Isolation Valves (MFIVs), Main Feedwater Control Valves (MFCVs), and Main Feedwater (MFW) Pump Breakers

LCO 3.7.3 Each MFIV, MFCV, and MFW pump breaker shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each feedwater flow path.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both feedwater flow paths with MFIV or MFCV inoperable.	A.1 Isolate the affected flow path.	72 hours
	<u>AND</u> A.2 Verify affected flow path is isolated.	Once per 7 days
B. One or both feedwater flow paths with associated MFIV and MFCV inoperable.	B.1 Isolate affected flow path.	8 hours
C. One or more feedwater flow paths with MFW pump breaker inoperable.	C.1 Restore the affected MFW pump breaker to OPERABLE status.	6 hours

**Technical Specifications**

MFIVs, MFCVs, and  
MFW Pump Breakers  
3.7.3

**ACTIONS (continued)**

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.  <u>AND</u>	6 hours
	D.2 Be in MODE 4 with the Reactor Coolant System (RCS) cooling provided by the Normal Residual Heat Removal System (RNS).  <u>AND</u>	24 hours
	D.3 Be in MODE 5.	36 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.7.3.1 ----- <p style="text-align: center;"><b>- NOTE -</b></p> Only required to be performed prior to entry into MODE 2. ----- Verify the closure time of each MFIV and MFCV is within limits on an actual or simulated actuation signal.	In accordance with the Inservice Testing Program
SR 3.7.3.2 Verify each MFW pump breaker trips open on an actual or simulated actuation signal, except for pump breaker maintained in the tripped condition.	24 months

3.7 PLANT SYSTEMS

3.7.7 Startup Feedwater (SFW) Isolation Valves, Control Valves, and Pump Breakers

LCO 3.7.7 Each SFW isolation valve, control valve, and pump breaker shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

- NOTES -

1. Flow paths may be unisolated intermittently under administrative controls.
2. Separate Condition entry is allowed for each flow path.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more flow paths with one inoperable valve.	A.1 Isolate the affected flow path.	72 hours
	<u>AND</u> A.2 Verify affected flow path is isolated.	Once per 7 days
B. One flow path with two inoperable valves.	B.1 Isolate the affected flow path.	8 hours
C. One or more flow paths with pump breaker inoperable.	C.1 Restore the affected pump breaker to OPERABLE status.	6 hours

**Technical Specifications**

SFW Isolation Valves,  
Control Valves,  
and Pump Breakers  
3.7.7

**ACTIONS (continued)**

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	D.2 Be in MODE 4 with the Reactor Coolant System (RCS) cooling provided by the Normal Residual Heat Removal System (RNS).	24 hours
	<u>AND</u>	
	D.3 Be in MODE 5.	36 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.7.7.1	Verify each SFW isolation and control valve is OPERABLE.	In accordance with the Inservice Testing Program
SR 3.7.7.2	Verify each SFW isolation and control valve actuates to the isolation position on an actual or simulated actuation signal.	24 months
SR 3.7.7.3	Verify each SFW pump breaker trips open on an actual or simulated actuation signal, except for pump breaker maintained in the tripped condition.	24 months

Attachment 3  
Technical Specification Bases Marked-up Pages  
(For Information Only)

**Attachment 3**

**Technical Specification Bases Marked-up Pages (For Information Only)**

Insertions Denoted by underlined Blue text and Deletions by ~~Red Strikethrough~~  
Omitted text is identified by three asterisks ( \* \* \* )

BASES

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SURVEILLANCE  
 REQUIREMENTS

Due to self-checking features that continuously monitor logic OPERABILITY and alert the operator to any failures, there are no Surveillances required for ESF Coincidence Logic. Similarly, there are no Surveillances required for ESF Actuation. ~~with the exception of the required actuation test SRs, which test the end devices. Nearly all similar actuation tests are found in the various system or valve LCOs. The actuated device tests included in LCO 3.3.15 were added to cover unique actuation tests for components that do not otherwise have a separate TS for the end devices. Failure of these SRs result in inoperability of ESF Actuation subsystem.~~

~~SR 3.3.15.1~~

~~This SR demonstrates that the pressurizer heater circuit breakers trip open in response to an actual or simulated actuation signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the circuit breakers. The OPERABILITY of the motor control center breakers is checked by opening these breakers using the Plant Control System.~~

~~The Frequency of 24 months is based on the need to perform this surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operation. This Frequency is adequate based on the use of multiple circuit breakers to prevent the failure of any single circuit breaker from disabling the function and that all circuit breakers are tested.~~

~~This Surveillance Requirement is modified by a Note that states that the SR is only required to be met when all four cold leg temperatures are >275°F.~~

~~SR 3.3.15.2~~

~~This SR demonstrates that the RCP breakers trip open in response to an actual or simulated actuation signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the circuit breakers.~~

~~The Frequency of 24 months is based on the need to perform this surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operation.~~

~~SR 3.3.15.3~~

~~This SR demonstrates that the main feedwater and startup feedwater pump breakers trip open in response to an actual or simulated actuation~~

~~signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the circuit breakers.~~

~~The Frequency of 24 months is based on the need to perform this surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operation.~~

~~SR 3.3.15.4~~

~~This SR demonstrates that the auxiliary spray and purification line isolation valves actuate to the isolation position in response to an actual or simulated actuation signal. In the case of CVS V092 & V094 (Zinc Injection Isolation) and CVS V219 (Hydrogen Injection Isolation) these end devices are also Containment Isolation Valves and have actuation tests covered by LCO 3.6.3, "Containment Isolation Valves." As such, only CVS V084 (Aux Spray Isolation) and CVS V001, V002, V003 (Purification Line Isolations) are addressed by SR 3.3.15.4. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the valves.~~

~~The Frequency of 24 months is based on the need to perform this surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operation.~~

~~This Surveillance Requirement is modified by a Note that states that the SR is only required to be met in MODES 1 and 2.~~

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REFERENCES

~~None~~.~~1.~~ FSAR Chapter 15, "Accident Analysis."

