Exelon Generation®

4300 Winfield Road
Warrenville, IL 60555
630 657 2000 Office

RS-17-127

10 CFR 50.90

December 13, 2017

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

LaSalle County Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

Subject: Application to Revise Technical Specifications to Adopt TSTF-542, "Reactor Pressure Vessel Water Inventory Control"

Pursuant to 10 CFR 50.90, Exelon Generation Company, LLC (EGC) is submitting a request for an amendment to the Technical Specifications (TS) for LaSalle County Station (LSCS), Units 1 and 2.

The proposed change replaces existing TS requirements related to operations with a potential for draining the reactor vessel (OPDRVs) with new requirements on reactor pressure vessel water inventory control (RPV WIC) to protect Safety Limit 2.1.1.3. Safety Limit 2.1.1.3 requires reactor vessel water level to be greater than the top of active irradiated fuel (TAF).

Attachment 1 provides a description and assessment of the proposed changes. Attachment 2 provides the existing TS pages marked to show the proposed changes. Attachment 3 provides revised (clean) TS pages. Attachment 4 provides existing TS Bases pages marked to show the proposed changes for information only.

The proposed change has been reviewed and recommended for approval by the LSCS Plant Operations Review Committee in accordance with the EGC Quality Assurance Program.

Approval of the proposed amendment is requested by December 13, 2018. Once approved, the amendment will be implemented prior to entry into Mode 4 following refueling activities during the LSCS, Unit 2 refuel outage in spring 2019 (i.e., L2R17), which is currently scheduled to occur in February 2019.

EGC is notifying the State of Illinois of this application for a change to the TS by sending a copy of this letter and its attachments to the designated State Official in accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b).

A001
NRR

There are no regulatory commitments contained within this letter. Should you have any questions concerning this letter, please contact Mr. Mitchel A. Mathews at (630) 657-2819.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 13th day of December 2017.

Respectfully,

Patrick R. Simpson
Manager – Licensing
Exelon Generation Company, LLC

Attachments: 1. Description and Assessment
2. Proposed Technical Specifications Changes (Mark-Up)
3. Revised Technical Specifications Pages
4. Proposed Technical Specifications Bases Changes (Mark-Up)

cc: NRC Regional Administrator, Region III
NRC Senior Resident Inspector – LaSalle County Station
Illinois Emergency Management Agency – Division of Nuclear Safety

LaSalle County Station, Units 1 and 2

Renewed Facility Operating License Nos. NPF-11 and NPF-18

NRC Docket Nos. 50-373 and 50-374

ATTACHMENT 1 - DESCRIPTION AND ASSESSMENT

Subject: **Application to Revise Technical Specifications to Adopt TSTF-542, "Reactor Pressure Vessel Water Inventory Control"**

ATTACHMENT 1 - DESCRIPTION AND ASSESSMENT

1.0 DESCRIPTION

Exelon Generation Company, LLC (EGC) proposes a change to the LaSalle County Station (LSCS), Units 1 and 2 Technical Specifications (TS) requirements related to "operations with a potential for draining the reactor vessel" (OPDRVs) with new requirements on Reactor Pressure Vessel Water Inventory Control (RPV WIC) to protect Safety Limit 2.1.1.3. Safety Limit 2.1.1.3 requires reactor vessel water level to be greater than the top of active irradiated fuel.

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

EGC has reviewed the safety evaluation provided to the Technical Specifications Task Force on December 20, 2016, as well as the information provided in TSTF-542. EGC has concluded that the justifications presented in TSTF-542 and the safety evaluation prepared by the NRC are applicable to LSCS, Units 1 and 2 and justify this amendment for the incorporation of the changes to the LSCS TS.

The following LSCS, Units 1 and 2 TS reference or are related to OPDRVs and are affected by the proposed change:

1.1, Definitions
3.3.5.1, Emergency Core Cooling System (ECCS) Instrumentation
3.3.5.2, Reactor Core Isolation Cooling (RCIC) System Instrumentation
3.3.6.1, Primary Containment Isolation Instrumentation
3.3.6.2, Secondary Containment Isolation Instrumentation
3.3.7.1, Control Room Area Filtration (CRAF) System Instrumentation
3.3.8.1, Loss of Power (LOP) Instrumentation
3.3.8.2, Reactor Protection System (RPS) Electric Power Monitoring
3.5.1, ECCS – Operating
3.5.2, ECCS – Shutdown
3.5.3, RCIC System
3.6.1.3, Primary Containment Isolation Valves (PCIVs)
3.6.4.1, Secondary Containment
3.6.4.2, Secondary Containment Isolation Valves (SCIVs)
3.6.4.3, Standby Gas Treatment (SGT) System
3.7.4, Control Room Area Filtration (CRAF) System
3.7.5, Control Room Area Ventilation Air Conditioning (AC) System
3.8.2, AC Sources - Shutdown
3.8.5, DC Sources - Shutdown
3.8.8, Distribution Systems – Shutdown

2.2 Variations

EGC is proposing the following variations from the TS changes described in TSTF-542 or the applicable parts of the NRC's safety evaluation. These variations do not affect the applicability of TSTF-542 or the NRC's safety evaluation to the proposed license amendment.

- In a few instances, the LSCS TS utilize different numbering and titles than the Standard Technical Specifications (STS) on which TSTF-542 was based. Specifically, the titles for the following LSCS, Units 1 and 2 TS vary from the STS discussed in TSTF-542:

  3.3.7.1, Control Room Area Filtration (CRAF) System Instrumentation
  3.7.4, Control Room Area Filtration (CRAF) System
  3.7.5, Control Room Area Ventilation Air Conditioning (AC) System

  These differences are administrative and do not affect the conclusion that TSTF-542 is applicable to the LSCS TS.

- The LSCS TS contain a Surveillance Frequency Control Program. Therefore, the Surveillance Requirement Frequencies for Limiting Conditions for Operation (LCOs) 3.3.5.2 and 3.5.2 are "In accordance with the Surveillance Frequency Control Program."

- The LSCS TS differ from the STS on which TSTF-542 was based, but are encompassed in the TSTF-542 justification. Specifically, there are LSCS specific instrumentation functions that differ from the STS. Changes to these instrumentation functions are encompassed by the discussion in Section 3.3.4 of the TSTF-542 justification.

  - LSCS TS Table 3.3.5.1-1 contains no function similar to STS Function 3.d (i.e., Condensate Storage Tank Level–Low). This is a minor difference, due to the fact that the HPCS systems for LSCS, Units 1 and 2 are normally aligned to take suction from their unit's suppression pool, which provides the same function as the Condensate Storage Tank described in the STS (i.e., provides water source for the required HPCS system).
  - In addition to the LPCI and LPCS subsystem injection permissive functions based on Reactor Steam Dome Pressure-Low, the LSCS low pressure ECCS subsystems require an additional injection permissive signal based on their associated Injection Line Pressure-Low (i.e., proposed Table 3.3.5.2-1 Functions 1.d and 2.c). These permissive functions are utilized to protect the low pressure ECCS systems from pressures that exceed their design; therefore, their inclusion in the proposed LCO 3.3.5.2, Table 3.3.5.2-1 is essentially the same as the justification for the inclusion of the Reactor Steam Dome Pressure-Low injection permissive functions.

- LSCS, Units 1 and 2 do not currently have the capability to perform Channel Checks for the following proposed Table 3.3.5.2-1 Functions:

  1. Low Pressure Coolant Injection A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems:
     a. Reactor Steam Dome Pressure—Low (Injection Permissive)
     b. LPCS Pump Discharge Flow—Low (Bypass)
     c. LPCI Pump A Discharge Flow-Low (Bypass)
     d. LPCS and LPCI A Injection Line Pressure-Low (Injection Permissive)

  2. LPCI B and LPCI C Subsystems:
     a. Reactor Steam Dome Pressure—Low (Injection Permissive)
     b. LPCI Pump B and LPCI Pump C Discharge Flow—Low (Bypass)
     c. LPCI B and LPCI C Injection Line Pressure-Low (Injection Permissive)

  3. High Pressure Core Spray (HPCS) System:
     a. HPCS Pump Discharge Pressure-High (Bypass)
     b. HPCS System Flow Rate-Low (Bypass)

  5. Reactor Water Cleanup (RWCU) System Isolation:
     a. Reactor Vessel Water Level-Low Low, Level 2.

     The current LSCS, Units 1 and 2 TS do not include Channel Checks for these functions; therefore, no Channel Check Surveillance Requirement (SR) was added for these functions.

- LSCS LCO 3.3.8.1, "Loss of Power (LOP) Instrumentation," currently contains a footnote in Table 3.3.8.1-1 that is required to be modified along with the adoption of TSTF-542 as-proposed. Currently, Table 3.3.8.1-1, Footnote a adds applicability for Functions 1.e and 2.e, "Degraded Voltage – Time Delay, LOCA." This footnote currently adds applicability for these Functions in Modes 4 and 5, when associated ECCS subsystem(s) are required to be operable by LCO 3.5.2, "ECCS-Shutdown." The purpose of this footnote is to ensure that the Degraded Voltage Time Delay, LOCA, Function is operable in Modes 4 and 5 when the associated ECCS subsystem is required to be operable for automatic initiation. EGC's justification for the proposed modification of Table 3.3.8.1-1, Footnote a is that following the adoption of TSTF-542, no ECCS subsystems will be required to start automatically in Modes 4 and 5; therefore, these Functions will no longer be required to be operable in Modes 4 and 5.

- EGC proposes to delete a portion of the applicability for LSCS, Units 1 and 2 LCO 3.6.1.3, "Primary Containment Isolation Valves (PCIVs)," as shown in Figure 1 below, and LCO 3.6.1.3, Condition F and all of its associated Required Actions as shown in Figure 2 below. The Applicability for LCO 3.6.1.3 is: *MODES 1, 2, and 3,* and; *When associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."* These changes are justified since all OPDRV requirements are being deleted, and Mode 4 and 5 (i.e., the only non-Mode 1, 2, and 3 PCIV requirement in LCO 3.3.6.1) PCIV requirements have been relocated from LCOs 3.3.6.1 and 3.6.1.3 to the proposed LCOs 3.3.5.2 and 3.5.2. Thus, there are no longer any PCIVs required to be

operable by LCO 3.6.1.3 during OPDRVs, during Mode 4 or 5, or by LCO 3.3.6.1. These requirements are addressed by the proposed LCO 3.3.5.2 and 3.5.2 in their entirety. Following the removal of OPDRV and relocation of Mode 4 and 5 requirements as discussed above, this portion of the LCO 3.6.1.3 Applicability, and Condition F and associated Actions would never be applicable; therefore, are no longer necessary in LCO 3.6.1.3.

APPLICABILITY: MODES 1, 2, and 3~~,~~
~~When associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."~~

Figure 1: Proposed Variation That Deletes a Port of the LCO 3.6.1.3 Applicability

~~F. Required Action and associated Completion Time of Condition A, B, C, or D not met for PCIV(s) required to be OPERABLE during MODE 4 or 5.~~	~~F.1 Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs).~~ ~~OR~~ ~~F.2 Initiate action to restore valve(s) to OPERABLE status.~~	~~Immediately~~ ~~Immediately~~

Figure 2: Proposed Variation That Deletes LCO 3.6.1.3 Condition F

- The LSCS Control Room Area Filtration (CRAF) and the Control Room Area Ventilation Air Conditioning (AC) systems (i.e., LCOs 3.7.4 and 3.7.5, respectively) provide Control Room habitability functions. Changes to the TS controls on these systems is justified by the discussion in Section 3.4.3 of the TSTF-542 justification. Specifically, these LSCS specific systems provide similar Control Room habitability functions as those described in the STS, and changes to these LCOs are similarly justified.

- EGC proposes to revise Table 3.3.5.2-1, "RPV Water Inventory Control Instrumentation," as described in TSTF-542 to reflect the LSCS, Units 1 and 2 design. Specifically, Function 1, "Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems," Function 1.d, "Manual Initiation," Function 2, "LPCI B and LPCI C Subsystems," Function 2.c, "Manual Initiation," and Function 3, High Pressure Core Spray (HPCS) System, Function 3.a, "Reactor Vessel Water Level - High, Level 8," and Function 3.e, "Manual initiation," that appear in the BWR/6 Technical Specifications in TSTF-542 are not included in the LSCS Technical Specifications as proposed. This corrects an issue in TSTF-542 associated with the BWR/5 and BWR/6 emergency core cooling system (ECCS) instrumentation requirements.

The purpose of the manual initiation functions is to allow manual actuation of the ECCS subsystems required by TS 3.5.2 to mitigate a draining event. Licensed operators in the Main Control Room have the capability to manually start the LPCI, LPCS, and HPCS pumps and to manually align valves to add water inventory, if needed. This can be accomplished without the "Manual Initiation" functions, and the "Reactor Vessel Water Level-High, Level 8" function associated with HPCS. If the water level is above Level 8, and HPCS is the required ECCS subsystem, the Level 8 function can be intentionally defeated to allow the HPCS injection valve to be opened, if needed to control inventory. All actions can be performed from the Main Control Room and can be accomplished well within the one-hour minimum drain time limit specified in TS 3.5.2, Condition E.

The Reactor Vessel Water Level High, Level 8 signal (i.e., TSTF-542, Table 3.3.5.2-1, Function 3.a) prevents overfilling of the reactor vessel into the main steam lines by closing the HPCS injection valves when the water level is above the Level 8 setpoint. Therefore, if HPCS is the required ECCS subsystem and the water level is above Level 8, using the "Manual Initiation" Function 3.e will not result in inventory injection into the reactor vessel until the water level drops below the Level 8 setpoint. If the Level 8 function is retained in Table 3.3.5.2-1, the function would need to be rendered inoperable in order to inject water when the water level is above the Level 8 setpoint.

Consequently, Table 3.3.5.2-1, Functions 1.d, 2.c, 3.a, and 3.e, and TS 3.3.5.2, Condition E and associated Required Actions E.1, and E.2 as described in TSTF 542 are not needed to actuate the LPCI, LPCS, and HPCS subsystem components to mitigate a draining event, and are not included in the proposed Table 3.3.5.2-1 for LSCS. Since EGC proposes to not include the Manual Initiation logic functions in Table 3.3.5.2-1, the need for including a Surveillance Requirement to perform a Logic System Function Test for any Table 3.3.5.2 function is eliminated. Therefore, SR 3.3.5.2.3 as described in TSTF-542 is not included in the proposed LCO 3.3.5.2 for LSCS. The remaining functions and Conditions have been renumbered accordingly.

To address the changes associated with this variation, EGC also proposes that Surveillance Requirement (SR) SR 3.5.2.8 be modified to verify that the LSCS, Units 1 and 2 required ECCS injection/spray subsystem can be manually operated from the Main Control Room in accordance with the Surveillance Frequency Control Program as shown in Figure 3 below. This will ensure that the required ECCS injection/spray subsystem is Operable and can be manually aligned to provide RPV inventory makeup, if required to do so, without delay.

SR 3.5.2.8	----------NOTE---------- Vessel injection/spray may be excluded. ----------	
	Verify the required ECCS injection/spray subsystem can be manually operated.	In accordance with the Surveillance Frequency Control Program

Figure 3: Proposed SR 3.5.2.8

- EGC proposes to modify LCO 3.8.2, "AC Sources-Shutdown," SR 3.8.2.1. The purpose for SR 3.8.2.1 is to define the LCO 3.8.1, "AC Sources-Operating," SRs that are necessary for ensuring the operability of the AC sources in Modes or Conditions other than Modes 1, 2, and 3. SR 3.8.2.1 currently contains two notes. The purpose of the first note is to preclude rendering the require diesel generator inoperable for testing, and disconnecting a required offsite circuit during the performance of the listed SRs. According to the TS Bases, it is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the DG and offsite circuit are required to be operable. Note 2 relaxes requirements for performing SR 3.8.1.12 and SR 3.8.1.19 when ECCS subsystems are not required to be operable in accordance with LCO 3.5.2, "ECCS-Shutdown." The intent of Note 2 is to be consistent with other ECCS instrumentation requirements that are not required when the associated ECCS subsystem will not receive an initiation signal. Since, following the adoption of TSTF-542 as proposed, no ECCS initiation signal will be provided in Modes 4 and 5, EGC proposes to delete reference to LCO 3.5.2 from SR 3.8.2.1. This revision will continue to ensure that the required AC sources are adequately tested without unnecessarily rendering them inoperable during shutdown periods when the available AC sources are limited.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Analysis

Exelon Generation Company, LLC (EGC) requests adoption of Technical Specifications Task Force Traveler (TSTF)-542 "Reactor Pressure Vessel Water Inventory Control," which is an approved change to the Standard Technical Specifications (STS), into the LaSalle County

Station, Units 1 and 2 Technical Specifications (TS). The proposed amendment replaces the existing requirements in the TS related to "operations with a potential for draining the reactor vessel" (OPDRVs) with new requirements on Reactor Pressure Vessel Water Inventory Control (RPV WIC) to protect Safety Limit 2.1.1.3. Safety Limit 2.1.1.3 requires reactor vessel water level to be greater than the top of active irradiated fuel.

