NEXTera®
ENERGY
SEABROOK

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Docket No. 50-443
SBK-L-15228

U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, DC 20555-0001

Seabrook Station
Submittal of Changes to the Seabrook Station Technical Specification Bases

NextEra Energy Seabrook, LLC submits the enclosed changes to the Seabrook Station Technical Specification Bases. The changes were made in accordance with Technical Specification 6.7.6.j., "Technical Specification (TS) Bases Control Program." Please update the Technical Specification Bases in accordance with Enclosure 1.

Should you have any questions concerning this submittal, please contact me at (603) 773-7512.

Sincerely,

NextEra Energy Seabrook, LLC

Michael H. Ossing
Licensing Manager

cc: D. Dorman, NRC Region I Administrator
J. Lamb, NRC Project Manager, Project Directorate I-2
P. Cataldo, NRC Senior Resident Inspector

ADD1
NRR

Enclosure 1 to SBK-L-15228

Change Instructions for Seabrook Station Technical Specification Bases

REMOVE	INSERT
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B 3/4 2-3	B 3/4 2-3
B 3/4 4-1	B 3/4 4-1
B 3/4 4-1a	B 3/4 4-1a
-------------	B 3/4 4-1b
B 3/4 5-1	B 3/4 5-1
B 3/4 5-2a	B 3/4 5-2a
B 3/4 5-3	B 3/4 5-3
B 3/4 5-4	B 3/4 5-4
B 3/4 5-5	-------------
B 3/4 5-6	-------------
B 3/4 6-3	B 3/4 6-3
B 3/4 6-3a	B 3/4 6-3a
B 3/4 6-3b	B 3/4 6-3b
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B 3/4 8-3a	B 3/4 8-3a
B 3/4 9-3	B 3/4 9-3
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Enclosure 2 to SBK-L-15228

BASES

BASES

SECTION		PAGE

3/4.2.2 and 3/4.2.3 HEAT FLUX HOT CHANNEL FACTOR and NUCLEAR ENTHALPY RISE HOT CHANNEL FACTOR (Continued)

$F_{\Delta H}^{N}$ will be maintained within its limits provided Conditions a. through d. above are maintained. Margin is maintained between the safety analysis limit DNBR and the design limit DNBR. There is additional margin available to offset any other DNBR penalties and for plant design flexibility.

When an $F_Q(Z)$ measurement is taken, an allowance for both measurement uncertainties and manufacturing tolerance must be made. An allowance of 5% is appropriate for measurement uncertainties. A 3% allowance is appropriate for manufacturing tolerance.

The hot channel factor $F_Q^M(Z)$ is measured in accordance with the Surveillance Frequency Control Program and increased by a cycle and height dependent power factor appropriate to Relaxed Axial Offset Control (RAOC) operation, W(Z), to provide assurance that the limit on the hot channel factor $F_Q(Z)$ is met. W(Z) accounts for the effects of normal operation transients and was determined from expected power control maneuvers over the full range of burnup conditions in the core. The W(Z) function for normal operation is specified in the CORE OPERATING LIMITS REPORT per Specification 6.8.1.6.

When RCS $F_{\Delta H}^{N}$ is measured, no additional allowances are necessary prior to comparison with the established limit. Appropriate $F_{\Delta H}^{N}$ measurement uncertainties are already incorporated into the limits $F_{\Delta H}^{N}$ established in the CORE OPERATING LIMITS REPORT for each measurement system, and a bounding $F_{\Delta H}^{N}$ measurement uncertainty has been applied in determination of the design DNBR value. The appropriate $F_{\Delta H}^{N}$ measurement uncertainty is 4%.

3/4.2.4 QUADRANT POWER TILT RATIO

The purpose of this specification is to detect gross changes in core power distribution between monthly Incore Detector System surveillances. During normal operation the QUADRANT POWER TILT RATIO is set equal to 1.0 once acceptability of core peaking factors has been established by review of incore surveillances. The limit of 1.02 is established as an indication that the power distribution has changed enough to warrant further investigation.

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION

An OPERABLE reactor coolant system loop consists of an OPERABLE reactor coolant pump and an OPERABLE steam generator.