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BASES

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ACTIONS (continued)

Completion Times are reasonable, based on operating experience, to reach the required plant conditions in an orderly manner without challenging plant systems.

Required Action C.2 minimizes the consequences of a loss of decay heat removal event by optimizing conditions for RCS cooling in MODE 6 using IRWST injection. Additionally, the potential for a criticality event is minimized by suspension of positive reactivity additions.

D.1

If the Required Action and associated Completion Time of Condition A is not met during movement of irradiated fuel assemblies, or one or more ESFAS actuation logic Functions within two or more divisions are inoperable, the plant must be placed in a condition in which the likelihood and consequences of an event are minimized. Required Action D.1 requires immediately suspending movement of irradiated fuel assemblies. This required action suspends activities with potential for releasing radioactivity that might enter the Main Control Room. This action does not preclude the movement of fuel to a safe position.

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SURVEILLANCE REQUIREMENTS

Due to self-checking features that continuously monitor logic OPERABILITY and alert the operator to any failures, there are no Surveillances required for ESF Coincidence Logic. Similarly, there are no Surveillances required for ESF Actuation. ~~with the exception of the required actuation test SRs, which test the end devices. Nearly all similar actuation tests are found in the various system or valve LCOs. The actuated device tests included in LCO 3.3.16 were added to cover unique actuation tests for components that do not otherwise have a separate TS for the end devices. Failure of these SRs result in inoperability of ESF Actuation subsystem.~~

~~SR 3.3.16.1~~

~~This SR demonstrates that the RCP breakers trip open in response to an actual or simulated actuation signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the circuit breakers. The Frequency of 24 months is based on the need to perform this surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operation. The SR is modified by a Note stating that the SR is only required to be met in MODE 5.~~

BASES

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ACTIONS (continued)

SR 3.3.16.2

~~This SR demonstrates that the CVS letdown isolation valves actuate to the isolation position in response to an actual or simulated actuation signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the valves.~~

~~The Frequency of 24 months is based on the need to perform this surveillance during periods in which the plant is shutdown to prevent any upsets of plant operation.~~

~~The SR is modified by a Note stating that the SR is not required to be met in MODE 5 above the P-12 (Pressurizer Level) interlock. A second Note states that the SR is not required to be met in MODE 6 with water level  $\geq$  23 feet above the top of the reactor vessel flange.~~

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REFERENCES

1. ~~None.~~ [FSAR Chapter 15, "Accident Analysis."](#)
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B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.18 Pressurizer Heater Circuit Breakers

BASES

BACKGROUND

Electrical immersion heaters, located in the lower section of the pressurizer vessel, keep the water in the pressurizer at saturation temperature and maintain a constant operating pressure. Power to the pressurizer heaters is blocked when the core makeup tanks are actuated. This action reduces the potential for steam generator overfill for a steam generator tube rupture accident.

Pressurizer heaters are automatically tripped to reduce the potential for steam generator overfill and automatic ADS Stages 1, 2, and 3 actuation for a steam generator tube rupture event. Automatically tripping the pressurizer heaters reduces the pressurizer level swell for certain non-LOCA events such as loss of normal feedwater, inadvertent CMT operation, and CVS malfunction resulting in an increase in RCS inventory. For small break LOCA analysis, tripping the pressurizer heaters supports depressurization of the RCS following actuation of the CMTs.

As described in Updated Safety Analysis Report subsection 7.3.1.2.23, Division A of the protection and safety monitoring system provides actuation signals to five load center circuit breakers which provide the power feed to five pressurizer heater electrical control centers. When these five power feed breakers are opened, the electrical power is removed from the pressurizer heaters. In addition, each division of the protection and safety monitoring system provides a separate signal to the plant control system. Within the plant control system, these signals are voted two-out-of-four and the result is used to open the pressurizer heater circuits at the motor control center. This arrangement provides for complete disabling of the pressurizer heaters, even if a single component failure occurs. Pressurizer heater trip on High-3 pressurizer water level may be manually blocked when wide range RCS pressure is below the P-19 interlock.

APPLICABLE  
SAFETY  
ANALYSES

For Condition II non-LOCA events, such as inadvertent operation of the core makeup tanks during power operation (Ref. 1) and chemical and volume control system malfunction that increases reactor coolant inventory (Ref. 2), the blocking of pressurizer heater operation may be required to prevent long-term pressurizer overfill.

BASES

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APPLICABLE SAFETY ANALYSES (continued)

For the steam generator tube rupture events, power to the pressurizer heaters is shut off so that they will not provide additional heat to the primary should the pressurizer level return (Ref. 3).

The pressurizer heater circuit breakers satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

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LCO

The requirement that each pressurizer heater circuit breaker be OPERABLE ensures that upon signal to block pressurizer heaters the breakers will trip open as assumed in the DBA safety analyses.

For a pressurizer heater circuit breaker to be considered OPERABLE, it must be capable of tripping on an actuation signal or maintained in the tripped condition.

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APPLICABILITY

In MODES 1, 2, and 3, and MODE 4 with all four cold leg temperatures > 275°F, the pressurizer heater circuit breakers must be OPERABLE to mitigate the potential consequences of any event which causes an increase in the pressurizer water level that could otherwise result in overflowing of the pressurizer.