EGC has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "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 change replaces existing TS requirements related to OPDRVs with new requirements on RPV WIC that will protect Safety Limit 2.1.1.3. Draining of RPV water inventory in Mode 4 (i.e., cold shutdown) and Mode 5 (i.e., refueling) is not an accident previously evaluated and, therefore, replacing the existing TS controls to prevent or mitigate such an event with a new set of controls has no effect on any accident previously evaluated. RPV water inventory control in Mode 4 or Mode 5 is not an initiator of any accident previously evaluated. The existing OPDRV controls or the proposed RPV WIC controls are not mitigating actions assumed in any accident previously evaluated.

   The proposed change reduces the probability of an unexpected draining event (which is not a previously evaluated accident) by imposing new requirements on the limiting time in which an unexpected draining event could result in the reactor vessel water level dropping to the top of the active fuel (TAF). These controls require cognizance of the plant configuration and control of configurations with unacceptably short drain times. These requirements reduce the probability of an unexpected draining event. The current TS requirements are only mitigating actions and impose no requirements that reduce the probability of an unexpected draining event.

   The proposed change reduces the consequences of an unexpected draining event (which is not a previously evaluated accident) by requiring an Emergency Core Cooling System (ECCS) subsystem to be operable at all times in Modes 4 and 5. The current TS requirements do not require any water injection systems, ECCS or otherwise, to be operable in certain conditions in Mode 5. The change in requirement from two ECCS subsystems to one ECCS subsystem in Modes 4 and 5 does not significantly affect the consequences of an unexpected draining event because the proposed Actions ensure equipment is available within the limiting drain time that is as capable of mitigating the event as the current requirements. The proposed controls provide escalating compensatory measures to be established as calculated drain times decrease, such as verification of a second method of water injection and additional confirmations that secondary containment and/or filtration would be available if needed.

   The proposed change reduces or eliminates some requirements that were determined to be unnecessary to manage the consequences of an unexpected draining event, such as

automatic initiation of an ECCS subsystem and control room ventilation. These changes do not affect the consequences of any accident previously evaluated since a draining event in Modes 4 and 5 is not a previously evaluated accident and the requirements are not needed to adequately respond to a draining event.

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

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

   Response: No

   The proposed change replaces existing TS requirements related to OPDRVs with new requirements on RPV WIC that will protect Safety Limit 2.1.1.3. The proposed change will not alter the design function of the equipment involved. Under the proposed change, some systems that are currently required to be operable during OPDRVs would be required to be available within the limiting drain time or to be in service depending on the limiting drain time. Should those systems be unable to be placed into service, the consequences are no different than if those systems were unable to perform their function under the current TS requirements.

   The event of concern under the current requirements and the proposed change is an unexpected draining event. The proposed change does not create new failure mechanisms, malfunctions, or accident initiators that would cause a draining event or a new or different kind of accident not previously evaluated or included in the design and licensing bases.

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

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

   Response: No

   The proposed change replaces existing TS requirements related to OPDRVs with new requirements on RPV WIC. The current requirements do not have a stated safety basis and no margin of safety is established in the licensing basis. The safety basis for the new requirements is to protect Safety Limit 2.1.1.3. New requirements are added to determine the limiting time in which the RPV water inventory could drain to the top of the fuel in the reactor vessel should an unexpected draining event occur. Plant configurations that could result in lowering the RPV water level to the TAF within one hour are now prohibited. New escalating compensatory measures based on the limiting drain time replace the current controls. The proposed TS establish a safety margin by providing defense-in-depth to ensure that the Safety Limit is protected and to protect the public health and safety. While some less restrictive requirements are proposed for plant configurations with long calculated drain times, the overall effect of the change is to improve plant safety and to add safety margin.

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

Based on the above, EGC concludes that the proposed change presents no 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.

4.0 ENVIRONMENTAL EVALUATION

The proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does 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 change meets the eligibility criterion 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 change.

LaSalle County Station, Units 1 and 2

Application to Revise Technical Specifications to Adopt TSTF-542, "Reactor Pressure Vessel Water Inventory Control"

ATTACHMENT 2 - PROPOSED TECHNICAL SPECIFICATIONS CHANGES (MARK-UP)

TOC Page i	3.3.5.2-3	3.6.1.3-1
TOC Page ii	3.3.5.2-4	3.6.1.3-5
1.1-2	3.3.5.3-1	3.6.4.1-1
1.1-3	3.3.5.3-2	3.6.4.1-2
1.1-4	3.3.5.3-3	3.6.4.2-1
1.1-5	3.3.5.3-4	3.6.4.2-3
1.1-6	3.3.6.1-9	3.6.4.3-1
1.1-7	3.3.6.2-4	3.6.4.3-2
1.1-8	3.3.7.1-1	3.6.4.3-3
1.1-9	3.3.8.1-3	3.7.4-1
3.3.5.1-2	3.3.8.2-1	3.7.4-2
3.3.5.1-3	3.3.8.2-3	3.7.4-3
3.3.5.1-4	3.5.1-1	3.7.5-1
3.3.5.1-9	3.5.2-1	3.7.5-2
3.3.5.1-10	3.5.2-2	3.7.5-3
3.3.5.1-11	3.5.2-3	3.8.2-3
3.3.5.1-12	3.5.2-4	3.8.2-4
3.3.5.2-1	3.5.2-5	3.8.5-3
3.3.5.2-2	3.5.3-1	3.8.8-2

TABLE OF CONTENTS

(continued)

(continued)

1.1 Definitions (continued)

CHANNEL FUNCTIONAL TEST	A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps.
CORE ALTERATION	CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel. The following exceptions are not considered to be CORE ALTERATIONS: a. Movement of source range monitors, local power range monitors, intermediate range monitors, traversing incore probes, or special movable detectors (including undervessel replacement); and b. Control rod movement, provided there are no fuel assemblies in the associated core cell. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.
CORE OPERATING LIMITS REPORT (COLR)	The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific limits shall be determined for each reload cycle in accordance with Specification 5.6.5. Plant operation within these limits is addressed in individual Specifications.
DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/gram) that alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites;" Table E-7 of Regulatory Guide 1.109, Rev. 1, NRC, 1977; or ICRP

(continued)

1.1 Definitions

DOSE EQUIVALENT I-131 (continued)	30, Supplement to Part 1, pages 192-212, Table titled, "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity."
DRAIN TIME	*The DRAIN TIME is the time it would take for the water inventory in and above the Reactor Pressure Vessel (RPV) to drain to the top of the active fuel (TAF) seated in the RPV assuming:* *a. The water inventory above the TAF is divided by the limiting drain rate;* *b. The limiting drain rate is the larger of the drain rate through a single penetration flow path with the highest flow rate, or the sum of the drain rates through multiple penetration flow paths susceptible to a common mode failure (e.g., seismic event, loss of normal power, single human error), for all penetration flow paths below the TAF except:* *1. Penetration flow paths connected to an intact closed system, or isolated by manual or automatic valves that are locked, sealed, or otherwise secured in the closed position, blank flanges, or other devices that prevent flow of reactor coolant through the penetration flow paths;* *2. Penetration flow paths capable of being isolated by valves that will close automatically without offsite power prior to the RPV water level being equal to the TAF when actuated by RPV water level isolation instrumentation; or*

(continued)

1.1 Definitions

DRAIN TIME (continued)	*3. Penetration flow paths with isolation devices that can be closed prior to the RPV water level being equal to the TAF by a dedicated operator trained in the task, who is in continuous communication with the control room, is stationed at the controls, and is capable of closing the penetration flow path isolation devices without offsite power.* *c. The penetration flow paths required to be evaluated per paragraph b) are assumed to open instantaneously and are not subsequently isolated, and no water is assumed to be subsequently added to the RPV water inventory;* *d. No additional draining events occur; and* *e. Realistic cross-sectional areas and drain rates are used.* *A bounding DRAIN TIME may be used in lieu of a calculated value.*
EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME	The ECCS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ECCS initiation setpoint at the channel sensor until the ECCS equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and method for verification have been previously reviewed and approved by the NRC.

(continued)

1.1 Definitions (continued)

END OF CYCLE RECIRCULATION PUMP TRIP (EOC-RPT) SYSTEM RESPONSE TIME	The EOC-RPT SYSTEM RESPONSE TIME shall be that time interval from initial signal generation by the associated turbine stop valve limit switch or from when the turbine control valve hydraulic oil control oil pressure drops below the pressure switch setpoint to complete suppression of the electric arc between the fully open contacts of the recirculation pump circuit breaker. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and method for verification have been previously reviewed and approved by the NRC.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).
ISOLATION SYSTEM RESPONSE TIME	The ISOLATION SYSTEM RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its isolation initiation setpoint at the channel sensor until the isolation valves travel to their required positions. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and method for verification have been previously reviewed and approved by the NRC.

(continued)

1.1 Definitions (continued)

LEAKAGE	LEAKAGE shall be: a. Identified LEAKAGE 1. LEAKAGE into the drywell such as that from pump seals or valve packing, that is captured and conducted to a sump or collecting tank; or 2. LEAKAGE into the drywell atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; b. Unidentified LEAKAGE All LEAKAGE into the drywell that is not identified LEAKAGE; c. Total LEAKAGE Sum of the identified and unidentified LEAKAGE; and d. Pressure Boundary LEAKAGE LEAKAGE through a nonisolable fault in a Reactor Coolant System (RCS) component body, pipe wall, or vessel wall.
LINEAR HEAT GENERATION RATE (LHGR)	The LHGR shall be the heat generation rate per unit length of fuel rod. It is the integral of the heat flux over the heat transfer area associated with the unit length.
LOGIC SYSTEM FUNCTIONAL TEST	A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all logic components required for OPERABILITY of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.

(continued)

1.1 Definitions (continued)

MINIMUM CRITICAL POWER RATIO (MCPR)	The MCPR shall be the smallest critical power ratio (CPR) that exists in the core for each class of fuel. The CPR is that power in the assembly that is calculated by application of the appropriate correlation(s) to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.
OPERABLE—OPERABILITY	A system, subsystem, division, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3546 MWt.
REACTOR PROTECTION SYSTEM (RPS) RESPONSE TIME	The RPS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RPS trip setpoint at the channel sensor until de-energization of the scram pilot valve solenoids. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and method for verification have been previously reviewed and approved by the NRC.

(continued)

1.1 Definitions (continued)

SHUTDOWN MARGIN (SDM)	SDM shall be the amount of reactivity by which the reactor is subcritical or would be subcritical throughout the operating cycle assuming that: a. The reactor is xenon free; b. The moderator temperature is $\geq$ 68°F, corresponding to the most reactive state; and c. All control rods are fully inserted except for the single control rod of highest reactivity worth, which is assumed to be fully withdrawn. With control rods not capable of being fully inserted, the reactivity worth of these control rods must be accounted for in the determination of SDM.
STAGGERED TEST BASIS	A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
TURBINE BYPASS SYSTEM RESPONSE TIME	The TURBINE BYPASS SYSTEM RESPONSE TIME shall be that time interval from when the turbine bypass control unit generates a turbine bypass valve flow signal until the turbine bypass valves travel to their required positions. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

Table 1.1-1 (page 1 of 1)
MODES

MODE	TITLE	REACTOR MODE SWITCH POSITION	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	Run	NA
2	Startup	Refuel[a] or Startup/Hot Standby	NA
3	Hot Shutdown[a]	Shutdown	> 200
4	Cold Shutdown[a]	Shutdown	≤ 200
5	Refueling[b]	Shutdown or Refuel	NA

(a) All reactor vessel head closure bolts fully tensioned.

(b) One or more reactor vessel head closure bolts less than fully tensioned.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	B.1	--------NOTE~~S~~-------- ~~1. Only applicable in MODES 1, 2, and 3.~~ ~~2.~~ Only applicable for Functions 1.a, 1.b, 2.a and 2.b. ---------- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for feature(s) in both divisions
	AND		
	B.2	--------NOTE~~S~~-------- ~~1. Only applicable in MODES 1, 2, and 3.~~ ~~2.~~ Only applicable for Functions 3.a and 3.b. ---------- Declare High Pressure Core Spray (HPCS) System inoperable.	1 hour from discovery of loss of HPCS initiation capability
	AND		
	B.3	Place channel in trip.	24 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	C.1 --------NOTE~~S~~-------- ~~1. Only applicable in MODES 1, 2, and 3.~~ ~~2.~~ Only applicable for Functions 1.c and 2.c. ----------	
	Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for feature(s) in both divisions
	AND	
	C.2 Restore channel to OPERABLE status.	24 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	D.1 --------NOTES-------- ~~1. Only applicable in MODES 1, 2, and 3.~~ ~~2.~~ Only applicable for Functions 1.d, 1.e, 1.f, 1.g, 2.d, 2.e, and 2.f. ---------- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for feature(s) in both divisions
	AND	
	D.2 --------NOTE-------- Only applicable for Functions 1.d and 2.d. ---------- Declare supported feature(s) inoperable.	24 hours from discovery of loss of initiation capability for feature(s) in one division
	AND	

(continued)

Table 3.3.5.1-1 (page 1 of 4)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems					
a. Reactor Vessel Water Level–Low Low Low, Level 1	1,2,3~~,~~ ~~4(a),5(a)~~	2(~~b~~a)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -147.0 inches
b. Drywell Pressure–High	1,2,3	2(~~b~~a)	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.77 psig
c. LPCI Pump A Start–Time Delay Relay	1,2,3~~,~~ ~~4(a),5(a)~~	1	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 5.5 seconds
d. Reactor Steam Dome Pressure–Low (Injection Permissive)	1,2,3	2	D	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490 psig and ≤ 522 psig
	~~4(a),5(a)~~	~~2~~	~~B~~	~~SR 3.3.5.1.2~~ ~~SR 3.3.5.1.4~~ ~~SR 3.3.5.1.5~~ ~~SR 3.3.5.1.6~~	~~≥ 490 psig and ≤ 522 psig~~
e. LPCS Pump Discharge Flow–Low (Bypass)	1,2,3~~,~~ ~~4(a),5(a)~~	1	D	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 1240 gpm and ≤ 1835 gpm
f. LPCI Pump A Discharge Flow–Low (Bypass)	1,2,3~~,~~ ~~4(a),5(a)~~	1	D	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 1330 gpm and ≤ 2144 gpm
g. LPCS and LPCI A Injection Line Pressure–Low (Injection Permissive)	1,2,3	1 per valve	D	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490 psig and ≤ 522 psig
	~~4(a),5(a)~~	~~1 per valve~~	~~B~~	~~SR 3.3.5.1.2~~ ~~SR 3.3.5.1.4~~ ~~SR 3.3.5.1.5~~ ~~SR 3.3.5.1.6~~	~~≥ 490 psig and ≤ 522 psig~~
h. Manual Initiation	1,2,3~~,~~ ~~4(a),5(a)~~	1	C	SR 3.3.5.1.5	NA

(continued)

~~(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, "ECCS–Shutdown."~~

(~~b~~a) Also required to initiate the associated diesel generator (DG).

Table 3.3.5.1-1 (page 2 of 4)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI B and LPCI C Subsystems					
a. Reactor Vessel Water Level–Low Low Low, Level 1	1,2,3~~,~~ ~~4(a),5(a)~~	2(~~b~~a)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -147.0 inches
b. Drywell Pressure–High	1,2,3	2(~~b~~a)	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.77 psig
c. LPCI Pump B Start–Time Delay Relay	1,2,3~~,~~ ~~4(a),5(a)~~	1	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 5.5 seconds
d. Reactor Steam Dome Pressure–Low (Injection Permissive)	1,2,3	2	D	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490 psig and ≤ 522 psig
	~~4(a),5(a)~~	~~2~~	~~B~~	~~SR 3.3.5.1.2~~ ~~SR 3.3.5.1.4~~ ~~SR 3.3.5.1.5~~ ~~SR 3.3.5.1.6~~	~~≥ 490 psig and ≤ 522 psig~~
e. LPCI Pump B and LPCI Pump C Discharge Flow–Low (Bypass)	1,2,3~~,~~ ~~4(a),5(a)~~	1 per pump	D	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 1330 gpm and ≤ 2144 gpm
f. LPCI B and LPCI C Injection Line Pressure–Low (Injection Permissive)	1,2,3	1 per valve	D	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490 psig and ≤ 522 psig
	~~4(a),5(a)~~	~~1 per valve~~	~~B~~	~~SR 3.3.5.1.2~~ ~~SR 3.3.5.1.4~~ ~~SR 3.3.5.1.5~~ ~~SR 3.3.5.1.6~~	~~≥ 490 psig and ≤ 522 psig~~
g. Manual Initiation	1,2,3~~,~~ ~~4(a),5(a)~~	1	C	SR 3.3.5.1.5	NA

(continued)

~~(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2.~~

(~~b~~a) Also required to initiate the associated DG.