The plant is designed to operate with all reactor coolant loops in operation and maintain DNBR above 1.30 during all normal operations and anticipated transients. In MODES 1 and 2 with one reactor coolant loop not in operation, this specification requires that the plant be in at least HOT STANDBY within 6 hours.

In MODE 3, two reactor coolant loops provide sufficient heat removal capability for removing core decay heat even in the event of a bank withdrawal accident; however, a single reactor coolant loop provides sufficient heat removal capacity if a bank withdrawal accident can be prevented, i.e., by placing the Control Rod Drive System in a condition incapable of rod withdrawal. Single failure considerations require that two loops be OPERABLE at all times.

In MODE 4, and in MODE 5 with reactor coolant loops filled, a single reactor coolant loop or RHR loop provides sufficient heat removal capability for removing decay heat; but single failure considerations require that at least two loops (either RHR or RCS) be OPERABLE. Managing of gas voids is important to RHR System OPERABILITY.

In MODE 5 with reactor coolant loops not filled, a single RHR loop provides sufficient heat removal capability for removing decay heat; but single failure considerations, and the unavailability of the steam generators as a heat removing component, require that at least two RHR loops be OPERABLE. Managing of gas voids is important to RHR System OPERABILITY.

A Reactor Coolant "loops filled" condition is defined as follows: (1) Having pressurizer level greater than or equal to 55% if the pressurizer does not have a bubble, and greater than or equal to 17% when there is a bubble in the pressurizer. (2) Having the air and non-condensables evacuated from the Reactor Coolant System by either operating each reactor coolant pump for a short duration to sweep air from the Steam Generator U-tubes into the upper head area of the reactor vessel, or removing the air from the Reactor Coolant System via an RCS evacuation skid, and (3) Having vented the upper head area of the reactor vessel if the pressurizer does not have a bubble. (4) Having the Reactor Coolant System not vented, or if vented capable of isolating the vent paths within the time to boil.

Draining the RCS to a level that is lower than the stated limits (55% with no bubble or 17% with a bubble) and subsequently re-establishing the required levels does not preclude establishing the "loops filled" condition as long as the level is not dropped to the point at which additional air can be introduced into the steam generator tubes. If no additional air is introduced into the steam generator tubes, the refill of the RCS re-establishes the conditions that existed prior to the draining. Engineering Evaluation EE-08-012 demonstrates that, with the maximum amount of air/gas available from reactor coolant system sources in Mode 5 present in the steam generator tubes, any two steam generators provide adequate decay heat removal via natural circulation approximately 12 hours after shutdown.

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION (Continued)

If the RCS is drained to the point where additional air is available to enter the steam generators, i.e., to a reduced inventory condition [El.(-)36"], then the air/gas must be removed from the steam generator tubes prior to the steam generators being available as a heat sink. This will require either the removal of the air from the Reactor Coolant System via the RCS evacuation skid or operating each reactor coolant pump for a short duration to sweep air from the Steam Generator U-tubes (only required for those generators to be credited for decay heat removal). Operating the reactor coolant pumps to sweep the loops re-establishes the conditions that existed prior to draining the RCS. Using the evacuation skid results in a larger volume of air/gas contained in the steam generator u-tubes than exists under the initial shutdown conditions, however Engineering Evaluations EE-08-012 demonstrates the natural circulation conditions will be established for this circumstance.

The operation of one reactor coolant pump (RCP) or one RHR pump provides adequate flow to ensure mixing, prevent stratification and produce gradual reactivity changes during boron concentration reductions in the Reactor Coolant System. The reactivity change rate associated with boron reduction will, therefore, be within the capability of operator recognition and control.

The restrictions on starting an RCP in MODES 4 and 5 are provided to prevent RCS pressure transients, caused by energy additions from the Secondary Coolant System, which could exceed the limits of Appendix G to 10 CFR Part 50. The RCS will be protected against overpressure transients and will not exceed the limits of Appendix G by restricting starting of the RCPs to when the secondary water temperature of each steam generator is less than 50°F above each of the RCS cold-leg temperatures.

RHR System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR loops and may also prevent water hammer, pump cavitation, and pumping of non-condensable gas into the reactor vessel.

Selection of RHR System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrument drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walkdowns to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as standby versus operating conditions.