In MODE 4, any cold leg temperature ≤ 275°F, and in MODES 5 and 6, pressurizer overfill is not a concern since overpressure protection in these MODES is provided by LCO 3.4.14, Low Temperature Overpressure Protection (LTOP), and the credited valves are designed for water relief.

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ACTIONS

The actions are modified by a Note indicating that separate Condition entry is allowed for each pressurizer heater. This is acceptable, since the Required Actions provide appropriate compensatory actions for each pressurizer heater with inoperable breaker(s). Complying with the Required Actions allows subsequent inoperable circuit breakers to be governed by subsequent Condition entry and application of associated Required Actions.

A.1

If one or more pressurizer heaters with one circuit breaker is inoperable, action must be taken to restore the breaker(s) to OPERABLE status within 6 hours. The 6 hours allowed to restore the inoperable breaker(s) is reasonable based on the low probability of an event occurring during this interval.

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BASES

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ACTIONS (continued)

B.1 and B.2

If the Required Action and associated Completion Time of Condition A is not met or if one or more pressurizer heaters with two circuit breakers are determined to be inoperable, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 with at least one cold leg temperature  $\leq 275^{\circ}\text{F}$  within 24 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner, without challenging plant systems.

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SURVEILLANCE  
REQUIREMENTS

SR 3.4.18.1

This SR demonstrates that the pressurizer heater circuit breakers trip open in response to an actual or simulated actuation signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the circuit breakers. The OPERABILITY of the motor control center breakers is checked by opening these breakers using the Plant Control System.

The SR excludes circuit breakers that are maintained in the tripped position since a tripped open circuit breaker is already performing the safety function. Restoration of a circuit breaker to the non-tripped position requires verification that the SR has been met within its required Frequency.

The Frequency of 24 months is based on the need to perform this surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operation. This Frequency is adequate based on the use of multiple circuit breakers to prevent the failure of any single circuit breaker from disabling the function and that all circuit breakers are tested.

BASES

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REFERENCES

1. FSAR Section 15.5.1, "Inadvertent Operation of the Core Makeup Tanks During Power Operation."
  2. FSAR Section 15.5.2, "Chemical and Volume Control System Malfunction That Increases Reactor Coolant Inventory."
  3. FSAR Section 15.6.3, "Steam Generator Tube Rupture."
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B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.19 Auxiliary Spray and Purification Line Isolation Valves

BASES

BACKGROUND

The Chemical and Volume Control System (CVS) maintains the reactor coolant system (RCS) fluid purity and activity level within acceptable limits. The CVS purification line receives flow from the discharge of the reactor coolant pumps (RCPs). The CVS also provides auxiliary spray to the pressurizer. To preserve the reactor coolant inventory in the event of a break in the CVS loop piping, the auxiliary spray line, purification line, zinc addition line, and hydrogen addition line are isolated on Pressurizer Water Level – Low to help maintain reactor coolant system inventory.

In the case of CVS-V092 & -V094 (Zinc Injection Isolation) and CVS-V219 (Hydrogen Injection Isolation) these end devices are also Containment Isolation Valves and have OPERABILITY covered by LCO 3.6.3, “Containment Isolation Valves.” As such, only CVS-V084 (Aux Spray Isolation) and CVS-V001, -V002, -V003 (Purification Line Isolations) are addressed by this LCO.

Auxiliary Spray and Purification Line Isolation is actuated on the following signals:

- Pressurizer Water Level – Low; and
- Chemical and Volume Control System Makeup Isolation – Manual Initiation.

APPLICABLE SAFETY ANALYSES

To help preserve the reactor coolant inventory in the event of a break in the CVS loop piping the auxiliary spray and purification line isolation valves can be closed (Ref. 1).

The auxiliary spray and purification line Isolation valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The requirement for OPERABILITY of the CVS auxiliary spray and purification line isolation valves ensures that upon signal to isolate the valves will be isolated. For each auxiliary spray and purification line isolation valve to be considered OPERABLE, it must be capable of tripping on an actuation signal.

BASES

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APPLICABILITY      This Function is required to be OPERABLE in MODES 1 and 2. In MODES 3, 4, 5, and 6, this Function is not needed for accident detection and mitigation.

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ACTIONS              The ACTIONS are modified by two Notes. Note 1 allows the auxiliary spray and purification line flow path to be unisolated intermittently under administrative control. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way the flow path can be rapidly isolated when a need for auxiliary spray and purification line isolation is indicated.

Note 2 indicates that separate Condition entry is allowed for each flow path. This is acceptable, since the Required Actions provide appropriate compensatory actions for each inoperable isolation valve. Complying with the Required Actions may allow for continued operation, and subsequent inoperable isolation valves are governed by subsequent Condition entry and application of associated Required Actions.

A.1

In the event the auxiliary spray flow path isolation valve and/or one or two of the purification line flow path isolation valves is inoperable, the valve(s) must be restored to OPERABLE status in 6 hours. The 6 hour Completion Time is reasonable considering the time required to isolate the penetration, the relative importance of supporting automatic RCS isolation.

B.1 and B.2

If the Required Action and associated Completion Time of Condition A is not met or if three purification line flow path isolation valves are inoperable then the affected flow path must be isolated by use of at least one closed and deactivated automatic valve within 6 hours. Alternatively, the plant must be placed in a MODE 3 in which the likelihood and consequences of an event are minimized. The 6 hour Completion Time is a reasonable time based on operating experience, to isolate the flow path or reach MODE 3 from full power in an orderly manner and without challenging plant systems.