Table 3.3.5.1-1 (page 3 of 4)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. High Pressure Core Spray (HPCS) System					
a. Reactor Vessel Water Level–Low Low, Level 2	1,2,3~~,~~ ~~4(a),5(a)~~	4(~~b~~a)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -83 inches
b. Drywell Pressure–High	1,2,3	4(~~b~~a)	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.77 psig
c. Reactor Vessel Water Level–High, Level 8	1,2,3~~,~~ ~~4(a),5(a)~~	2	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 66.5 inches
d. HPCS Pump Discharge Pressure–High (Bypass)	1,2,3~~,~~ ~~4(a),5(a)~~	1	D	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 113.2 psig
e. HPCS System Flow Rate–Low (Bypass)	1,2,3~~,~~ ~~4(a),5(a)~~	1	D	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 1380 gpm and ≤ 2194 gpm
f. Manual Initiation	1,2,3~~,~~ ~~4(a),5(a)~~	1	C	SR 3.3.5.1.5	NA
4. Automatic Depressurization System (ADS) Trip System A					
a. Reactor Vessel Water Level–Low Low Low, Level 1	1,2(~~c~~b),3(~~c~~b)	2	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -147.0 inches
b. Drywell Pressure–High	1,2(~~c~~b),3(~~c~~b)	2	E	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.77 psig
c. ADS Initiation Timer	1,2(~~c~~b),3(~~c~~b)	1	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 118 seconds

(continued)

~~(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2.~~

(~~b~~a) Also required to initiate the associated DG.

(~~c~~b) With reactor steam dome pressure > 150 psig.

Table 3.3.5.1-1 (page 4 of 4)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. ADS Trip System A (continued)					
d. Reactor Vessel Water Level–Low, Level 3 (Confirmatory)	1,2(~~b~~),3(~~b~~)	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 11.0 inches
e. LPCS Pump Discharge Pressure–High	1,2(~~b~~),3(~~b~~)	2	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 131.2 psig and ≤ 271.0 psig
f. LPCI Pump A Discharge Pressure–High	1,2(~~b~~),3(~~b~~)	2	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 105.0 psig and ≤ 128.6 psig
g. ADS Drywell Pressure Bypass Timer	1,2(~~b~~),3(~~b~~)	2	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 598 seconds
h. Manual Initiation	1,2(~~b~~),3(~~b~~)	2	F	SR 3.3.5.1.5	NA
5. ADS Trip System B					
a. Reactor Vessel Water Level–Low Low Low, Level 1	1,2(~~b~~),3(~~b~~)	2	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -147.0 inches
b. Drywell Pressure–High	1,2(~~b~~),3(~~b~~)	2	E	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.77 psig
c. ADS Initiation Timer	1,2(~~b~~),3(~~b~~)	1	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 118 seconds
d. Reactor Vessel Water Level–Low, Level 3 (Confirmatory)	1,2(~~b~~),3(~~b~~)	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 11.0 inches
e. LPCI Pumps B & C Discharge Pressure–High	1,2(~~b~~),3(~~b~~)	2 per pump	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 105.0 psig and ≤ 128.6 psig
f. ADS Drywell Pressure Bypass Timer	1,2(~~b~~),3(~~b~~)	2	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 598 seconds
g. Manual Initiation	1,2(~~b~~),3(~~b~~)	2	F	SR 3.3.5.1.5	NA

(~~b~~) With reactor steam dome pressure > 150 psig.

3.3 INSTRUMENTATION

3.3.5.2 Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation

LCO 3.3.5.2 The RPV Water Inventory Control instrumentation for each Function in Table 3.3.5.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5.2-1.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.5.2-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	B.1 Declare associated penetration flow path(s) incapable of automatic isolation. AND B.2 Calculate DRAIN TIME.	Immediately Immediately
C. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	C.1 Place channel in trip.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	D.1 Restore channel to OPERABLE status.	24 hours
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Declare associated ECCS injection/spray subsystem inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

----------NOTE----------
Refer to Table 3.3.5.2-1 to determine which SRs apply for each ECCS Function.

SURVEILLANCE	FREQUENCY
SR 3.3.5.2.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2.2 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

Table 3.3.5.2-1 (page 1 of 2)
RPV Water Inventory Control Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems					
a. Reactor Steam Dome Pressure-Low (Injection Permissive)	4,5	1[(a)]	C	SR 3.3.5.2.2	≤ 522 psig
b. LPCS Pump Discharge Flow-Low (Bypass)	4,5	1 per pump[(a)]	D	SR 3.3.5.2.2	≥ 1240 gpm and ≤ 1835 gpm
c. LPCI Pump A Discharge Flow-Low (Bypass)	4,5	1 per pump[(a)]	D	SR 3.3.5.2.2	≥ 1330 gpm and ≤ 2144 gpm
d. LPCS and LPCI A Injection Line Pressure-Low (Injection Permissive)	4,5	1 per valve[(a)]	C	SR 3.3.5.2.2	≤ 522 psig
2. LPCI B and LPCI C Subsystems					
a. Reactor Steam Dome Pressure-Low (Injection Permissive)	4,5	1[(a)]	C	SR 3.3.5.2.2	≤ 522 psig
b. LPCI Pump B and LPCI Pump C Discharge Flow-Low (Bypass)	4,5	1 per pump[(a)]	D	SR 3.3.5.2.2	≥ 1330 gpm and ≤ 2144 gpm
c. LPCI B and LPCI C Injection Line Pressure-Low (Injection Permissive)	4,5	1 per valve[(a)]	C	SR 3.3.5.2.2	≤ 522 psig

(continued)

(a) Associated with an ECCS subsystem required to be OPERABLE by LCO 3.5.2, "RPV Water Inventory Control."

Table 3.3.5.2-1 (page 2 of 2)
RPV Water Inventory Control Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. High Pressure Core Spray (HPCS) System					
a. HPCS Pump Discharge Pressure-High (Bypass)	4, 5	1[a]	D	SR 3.3.5.2.2	≥ 113.2 psig
b. HPCS System Flow Rate-Low (Bypass)	4, 5	1[a]	D	SR 3.3.5.2.2	≥ 1380 gpm and ≤ 2194 gpm
4. RHR Shutdown Cooling System Isolation					
a. Reactor Vessel Water Level-Low, Level 3	[b]	2 in one trip system	B	SR 3.3.5.2.1 SR 3.3.5.2.2	≥ 11.0 inches
5. Reactor Water Cleanup (RWCU) System Isolation					
a. Reactor Vessel Water Level-Low Low, Level 2	[b]	2 in one trip system	B	SR 3.3.5.2.2	≥ -58.0 inches

(a) Associated with an ECCS subsystem required to be OPERABLE by LCO 3.5.2, "RPV Water Inventory Control."

(b) When automatic isolation of the associated penetration flow path(s) is credited in calculating DRAIN TIME.

3.3 INSTRUMENTATION

3.3.5.~~2~~3 Reactor Core Isolation Cooling (RCIC) System Instrumentation

LCO 3.3.5.~~2~~3 The RCIC System instrumentation for each Function in Table 3.3.5.~~2~~3-1 shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > 150 psig.

ACTIONS

NOTE
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.5.~~2~~3-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.~~2~~3-1.	B.1 Declare RCIC System inoperable. AND B.2 Place channel in trip.	1 hour from discovery of loss of RCIC initiation capability 24 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. As required by Required Action A.1 and referenced in Table 3.3.5.~~23~~-1.	C.1	Restore channel to OPERABLE status.	24 hours
D. As required by Required Action A.1 and referenced in Table 3.3.5.~~23~~-1.	D.1	--------NOTE-------- Only applicable if RCIC pump suction is not aligned to the suppression pool. ---------- Declare RCIC System inoperable.	1 hour from discovery of loss of RCIC initiation capability
	AND		
	D.2.1	Place channel in trip.	24 hours
	OR		
	D.2.2	Align RCIC pump suction to the suppression pool.	24 hours
E. Required Action and associated Completion Time of Condition B, C, or D not met.	E.1	Declare RCIC System inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Refer to Table 3.3.5.~~23~~-1 to determine which SRs apply for each RCIC Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Functions 2 and 4; and (b) for up to 6 hours for Functions 1 and 3 provided the associated Function maintains RCIC initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.5.~~23~~.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.~~23~~.2	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.~~23~~.3	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.~~23~~.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

Table 3.3.5.~~23~~-1 (page 1 of 1)
Reactor Core Isolation Cooling System Instrumentation

FUNCTION	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level–Low Low, Level 2	4	B	SR 3.3.5.~~23~~.2 SR 3.3.5.~~23~~.3 SR 3.3.5.~~23~~.4	≥ -83 inches
2. Reactor Vessel Water Level–High, Level 8	2	C	SR 3.3.5.~~23~~.1 SR 3.3.5.~~23~~.2 SR 3.3.5.~~23~~.3 SR 3.3.5.~~23~~.4	≤ 66.5 inches
3. Condensate Storage Tank Level–Low	2	D	SR 3.3.5.~~23~~.2 SR 3.3.5.~~23~~.3 SR 3.3.5.~~23~~.4	≥ 713.6 ft
4. Manual Initiation	1	C	SR 3.3.5.~~23~~.4	NA

Table 3.3.6.1-1 (page 4 of 4)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. RWCU System Isolation (continued)					
k. Reactor Vessel Water Level–Low Low, Level 2	1,2,3	2	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ -58.0 inches
l. Standby Liquid Control System Initiation	1,2,3	2(b)	I	SR 3.3.6.1.5	NA
m. Manual Initiation	1,2,3	1	G	SR 3.3.6.1.5	NA
5. RHR Shutdown Cooling System Isolation					
a. Reactor Vessel Water Level–Low, Level 3	~~3,4,5~~	~~2(c)~~	J	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ 11.0 inches
b. Reactor Vessel Pressure–High	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≤ 143 psig
c. Manual Initiation	1,2,3	1	G	SR 3.3.6.1.5	NA

(b) Only inputs into one of two trip systems.

~~(c) Only one trip system required in MODES 4 and 5 with RHR Shutdown Cooling System integrity maintained.~~

Table 3.3.6.2-1 (page 1 of 1)
Secondary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES AND OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level–Low Low, Level 2	1,2,3~~,(a)~~	2	SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≥ -58.0 inches
2. Drywell Pressure–High	1,2,3	2	SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≤ 1.93 psig
3. Reactor Building Ventilation Exhaust Plenum Radiation–High	1,2,3, (a)~~,(b)~~	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≤ 42.0 mR/hr
4. Fuel Pool Ventilation Exhaust Radiation–High	1,2,3, (a)~~,(b)~~	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≤ 42.0 mR/hr
5. Manual Initiation	1,2,3, (a)~~,(b)~~	1	SR 3.3.6.2.4	NA

~~(a) During operations with a potential for draining the reactor vessel.~~

(~~b~~*a*) During CORE ALTERATIONS, and during movement of irradiated fuel assemblies in the secondary containment.

3.3 INSTRUMENTATION

3.3.7.1 Control Room Area Filtration (CRAF) System Instrumentation

LCO 3.3.7.1 Two channels per trip system for the Control Room Air Intake Radiation–High Function shall be OPERABLE for each CRAF subsystem.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS~~,~~
~~During operations with a potential for draining the reactor vessel (OPDRVs)~~.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Declare associated CRAF subsystem inoperable.	1 hour from discovery of loss of CRAF subsystem initiation capability
	AND	
	A.2 Place channel in trip.	6 hours

(continued)

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER DIVISION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Divisions 1, 2 and Opposite Unit Division 2 – 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage – 4.16 kV Basis	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 2870 V and ≤ 3127 V
b. Loss of Voltage – Time Delay	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 3.1 seconds and ≤ 10.9 seconds
c. Degraded Voltage – 4.16 kV Basis	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 3814 V and ≤ 3900 V
d. Degraded Voltage – Time Delay, No LOCA	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 270.1 seconds and ≤ 329.9 seconds
e. Degraded Voltage – Time Delay, LOCA	2(a)(b)	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 9.4 seconds and ≤ 10.9 seconds
2. Division 3-4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage – 4.16 kV Basis	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 2725 V and ≤ 3172 V
b. Loss of Voltage – Time Delay	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≤ 10.9 seconds
c. Degraded Voltage – 4.16 kV Basis	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 3814 V and ≤ 3900 V
d. Degraded Voltage – Time Delay, No LOCA	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 270.1 seconds and ≤ 329.9 seconds
e. Degraded Voltage – Time Delay, LOCA	2(a)(b)	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 9.4 seconds and ≤ 10.9 seconds

(a) In MODES 4 and 5, ~~when associated ECCS subsystem(s) are~~*not* required to be OPERABLE.~~ per LCO 3.5.2, "ECCS Shutdown."~~

(b) With no fuel in the reactor vessel, not required to be OPERABLE.

3.3 INSTRUMENTATION

3.3.8.2 Reactor Protection System (RPS) Electric Power Monitoring

LCO 3.3.8.2 Two RPS electric power monitoring assemblies shall be OPERABLE for each inservice RPS motor generator set or alternate power supply.

APPLICABILITY: MODES 1, 2, and 3,
MODES 4 and 5 with residual heat removal (RHR) shutdown cooling (SDC) isolation valves open,
MODE 5, with any control rod withdrawn from a core cell containing one or more fuel assemblies,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS~~,~~
~~During operations with a potential for draining the reactor vessel (OPDRVs)~~.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both inservice power supplies with one electric power monitoring assembly inoperable.	A.1 Remove associated inservice power supply(s) from service.	72 hours
B. One or both inservice power supplies with both electric power monitoring assemblies inoperable.	B.1 Remove associated inservice power supply(s) from service.	1 hour

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and associated Completion Time of Condition A or B not met during movement of irradiated fuel assemblies in the secondary containment~~,~~ *or* during CORE ALTERATIONS~~, or during OPDRVs~~.	F.1.1 Isolate the associated secondary containment penetration flow path(s).	Immediately
	OR	
	F.1.2 Declare the associated secondary containment isolation valve(s) inoperable.	Immediately
	AND	
	F.2.1 Place the associated standby gas treatment (SGT) subsystem(s) in operation.	Immediately
	OR	
	F.2.2 Declare associated SGT subsystem(s) inoperable.	Immediately

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), *REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL*, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.1 ECCS–Operating

LCO 3.5.1 Each ECCS injection/spray subsystem and the Automatic Depressurization System (ADS) function of six safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except ADS valves are not required to be OPERABLE with reactor steam dome pressure ≤ 150 psig.

ACTIONS

----------NOTE----------
LCO 3.0.4.b is not applicable to HPCS.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One low pressure ECCS injection/spray subsystem inoperable.	A.1 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	7 days

(continued)

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), *REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL*, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.2 *RPV Water Inventory Control*~~ECCS Shutdown~~

LCO 3.5.2 *DRAIN TIME of RPV water inventory to the top of active fuel (TAF) shall be ≥ 36 hours.*

AND

One~~Two~~ ECCS injection/spray subsystem~~s~~ shall be OPERABLE.

---NOTE---
~~One~~ *A L*~~l~~ow *P*~~p~~ressure *C*~~c~~oolant *I*~~i~~njection (LPCI) subsystem may be considered OPERABLE during alignment and operation for decay heat removal, if capable of being manually realigned and not otherwise inoperable.