The RHR System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION (Continued)

RHR System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative subset of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, plant configuration, or personnel safety. For these locations, alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

This SR is modified by a NOTE that states the SR is not required to be performed until 12 hours after entering MODE 4. In a rapid shutdown, there may be insufficient time to verify all susceptible locations prior to entering MODE 4.

The SURVEILLANCE Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

3/4.5.1 ACCUMULATORS

The OPERABILITY of each Reactor Coolant System (RCS) accumulator ensures that a sufficient volume of borated water will be immediately forced into the reactor core through each of the cold legs in the event the RCS pressure falls below the pressure of the accumulators. This initial surge of water into the core provides the initial cooling mechanism during large RCS pipe ruptures.

The limits on accumulator volume, boron concentration, and pressure ensure that the assumptions used for accumulator injection in the safety analysis are met.

In MODES 1 and 2, the accumulator power-operated isolation valves are considered to be "operating bypasses" in the context of IEEE Std. 279-1971, which requires that bypasses of a protective function be removed automatically whenever permissive conditions are not met. In MODES 1, 2, 3, and in MODE 4 within 12 hours of entry into MODE 3 from 4, the accumulator isolation valves are open with their power removed whenever pressurizer pressure is greater than 1000 psig. In addition, as these accumulator isolation valves fail to meet single-failure criteria, removal of power to the valves is required.

The limits for operation with an accumulator inoperable for any reason except an isolation valve closed minimizes the time exposure of the plant to a LOCA event occurring concurrent with failure of an additional accumulator which may result in unacceptable peak cladding temperatures. If a closed isolation valve cannot be immediately opened, the full capability of one accumulator is not available and prompt action is required to place the reactor in a mode where this capability is not required.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS

The OPERABILITY of two independent ECCS subsystems ensures that sufficient emergency core cooling capability will be available in the event of a LOCA assuming the loss of one subsystem through any single-failure consideration. Either subsystem operating in conjunction with the accumulators is capable of supplying sufficient core cooling to limit the peak cladding temperatures within acceptable limits for all postulated break sizes ranging from the double-ended break of the largest RCS cold-leg pipe downward. In addition, each ECCS subsystem provides long-term core cooling capability in the recirculation mode during the accident recovery period. Managing of gas voids is important to ECCS OPERABILITY.

Operability of the ECCS flow paths is contingent on the ability of the encapsulations surrounding the containment sump isolation valves (CBS-V8 and CBS-V14) to perform their design functions. During the recirculation phase of an accident, any postulated leakage resulting from the failure of the valves or piping will be contained within the encapsulations, preserving the water inventory needed to support ECCS operation during recirculation. Consequently, maintaining the encapsulations intact with leakage within allowable limits is necessary to ensure operability of the ECCS flow paths. Although designed to withstand containment pressure, the encapsulations do not function as a containment boundary, but rather prevent the release of radioactive fluid and gasses to the environment.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (Continued)

An automatic valve may be aligned in other than its accident position provided (1) the valve receives an automatic signal to re-position to its required position in the event of an accident, and (2) the valve is otherwise operable (stroke time within limits, motive force available to re-position the valve, control circuitry energized, and mechanically capable of re-positioning).

With the exception of the operating centrifugal charging pump, the ECCS pumps are normally in a standby, non-operating mode.

ECCS piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the ECCS and may also prevent a water hammer, pump cavitation, and pumping of non-condensable gas into the reactor vessel.

Selection of ECCS locations susceptible to gas accumulation is based on a review of system design information, including piping and instrument drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walkdowns to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as standby versus operating conditions.

The ECCS is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the ECCS is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

ECCS locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative subset of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, plant configuration, or personnel safety. For these locations, alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (Continued)

Surveillance frequency in accordance with the Surveillance Frequency Control Program for SR 4.5.2.b.1) ensures locations are sufficiently filled with water by taking into consideration the gradual nature of gas accumulation in the ECCS piping and the procedural controls governing system operation.

Surveillance 4.5.2.b.2) is modified by a Note which exempts system vent flow paths opened under administrative control. The administrative control should be proceduralized and include stationing a dedicated individual at the system vent path who is in continuous communication with the operators in the control room. The individual will have a method to rapidly close the system vent flow path if directed.