BASES

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SURVEILLANCE  
REQUIREMENTS

SR 3.4.19.1

This SR demonstrates that the auxiliary spray and purification line isolation valves actuate to the isolation position in response to an actual or simulated actuation signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the valves.

The Frequency of 24 months is based on the need to perform this surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operation.

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REFERENCES

1. FSAR Section 7.3.1.2.18, "Auxiliary Spray and Purification Line and Zinc/Hydrogen Addition Isolation."
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B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.20 Chemical and Volume Control System (CVS) Letdown Isolation Valves

BASES

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BACKGROUND      The CVS provides letdown to the liquid radwaste system to maintain the pressurizer level. To help maintain RCS inventory in the event of a LOCA, the CVS letdown isolation valves (CVS-V045 and CVS-V047) are actuated on Hot Leg Level – Low 2.

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APPLICABLE SAFETY ANALYSES      Letdown isolation assists the operators when draining the RCS to a mid-loop level. If the operators fail to isolate letdown, these channels send a signal to close the letdown valves and stop the draining process (Ref. 1).

The CVS letdown isolation valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

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LCO      The requirement for OPERABILITY of the CVS letdown isolation valves ensures that upon signal to isolate the penetration will be isolated. For each CVS letdown isolation valve to be considered OPERABLE, it must be capable of isolating on an actuation signal.

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APPLICABILITY      This Function is required to be OPERABLE in MODE 5 below the P-12 (Pressurizer Level) interlock, and in MODE 6 with the water level < 23 feet above the top of the reactor vessel flange to assist the operators when draining the RCS to a mid-loop level.

In other conditions, the RCS is not being drained to mid-loop and operator assistance is not needed.

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ACTIONS      The Action are modified by a Note allowing the CVS letdown flow path to be unisolated intermittently under administrative control. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way the flow path can be rapidly isolated when a need for CVS letdown isolation is indicated.

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BASES

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ACTIONS (continued)

A.1

If one CVS letdown isolation valve is inoperable, action must be taken to restore the valve within 72 hours. The 72 hours allowed to restore the inoperable valve is reasonable based on the low probability of an event occurring during this interval and OPERABILITY of the redundant letdown isolation valve.

B.1

If the Required Action or associated Completion Time of Condition A is not met or two CVS letdown isolation valves are inoperable, action must be initiated immediately to isolate the CVS letdown flow. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve.

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SURVEILLANCE  
REQUIREMENTS

SR 3.4.20.1

This SR demonstrates that the CVS letdown isolation valves actuate to the isolation position in response to an actual or simulated actuation signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the valves.

The Frequency of 24 months is based on the need to perform this surveillance during periods in which the plant is shutdown to prevent any upsets of plant operation.

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REFERENCES

1. FSAR Section 19E.2.1.2.4, "Improved RCS Draindown Method."
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## B 3.5 PASSIVE CORE COOLING SYSTEM (PXS)

## B 3.5.2 Core Makeup Tanks (CMTs) – Operating

## BASES

## BACKGROUND

Two redundant CMTs provide sufficient borated water to assure Reactor Coolant System (RCS) reactivity and inventory control for all design basis accidents (DBAs), including both loss of coolant accident (LOCA) events and non-LOCA events (Ref. 1). [Flow from the core makeup tank increases if the reactor coolant pumps \(RCPs\) have coasted down, therefore, the RCP breaker OPERABILITY is addressed in LCO 3.5.9, Reactor Coolant Pump Breakers.](#)

The CMTs are cylindrical tanks with hemispherical upper and lower heads. They are made of carbon steel and clad on the internal surfaces with stainless steel. They are located in containment at an elevation slightly above the reactor coolant loops. Each tank is full of borated water at > 3400 ppm. During normal operation, the CMTs are maintained at RCS pressure through a normally open pressure balance line from the cold leg.

The outlet line from each CMT is connected to one of two direct vessel injection lines, which provides an injection path for the water supplied by the CMT. The outlet line from each CMT is isolated by parallel, normally closed, fail open valves. Upon receipt of a safeguards actuation signal, these four valves open to align the CMTs to the RCS.

The CMTs will inject to the RCS as inventory is lost and steam or reactor coolant is supplied to the CMT to displace the water that is injected. Steam or reactor coolant is provided to the CMT through the cold leg balance line, depending upon the specific event that has occurred. The inlet line from the cold leg is sized for LOCA events, where the cold legs become voided and higher CMT injection flows are required.

The injection line from each CMT contains a flow tuning orifice that is used to provide a mechanism for the field adjustment of the injection line resistance. The orifice is used to establish the required flow rates for the associated plant conditions assumed in the CMT design. The CMT flow is based on providing injection for approximately 20 minutes after CMT actuation.

The CMT size and injection capability are selected to provide adequate RCS boration and safety injection for the limiting DBA. One CMT is adequate for this function during a small break LOCA where one CMT completely spills via the pipe break (Ref. 2). The Probabilistic Risk Assessment (PRA) (Ref. 3) shows that none of the CMTs are required for small LOCAs, assuming that at least one accumulator is available.

B 3.5 PASSIVE CORE COOLING SYSTEM (PXS)

B 3.5.9 Reactor Coolant Pump Breakers

BASES

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BACKGROUND

Core Makeup Tank (CMTs) provide sufficient borated water to assure Reactor Coolant System (RCS) reactivity and inventory control for all design basis accidents (DBAs), including both loss of coolant accident (LOCA) events and non-LOCA events. CMT performance assumes reactor coolant pumps (RCPs) have tripped (Ref. 1). Flow from the core makeup tank increases if the RCPs have coasted down, therefore, the RCP breakers are required to trip open after time delay to support the assumptions for CMT injection.