APPLICABILITY: MODE*S* 4 *and*~~,~~
~~MODE 5 except with the spent fuel storage pool gates removed and water level ≥ 22 ft over the top of the reactor pressure vessel flange~~.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~One r~~*R*equired ECCS injection/spray subsystem inoperable.	A.1 Restore required ECCS injection/spray subsystem to OPERABLE status.	4 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action to ~~suspend operations with a potential for draining the reactor vessel (OPDRVs)~~*establish a method of water injection capable of operating without offsite power*.	Immediately

(continued)

ACTIONS *(continued)*

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~C. Two required ECCS injection/spray subsystems inoperable.~~	~~C.1 Initiate action to suspend OPDRVs.~~ ~~AND~~ ~~C.2 Restore one required ECCS injection/spray subsystem to OPERABLE status.~~	~~Immediately~~ ~~4 hours~~
C. DRAIN TIME < 36 hours and ≥ 8 hours	*C.1 Verify secondary containment boundary is capable of being established in less than the DRAIN TIME.* *AND* *C.2 Verify each secondary containment penetration flow path is capable of being isolated in less than the DRAIN TIME.* *AND* *C.3 Verify one standby gas treatment subsystem is capable of being placed in operation in less than the DRAIN TIME.*	*4 hours* *4 hours* *4 hours*

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. *DRAIN TIME < 8 hours.* ~~Required Action C.2 and associated Completion Time not met.~~	D.1 -------*NOTE*-------- *Required ECCS injection/spray subsystem or additional method of water injection shall be capable of operating without offsite electrical power.* ---------- Initiate action to *establish an additional method of water injection with water sources capable of maintaining RPV water level > TAF for ≥ 36 hours.* ~~restore secondary containment to OPERABLE status.~~	Immediately
	AND	
	D.2 Initiate action to *establish secondary containment boundary* ~~restore one standby gas treatment subsystem to OPERABLE status~~.	Immediately
	AND	
	D.3 Initiate action to isolate each secondary containment penetration flow path or verify it can be manually isolated from the control room.	Immediately
	AND	
	D.~~3~~4 Initiate action to *verify one standby gas treatment subsystem is capable of being placed in operation.* ~~restore isolation capability in each required secondary containment penetration flow path not isolated.~~	*Immediately*

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition C or D not met. *OR* *DRAIN TIME < 1 hour.*	*E.1 Initiate action to restore DRAIN TIME to ≥ 36 hours.*	*Immediately*

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	*Verify DRAIN TIME ≥ 36 hours.*	*In accordance with the Surveillance Frequency Control Program.*
SR 3.5.2.~~2~~*1*	Verify, for ~~each~~ *a* required low pressure ECCS injection/spray subsystem, the suppression pool water level is ≥ -12 ft 7 in.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.~~3~~*2*	Verify, for ~~the~~ *a* required High Pressure Core Spray (HPCS) System, the suppression pool water level is ≥ -12 ft 7 in.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.~~4~~*3*	Verify, for ~~each~~ *the* required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.2.~~5~~4	----------NOTE---------- Not required to be met for system vent flow paths opened under administrative control. ---------- Verify, *for the*~~each~~ required ECCS injection/spray subsystem, *each* manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.~~6~~5	*Operate the required ECCS injection/spray subsystem through the recirculation line for ≥ 10 minutes.* ~~Verify each required ECCS pump develops the specified flow rate against the specified test line pressure.~~ ~~TEST LINE~~ ~~SYSTEM FLOW RATE PRESSURE~~ ~~LPCS ≥ 6350 gpm ≥ 290 psig~~ ~~LPCI ≥ 7200 gpm ≥ 130 psig~~ ~~HPCS (Unit 1) ≥ 6250 gpm ≥ 370 psig~~ ~~HPCS (Unit 2) ≥ 6200 gpm ≥ 330 psig~~	In accordance with the ~~INSERVICE TESTING PROGRAM~~*Surveillance Frequency Control Program*
SR 3.5.2.7	*Verify each valve credited for automatically isolating a penetration flow path actuates to the isolation position on an actual or simulated isolation signal.*	*In accordance with the Surveillance Frequency Control Program*
SR 3.5.2.~~8~~6	----------NOTE---------- Vessel injection/spray may be excluded. ---------- Verify ~~each~~ *the* required ECCS injection/spray subsystem ~~actuates on an actual or simulated automatic initiation signal~~*can be manually operated*.	*In accordance with the Surveillance Frequency Control Program* ~~24 months~~

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), *REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL*, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.3 RCIC System

LCO 3.5.3 The RCIC System shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > 150 psig.

ACTIONS

----------NOTE----------
LCO 3.0.4.b is not applicable to RCIC.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. RCIC System inoperable.	A.1	Verify by administrative means High Pressure Core Spray System is OPERABLE.	Immediately
	AND		
	A.2	Restore RCIC System to OPERABLE status.	14 days
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Reduce reactor steam dome pressure to ≤ 150 psig.	36 hours

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Primary Containment Isolation Valves (PCIVs)

LCO 3.6.1.3 Each PCIV shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3~~,~~
~~When associated instrumentation is required to be OPERABLE per LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."~~

ACTIONS

---------- NOTES ----------
1. Penetration flow paths may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by PCIVs.

4. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment," when PCIV leakage results in exceeding overall containment leakage rate acceptance criteria.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ---------NOTE--------- Only applicable to penetration flow paths with two or more PCIVs. ---------- One or more penetration flow paths with one PCIV inoperable for reasons other than Condition D.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	4 hours except for main steam line AND 8 hours for main steam line (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, C, or D not met in MODE 1, 2, or 3.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	12 hours 36 hours
~~F. Required Action and associated Completion Time of Condition A, B, C, or D not met for PCIV(s) required to be OPERABLE during MODE 4 or 5.~~	~~F.1 Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs).~~ ~~OR~~ ~~F.2 Initiate action to restore valve(s) to OPERABLE status.~~	~~Immediately~~ ~~Immediately~~

3.6 CONTAINMENT SYSTEMS

3.6.4.1 Secondary Containment

LCO 3.6.4.1 The secondary containment shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS~~,~~
~~During operations with a potential for draining the reactor vessel (OPDRVs)~~.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Secondary containment inoperable in MODE 1, 2, or 3.	A.1 Restore secondary containment to OPERABLE status.	4 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	12 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Secondary containment inoperable during movement of irradiated fuel assemblies in the secondary containment~~,~~ *or* during CORE ALTERATIONS~~, or during OPDRVs~~.	C.1 --------NOTE-------- LCO 3.0.3 is not applicable. ---------- Suspend movement of irradiated fuel assemblies in the secondary containment.	Immediately
	AND	
	C.2 Suspend CORE ALTERATIONS.	Immediately
	~~AND~~	
	~~C.3 Initiate action to suspend OPDRVs.~~	~~Immediately~~

3.6 CONTAINMENT SYSTEMS

3.6.4.2 Secondary Containment Isolation Valves (SCIVs)

LCO 3.6.4.2 Each SCIV shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS~~,~~
~~During operations with a potential for draining the reactor vessel (OPDRVs)~~.

ACTIONS

----------NOTES----------
1. Penetration flow paths may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by SCIVs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more penetration flow paths with one SCIV inoperable.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND	8 hours (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A or B not met during movement of irradiated fuel assemblies in the secondary containment~~,~~ *or* during CORE ALTERATIONS~~, or during OPDRVs~~.	D.1 --------NOTE-------- LCO 3.0.3 is not applicable. ---------- Suspend movement of irradiated fuel assemblies in the secondary containment.	Immediately
	AND	
	D.2 Suspend CORE ALTERATIONS.	Immediately
	~~AND~~	
	~~D.3 Initiate action to suspend OPDRVs.~~	~~Immediately~~

3.6 CONTAINMENT SYSTEMS

3.6.4.3 Standby Gas Treatment (SGT) System

LCO 3.6.4.3 Two SGT subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS~~,~~
~~During operations with a potential for draining the reactor vessel (OPDRVs)~~.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SGT subsystem inoperable.	A.1 Restore SGT subsystem to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1 Be in MODE 3.	12 hours
C. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the secondary containment~~,~~ *or* during CORE ALTERATIONS~~, or during OPDRVs~~.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- C.1 Place OPERABLE SGT subsystem in operation. OR	Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND	Immediately
	C.2.2 Suspend CORE ALTERATIONS. ~~AND~~	Immediately
	~~C.2.3 Initiate action to suspend OPDRVs.~~	~~Immediately~~
D. Two SGT subsystems inoperable in MODE 1, 2, or 3.	D.1 Be in MODE 3	12 hours
E. Two SGT subsystems inoperable during movement of irradiated fuel assemblies in the secondary containment, *or* during CORE ALTERATIONS~~, or during OPDRVs~~.	E.1 --------NOTE-------- LCO 3.0.3 is not applicable. ---------- Suspend movement of irradiated fuel assemblies in the secondary containment. AND	Immediately
	E.2 Suspend CORE ALTERATIONS. ~~AND~~	Immediately
	~~E.3 Initiate action to suspend OPDRVs.~~	~~Immediately~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for ≥ 15 continuous minutes with heaters operating.	In accordance with the Surveillance Frequency Control Program
SR 3.6.4.3.2	Perform required SGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.4.3.3	Verify each SGT subsystem actuates on an actual or simulated initiation signal.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.4 Control Room Area Filtration (CRAF) System

LCO 3.7.4 Two CRAF subsystems shall be OPERABLE.

NOTE
The control room envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS~~,~~
~~During operations with a potential for draining the reactor vessel (OPDRVs)~~.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CRAF subsystem inoperable for reasons other than Condition B.	A.1 Restore CRAF subsystem to OPERABLE status.	7 days
B. One or more CRAF subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	B.1 Initiate action to implement mitigating actions. AND	Immediately
	B.2 Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits. AND	24 hours
	B.3 Restore CRE boundary to OPERABLE status.	90 days

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and Associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 Be in MODE 3.	12 hours
D. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the secondary containment~~,~~ *or* during CORE ALTERATIONS~~, or during OPDRVs~~.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- D.1 Place OPERABLE CRAF subsystem in pressurization mode. OR D.2.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND D.2.2 Suspend CORE ALTERATIONS. ~~AND~~ ~~D.2.3 Initiate action to suspend OPDRVs.~~	 Immediately Immediately Immediately ~~Immediately~~
E. Two CRAF subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.	E.1 Be in MODE 3.	12 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two CRAF subsystems inoperable during movement of irradiated fuel assemblies in the secondary containment, *or* during CORE ALTERATIONS~~, or during OPDRVs~~. OR One or more CRAF subsystems inoperable due to inoperable CRE boundary during movement of irradiated fuel assemblies in the secondary containment, *or* during CORE ALTERATIONS~~, or during OPDRVS~~.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- F.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND F.2 Suspend CORE ALTERATIONS. ~~AND~~ ~~F.3 Initiate action to suspend OPDRVs.~~	Immediately Immediately ~~Immediately~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Operate each CRAF subsystem for ≥ 15 continuous minutes with the heaters operating.	In accordance with the Surveillance Frequency Control Program

(continued)

3.7 PLANT SYSTEMS

3.7.5 Control Room Area Ventilation Air Conditioning (AC) System

LCO 3.7.5 Two control room area ventilation AC subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS~~,~~
~~During operations with a potential for draining the reactor vessel (OPDRVs)~~.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One control room area ventilation AC subsystem inoperable.	A.1 Restore control room area ventilation AC subsystem to OPERABLE status.	30 days
B. Two control room area ventilation AC subsystems inoperable.	B.1 Verify control room area temperature < 90°F. AND B.2 Restore one control room area ventilation AC subsystem to OPERABLE status.	Once per 4 hours 72 hours
C. Required Action and Associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 Be in MODE 3.	12 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the secondary containment, *or* during CORE ALTERATIONS~~, or during OPDRVs~~.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- D.1 Place OPERABLE control room area ventilation AC subsystem in operation. OR D.2.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND D.2.2 Suspend CORE ALTERATIONS. ~~AND~~ ~~D.2.3 Initiate action to suspend OPDRVs.~~	Immediately Immediately Immediately ~~Immediately~~

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition B not met during movement of irradiated fuel assemblies in the secondary containment, *or* during CORE ALTERATIONS~~, or during OPDRVs~~.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- E.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND E.2 Suspend CORE ALTERATIONS. ~~AND~~ ~~E.3 Initiate action to suspend OPDRVs.~~	Immediately Immediately ~~Immediately~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Monitor control room and auxiliary electric equipment room temperatures.	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.2	Verify correct breaker alignment and indicated power are available to the control room area ventilation AC subsystems.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	~~A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel (OPDRVs).~~	~~Immediately~~
	~~AND~~	
	A.2.~~3~~4 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately
B. Required DG of LCO Item b. inoperable.	B.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	B.2 Suspend movement of irradiated fuel assemblies in secondary containment.	Immediately
	~~AND~~	
	~~B.3 Initiate action to suspend OPDRVs~~	~~Immediately~~
	AND	
	B.~~3~~4 Initiate action to restore required DG to OPERABLE status.	Immediately
C. Required DG of LCO Item c. inoperable.	C.1 Declare High Pressure Core Spray System inoperable.	72 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required offsite circuit or DG of LCO Item d. inoperable.	D.1 Declare associated standby gas treatment subsystem, control room area filtration subsystem, and control room area ventilation air conditioning subsystem inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.2.1	----------NOTES---------- 1. The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9 through SR 3.8.1.11, SR 3.8.1.13 through SR 3.8.1.16, SR 3.8.1.18, and SR 3.8.1.19. 2. SR 3.8.1.12 and SR 3.8.1.19 are not required to be met. ~~when associated ECCS subsystem(s) are not required to be OPERABLE per LCO 3.5.2, "ECCS-Shutdown."~~ ----------	
	For AC sources required to be OPERABLE, the SRs of Specification 3.8.1, except SR 3.8.1.8, SR 3.8.1.17, and SR 3.8.1.20, are applicable.	In accordance with applicable SRs

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more required DC electrical power subsystems inoperable for reasons other than Condition A. OR Required Action and Completion Time of Condition A not met.	B.1 Declare affected required feature(s) inoperable. OR B.2.1 Suspend CORE ALTERATIONS. AND B.2.2 Suspend movement of irradiated fuel assemblies in the secondary containment. ~~AND~~ ~~B.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.~~ AND B.2.34 Initiate action to restore required DC electrical power subsystems to OPERABLE status.	Immediately Immediately Immediately ~~Immediately~~ Immediately

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	~~A.2.3 Initiate action to suspend operations with a potential for draining the reactor vessel.~~ ~~AND~~ A.2.~~3~~4 Initiate actions to restore required AC and DC electrical power distribution subsystems to OPERABLE status. AND A.2.~~4~~5 Declare associated required shutdown cooling subsystem(s) inoperable and not in operation.	~~Immediately~~ Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.8.1	Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	In accordance with the Surveillance Frequency Control Program

LaSalle County Station, Units 1 and 2

Application to Revise Technical Specifications to Adopt TSTF-542, "Reactor Pressure Vessel Water Inventory Control"

ATTACHMENT 3 - REVISED TECHNICAL SPECIFICATIONS PAGES

TABLE OF CONTENTS

(continued)

(continued)

1.1 Definitions (continued)

CHANNEL FUNCTIONAL TEST	A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps.
CORE ALTERATION	CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel. The following exceptions are not considered to be CORE ALTERATIONS: a. Movement of source range monitors, local power range monitors, intermediate range monitors, traversing incore probes, or special movable detectors (including undervessel replacement); and b. Control rod movement, provided there are no fuel assemblies in the associated core cell. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.
CORE OPERATING LIMITS REPORT (COLR)	The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific limits shall be determined for each reload cycle in accordance with Specification 5.6.5. Plant operation within these limits is addressed in individual Specifications.
DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/gram) that alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites;" Table E-7 of Regulatory Guide 1.109, Rev. 1, NRC, 1977; or ICRP

(continued)

1.1 Definitions

DOSE EQUIVALENT I-131 (continued)	30, Supplement to Part 1, pages 192-212, Table titled, "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity."
DRAIN TIME	The DRAIN TIME is the time it would take for the water inventory in and above the Reactor Pressure Vessel (RPV) to drain to the top of the active fuel (TAF) seated in the RPV assuming: a. The water inventory above the TAF is divided by the limiting drain rate; b. The limiting drain rate is the larger of the drain rate through a single penetration flow path with the highest flow rate, or the sum of the drain rates through multiple penetration flow paths susceptible to a common mode failure (e.g., seismic event, loss of normal power, single human error), for all penetration flow paths below the TAF except: 1. Penetration flow paths connected to an intact closed system, or isolated by manual or automatic valves that are locked, sealed, or otherwise secured in the closed position, blank flanges, or other devices that prevent flow of reactor coolant through the penetration flow paths; 2. Penetration flow paths capable of being isolated by valves that will close automatically without offsite power prior to the RPV water level being equal to the TAF when actuated by RPV water level isolation instrumentation; or

(continued)

1.1 Definitions

DRAIN TIME (continued)	3. Penetration flow paths with isolation devices that can be closed prior to the RPV water level being equal to the TAF by a dedicated operator trained in the task, who is in continuous communication with the control room, is stationed at the controls, and is capable of closing the penetration flow path isolation devices without offsite power. c. The penetration flow paths required to be evaluated per paragraph b) are assumed to open instantaneously and are not subsequently isolated, and no water is assumed to be subsequently added to the RPV water inventory; d. No additional draining events occur; and e. Realistic cross-sectional areas and drain rates are used. A bounding DRAIN TIME may be used in lieu of a calculated value.
EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME	The ECCS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ECCS initiation setpoint at the channel sensor until the ECCS equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and method for verification have been previously reviewed and approved by the NRC.

(continued)

1.1 Definitions (continued)

END OF CYCLE RECIRCULATION PUMP TRIP (EOC-RPT) SYSTEM RESPONSE TIME	The EOC-RPT SYSTEM RESPONSE TIME shall be that time interval from initial signal generation by the associated turbine stop valve limit switch or from when the turbine control valve hydraulic oil control oil pressure drops below the pressure switch setpoint to complete suppression of the electric arc between the fully open contacts of the recirculation pump circuit breaker. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and method for verification have been previously reviewed and approved by the NRC.
INSERVICE TESTING PROGRAM	The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).
ISOLATION SYSTEM RESPONSE TIME	The ISOLATION SYSTEM RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its isolation initiation setpoint at the channel sensor until the isolation valves travel to their required positions. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and method for verification have been previously reviewed and approved by the NRC.