ECCS piping high points may be considered inaccessible if any of the following criteria are met:

a) The high point is located inside the bioshield in containment while the reactor is critical (Modes 1 & 2), since this area can contain lethal radiation fields during reactor operation. During those situations when the reactor is not critical, other conditions where gaining access poses a safety or radiological hazard (e.g., high system temperature, high radiological conditions) may prohibit verification by UT/venting.

b) The high point is located in an area where gaining access poses a safety or radiological hazard, e.g.:

- Installation/removal of temporary ladders within containment or other areas where stay times (heat stress / high radiation levels) or other factors must be kept to minimums.

Note: The safety or radiological concern should be documented for further evaluation by the responsible organization(s).

c) High points within heat exchanger tubes.

Surveillance Requirements for throttle valve position stops and flow balance testing provide assurance that proper ECCS flows will be maintained in the event of a LOCA. Maintenance of proper flow resistance and pressure drop in the piping system to each injection point is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses.

3/4.5.2 and 3/4.5.3 ECCS SUBSYSTEMS (Continued)

Verifying that the RHR system suction valve interlock is OPERABLE ensures that the RCS will not pressurize the RHR system beyond its design pressure. The value specified in the surveillance requirement ensures that the valves cannot be opened unless the RCS pressure is less than 440 psig. Due to bistable reset design, and the instrument uncertainty, the valves could be open above the interlock setpoint, but below the reset pressure. To ensure that the RHR system design pressure will not be exceeded, the actual interlock setpoint takes into consideration RHR suction relief valve settings and allowable tolerance, bistable deadband, total instrument channel uncertainty associated with the interlock, and available operating margin (differential pressure operating limit) for reactor coolant pump operation to ensure shutdown cooling can be transitioned to RHR. This results in the actual setpoint and reset values being below the value specified in the surveillance requirement. The actual interlock setpoint and reset values, in addition to separate administrative controls, will ensure that the RHR suction isolation valves cannot be opened from the main control room when the RCS pressure could cause the RHR system design pressure to be exceeded.

3/4.5.4 REFUELING WATER STORAGE TANK

The OPERABILITY of the refueling water storage tank (RWST) as part of the ECCS ensures that a sufficient supply of borated water is available for injection by the ECCS in the event of a LOCA. The limits on RWST minimum volume and boron concentration ensure that: (1) sufficient water is available within containment to permit recirculation cooling flow to the core and (2) the reactor will remain subcritical in the cold condition following mixing of the RWST and the RCS water volumes with all control rods inserted except for the most reactive control assembly. These assumptions are consistent with the LOCA analysis.

The contained water volume limit includes and allowance for water not usable because of tank discharge line location or other physical characteristics.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 8.5 and 11.0 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 CONTAINMENT SPRAY SYSTEM

The OPERABILITY of the Containment Spray System ensures that containment depressurization and cooling capability will be available in the event of a LOCA. The pressure reduction and resultant lower containment leakage rate are consistent with the assumptions used in the safety analyses.

The two independent Containment Spray Systems provide post-accident cooling of the containment atmosphere. The Containment Spray Systems also provide a mechanism for removing iodine from the containment atmosphere, and, therefore, the time requirements for restoring an inoperable Spray System to OPERABLE status have been maintained consistent with those assigned other inoperable ESF equipment. Managing of gas voids is important to Containment Spray System OPERABILITY.

Verifying the correct alignment of manual, power-operated, and automatic valves provides assurance that the proper flow paths exist for operation of the Containment Spray System under accident conditions. This verification includes only those valves in the direct flow paths through safety-related equipment whose position is critical to the proper functioning of the safety-related equipment. Vents, drains, sampling connections, instrument taps, etc., that are not directly in the flow path and are not critical to proper functioning of the safety-related equipment are excluded from this surveillance requirement. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position because these valves are verified in their correct position prior to locking, sealing, or securing. Also, this requirement does not apply to valves that cannot be inadvertently misaligned, such as check valves.

An automatic valve may be aligned in other than its accident position provided (1) the valve receives an automatic signal to re-position to its required position in the event of an accident, and (2) the valve is otherwise operable (stroke time within limits, motive force available to re-position the valve, control circuitry energized, and mechanically capable of re-positioning).