RCP trip is actuated on the following signals (refer to the Bases for LCO 3.3.8, Engineered Safety Feature Actuation System (ESFAS) Instrumentation):

- Safeguards Actuation;
- ADS Stages 1, 2, & 3 Actuation;
- Reactor Coolant Pump Bearing Water Temperature – High 2;
- Pressurizer Water Level – Low 2; and
- CMT Injection Actuation – Manual Initiation.

Each RCP is powered through two Class 1E circuit breakers connected in series, with one breaker receiving a trip signal from either Protection and Safety Monitoring System (PMS) Division B and the second breaker from Division C. The two breakers in series scheme is used to ensure that the RCPs are shutdown when the PMS tripping signal is initiated.

APPLICABLE SAFETY ANALYSES

When the CMTs are actuated, the RCPs are tripped (after a time delay) to allow steam and water to separate in the RCS and to allow steam displacement draindown. Tripping of the RCPs is done to enhance safety injection and avoid potential adverse interactions.

RCP Breakers satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

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LCO                      This LCO establishes the OPERABILITY for two RCP breakers for each RCP. For RCP breakers to be considered OPERABLE they must trip open on an actuation signal or be maintained in the tripped condition.

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APPLICABILITY                      The Applicability is established consistent with the CMTs, which are required to be OPERABLE to provide borated water for RCS inventory makeup and reactivity control following a design basis event and subsequent cooldown. In MODES 1, 2, 3, and 4 CMT OPERABILITY is required to provide borated water for RCS inventory makeup and reactivity control following a design basis event and subsequent cooldown.

In MODE 5 with the RCS not VENTED, CMT OPERABILITY is required to provide borated water to the RCS in the event the nonsafety related chemical and volume control system makeup pumps are not available to provide RCS inventory control.

The RCP breakers are not required to be OPERABLE while in MODE 5 with the RCS VENTED, or in MODE 6, because the RCS is depressurized and borated water can be supplied from the In-containment Refueling Water Storage Tank (IRWST), if needed. The RCS is considered VENTED when the ADS stage 1, 2, and 3 flow paths (or alternative flow path with equivalent area) required by LCO 3.4.13, "Automatic Depressurization System (ADS) - Shutdown, RCS Open," are open, such that when combined with required ADS stage 4 actuation, sufficient steam venting area is provided to lower RCS pressure sufficiently to allow IRWST injection.

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ACTIONS                      The ACTIONS are modified by a note indicating that separate condition entry is allowed for each RCP. This is acceptable, since the Required Actions provide appropriate compensatory actions for each RCP. Complying with the Required Actions allows subsequent RCPs with inoperable breakers to be governed by subsequent Condition entry and application of associated Required Actions.

A.1

With one or more RCPs with one breaker inoperable in MODE 1, 2, 3, or 4, action must be taken to restore the breaker(s) within 6 hours. The 6 hours allowed to restore the inoperable breaker is reasonable based on the capability of the remaining OPERABLE breaker to mitigate all DBAs and the low probability of an event occurring during this interval and OPERABILITY of the redundant RCP breaker.

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BASES

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ACTIONS (continued)B.1 and B.2

If the Required Action or associated Completion Time of Condition A is not met or one or more RCPs with two breakers are inoperable in MODE 1, 2, 3, or 4, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

C.1

With one or more RCPs with one breaker inoperable in MODE 5, action must be taken to restore the breaker(s) within 72 hours. The 72 hours is reasonable considering the remaining OPERABLE breaker is capable of performing the associated safety function and the low probability of an event occurring during this interval.

D.1

If the Required Action or associated Completion Time of Condition C is not met or one or more RCPs with two breakers are inoperable in MODE 5, action must be initiated immediately to trip the inoperable RCP breaker(s). Tripping the affected RCP(s) accomplishes the necessary safety function to support CMT OPERABILITY.

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SURVEILLANCE  
REQUIREMENTSSR 3.5.9.1

This SR verifies that RCP breakers trip open on an actual or simulated actuation signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the valve.

The SR excludes circuit breakers that are maintained in the tripped position since a tripped open circuit breaker is already performing the safety function. Restoration of a circuit breaker to the non-tripped position requires verification that the SR has been met within its required Frequency.

The Frequency of 24 months is based on the need to perform this surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operation.

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BASES

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REFERENCES

1. FSAR Section 6.3, "Passive Core Cooling System."
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BASES

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LCO (continued)

The automatic power operated isolation valves are required to have isolation times within limits and to actuate on an automatic isolation signal. The valves covered by this LCO are listed along with their associated stroke times in the FSAR Section 6.2 (Ref. 1).

The normally closed isolation valves are considered OPERABLE when manual valves are closed, automatic valves are de-activated and secured in their closed position, or blind flanges are in place. These passive isolation valves/devices are those listed in Reference 1.

This LCO provides assurance that the containment isolation valves, except for the closed system valves and vacuum relief valves, and purge valves will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the containment boundary during accidents. The containment isolation valves associated with closed systems are not included in this LCO since they are covered in LCO 3.7.1, "Main Steam Safety Valves (MSSVs)," LCO 3.7.2, "Main Steam Line Flow Path Isolation Valves," LCO 3.7.3, "Main Feedwater Isolation Valves (MFIVs), ~~and~~ Main Feedwater Control Valves (MFCVs), ~~and~~ [Main Feedwater \(MFW\) Pump Breakers](#)," LCO 3.7.7, "Startup Feedwater (SFW) Isolation [Valves](#), ~~and~~ Control Valves, ~~and~~ [Pump Breakers](#)," and LCO 3.7.10, "Steam Generator (SG) Isolation Valves."