(continued)

1.1 Definitions (continued)

LEAKAGE	LEAKAGE shall be: a. Identified LEAKAGE 1. LEAKAGE into the drywell such as that from pump seals or valve packing, that is captured and conducted to a sump or collecting tank; or 2. LEAKAGE into the drywell atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; b. Unidentified LEAKAGE All LEAKAGE into the drywell that is not identified LEAKAGE; c. Total LEAKAGE Sum of the identified and unidentified LEAKAGE; and d. Pressure Boundary LEAKAGE LEAKAGE through a nonisolable fault in a Reactor Coolant System (RCS) component body, pipe wall, or vessel wall.
LINEAR HEAT GENERATION RATE (LHGR)	The LHGR shall be the heat generation rate per unit length of fuel rod. It is the integral of the heat flux over the heat transfer area associated with the unit length.
LOGIC SYSTEM FUNCTIONAL TEST	A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all logic components required for OPERABILITY of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.

(continued)

1.1 Definitions (continued)

MINIMUM CRITICAL POWER RATIO (MCPR)	The MCPR shall be the smallest critical power ratio (CPR) that exists in the core for each class of fuel. The CPR is that power in the assembly that is calculated by application of the appropriate correlation(s) to cause some point in the assembly to experience boiling transition, divided by the actual assembly operating power.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.
OPERABLE—OPERABILITY	A system, subsystem, division, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3546 MWt.
REACTOR PROTECTION SYSTEM (RPS) RESPONSE TIME	The RPS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RPS trip setpoint at the channel sensor until de-energization of the scram pilot valve solenoids. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and method for verification have been previously reviewed and approved by the NRC.

(continued)

1.1 Definitions (continued)

SHUTDOWN MARGIN (SDM)	SDM shall be the amount of reactivity by which the reactor is subcritical or would be subcritical throughout the operating cycle assuming that: a. The reactor is xenon free; b. The moderator temperature is $\geq$ 68°F, corresponding to the most reactive state; and c. All control rods are fully inserted except for the single control rod of highest reactivity worth, which is assumed to be fully withdrawn. With control rods not capable of being fully inserted, the reactivity worth of these control rods must be accounted for in the determination of SDM.
STAGGERED TEST BASIS	A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
TURBINE BYPASS SYSTEM RESPONSE TIME	The TURBINE BYPASS SYSTEM RESPONSE TIME shall be that time interval from when the turbine bypass control unit generates a turbine bypass valve flow signal until the turbine bypass valves travel to their required positions. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

Table 1.1-1 (page 1 of 1)
MODES

MODE	TITLE	REACTOR MODE SWITCH POSITION	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	Run	NA
2	Startup	Refuel[a] or Startup/Hot Standby	NA
3	Hot Shutdown[a]	Shutdown	> 200
4	Cold Shutdown[a]	Shutdown	≤ 200
5	Refueling[b]	Shutdown or Refuel	NA

(a) All reactor vessel head closure bolts fully tensioned.

(b) One or more reactor vessel head closure bolts less than fully tensioned.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	B.1	--------NOTE-------- Only applicable for Functions 1.a, 1.b, 2.a and 2.b. ---------- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for feature(s) in both divisions
	AND		
	B.2	--------NOTE-------- Only applicable for Functions 3.a and 3.b. ---------- Declare High Pressure Core Spray (HPCS) System inoperable.	1 hour from discovery of loss of HPCS initiation capability
	AND		
	B.3	Place channel in trip.	24 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	C.1 --------NOTE-------- Only applicable for Functions 1.c and 2.c. ---------- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for feature(s) in both divisions
	AND	
	C.2 Restore channel to OPERABLE status.	24 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	D.1 --------NOTE-------- Only applicable for Functions 1.d, 1.e, 1.f, 1.g, 2.d, 2.e, and 2.f. ---------- Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	1 hour from discovery of loss of initiation capability for feature(s) in both divisions
	AND	
	D.2 --------NOTE--------- Only applicable for Functions 1.d and 2.d. ---------- Declare supported feature(s) inoperable.	24 hours from discovery of loss of initiation capability for feature(s) in one division
	AND	

(continued)

Table 3.3.5.1-1 (page 1 of 4)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems					
a. Reactor Vessel Water Level–Low Low Low, Level 1	1,2,3	2[a]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -147.0 inches
b. Drywell Pressure–High	1,2,3	2[a]	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.77 psig
c. LPCI Pump A Start–Time Delay Relay	1,2,3	1	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 5.5 seconds
d. Reactor Steam Dome Pressure–Low (Injection Permissive)	1,2,3	2	D	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490 psig and ≤ 522 psig
e. LPCS Pump Discharge Flow–Low (Bypass)	1,2,3	1	D	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 1240 gpm and ≤ 1835 gpm
f. LPCI Pump A Discharge Flow–Low (Bypass)	1,2,3	1	D	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 1330 gpm and ≤ 2144 gpm
g. LPCS and LPCI A Injection Line Pressure–Low (Injection Permissive)	1,2,3	1 per valve	D	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490 psig and ≤ 522 psig
h. Manual Initiation	1,2,3	1	C	SR 3.3.5.1.5	NA

(continued)

(a) Also required to initiate the associated diesel generator (DG).

Table 3.3.5.1-1 (page 2 of 4)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI B and LPCI C Subsystems					
a. Reactor Vessel Water Level–Low Low Low, Level 1	1,2,3	2[(a)]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -147.0 inches
b. Drywell Pressure–High	1,2,3	2[(a)]	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.77 psig
c. LPCI Pump B Start–Time Delay Relay	1,2,3	1	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 5.5 seconds
d. Reactor Steam Dome Pressure–Low (Injection Permissive)	1,2,3	2	D	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490 psig and ≤ 522 psig
e. LPCI Pump B and LPCI Pump C Discharge Flow–Low (Bypass)	1,2,3	1 per pump	D	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 1330 gpm and ≤ 2144 gpm
f. LPCI B and LPCI C Injection Line Pressure–Low (Injection Permissive)	1,2,3	1 per valve	D	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490 psig and ≤ 522 psig
g. Manual Initiation	1,2,3	1	C	SR 3.3.5.1.5	NA

(continued)

(a) Also required to initiate the associated DG.

Table 3.3.5.1-1 (page 3 of 4)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. High Pressure Core Spray (HPCS) System					
a. Reactor Vessel Water Level–Low Low, Level 2	1,2,3	4[a]	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ -83 inches
b. Drywell Pressure–High	1,2,3	4[a]	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.77 psig
c. Reactor Vessel Water Level–High, Level 8	1,2,3	2	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 66.5 inches
d. HPCS Pump Discharge Pressure–High (Bypass)	1,2,3	1	D	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 113.2 psig
e. HPCS System Flow Rate–Low (Bypass)	1,2,3	1	D	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5	≥ 1380 gpm and ≤ 2194 gpm
f. Manual Initiation	1,2,3	1	C	SR 3.3.5.1.5	NA
4. Automatic Depressurization System (ADS) Trip System A					
a. Reactor Vessel Water Level–Low Low Low, Level 1	1,2[b],3[b]	2	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -147.0 inches
b. Drywell Pressure–High	1,2[b],3[b]	2	E	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.77 psig
c. ADS Initiation Timer	1,2[b],3[b]	1	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 118 seconds

(continued)

(a) Also required to initiate the associated DG.

(b) With reactor steam dome pressure > 150 psig.

Table 3.3.5.1-1 (page 4 of 4)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. ADS Trip System A (continued)					
d. Reactor Vessel Water Level–Low, Level 3 (Confirmatory)	1,2[b],3[b]	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 11.0 inches
e. LPCS Pump Discharge Pressure–High	1,2[b],3[b]	2	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 131.2 psig and ≤ 271.0 psig
f. LPCI Pump A Discharge Pressure–High	1,2[b],3[b]	2	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 105.0 psig and ≤ 128.6 psig
g. ADS Drywell Pressure Bypass Timer	1,2[b],3[b]	2	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 598 seconds
h. Manual Initiation	1,2[b],3[b]	2	F	SR 3.3.5.1.5	NA
5. ADS Trip System B					
a. Reactor Vessel Water Level–Low Low Low, Level 1	1,2[b],3[b]	2	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ -147.0 inches
b. Drywell Pressure–High	1,2[b],3[b]	2	E	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 1.77 psig
c. ADS Initiation Timer	1,2[b],3[b]	1	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 118 seconds
d. Reactor Vessel Water Level–Low, Level 3 (Confirmatory)	1,2[b],3[b]	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 11.0 inches
e. LPCI Pumps B & C Discharge Pressure–High	1,2[b],3[b]	2 per pump	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≥ 105.0 psig and ≤ 128.6 psig
f. ADS Drywell Pressure Bypass Timer	1,2[b],3[b]	2	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.5	≤ 598 seconds
g. Manual Initiation	1,2[b],3[b]	2	F	SR 3.3.5.1.5	NA

(b) With reactor steam dome pressure > 150 psig.

3.3 INSTRUMENTATION

3.3.5.2 Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation

LCO 3.3.5.2 The RPV Water Inventory Control instrumentation for each Function in Table 3.3.5.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5.2-1.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.5.2-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	B.1 Declare associated penetration flow path(s) incapable of automatic isolation. AND B.2 Calculate DRAIN TIME.	Immediately Immediately
C. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	C.1 Place channel in trip.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	D.1 Restore channel to OPERABLE status.	24 hours
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Declare associated ECCS injection/spray subsystem inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

----------NOTE----------
Refer to Table 3.3.5.2-1 to determine which SRs apply for each ECCS Function.

SURVEILLANCE	FREQUENCY
SR 3.3.5.2.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.2.2 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

Table 3.3.5.2-1 (page 1 of 2)
RPV Water Inventory Control Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems					
a. Reactor Steam Dome Pressure-Low (Injection Permissive)	4,5	1[(a)]	C	SR 3.3.5.2.2	≤ 522 psig
b. LPCS Pump Discharge Flow-Low (Bypass)	4,5	1 per pump[(a)]	D	SR 3.3.5.2.2	≥ 1240 gpm and ≤ 1835 gpm
c. LPCI Pump A Discharge Flow-Low (Bypass)	4,5	1 per pump[(a)]	D	SR 3.3.5.2.2	≥ 1330 gpm and ≤ 2144 gpm
d. LPCS and LPCI A Injection Line Pressure-Low (Injection Permissive)	4,5	1 per valve[(a)]	C	SR 3.3.5.2.2	≤ 522 psig
2. LPCI B and LPCI C Subsystems					
a. Reactor Steam Dome Pressure-Low (Injection Permissive)	4,5	1[(a)]	C	SR 3.3.5.2.2	≤ 522 psig
b. LPCI Pump B and LPCI Pump C Discharge Flow-Low (Bypass)	4,5	1 per pump[(a)]	D	SR 3.3.5.2.2	≥ 1330 gpm and ≤ 2144 gpm
c. LPCI B and LPCI C Injection Line Pressure-Low (Injection Permissive)	4,5	1 per valve[(a)]	C	SR 3.3.5.2.2	≤ 522 psig

(continued)

(a) Associated with an ECCS subsystem required to be OPERABLE by LCO 3.5.2, "RPV Water Inventory Control."

Table 3.3.5.2-1 (page 2 of 2)
RPV Water Inventory Control Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. High Pressure Core Spray (HPCS) System					
a. HPCS Pump Discharge Pressure-High (Bypass)	4, 5	1[(a)]	D	SR 3.3.5.2.2	≥ 113.2 psig
b. HPCS System Flow Rate-Low (Bypass)	4, 5	1[(a)]	D	SR 3.3.5.2.2	≥ 1380 gpm and ≤ 2194 gpm
4. RHR Shutdown Cooling System Isolation					
a. Reactor Vessel Water Level-Low, Level 3	[(b)]	2 in one trip system	B	SR 3.3.5.2.1 SR 3.3.5.2.2	≥ 11.0 inches
5. Reactor Water Cleanup (RWCU) System Isolation					
a. Reactor Vessel Water Level-Low Low, Level 2	[(b)]	2 in one trip system	B	SR 3.3.5.2.2	≥ -58.0 inches

(a) Associated with an ECCS subsystem required to be OPERABLE by LCO 3.5.2, "RPV Water Inventory Control."

(b) When automatic isolation of the associated penetration flow path(s) is credited in calculating DRAIN TIME.

3.3 INSTRUMENTATION

3.3.5.3 Reactor Core Isolation Cooling (RCIC) System Instrumentation

LCO 3.3.5.3 The RCIC System instrumentation for each Function in Table 3.3.5.3-1 shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > 150 psig.

ACTIONS

NOTE
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Enter the Condition referenced in Table 3.3.5.3-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.3-1.	B.1 Declare RCIC System inoperable. AND B.2 Place channel in trip.	1 hour from discovery of loss of RCIC initiation capability 24 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. As required by Required Action A.1 and referenced in Table 3.3.5.3-1.	C.1 Restore channel to OPERABLE status.	24 hours
D. As required by Required Action A.1 and referenced in Table 3.3.5.3-1.	D.1 --------NOTE--------- Only applicable if RCIC pump suction is not aligned to the suppression pool. ----------	
	Declare RCIC System inoperable.	1 hour from discovery of loss of RCIC initiation capability
	AND	
	D.2.1 Place channel in trip.	24 hours
	OR	
	D.2.2 Align RCIC pump suction to the suppression pool.	24 hours
E. Required Action and associated Completion Time of Condition B, C, or D not met.	E.1 Declare RCIC System inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Refer to Table 3.3.5.3-1 to determine which SRs apply for each RCIC Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Functions 2 and 4; and (b) for up to 6 hours for Functions 1 and 3 provided the associated Function maintains RCIC initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.5.3.1	Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.3.2	Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.3.3	Perform CHANNEL CALIBRATION.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.3.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

Table 3.3.5.3-1 (page 1 of 1)
Reactor Core Isolation Cooling System Instrumentation

FUNCTION	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level–Low Low, Level 2	4	B	SR 3.3.5.3.2 SR 3.3.5.3.3 SR 3.3.5.3.4	≥ -83 inches
2. Reactor Vessel Water Level–High, Level 8	2	C	SR 3.3.5.3.1 SR 3.3.5.3.2 SR 3.3.5.3.3 SR 3.3.5.3.4	≤ 66.5 inches
3. Condensate Storage Tank Level–Low	2	D	SR 3.3.5.3.2 SR 3.3.5.3.3 SR 3.3.5.3.4	≥ 713.6 ft
4. Manual Initiation	1	C	SR 3.3.5.3.4	NA

Table 3.3.6.1-1 (page 4 of 4)
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. RWCU System Isolation (continued)					
k. Reactor Vessel Water Level–Low Low, Level 2	1,2,3	2	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ -58.0 inches
l. Standby Liquid Control System Initiation	1,2,3	2(b)	I	SR 3.3.6.1.5	NA
m. Manual Initiation	1,2,3	1	G	SR 3.3.6.1.5	NA
5. RHR Shutdown Cooling System Isolation					
a. Reactor Vessel Water Level–Low, Level 3	3	2	J	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≥ 11.0 inches
b. Reactor Vessel Pressure–High	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.5	≤ 143 psig
c. Manual Initiation	1,2,3	1	G	SR 3.3.6.1.5	NA

(b) Only inputs into one of two trip systems.

Table 3.3.6.2-1 (page 1 of 1)
Secondary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES AND OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level–Low Low, Level 2	1,2,3	2	SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≥ -58.0 inches
2. Drywell Pressure–High	1,2,3	2	SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≤ 1.93 psig
3. Reactor Building Ventilation Exhaust Plenum Radiation–High	1,2,3,(a)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≤ 42.0 mR/hr
4. Fuel Pool Ventilation Exhaust Radiation–High	1,2,3,(a)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≤ 42.0 mR/hr
5. Manual Initiation	1,2,3,(a)	1	SR 3.3.6.2.4	NA

(a) During CORE ALTERATIONS, and during movement of irradiated fuel assemblies in the secondary containment.

3.3 INSTRUMENTATION

3.3.7.1 Control Room Area Filtration (CRAF) System Instrumentation

LCO 3.3.7.1 Two channels per trip system for the Control Room Air Intake Radiation—High Function shall be OPERABLE for each CRAF subsystem.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Declare associated CRAF subsystem inoperable.	1 hour from discovery of loss of CRAF subsystem initiation capability
	AND	
	A.2 Place channel in trip.	6 hours

(continued)

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER DIVISION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Divisions 1, 2 and Opposite Unit Division 2 – 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage – 4.16 kV Basis	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 2870 V and ≤ 3127 V
b. Loss of Voltage – Time Delay	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 3.1 seconds and ≤ 10.9 seconds
c. Degraded Voltage – 4.16 kV Basis	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 3814 V and ≤ 3900 V
d. Degraded Voltage – Time Delay, No LOCA	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 270.1 seconds and ≤ 329.9 seconds
e. Degraded Voltage – Time Delay, LOCA	2(a)(b)	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 9.4 seconds and ≤ 10.9 seconds
2. Division 3-4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage – 4.16 kV Basis	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≥ 2725 V and ≤ 3172 V
b. Loss of Voltage – Time Delay	2	SR 3.3.8.1.3 SR 3.3.8.1.4 SR 3.3.8.1.5	≤ 10.9 seconds
c. Degraded Voltage – 4.16 kV Basis	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 3814 V and ≤ 3900 V
d. Degraded Voltage – Time Delay, No LOCA	2	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 270.1 seconds and ≤ 329.9 seconds
e. Degraded Voltage – Time Delay, LOCA	2(a)(b)	SR 3.3.8.1.1 SR 3.3.8.1.2 SR 3.3.8.1.5	≥ 9.4 seconds and ≤ 10.9 seconds

(a) In MODES 4 and 5, not required to be OPERABLE.