Containment Spray System flow path piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the containment spray trains and may also prevent a water hammer and pump cavitation.

Selection of Containment Spray System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrument drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walkdowns to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 CONTAINMENT SPRAY SYSTEM (Continued)

otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as standby versus operating conditions.

The Containment Spray System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the Containment Spray System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

Containment Spray System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative subset of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, plant configuration, or personnel safety. For these locations, alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

Surveillance frequency in accordance with the Surveillance Frequency Control Program for SR 4.6.2.1.a.1) ensures locations are sufficiently filled with water by taking into consideration the gradual nature of gas accumulation in the Containment Spray System piping and the procedural controls governing system operation.

Surveillance 4.6.2.1.a is modified by a Note which exempts system vent flow paths opened under administrative control. The administrative control should be proceduralized and include stationing a dedicated individual at the system vent path who is in continuous communication with the operators in the control room. The individual will have a method to rapidly close the system vent flow path if directed.

Surveillance requirement (SR) 4.6.2.1.d requires verification that each spray nozzle is unobstructed following activities that could cause nozzle blockage. An air or smoke flow test is used to ensure that each spray nozzle is unobstructed and that spray coverage of the containment during an accident is not degraded. Normal plant activities are not expected to initiate this SR. However, activities such as inadvertent spray actuation that causes fluid flow through the spray nozzles or a loss of foreign material control when working on the system may require performing the surveillance.

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS (Continued)

3/4.6.2.2 SPRAY ADDITIVE SYSTEM

The OPERABILITY of the Spray Additive System ensures that sufficient NaOH is added to the containment spray in the event of a LOCA. The limits on NaOH volume and concentration ensure a pH value of between 8.5 and 11.0 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components. The contained solution volume limit includes an allowance for solution not usable because of tank discharge line location or other physical characteristics. These assumptions are consistent with the iodine removal efficiency assumed in the safety analyses.

The Spray Additive Tank System piping must be maintained full of water to ensure system operability. The piping may be considered full of water, even with some gas voids present, if an evaluation concludes that the system remains capable of performing its specified safety function.

Verifying the correct alignment of manual, power-operated, and automatic valves provides assurance that the proper flow paths exist for operation of the Spray Additive System under accident conditions. This verification includes only those valves in the direct flow paths through safety-related equipment whose position is critical to the proper functioning of the safety-related equipment. Vents, drains, sampling connections, instrument taps, etc., that are not directly in the flow path and are not critical to proper functioning of the safety-related equipment are excluded from this surveillance requirement. This surveillance does not apply to valves that are locked, sealed, or otherwise secured in position because these valves are verified in their correct position prior to locking, sealing, or securing. Also, this requirement does not apply to valves that cannot be inadvertently misaligned, such as check valves.

An automatic valve may be aligned in other than its accident position provided (1) the valve receives an automatic signal to re-position to its required position in the event of an accident, and (2) the valve is otherwise operable (stroke time within limits, motive force available to re-position the valve, control circuitry energized, and mechanically capable of re-positioning).

3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves (CIV) ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment and is consistent with the requirements of General Design Criteria 54 through 57 of Appendix A to 10 CFR Part 50. Containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

The containment isolation system is designed to isolate penetrations that are not required for operation of the engineered safety features systems in the event of a LOCA or main steam line break. The containment isolation devices are either passive or active. Automatic containment isolation valves are active devices that are designed to close without operator action within time limits on a containment isolation signal following an accident. Passive devices are normally closed barriers that require no mechanical movement to perform their isolation function. Passive containment isolation barriers are operable when their applicable surveillance requirements are met and:

1. Manual valves are locked in the closed position,
2. Automatic valves are de-activated and locked in the closed position,
3. Blind flanges are in place, and
4. Closed systems are intact.

The opening of locked or sealed closed containment isolation valves on an intermittent basis under administrative control includes the following considerations: (1) stationing an operator, who is in constant communication with control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

In the event that one containment isolation valve becomes inoperable, the valve must be restored to an operable status within four hours or the affected penetration must be isolated. Additionally, if the penetration is open, the second isolation barrier in the penetration (either another containment isolation valve or the associated closed system within containment) must remain operable. The operability of the closed system is established by its governing Technical Specification. For example, the SG U-tubes would comprise an operable closed system functioning as a containment barrier if tube leakage was within the leakage limitations of T.S. 3.4.6.2. For the hydrogen analyzer portion of the Combustible Gas Control system, the system outside of containment is qualified as an additional containment isolation barrier.