The containment system vacuum relief valves provide containment isolation but are also required to open to mitigate a negative pressure event within containment. Therefore, the vacuum relief valves are not included in this LCO since they are covered in LCO 3.6.9, "Vacuum Relief Valves."

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APPLICABILITY

In MODES 1, 2, 3, and 4 a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, containment isolation valves are not required to be OPERABLE in MODES 5 and 6 to prevent leakage of radioactive material from containment. However, containment closure capability is required in MODES 5 and 6. The requirements for containment isolation valves during MODES 5 and 6 are addressed in LCO 3.6.7, "Containment Penetrations."

## B 3.7 PLANT SYSTEMS

B 3.7.3 Main Feedwater Isolation Valves (MFIVs), ~~and~~ Main Feedwater Control Valves (MFCVs), and Main Feedwater (MFW) Pump Breakers

## BASES

## BACKGROUND

The MFIVs isolate main feedwater (MFW) flow to the secondary side of the steam generators following a high energy line break. The safety related function of the MFCVs is to provide the second isolation of MFW flow to the secondary side of the steam generators following a high energy line break. Closure of the MFIVs or MFCVs terminates flow to the steam generators, terminating the event for feedwater line breaks occurring upstream of the MFIVs or MFCVs. The MFW pumps also trip to prevent damage to the turbine due to water in the steam lines and to stop the excessive flow of feedwater into the steam generators. The consequences of events occurring in the main steam lines or in the MFW lines downstream from the MFIVs will be mitigated by their closure and the MFW pump trip. Closure of the MFIVs or MFCVs, and trip of the MFW pumps, effectively terminates the addition of main feedwater to an affected steam generator, limiting the mass and energy release for steam or feedwater line breaks inside containment, and reducing the cooldown effects for steam line breaks (SLBs).

The MFIVs or MFCVs isolate the nonsafety related portions from the safety related portions of the system. In the event of a secondary side pipe rupture inside containment, the valves isolate and the pumps trip to limit the quantity of high energy fluid that enters containment through the break, and provide a pressure boundary for the controlled addition of startup feedwater (SFW) to the intact loops of the steam generator.

One MFIV and one MFCV are located on each MFW line, outside but close to containment. The MFIVs and MFCVs are located in the MFW line and are independent of the delivery of the MFW or SFW via the SFW line which is separately connected and isolated from the steam generator. This configuration permits MFW or SFW to be supplied to the steam generators following MFIV or MFCV closure. The piping volume from these valves to the steam generators must be accounted for in calculating mass and energy releases following either an SLB or FWLB.

The three MFW pumps operate in parallel each constituting a MFW pump flow path. The MFW pumps discharge to a common header, which then feeds two MFW flow paths each to one steam generator.

The MFIVs and MFCVs close, and the MFW pump breaker trips, on receipt of engineered safeguards feedwater isolation signal generated from any of the following conditions:

BASES

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BACKGROUND (continued)

- Automatic or manual safeguards actuation “S” signal;
- High 3 steam generator level;
- Low-2 T<sub>avg</sub> signal coincident with reactor trip (P-4) (for the MFIVs and MFW pumps);
- Low T<sub>avg</sub> signal coincident with reactor trip (P-4) (for the MFCVs); and
- Manual actuation

Each valve and each pump may be actuated manually. In addition to the MFIVs and the MFCVs, a check valve is available outside containment to isolate the feedwater line penetrating containment. In the event of feedwater line depressurization due to pump trip on line break, the check valve provides rapid backup isolation of the steam generators limiting the inventory loss. A description of the MFIVs and MFCVs is found in Reference 1.

APPLICABLE SAFETY ANALYSES

The design basis of the MFIVs, ~~and~~ MFCVs, and MFW pump trip is established by the analyses for the large SLB. It is also influenced by the accident analysis for the large Feedwater Line Break (FWLB). Closure of the MFIVs (or MFCVs), and trip of the MFW pump, may also be relied on to mitigate an SLB for core response analysis and excess feedwater event upon the receipt of a steam generator water level – High 3 signal.

Failure of an MFIV (or MFCV), ~~to close,~~ or the MFW pumps to trip, following an SLB or FWLB, 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 SLB or FWLB event.

In addition, the MFIVs are containment isolation valves and support the assumptions related to minimizing the loss of inventory and establishing the containment boundary during major accidents. Therefore, the safety analysis of any event requiring isolation of containment is applicable to the MFIVs.

The MFIVs, ~~and~~ MFCVs, and MFW pump breakers satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

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LCO

This LCO ensures that the MFIVs and the MFCVs will isolate the main feedwater system to the secondary side of the steam generators and ensures that the MFW pumps will trip.

This LCO requires that the one isolation valve and one control valve on each feedwater line and each MFW pump breaker be OPERABLE. These valves are considered OPERABLE when their isolation times are within limits and they close on an isolation actuation signal. For a MFW pump breaker to be considered OPERABLE, it must trip on an actuation signal or be in the tripped condition.

Failure to meet the LCO requirements can result in additional mass and energy being released to containment following an SLB or FWLB inside containment. A main feedwater isolation signal on High 3 steam generator level is relied on to terminate an excess feedwater flow event, and therefore failure to meet the LCO may result in the introduction of water into the main steam lines.