(b) With no fuel in the reactor vessel, not required to be OPERABLE.

3.3 INSTRUMENTATION

3.3.8.2 Reactor Protection System (RPS) Electric Power Monitoring

LCO 3.3.8.2 Two RPS electric power monitoring assemblies shall be OPERABLE for each inservice RPS motor generator set or alternate power supply.

APPLICABILITY: MODES 1, 2, and 3,
MODES 4 and 5 with residual heat removal (RHR) shutdown cooling (SDC) isolation valves open,
MODE 5, with any control rod withdrawn from a core cell containing one or more fuel assemblies,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both inservice power supplies with one electric power monitoring assembly inoperable.	A.1 Remove associated inservice power supply(s) from service.	72 hours
B. One or both inservice power supplies with both electric power monitoring assemblies inoperable.	B.1 Remove associated inservice power supply(s) from service.	1 hour

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and associated Completion Time of Condition A or B not met during movement of irradiated fuel assemblies in the secondary containment or during CORE ALTERATIONS.	F.1.1 Isolate the associated secondary containment penetration flow path(s).	Immediately
	OR	
	F.1.2 Declare the associated secondary containment isolation valve(s) inoperable.	Immediately
	AND	
	F.2.1 Place the associated standby gas treatment (SGT) subsystem(s) in operation.	Immediately
	OR	
	F.2.2 Declare associated SGT subsystem(s) inoperable.	Immediately

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.1 ECCS–Operating

LCO 3.5.1 Each ECCS injection/spray subsystem and the Automatic Depressurization System (ADS) function of six safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except ADS valves are not required to be OPERABLE with reactor steam dome pressure ≤ 150 psig.

ACTIONS

----------NOTE----------
LCO 3.0.4.b is not applicable to HPCS.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One low pressure ECCS injection/spray subsystem inoperable.	A.1 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	7 days

(continued)

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.2 RPV Water Inventory Control

LCO 3.5.2 DRAIN TIME of RPV water inventory to the top of active fuel (TAF) shall be ≥ 36 hours.

AND

One ECCS injection/spray subsystem shall be OPERABLE.

---NOTE---
A Low Pressure Coolant Injection (LPCI) subsystem may be considered OPERABLE during alignment and operation for decay heat removal, if capable of being manually realigned and not otherwise inoperable.

APPLICABILITY: MODES 4 and 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required ECCS injection/spray subsystem inoperable.	A.1 Restore required ECCS injection/spray subsystem to OPERABLE status.	4 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action to establish a method of water injection capable of operating without offsite power.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. DRAIN TIME < 36 hours and ≥ 8 hours	C.1 Verify secondary containment boundary is capable of being established in less than the DRAIN TIME.	4 hours
	AND	
	C.2 Verify each secondary containment penetration flow path is capable of being isolated in less than the DRAIN TIME.	4 hours
	AND	
	C.3 Verify one standby gas treatment subsystem is capable of being placed in operation in less than the DRAIN TIME.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. DRAIN TIME < 8 hours.	D.1	-------NOTE-------- Required ECCS injection/spray subsystem or additional method of water injection shall be capable of operating without offsite electrical power. ----------	
		Initiate action to establish an additional method of water injection with water sources capable of maintaining RPV water level > TAF for ≥ 36 hours.	Immediately
	AND		
	D.2	Initiate action to establish secondary containment boundary.	Immediately
	AND		
	D.3	Initiate action to isolate each secondary containment penetration flow path or verify it can be manually isolated from the control room.	Immediately
	AND		
	D.4	Initiate action to verify one standby gas treatment subsystem is capable of being placed in operation.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition C or D not met. OR DRAIN TIME < 1 hour.	E.1 Initiate action to restore DRAIN TIME to ≥ 36 hours.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify DRAIN TIME ≥ 36 hours.	In accordance with the Surveillance Frequency Control Program.
SR 3.5.2.2	Verify, for a required low pressure ECCS injection/spray subsystem, the suppression pool water level is ≥ -12 ft 7 in.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.3	Verify, for a required High Pressure Core Spray (HPCS) System, the suppression pool water level is ≥ -12 ft 7 in.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.4	Verify, for the required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.5.2.5	----------NOTE---------- Not required to be met for system vent flow paths opened under administrative control. ---------- Verify, for the required ECCS injection/spray subsystem, each manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.6	Operate the required ECCS injection/spray subsystem through the recirculation line for ≥ 10 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.7	Verify each valve credited for automatically isolating a penetration flow path actuates to the isolation position on an actual or simulated isolation signal.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.8	----------NOTE---------- Vessel injection/spray may be excluded. ---------- Verify the required ECCS injection/spray subsystem can be manually operated.	In accordance with the Surveillance Frequency Control Program

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.3 RCIC System

LCO 3.5.3 The RCIC System shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > 150 psig.

ACTIONS

---NOTE---
LCO 3.0.4.b is not applicable to RCIC.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. RCIC System inoperable.	A.1	Verify by administrative means High Pressure Core Spray System is OPERABLE.	Immediately
	AND		
	A.2	Restore RCIC System to OPERABLE status.	14 days
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Reduce reactor steam dome pressure to ≤ 150 psig.	36 hours

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Primary Containment Isolation Valves (PCIVs)

LCO 3.6.1.3 Each PCIV shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3

ACTIONS

---------- NOTES----------
1. Penetration flow paths may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by PCIVs.

4. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment," when PCIV leakage results in exceeding overall containment leakage rate acceptance criteria.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ---------NOTE--------- Only applicable to penetration flow paths with two or more PCIVs. ---------- One or more penetration flow paths with one PCIV inoperable for reasons other than Condition D.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	4 hours except for main steam line AND 8 hours for main steam line (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, C, or D not met in MODE 1, 2, or 3.	E.1 Be in MODE 3. AND E.2 Be in MODE 4.	12 hours 36 hours

3.6 CONTAINMENT SYSTEMS

3.6.4.1 Secondary Containment

LCO 3.6.4.1 The secondary containment shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Secondary containment inoperable in MODE 1, 2, or 3.	A.1 Restore secondary containment to OPERABLE status.	4 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	12 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Secondary containment inoperable during movement of irradiated fuel assemblies in the secondary containment or during CORE ALTERATIONS.	C.1 --------NOTE-------- LCO 3.0.3 is not applicable. ---------- Suspend movement of irradiated fuel assemblies in the secondary containment. AND	Immediately
	C.2 Suspend CORE ALTERATIONS.	Immediately

3.6 CONTAINMENT SYSTEMS

3.6.4.2 Secondary Containment Isolation Valves (SCIVs)

LCO 3.6.4.2 Each SCIV shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS.

ACTIONS

----------NOTES----------

1. Penetration flow paths may be unisolated intermittently under administrative controls.

2. Separate Condition entry is allowed for each penetration flow path.

3. Enter applicable Conditions and Required Actions for systems made inoperable by SCIVs.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more penetration flow paths with one SCIV inoperable.	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND	8 hours (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A or B not met during movement of irradiated fuel assemblies in the secondary containment or during CORE ALTERATIONS.	D.1 --------NOTE-------- LCO 3.0.3 is not applicable. ---------- Suspend movement of irradiated fuel assemblies in the secondary containment. AND	Immediately
	D.2 Suspend CORE ALTERATIONS.	Immediately

3.6 CONTAINMENT SYSTEMS

3.6.4.3 Standby Gas Treatment (SGT) System

LCO 3.6.4.3 Two SGT subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SGT subsystem inoperable.	A.1 Restore SGT subsystem to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1 Be in MODE 3.	12 hours
C. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the secondary containment or during CORE ALTERATIONS.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- C.1 Place OPERABLE SGT subsystem in operation. OR	Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND C.2.2 Suspend CORE ALTERATIONS.	Immediately Immediately
D. Two SGT subsystems inoperable in MODE 1, 2, or 3.	D.1 Be in MODE 3	12 hours
E. Two SGT subsystems inoperable during movement of irradiated fuel assemblies in the secondary containment, or during CORE ALTERATIONS.	E.1 --------NOTE-------- LCO 3.0.3 is not applicable. ---------- Suspend movement of irradiated fuel assemblies in the secondary containment. AND E.2 Suspend CORE ALTERATIONS.	 Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for ≥ 15 continuous minutes with heaters operating.	In accordance with the Surveillance Frequency Control Program
SR 3.6.4.3.2	Perform required SGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.4.3.3	Verify each SGT subsystem actuates on an actual or simulated initiation signal.	In accordance with the Surveillance Frequency Control Program

3.7 PLANT SYSTEMS

3.7.4 Control Room Area Filtration (CRAF) System

LCO 3.7.4 Two CRAF subsystems shall be OPERABLE.

NOTE
The control room envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CRAF subsystem inoperable for reasons other than Condition B.	A.1 Restore CRAF subsystem to OPERABLE status.	7 days
B. One or more CRAF subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	B.1 Initiate action to implement mitigating actions. AND B.2 Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits. AND B.3 Restore CRE boundary to OPERABLE status.	Immediately 24 hours 90 days

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and Associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 Be in MODE 3.	12 hours
D. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the secondary containment or during CORE ALTERATIONS.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- D.1 Place OPERABLE CRAF subsystem in pressurization mode. OR D.2.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND D.2.2 Suspend CORE ALTERATIONS.	Immediately Immediately Immediately
E. Two CRAF subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B.	E.1 Be in MODE 3.	12 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Two CRAF subsystems inoperable during movement of irradiated fuel assemblies in the secondary containment or during CORE ALTERATIONS. OR One or more CRAF subsystems inoperable due to inoperable CRE boundary during movement of irradiated fuel assemblies in the secondary containment or during CORE ALTERATIONS.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- F.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND F.2 Suspend CORE ALTERATIONS.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Operate each CRAF subsystem for ≥ 15 continuous minutes with the heaters operating.	In accordance with the Surveillance Frequency Control Program

(continued)

3.7 PLANT SYSTEMS

3.7.5 Control Room Area Ventilation Air Conditioning (AC) System

LCO 3.7.5 Two control room area ventilation AC subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of irradiated fuel assemblies in the secondary containment,
During CORE ALTERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One control room area ventilation AC subsystem inoperable.	A.1 Restore control room area ventilation AC subsystem to OPERABLE status.	30 days
B. Two control room area ventilation AC subsystems inoperable.	B.1 Verify control room area temperature < 90°F. AND B.2 Restore one control room area ventilation AC subsystem to OPERABLE status.	Once per 4 hours 72 hours
C. Required Action and Associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 Be in MODE 3.	12 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A not met during movement of irradiated fuel assemblies in the secondary containment or during CORE ALTERATIONS.	----------NOTE---------- LCO 3.0.3 is not applicable. ----------	
	D.1 Place OPERABLE control room area ventilation AC subsystem in operation.	Immediately
	OR	
	D.2.1 Suspend movement of irradiated fuel assemblies in the secondary containment.	Immediately
	AND	
	D.2.2 Suspend CORE ALTERATIONS.	Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition B not met during movement of irradiated fuel assemblies in the secondary containment or during CORE ALTERATIONS.	----------NOTE---------- LCO 3.0.3 is not applicable. ---------- E.1 Suspend movement of irradiated fuel assemblies in the secondary containment. AND E.2 Suspend CORE ALTERATIONS.	 Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	Monitor control room and auxiliary electric equipment room temperatures.	In accordance with the Surveillance Frequency Control Program
SR 3.7.5.2	Verify correct breaker alignment and indicated power are available to the control room area ventilation AC subsystems.	In accordance with the Surveillance Frequency Control Program

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.3 Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately
B. Required DG of LCO Item b. inoperable.	B.1 Suspend CORE ALTERATIONS. AND B.2 Suspend movement of irradiated fuel assemblies in secondary containment. AND B.3 Initiate action to restore required DG to OPERABLE status.	Immediately Immediately Immediately
C. Required DG of LCO Item c. inoperable.	C.1 Declare High Pressure Core Spray System inoperable.	72 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required offsite circuit or DG of LCO Item d. inoperable.	D.1 Declare associated standby gas treatment subsystem, control room area filtration subsystem, and control room area ventilation air conditioning subsystem inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.2.1	----------NOTES---------- 1. The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.9 through SR 3.8.1.11, SR 3.8.1.13 through SR 3.8.1.16, SR 3.8.1.18, and SR 3.8.1.19. 2. SR 3.8.1.12 and SR 3.8.1.19 are not required to be met. ---------- For AC sources required to be OPERABLE, the SRs of Specification 3.8.1, except SR 3.8.1.8, SR 3.8.1.17, and SR 3.8.1.20, are applicable.	In accordance with applicable SRs

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more required DC electrical power subsystems inoperable for reasons other than Condition A. OR Required Action and Completion Time of Condition A not met.	B.1 Declare affected required feature(s) inoperable. OR B.2.1 Suspend CORE ALTERATIONS. AND B.2.2 Suspend movement of irradiated fuel assemblies in the secondary containment. AND B.2.3 Initiate action to restore required DC electrical power subsystems to OPERABLE status.	Immediately Immediately Immediately Immediately

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.3 Initiate actions to restore required AC and DC electrical power distribution subsystems to OPERABLE status. AND	Immediately
	A.2.4 Declare associated required shutdown cooling subsystem(s) inoperable and not in operation.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.8.1	Verify correct breaker alignments and voltage to required AC and DC electrical power distribution subsystems.	In accordance with the Surveillance Frequency Control Program

LaSalle County Station, Units 1 and 2

Application to Revise Technical Specifications to Adopt TSTF-542, "Reactor Pressure Vessel Water Inventory Control"

ATTACHMENT 4

PROPOSED TECHNICAL SPECIFICATIONS BASES CHANGES (MARK-UP)

TOC i
TOC ii
B 3.3.5.1-8
B 3.3.5.1-10
B 3.3.5.1-11
B 3.3.5.1-12
B 3.3.5.1-13
B 3.3.5.1-14
B 3.3.5.1-15
B 3.3.5.1-16
B 3.3.5.1-17
B 3.3.5.1-18
B 3.3.5.1-25
B 3.3.5.1-27
B 3.3.5.1-29
B 3.3.5.1-36
B 3.3.5.2-1
B 3.3.5.2-2
B 3.3.5.2-3
B 3.3.5.2-4
B 3.3.5.2-5
B 3.3.5.2-6
B 3.3.5.2-7
B 3.3.5.2-8
B 3.3.5.2-9
B 3.3.5.2-10
B 3.3.5.3-1
B 3.3.5.3-2
B 3.3.5.3-3
B 3.3.5.3-4
B 3.3.5.3-5
B 3.3.5.3-6
B 3.3.5.3-7
B 3.3.5.3-8
B 3.3.5.3-9
B 3.3.5.3-10
B 3.3.5.3-11
B 3.3.5.3-12
B 3.3.6.1-7
B 3.3.6.1-28
B 3.3.6.2-4
B 3.3.6.2-6
B 3.3.6.2-7
B 3.3.7.1-3
B 3.3.8.1-6
B 3.3.8.2-4
B 3.3.8.2-6
B 3.5.1-1
B 3.5.1-6
B 3.5.2-1
B 3.5.2-2
B 3.5.2-3
B 3.5.2-4
B 3.5.2-5
B 3.5.2-6
B 3.5.2-7
B 3.5.2-8
B 3.5.2-9
B 3.5.2-10
B 3.5.2-11
B 3.5.2-12
B 3.5.2-13
B 3.5.3-1
B 3.5.3-2
B 3.5.3-7
B 3.6.1.3-3
B 3.6.1.3-9
B 3.6.1.3-10
B 3.6.2.2-2
B 3.6.4.1-2
B 3.6.4.1-3
B 3.6.4.1-4
B 3.6.4.2-2
B 3.6.4.2-5
B 3.6.4.3-3
B 3.6.4.3-4
B 3.6.4.3-5
B 3.7.4-4
B 3.7.4-5
B 3.7.4-6
B 3.7.4-7
B 3.7.4-8
B 3.7.5-3
B 3.7.5-5
B 3.7.5-6
B 3.8.2-1
B 3.8.2-3
B 3.8.2-4
B 3.8.2-5
B 3.8.2-6
B 3.8.2-7
B 3.8.2-8
B 3.8.5-1
B 3.8.5-3
B 3.8.5-7
B 3.8.8-1
B 3.8.8-2
B 3.8.8-3
B 3.8.8-4
B 3.10.8-3

TABLE OF CONTENTS

(continued)

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

ECCS instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). Certain instrumentation Functions are retained for other reasons and are described below in the individual Functions discussion.