3/4.8.1 AC SOURCES (Continued)

LIMITING CONDITION FOR OPERATION (LCO) (continued)
APPLICABILITY

The AC sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients and

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3/4.8.2, "AC Sources – Shutdown."

ACTIONS

A Note prohibits the application of LCO 3.0.4.b to an inoperable DG. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable DG and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

For all of the following ACTIONs, if the inoperable AC electric power sources cannot be restored to OPERABLE status within the required AOT, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least HOT STANDBY within 6 hours and to COLD SHUTDOWN within the following 30 hours.

Inoperability of a DG does not render inoperable the equipment supported by the inoperable DG if required power is provided to the supported equipment from its normal power source. This is consistent with the definition of OPERABILITY, which requires that necessary electrical power, which consists of either the normal or emergency power source, is capable of providing its related support function. TS equipment may remain operable if required electrical power is available, regardless of whether electrical power is provided from the normal or emergency source. The equipment would become inoperable upon a loss of normal power with the emergency power source (DG) inoperable.

3/4.9.5 (THIS SPECIFICATION NUMBER IS NOT USED.)

3/4.9.6 (THIS SPECIFICATION NUMBER IS NOT USED.)

3/4.9.7 (THIS SPECIFICATION NUMBER IS NOT USED.)

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

The requirement that at least one residual heat removal (RHR) loop be in operation ensures that: (1) sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor vessel below 140°F as required during the REFUELING MODE, and (2) sufficient coolant circulation is maintained through the core to minimize the effect of a boron dilution incident and prevent boron stratification. Managing of gas voids is important to RHR System OPERABILITY.

The requirement to have two RHR loops OPERABLE when there is less than 23 feet of water above the reactor vessel flange ensures that a single failure of the operating RHR loop will not result in a complete loss of residual heat removal capability. However, only one RHR loop is required for decay heat removal with water level at least 23 feet above the reactor vessel flange and the upper internals removed from the reactor vessel. The large volume of water above the flange provides backup decay heat removal capability.

When installed in the reactor vessel, the upper internals provide a flow restriction between the core region and the refueling cavity. Consequently, following a loss of RHR cooling, heating of the water in the core would proceed faster than heating of the refueling cavity water, and core boiling could occur in a relatively short period of time. As a result, administrative controls implement compensatory measures to reduce the risk of core boiling should a loss of RHR cooling occur. These administrative controls ensure that the second train of RHR, although not required by the TS to be operable, will be functional within approximately one-half the time to core boiling following a loss of the operable RHR train.

Closure of the Equipment Hatch containment penetration using the Containment Outage Door may satisfy the containment closure requirement of the action statements for Technical Specifications 3.9.8.1 and 3.9.8.2, when the Containment Outage Door is being used during the movement of non-recently irradiated fuel assemblies within containment in lieu of the Containment Equipment Hatch.

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION (Continued)

RHR System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the RHR loops and may also prevent water hammer, pump cavitation, and pumping of non-condensable gas into the reactor vessel.

Selection of RHR System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrument drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walkdowns to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as standby versus operating conditions.

The RHR System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If it is determined by subsequent evaluation that the RHR System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

RHR System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative subset of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, plant configuration, or personnel safety. For these locations, alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

Surveillance frequency in accordance with the Surveillance Frequency Control Program ensures locations are sufficiently filled with water by taking into consideration the gradual nature of gas accumulation in the RHR System piping and the procedural controls governing system operation.

BASES

3/4.9.14 THIS SPECIFICATION NUMBER IS NOT USED

3/4.9.15 SPENT FUEL POOL BORON CONCENTRATION

The limitation on the Spent Fuel Pool boron concentration ensures that sufficient boron is present to maintain criticality margin during any potential spent fuel pool accident. The required boron concentration is also sufficient to ensure that no boron dilution event could reduce the spent fuel concentration below 500 ppm. The action statement requires immediately suspending movement of fuel until the boron concentration has been restored. This does not preclude movement of a fuel assembly to a safe position.