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APPLICABILITY

The MFIVs, ~~and~~ MFCVs, and MFW pump breakers must be OPERABLE whenever there is significant mass and energy in the Reactor Coolant System and the steam generators. This ensures that, in the event of a high energy line break, a single failure cannot result in the blowdown of more than one steam generator. In MODES 1, 2, 3, and 4, these valves and pump trips are required to be OPERABLE to limit the amount of available fluid that could be added to the containment in the case of a secondary system pipe break inside containment and where a DBA could cause a release of radioactive material to containment.

In MODES 5 and 6 steam generator energy is low. Therefore, the MFIVs and the MFCVs are normally closed, and MFW pumps are not running, since MFW is not required.

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ACTIONS

The ACTIONS table is modified by a Note indicating that separate condition entry is allowed for each feedwater flow path, where there are two MFW flow paths with an MFIV and MFCV in series and three MFW pump flow paths with one MFW pump in each flow path.

A.1 and A.2

With one or both feedwater flow paths with an MFIV or MFCV inoperable (one or two MFIVs, or one or two MFCVs inoperable), the affected flow path must be isolated in 72 hours. When these flow paths are isolated, they are performing their required safety function.

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BASES

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## ACTIONS (continued)

The 72 hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE valves, and the low probability of an event that would require isolation of the main feedwater flow paths occurring during this period.

For inoperable MFIVs and MFCVs that cannot be restored to OPERABLE status within the specified Completion Time but whose affected flow path is isolated, the flow paths must be verified on a periodic basis to be isolated. This is necessary to ensure that the assumptions in the safety analyses 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 flow paths are isolated.

B.1

With one or both feedwater flow paths with associated MFIV and MFCV inoperable (two inoperable valves in the same flow path), there may be no redundant system to operate automatically to perform the required safety function. Under these conditions, one valve in the affected flow path must be restored to OPERABLE status, or the affected flow path isolated within 8 hours. This action returns the system to the situation in which at least one valve in the affected flow path is performing the required safety function. The 8 hour Completion Time is a reasonable amount of time to complete the actions required to close the MFIV, or MFCV, which includes performing a controlled plant shutdown. The Completion Time is reasonable based on operating experience to reach MODE 2 with the MFIV or MFCV closed, from full-power conditions in an orderly manner and without challenging plant systems.

C.1

With one or more feedwater flow paths with a MFW pump breaker inoperable, the affected MFW pump breaker must be restored to OPERABLE status within 6 hours. The Completion Time takes into account the redundancy afforded by the MFIV and MFCV and the low probability of an event that would require tripping the MFW pump during this period.

## BASES

## ACTIONS (continued)

DG.1, DG.2, and DG.3

If the affected flow path cannot be isolated or the MFIVs, ~~and~~ MFCVs, or MFW pump breaker cannot be restored to OPERABLE status, ~~or the affected flow paths cannot be isolated~~ within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in at least MODE 3 within 6 hours, in MODE 4 with the normal residual heat removal system in service within 24 hours, and in MODE 5 within 36 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 plant systems.

SURVEILLANCE  
REQUIREMENTSSR 3.7.3.1

This SR verifies that the closure time of each MFIV and MFCV is  $\leq 5.0$  seconds, on an actual or simulated actuation signal. The MFIV and MFCV isolation times are assumed in the accident and containment analyses. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the valves. This Surveillance is normally performed upon returning the unit to operation following a refueling outage. These valves should not be tested at power, since even a part stroke exercise increases the risk of a valve closure when the unit is generating power.

The Frequency is in accordance with the Inservice Testing Program.

The SR is modified by a note which states that the SR is only required to be performed prior to entry into MODE 2. This allows the option to perform testing in MODES 3 or 4.

SR 3.7.3.2

This SR verifies that each main feedwater pump breaker trip open in response to an actual or simulated actuation signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the pump breaker.

BASES

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SURVEILLANCE REQUIREMENTS (continued)

The SR excludes main feedwater pump breakers that are maintained in the tripped position since a tripped open MFW pump breaker is already performing the safety function. Restoration of a breaker to the non-actuated position requires verification that the SR has been met within its required Frequency.

The 24 month Frequency is based on the need to perform this Surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operation.

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REFERENCES

1. FSAR Section 10.4.7, "Condensate and Feedwater System."
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B 3.7 PLANT SYSTEMS

B 3.7.7 Startup Feedwater (SFW) Isolation Valves, ~~and~~ Control Valves, and Pump Breakers

BASES

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**BACKGROUND** The ~~startup feedwater~~SFW system supplies feedwater to the steam generators during plant startup, hot standby and cooldown, and in the event of main feedwater unavailability.

The ~~startup feedwater~~SFW system serves no safety related function and has no safety related design basis, except to isolate feedwater in the event of a Feedline Break (FLB), Steam Line Break (SLB), a steam generator tube rupture (SGTR), or other secondary side event.

The ~~startup feedwater~~SFW system consists of two SFW pumps, which are headered at the pump discharge, and a separate flow path to each of the steam generators. Each flow path consists of two series ~~startup feedwater~~SFW valves to provide feedwater control for low feedwater demand conditions. Feedwater can be supplied to the ~~startup feedwater~~SFW line via either the main or ~~startup feedwater~~SFW pumps. The feedwater is delivered directly to the steam generator (SG) independent of the main feedwater line. Each ~~startup feedwater~~SFW line contains one control valve and one isolation valve (Ref. 1).

**APPLICABLE SAFETY ANALYSES** The basis for the requirement to isolate the ~~startup feedwater~~SFW system is established by the analysis for large SLB inside containment. It is also based on the analysis for a large FLB and a steam generator tube rupture. Failure to isolate the ~~startup feedwater~~SFW system following a SLB or FLB can lead to additional mass and energy being delivered to the steam generators, resulting in excessive cooldown and additional mass and energy release in containment. Failure to isolate the ~~startup feedwater~~SFW following a steam generator tube rupture may result in overfilling the steam generator.