The OPERABILITY of the ECCS instrumentation is dependent upon the OPERABILITY of the individual instrumentation channel Functions specified in Table 3.3.5.1-1. Each Function must have a required number of OPERABLE channels, with their setpoints within the specified Allowable Values, where appropriate. The actual setpoint is calibrated consistent with applicable setpoint methodology assumptions. Each ECCS subsystem must also respond within its assumed response time. Table 3.3.5.1-1, ~~f~~Footnote (a~~b~~), is added to show that certain ECCS instrumentation Functions are also required to be OPERABLE to perform DG initiation.

Allowable Values are specified for each ECCS Function specified in the Table. Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Value between CHANNEL CALIBRATIONS. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value. Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor vessel water level), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. The trip setpoints are determined from the analytic limits, corrected for defined process, calibration, and instrument errors. The Allowable Values are then determined, based on the trip setpoint values, by accounting for the calibration based errors. These calibration based errors are limited to reference accuracy, instrument drift, errors associated with measurement and test equipment, and calibration tolerance of loop components. The trip setpoints and Allowable Values determined in this manner provide adequate protection

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.a, 2.a. Reactor Vessel Water Level—Low Low Low, Level 1 (continued)

Reactor Vessel Water Level—Low Low Low, Level 1 signals are initiated from four differential pressure transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. The Reactor Vessel Water Level—Low Low Low, Level 1 Allowable Value is chosen to allow time for the low pressure core flooding systems to activate and provide adequate cooling.

Two channels of Reactor Vessel Water Level—Low Low Low, Level 1 Function per associated Division are only required to be OPERABLE when the associated ECCS is required to be OPERABLE for automatic initiation, to ensure that no single instrument failure can preclude the ECCS function. (Two channels input to LPCS, LPCI A, and the associated Division 1 DG, while the other two channels input to LPCI B, LPCI C, and Division 2 DG). ~~Refer to LCO 3.5.1 and LCO 3.5.2, "ECCS—Shutdown," for Applicability Bases for the low pressure ECCS subsystems.~~

1.b, 2.b. Drywell Pressure—High

High pressure in the drywell could indicate a break in the reactor coolant pressure boundary (RCPB). The low pressure ECCS and associated DGs are initiated upon receipt of the Drywell Pressure—High Function in order to minimize the possibility of fuel damage. The core cooling function of the ECCS, along with the scram action of the RPS, ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46.

High drywell pressure signals are initiated from four pressure switches that sense drywell pressure. The Allowable Value was selected to be as low as possible and be indicative of a LOCA inside primary containment.

The Drywell Pressure—High Function is required to be OPERABLE when the associated ECCS is required to be OPERABLE in conjunction with times when the primary containment is

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.b, 2.b. Drywell Pressure–High (continued)

required to be OPERABLE. Thus, four channels of the LPCS and LPCI Drywell Pressure–High Function are required to be OPERABLE in MODES 1, 2, and 3 to ensure that no single instrument failure can preclude ECCS initiation. (Two channels input to LPCS, LPCI A, and the Division 1 DG, while the other two channels input to LPCI B, LPCI C, and the Division 2 DG.) In MODES 4 and 5, the Drywell Pressure-High Function is not required since there is insufficient energy in the reactor to pressurize the primary containment to Drywell Pressure–High setpoint. ~~Refer to LCO 3.5.1 for Applicability Bases for the low pressure ECCS subsystems.~~

1.c, 2.c. LPCI Pump A and Pump B Start–Time Delay Relay

The purpose of this time delay is to stagger the start of the two ECCS pumps that are in each of Divisions 1 and 2, thus limiting the starting transients on the 4.16 kV emergency buses. This Function is only necessary when power is being supplied from the standby power sources (DG). On ECCS initiation, the time delay is bypassed if the normal feed breaker to the Class 1E switchgear is closed. The LPCI Pump Start–Time Delay Relays are assumed to be OPERABLE in the accident and transient analyses requiring ECCS initiation. That is, the analysis assumes that the pumps will initiate when required and excess loading will not cause failure of the standby power sources (DG).

There are two LPCI Pump Start–Time Delay Relays, one in each of the RHR "A" and RHR "B" pump start logic circuits. While each time delay relay is dedicated to a single pump start logic, a single failure of a LPCI Pump Start–Time Delay Relay could result in the failure of the two low pressure ECCS pumps, powered from the emergency bus, to perform their intended function within the assumed ECCS RESPONSE TIMES (e.g., as in the case where both ECCS pumps on one emergency bus start simultaneously due to an inoperable time delay relay). This still leaves two of the four low pressure ECCS pumps OPERABLE; thus, the single failure criterion is met (i.e., loss of one instrument does not preclude ECCS initiation). The Allowable Value for the LPCI Pump Start–Time Delay Relays is chosen to be short enough so that ECCS operation is not degraded.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.c, 2.c. LPCI Pump A and Pump B Start-Time Delay Relay (continued)

Each LPCI Pump Start-Time Delay Relay Function is required to be OPERABLE when the associated LPCI subsystem is required to be OPERABLE. ~~Refer to LCO 3.5.1 and LCO 3.5.2 for Applicability Bases for the LPCI subsystems.~~

1.d, 1.g, 2.d, 2.f. Reactor Steam Dome Pressure-Low (Injection Permissive) and LPCS and LPCI Injection Line Pressure-Low (Injection Permissive)

Low reactor steam dome pressure and injection line pressure signals are used as permissives for the low pressure ECCS subsystems. This ensures that, prior to opening the injection valves of the low pressure ECCS subsystems, the reactor pressure has fallen to a value below these subsystems maximum design pressure. The Reactor Steam Dome Pressure-Low (Injection Permissive) and LPCS and LPCI Injection Line Pressure-Low (Injection Permissive) are two of the Functions assumed to be OPERABLE and capable of permitting initiation of the ECCS during the transients analyzed in References 1 and 3. In addition, the Reactor Steam Dome Pressure-Low (Injection Permissive) and LPCS and LPCI Injection Line Pressure-Low (Injection Permissive) Functions are directly assumed in the analysis of the recirculation line break (Ref. 2). The core cooling function of the ECCS, along with the scram action of the RPS, ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46.

The Reactor Steam Dome Pressure-Low (Injection Permissive) signals are initiated from four pressure switches that sense the reactor dome pressure. The LPCS and LPCI Injection Line Pressure-Low (Injection Permissive) signals are initiated from four pressure switches that sense the pressure in the injection line (one switch for each low pressure ECCS injection line). The Allowable Values are low enough to

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.d, 1.g, 2.d, 2.f. Reactor Steam Dome Pressure–Low (Injection Permissive) and LPCS and LPCI Injection Line Pressure–Low (Injection Permissive) (continued)

prevent overpressurizing the equipment in the low pressure ECCS, but high enough to ensure that the ECCS injection prevents the fuel peak cladding temperature from exceeding the limits of 10 CFR 50.46.

Two channels of Reactor Steam Dome Pressure–Low (Injection Permissive) Function per associated Division and one channel of LPCS and LPCI Injection Line Pressure–Low (Injection Permissive) per associated injection line are only required to be OPERABLE when the associated ECCS is required to be OPERABLE to ensure that no single instrument failure can preclude ECCS initiation. (Two channels of Reactor Vessel Pressure–Low (Injection Permissive) are required for LPCS and LPCI A, while two other channels are required for LPCI B and LPCI C. In addition, one channel of LPCS Injection Line Pressure–Low (Injection Permissive) is required for LPCS, while one channel of LPCI Injection Line Pressure is required for each LPCI subsystem). ~~Refer to LCO 3.5.1 and LCO 3.5.2 for Applicability Bases for the low pressure ECCS subsystems.~~

1.e, 1.f, 2.e. LPCS and LPCI Pump Discharge Flow–Low (Bypass)

The minimum flow instruments are provided to protect the associated low pressure ECCS pump from overheating when the pump is operating and the associated injection valve is not sufficiently open. The minimum flow line valve is opened when low flow is sensed, and the valve is automatically closed when the flow rate is adequate to protect the pump. The LPCI and LPCS Pump Discharge Flow–Low (Bypass) Functions are assumed to be OPERABLE and capable of closing the minimum flow valves to ensure that the low pressure ECCS flows assumed during the transients and accidents analyzed in References 1, 2, and 3 are met. The core cooling function of the ECCS, along with the scram action of the RPS, ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.e, 1.f, 2.e. LPCS and LPCI Pump Discharge Flow–Low (Bypass) (continued)

One flow switch per ECCS pump is used to detect the associated subsystems flow rate. The logic is arranged such that each switch causes its associated minimum flow valve to open when flow is low with the pump running. The logic will close the minimum flow valve once the closure setpoint is exceeded. The LPCI minimum flow valves are time delayed such that the valves will not open for approximately 8 seconds after the switches detect low flow. The time delay is provided to limit reactor vessel inventory loss during the startup of the RHR shutdown cooling mode. The Pump Discharge Flow–Low (Bypass) Allowable Values are high enough to ensure that the pump flow rate is sufficient to protect the pump, yet low enough to ensure that the closure of the minimum flow valve is initiated to allow full flow into the core.

Each channel of Pump Discharge Flow–Low (Bypass) Function (one LPCS channel and three LPCI channels) is only required to be OPERABLE when the associated ECCS is required to be OPERABLE, to ensure that no single instrument failure can preclude the ECCS function. ~~Refer to LCO 3.5.1 and LCO 3.5.2 for Applicability Bases for the low pressure ECCS subsystems.~~

1.h, 2.g. Manual Initiation

The Manual Initiation push button channels introduce signals into the appropriate ECCS logic to provide manual initiation capability and are redundant to the automatic protective instrumentation. There is one push button for each of the two Divisions of low pressure ECCS (i.e., Division 1 ECCS, LPCS and LPCI A; Division 2 ECCS, LPCI B and LPCI C).

The Manual Initiation Function is not assumed in any accident or transient analyses in the UFSAR. However, the Function is retained for overall redundancy and diversity of the low pressure ECCS function as required by the NRC in the plant licensing basis.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.h, 2.g. Manual Initiation (continued)

There is no Allowable Value for this Function since the channels are mechanically actuated based solely on the position of the push buttons. Each channel of the Manual Initiation Function (one channel per division) is only required to be OPERABLE when the associated ECCS is required to be OPERABLE for automatic alignment and injection. ~~Refer to LCO 3.5.1 and LCO 3.5.2 for Applicability Bases for the low pressure ECCS subsystems.~~

High Pressure Core Spray System

3.a. Reactor Vessel Water Level–Low Low, Level 2

Low RPV water level indicates that the capability to cool the fuel may be threatened. Should RPV water level decrease too far, fuel damage could result. Therefore, the HPCS System and associated DG is initiated at Level 2 to maintain level above the top of the active fuel. The Reactor Vessel Water Level–Low Low, Level 2 is one of the Functions assumed to be OPERABLE and capable of initiating HPCS during the transients analyzed in References 1 and 3. The Reactor Vessel Water Level–Low Low, Level 2 Function associated with HPCS is directly assumed in the analysis of the recirculation line break (Ref. 2). The core cooling function of the ECCS, along with the scram action of the RPS, ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46.

Reactor Vessel Water Level–Low Low, Level 2 signals are initiated from four differential pressure transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. The Reactor Vessel Water Level–Low Low, Level 2 Allowable Value is chosen such that for complete loss of feedwater flow, the Reactor Core Isolation Cooling (RCIC) System flow with HPCS assumed to fail will be sufficient to avoid initiation of low pressure ECCS at Reactor Vessel Water Level–Low Low Low, Level 1.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

3.a. Reactor Vessel Water Level–Low Low, Level 2 (continued)

Four channels of Reactor Vessel Water Level–Low Low, Level 2 Function are only required to be OPERABLE when HPCS is required to be OPERABLE to ensure that no single instrument failure can preclude HPCS initiation. ~~Refer to LCO 3.5.1 and LCO 3.5.2 for HPCS Applicability Bases.~~

3.b. Drywell Pressure–High

High pressure in the drywell could indicate a break in the RCPB. The HPCS System and associated DG are initiated upon receipt of the Drywell Pressure–High Function in order to minimize the possibility of fuel damage. The core cooling function of the ECCS, along with the scram action of the RPS, ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46.

Drywell Pressure–High signals are initiated from four pressure switches that sense drywell pressure. The Allowable Value was selected to be as low as possible and be indicative of a LOCA inside primary containment.

The Drywell Pressure–High Function is required to be OPERABLE when HPCS is required to be OPERABLE in conjunction with times when the primary containment is required to be OPERABLE. Thus, four channels of the HPCS Drywell Pressure-High Function are required to be OPERABLE in MODES 1, 2, and 3, to ensure that no single instrument failure can preclude ECCS initiation. In MODES 4 and 5, the Drywell Pressure–High Function is not required since there is insufficient energy in the reactor to pressurize the drywell to the Drywell Pressure–High Functions setpoint. Refer to LCO 3.5.1 for the Applicability Bases for the HPCS System.

3.c. Reactor Vessel Water Level–High, Level 8

High RPV water level indicates that sufficient cooling water inventory exists in the reactor vessel such that there is no danger to the fuel. Therefore, the Level 8 signal is used to close the HPCS injection valve to prevent overflow into the main steam lines (MSLs). The Reactor Vessel Water

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

3.c. Reactor Vessel Water Level–High, Level 8 (continued)

Level–High, Level 8 Function for HPCS isolation is not credited in the accident analysis. It is retained since it is a potentially significant contributor to risk.

Reactor Vessel Water Level–High, Level 8 signals for HPCS are initiated from two level transmitters from the narrow range water level measurement instrumentation. The Reactor Vessel Water Level–High, Level 8 Allowable Value is chosen to isolate flow from the HPCS System prior to water overflowing into the MSLs.

Two channels of Reactor Vessel Water Level–High, Level 8 Function are only required to be OPERABLE when HPCS is required to be OPERABLE to ensure that no single instrument failure can preclude HPCS initiation. ~~Refer to LCO 3.5.1 and LCO 3.5.2 for HPCS Applicability Bases.~~

3.d, 3.e. HPCS Pump Discharge Pressure–High (Bypass) and HPCS System Flow Rate–Low (Bypass)

The minimum flow instruments are provided to protect the HPCS pump from overheating when the pump is operating and the associated injection valve is not sufficiently open. The minimum flow line valve is opened when low flow and high pump discharge pressure are sensed, and the valve is automatically closed when the flow rate is adequate to protect the pump or the discharge pressure is low (indicating the HPCS pump is not operating). The HPCS System Flow Rate–Low (Bypass) and HPCS Pump Discharge Pressure–High Functions are assumed to be OPERABLE and capable of closing the minimum flow valve to ensure that the ECCS flow assumed during the transients and accidents analyzed in References 1, 2, and 3 are met. The core cooling function of the ECCS, along with the scram action of the RPS, ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46.

One flow switch is used to detect the HPCS System's flow rate. The logic is arranged such that the switch causes the minimum flow valve to open, provided the HPCS pump discharge pressure, sensed by another switch, is high enough

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

3.d, 3.e. HPCS Pump Discharge Pressure—High (Bypass) and HPCS System Flow Rate—Low (Bypass) (continued)

(indicating the pump is operating). The logic will close the minimum flow valve once the closure setpoint is exceeded. (The valve will also close upon HPCS pump discharge pressure decreasing below the setpoint.)

The HPCS System Flow Rate—Low (Bypass) Allowable Values are high enough to ensure that pump flow rate is sufficient to protect the pump, yet low enough to ensure that the closure of the minimum flow valve is initiated to allow full flow into the core. The HPCS Pump Discharge Pressure—High (Bypass) Allowable Value is set high enough to ensure that the valve will not be open when the pump is not operating.

One channel of each Function is required to be OPERABLE when the HPCS is required to be OPERABLE. ~~Refer to LCO 3.5.1 and LCO 3.5.2 for HPCS Applicability Bases.~~

3.f. Manual Initiation

The Manual Initiation push button channel introduces a signal into the HPCS logic to provide manual initiation capability and is redundant to the automatic protective instrumentation. There is one push button for the HPCS System.

The Manual Initiation Function is not assumed in any accident or transient analyses in the UFSAR. However, the Function is retained for overall redundancy and diversity of the HPCS function as required by the NRC in the plant licensing basis.

There is no Allowable Value for this Function since the channel is mechanically actuated based solely on the position of the push button. One channel of the Manual Initiation Function is only required to be OPERABLE when the HPCS System is required to be OPERABLE. ~~Refer to LCO 3.5.1 and LCO 3.5.2 for HPCS Applicability Bases.~~

(continued)

BASES

ACTIONS

B.1, B.2, and B.3 (continued)

Divisions, this results in the affected portions in both Divisions of ECCS and DG being concurrently declared inoperable. For Required Action B.2, redundant automatic initiation capability (i.e., loss of automatic start capability for either Functions 3.a or 3.b) is lost if two Function 3.a or two Function 3.b parallel contacts (channels) are inoperable and untripped in the same trip system.