Low 2 T<sub>cold</sub> or high steam generator level signals close the ~~startup feedwater~~SFW control and isolation valves and trips the ~~startup feedwater~~SFW pumps.

In addition, the ~~startup feedwater~~SFW isolation valves are containment isolation valves and support the assumptions related to minimizing the loss of inventory and establishing the containment boundary during major accidents. Therefore, the safety analysis of any event requiring isolation of containment is applicable to these valves.

BASES

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APPLICABLE SAFETY ANALYSES (continued)

The ~~startup feedwater SFW~~ isolation valves, and control valves, and pump breakers are components which actuate to mitigate a Design Basis Accident, and as such meet Criterion 3 of 10 CFR 50.36(c)(2)(ii).

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LCO

This LCO ensures that the ~~startup feedwater SFW~~ isolation and control valves will ~~actuate isolate, and SFW pump breakers will trip,~~ on command, following a SLB, FLB or SGTR, ~~and to~~ isolate ~~startup feedwater SFW~~ flow to the steam generators.

The ~~startup feedwater SFW~~ isolation and control valves are considered OPERABLE when they automatically close on an isolation actuation signal and their isolation times are within the required limits. For a SFW pump breaker to be considered OPERABLE, it must trip on an actuation signal or be in the tripped condition.

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APPLICABILITY

The ~~startup feedwater SFW~~ isolation and control valves, and SFW pump breakers, must be OPERABLE whenever there is significant mass and energy in the Reactor Coolant System and the steam generators. In MODES 1, 2, 3 and 4, the ~~startup feedwater SFW~~ isolation and control valves, and SFW pump breakers, are required to be OPERABLE in order to limit the amount of mass and energy that could be added to containment in the event of a SLB or FLB and prevent steam generator overfill in the event of an SGTR and where a DBA could cause a release of radioactive material to containment.

In MODES 5 and 6, the energy in the steam generators is low, and isolation of the ~~startup feedwater SFW~~ system and trip of the feedwater pump breakers are ~~is~~ not required.

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ACTIONS

The ACTIONS are modified by ~~at two~~ Notes. Note 1 ~~allowing~~ flow paths to be unisolated intermittently under administrative controls. These controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the flow paths can be rapidly isolated.

The second Note allows separate Condition entry for each flow path, where there are two flow paths each with an isolation and control valve in series and two SFW pump flow paths. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable flow path.

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## BASES

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### ACTIONS (continued)

#### A.1 and A.2

With only one isolation or control valve OPERABLE in one or more flow paths, there is no redundant capability to isolate the flow paths. In this case, both an isolation and a control valve in each flow path must be restored to OPERABLE status with 72 hours, or the flow path must be

isolated. A Completion Time of 72 hours is acceptable since, with one valve in a flow path inoperable, there is a second valve available in the flow path to isolate the line.

If the inoperable valve in the flow path cannot be restored to OPERABLE status, then the flow path must be isolated within a Completion Time of 72 hours. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure.

For flow paths isolated in accordance with Required Action A.1, the affected flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that flow paths required to be isolated following an accident will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that the isolation devices are in the correct position. The Completion Time of "once per 7 days" is appropriate considering the fact that the devices are operated under administrative controls, valve status indications in the main control room and the probability of their misalignment is low.

#### B.1

With both the isolation and control valves inoperable in one flow path, the affected flow path must be restored to OPERABLE status or isolated within a Completion Time of 8 hours. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure.

#### C.1

With one or more flow paths with the pump breaker inoperable the affected pump breaker must be restored to OPERABLE status within 6 hours. The Completion Time takes into account the redundancy afforded by the isolation and control valves and the low probability of an event that would require tripping the SFW pump during this period.

## BASES

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### ACTIONS (continued)

#### DC.1, DC.2, and DC.3

If the the affected flow paths cannot be isolated or the isolation valves, ~~and~~ control valves, or pump breakers cannot be restored to OPERABLE status, closed, or isolated within the associated Completion Times, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in least MODE 3 within 6 hours, in MODE 4 with RCS cooling provided by the normal residual heat removal system within 24 hours, and in MODE 5 within 36 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 plant systems.

### SURVEILLANCE REQUIREMENTS

#### SR 3.7.7.1

This surveillance requires verification in accordance with the Inservice Testing Program to assure that each ~~startup feedwater SFW~~ isolation and control valve is OPERABLE. The Surveillance Frequency is provided in the Inservice Testing Program.

#### SR 3.7.7.2

This SR ensures that each ~~startup feedwater SFW~~ isolation valve and ~~startup feedwater SFW~~ control valve will actuate to its isolation position on an actual or simulated actuation signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the valves.

The 24 month Frequency is based on the need to perform this Surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operation.

#### SR 3.7.7.3

This SR verifies that each SFW pump breakers trip open on an actual or simulated actuation signal. The actual or simulated signal is processed through the component interface module to verify the continuity between the output of the component interface module and the pump breaker.

BASES

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SURVEILLANCE REQUIREMENTS (continued)

The SR excludes SFW pump breakers that are maintained in the tripped position since a tripped open SFW pump breaker is already performing the safety function. Restoration of a breaker to the non-actuated position requires verification that the SR has been met within its required Frequency.

The 24 month Frequency is based on the need to perform this Surveillance during periods in which the plant is shutdown for refueling to prevent any upsets of plant operation.

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REFERENCES

1. FSAR Section 10.4.9, "Startup Feedwater System."
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