In this situation (loss of redundant automatic initiation capability), the 24 hour allowance of Required Action B.3 is not appropriate and the feature(s) associated with the inoperable, untripped channels must be declared inoperable within 1 hour. ~~As noted (Note 1 to Required Action B.1 and Required Action B.2), the two Required Actions are only applicable in MODES 1, 2, and 3. In MODES 4 and 5, the specific initiation time of the ECCS is not assumed and the probability of a LOCA is lower. Thus, a total loss of initiation capability for 24 hours (as allowed by Required Action B.3) is allowed during MODES 4 and 5.~~ Notes are ~~also~~ provided (*the* Note ~~2~~ to Required Action B.1 and Required Action B.2) to delineate which Required Action is applicable for each Function that requires entry into Condition B if an associated channel is inoperable. This ensures that the proper loss of initiation capability check is performed.

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." For Required Action B.1, the Completion Time only begins upon discovery that a redundant feature in both Divisions (e.g., any Division 1 ECCS and Division 2 ECCS) cannot be automatically initiated due to inoperable, untripped channels within the same variable as described in the paragraph above. For Required Action B.2, the Completion Time only begins upon discovery that the HPCS System cannot be automatically initiated due to two inoperable, untripped channels (parallel contacts) for the associated Function in the same trip system. The 1 hour Completion Time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

and 2.c, the affected portions of the Division are LPCI A and LPCI B, respectively. In addition, the specific inoperability of these Functions should also be evaluated for impact on the DGs.

In this situation (loss of redundant automatic initiation capability), the 24 hour allowance of Required Action C.2 is not appropriate and the feature(s) associated with the inoperable channels must be declared inoperable within 1 hour. ~~As noted (Note 1), the Required Action is only applicable in MODES 1, 2, and 3. In MODES 4 and 5, the specific initiation time of the ECCS is not assumed and the probability of a LOCA is lower. Thus, a total loss of automatic initiation capability for 24 hours (as allowed by Required Action C.2) is allowed during MODES 4 and 5.~~

The Note ~~2~~ states that Required Action C.1 is only applicable for Functions 1.c and 2.c. The Required Action is not applicable to Functions 1.h, 2.g, and 3.f (which also require entry into this Condition if a channel in these Functions is inoperable), since they are the Manual Initiation Functions and are not assumed in any accident or transient analysis. Thus, a total loss of manual initiation capability for 24 hours (as allowed by Required Action C.2) is allowed. Required Action C.1 is also not applicable to Function 3.c (which also requires entry into this Condition if a channel in this Function is inoperable), since the loss of the Function was considered during the development of Reference 4 and considered acceptable for the 24 hours allowed by Required Action C.2.

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." For Required Action C.1, the Completion Time only begins upon discovery that the same feature in both Divisions (i.e., any Division 1 ECCS and Division 2 ECCS) cannot be automatically initiated due to inoperable channels within the same variable as described in the paragraph above. The 1 hour Completion Time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration of channels.

(continued)

BASES

ACTIONS

D.1, D.2, D.3, and D.4 (continued)

inoperable 1.d channels or one inoperable 1.g channel. For Function 1.g, redundant automatic initiation capability is lost if two Function 1.g channels are inoperable concurrent with either two inoperable Function 2.d channels or one inoperable Function 2.f channel. For Function 2.f, redundant automatic initiation capability is lost if two Function 2.f channels are inoperable concurrent with two inoperable 1.d channels or one inoperable 1.g channel. Since each inoperable channel would have Required Action D.1 applied separately (refer to ACTIONS Note), each inoperable channel would only require the affected low pressure ECCS pump to be declared inoperable. However, since channels for more than one low pressure ECCS pump are inoperable, and the Completion Times started concurrently for the channels of the low pressure ECCS pumps, this results in the affected low pressure ECCS pumps being concurrently declared inoperable.

In this situation (loss of redundant automatic initiation capability), the Completion Times of Required Actions D.3 and D.4 are not appropriate and the feature(s) associated with each inoperable channel must be declared inoperable within 1 hour after discovery of loss of initiation capability for feature(s) in both Divisions. ~~As noted (Note 1 to Required Action D.1), Required Action D.1 is only applicable in MODES 1, 2, and 3. In MODES 4 and 5, the specific initiation time of the low pressure ECCS is not assumed and the probability of a LOCA is lower. Thus, a total loss of initiation capability for 7 days for Functions 1.e, 1.f, and 2.e (as allowed by Required Action D.4) is allowed during MODES 4 and 5. (This Condition is not entered when Functions 1.d, 1.g, 2.d or 2.f are inoperable in MODES 4 and 5.)~~ A Note is ~~also~~ provided (*The* Note ~~2~~ to Required Action D.1) to delineate that Required Action D.1 is only applicable to low pressure ECCS Functions. Required Action D.1 is not applicable to HPCS Functions 3.d and 3.e since the loss of one channel results in a loss of the Function (one-out-of-one logic). This loss was considered during the development of Reference 4 and considered acceptable for the 7 days allowed by Required Action D.4. Required Action D.2 is intended to ensure that appropriate

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.5.1.2 (continued)

clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.5.1.3 and SR 3.3.5.1.4

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.5.1.5

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required initiation logic for a specific channel. The system functional testing performed in LCO 3.5.1, ~~LCO 3.5.2,~~ LCO 3.8.1, and LCO 3.8.2 overlaps this Surveillance to provide complete testing of the assumed safety function.

(continued)

B 3.3 INSTRUMENTATION

B 3.3.5.2 Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation

BASES

BACKGROUND The RPV contains penetrations below the top of the active fuel (TAF) that have the potential to drain the reactor coolant inventory to below the TAF. If the water level should drop below the TAF, the ability to remove decay heat is reduced, which could lead to elevated cladding temperatures and clad perforation. Safety Limit 2.1.1.3 requires the RPV water level to be above the top of the active irradiated fuel at all times to prevent such elevated cladding temperatures.

Technical Specifications are required by 10 CFR 50.36 to include limiting safety system settings (LSSS) for variables that have significant safety functions. LSSS are defined by the regulation as "Where a LSSS is specified for a variable on which a safety limit has been placed, the setting must be chosen so that automatic protective actions will correct the abnormal situation before a Safety Limit (SL) is exceeded." The Analytical Limit is the limit of the process variable at which a safety action is initiated to ensure that a SL is not exceeded. Any automatic protection action that occurs on reaching the Analytical Limit therefore ensures that the SL is not exceeded. However, in practice, the actual settings for automatic protection channels must be chosen to be more conservative than the Analytical Limit to account for instrument loop uncertainties related to the setting at which the automatic protective action would actually occur. The actual settings for the automatic isolation channels are the same as those established for the same functions in MODES 1, 2, and 3 in LCO 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," or LCO 3.3.6.1, "Primary Containment Isolation Instrumentation."

With the unit in MODE 4 or 5, RPV water inventory control is not required to mitigate any events or accidents evaluated in the safety analyses. RPV water inventory control is required in MODES 4 and 5 to protect Safety Limit 2.1.1.3 and the fuel cladding barrier to prevent the release of radioactive material should a draining event occur. Under the definition of DRAIN TIME, some penetration flow paths may be excluded from the DRAIN TIME calculation if they will

(continued)

BASES

BACKGROUND (continued)

be isolated by valves that will close automatically without offsite power prior to the RPV water level being equal to the TAF when actuated by RPV water level isolation instrumentation.

The purpose of the RPV Water Inventory Control Instrumentation is to support the requirements of LCO 3.5.2, "RPV Water Inventory Control," and the definition of DRAIN TIME. There are functions that are required for manual operation of the ECCS injection/spray subsystem required to be OPERABLE by LCO 3.5.2 and other functions that support automatic isolation of Residual Heat Removal subsystem and Reactor Water Cleanup system penetration flow path(s) on low RPV water level.

The RPV Water Inventory Control Instrumentation supports operation of low pressure core spray (LPCS), low pressure coolant injection (LPCI), and high pressure core spray (HPCS). The equipment involved with each of these systems is described in the Bases for LCO 3.5.2.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

With the unit in MODE 4 or 5, RPV water inventory control is not required to mitigate any events or accidents evaluated in the safety analyses. RPV water inventory control is required in MODES 4 and 5 to protect Safety Limit 2.1.1.3 and the fuel cladding barrier to prevent the release of radioactive material should a draining event occur.

A double-ended guillotine break of the Reactor Coolant System (RCS) is not postulated in MODES 4 and 5 due to the reduced RCS pressure, reduced piping stresses, and ductile piping systems. Instead, an event is postulated in which a single operator error or initiating event allows draining of the RPV water inventory through a single penetration flow path with the highest flow rate, or the sum of the drain rates through multiple penetration flow paths susceptible to a common mode failure (e.g., seismic event, loss of normal power, single human error). It is assumed, based on engineering judgment, that while in MODES 4 and 5, one ECCS injection/spray subsystem can be manually operated to maintain adequate reactor vessel water level.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

As discussed in References 1, 2, 3, 4, and 5, operating experience has shown RPV water inventory to be significant to public health and safety. Therefore, RPV Water Inventory Control satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

Permissive and interlock setpoints are generally considered as nominal values without regard to measurement accuracy.

The specific Applicable Safety Analyses, LCO, and Applicability discussions are listed below on a Function by Function basis.

Low Pressure Coolant Injection Systems and Low Pressure Core Spray

1.a, 1.d, 2.a, 2.c. Reactor Steam Dome Pressure-Low (Injection Permissive) and LPCI and LPCS Injection Line Pressure-Low (Injection Permissive)

Low reactor steam dome pressure and LPCI and LPCS injection line pressure signals are used as permissives for the low pressure ECCS subsystems. This ensures that, prior to opening the injection valves of the low pressure ECCS subsystems, the reactor pressure has fallen to a value below these subsystems' maximum design pressure.

The Reactor Steam Dome Pressure-Low (Injection Permissive) signals are initiated from four pressure switches that sense the reactor dome pressure. The LPCI and LPCS Injection Line Pressure-Low (Injection Permissive) signals are initiated from four pressure switches that sense the pressure in the injection line (one switch for each low pressure ECCS injection line).

The Allowable Values are low enough to prevent overpressurizing the equipment in the low pressure ECCS.

One channel of Reactor Steam Dome Pressure-Low (Injection Permissive) Function per associated Division and one channel of LPCI and LPCS Injection Line Pressure-Low (Injection Permissive) per associated injection line are only required to be OPERABLE in MODES 4 and 5 when the associated subsystem is required to be OPERABLE by LCO 3.5.2, since these channels support the manual operation of these systems.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.a, 1.d, 2.a, 2.c. Reactor Steam Dome Pressure-Low (Injection Permissive) and LPCI and LPCS Injection Line Pressure-Low (Injection Permissive) (continued)

In addition, one channel of LPCS Injection Line Pressure-Low (Injection Permissive) is required to be operable for a required LPCS system, and one channel of LPCI Injection Line Pressure-LOW (Injection Permissive) is required to be OPERABLE for a required LPCI subsystem.

1.b, 1.c, 2.b. LPCS and LPCI Pump Discharge Flow-Low (Bypass)

The minimum flow instruments are provided to protect the associated low pressure ECCS pump from overheating when the pump is operating and the associated injection valve is not sufficiently open. The minimum flow line valve is opened when low flow is sensed, and the valve is automatically closed when the flow rate is adequate to protect the pump.

One flow switch per ECCS pump is used to detect the associated subsystem flow rate. The logic is arranged such that each switch causes its associated minimum flow valve to open when flow is low with the pump running. The logic will close the minimum flow valve once the closure setpoint is exceeded. The LPCI minimum flow valves are time delayed such that the valves will not open for approximately 8 seconds after the switches detect low flow. The time delay is provided to limit reactor vessel inventory loss during the startup of the RHR shutdown cooling mode.

The Pump Discharge Flow-Low (Bypass) Allowable Values are high enough to ensure that the pump flow rate is sufficient to protect the pump, yet low enough to ensure that the closure of the minimum flow valve is initiated to allow full flow into the RPV.

One channel of Pump Discharge Flow-Low (Bypass) Function is required to be OPERABLE when the associated LPCS or LPCI pump is required to be OPERABLE by LCO 3.5.2 to ensure that the pump is capable of injecting into the Reactor Pressure Vessel when manually operated.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

High Pressure Core Spray System

3.a, 3.b. HPCS Pump Discharge Pressure—High (Bypass) and HPCS System Flow Rate—Low (Bypass)

The minimum flow instruments are provided to protect the HPCS pump from overheating when the pump is operating and the associated injection valve is not sufficiently open. The minimum flow line valve is opened when low flow and high pump discharge pressure are sensed, and the valve is automatically closed when the flow rate is adequate to protect the pump or the discharge pressure is low (indicating the HPCS pump is not operating).

One flow switch is used to detect the HPCS System's flow rate. The logic is arranged such that the switch causes the minimum flow valve to open, provided the HPCS pump discharge pressure, sensed by another switch, is high enough (indicating the pump is operating). The logic will close the minimum flow valve once the closure setpoint is exceeded. (The valve will also close upon HPCS pump discharge pressure decreasing below the setpoint.)

The HPCS System Flow Rate—Low (Bypass) Allowable Values are high enough to ensure that pump flow rate is sufficient to protect the pump, yet low enough to ensure that the closure of the minimum flow valve is initiated to allow full flow into the RPV.

The HPCS Pump Discharge Pressure—High (Bypass) Allowable Value is set high enough to ensure that the valve will not be open when the pump is not operating.

One channel of each Function is required to be OPERABLE when the HPCS is required to be OPERABLE by LCO 3.5.2 in MODES 4 and 5.

RHR Shutdown Cooling System Isolation

4.a. Reactor Vessel Water Level-Low, Level 3

The definition of DRAIN TIME allows crediting the closing of penetration flow paths that are capable of being automatically isolated by RPV water level isolation instrumentation prior to the RPV water level being equal to

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

4.a. Reactor Vessel Water Level-Low, Level 3 (continued)

the TAF. The Reactor Vessel Water Level-Low, Level 3 Function is only required to be OPERABLE when automatic isolation of the associated RHR penetration flow path is credited in calculating DRAIN TIME.

Reactor Vessel Water Level–Low, Level 3 signals are initiated from differential pressure transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. While four channels (i.e., two channels per trip system) of the Reactor Vessel Water Level–Low, Level 3 Function are available, only two channels (all in the same trip system) are required to be OPERABLE.

The Reactor Vessel Water Level–Low, Level 3 Allowable Value was chosen to be the same as the RPS Reactor Vessel Water Level–Low, Level 3 Allowable Value (LCO 3.3.1.1) since the capability to cool the fuel may be threatened.

This Function isolates the Group 6 valves.

Reactor Water Cleanup (RWCU) System Isolation

5.a. Reactor Vessel Water Level-Low, Low, Level 2

The definition of DRAIN TIME allows crediting the closing of penetration flow paths that are capable of being automatically isolated by RPV water level isolation instrumentation prior to the RPV water level being equal to the TAF. The Reactor Vessel Water Level-Low Low, Level 2 Function associated with RWCU System isolation may be credited for automatic isolation of penetration flow paths associated with the RWCU System.

Reactor Vessel Water Level–Low Low, Level 2 signals are initiated from differential pressure transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. While four channels (two per tip system) of the Reactor Vessel Water

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

5.a. Reactor Vessel Water Level-Low, Low, Level 2 (continued)

Level–Low Low, Level 2 Function are available, only two channels (all in the same trip system) are required to be OPERABLE.

The Reactor Vessel Water Level–Low Low, Level 2 Allowable Value was chosen to be the same as the ECCS Reactor Vessel Water Level–Low Low, Level 2 Allowable Value (LCO 3.3.5.1), since the capability to cool the fuel may be threatened.

The Reactor Vessel Water Level-Low Low, Level 2 Function is only required to be OPERABLE when automatic isolation of the associated penetration flow path is credited in calculating DRAIN TIME.

This Function isolates the Group 5 valves.

ACTIONS

A Note has been provided to modify the ACTIONS related to RPV Water Inventory Control Instrumentation channels. Section 1.3, Completion Times, specifies that once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition discovered to be inoperable or not within limits will not result in separate entry into the Condition. Section 1.3 also specifies that Required Actions continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable RPV Water Inventory Control instrumentation channels provide appropriate compensatory measures for separate inoperable Condition entry for each inoperable RPV Water Inventory Control instrumentation channel.

A.1

Required Action A.1 directs entry into the appropriate Condition referenced in Table 3.3.5.2-1. The applicable Condition referenced in the Table is Function dependent. Each time a channel is discovered inoperable, Condition A is entered for that channel and provides for transfer to the appropriate subsequent Condition.

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

RHR Shutdown Cooling System Isolation, Reactor Vessel Water Level-Low, Level 3, and Reactor Water Cleanup System, Reactor Vessel Water Level-Low Low, Level 2 Functions are applicable when automatic isolation of the associated penetration flow path is credited in calculating Drain Time. If the instrumentation is inoperable, Required Action B.1 directs an immediate declaration that the associated penetration flow path(s) are incapable of automatic isolation. Required Action B.2 directs calculation of DRAIN TIME. The calculation cannot credit automatic isolation of the affected penetration flow paths.

C.1

Low reactor steam dome and LPCI and LPCS injection line pressure signals are used as permissives for the manual operation of the low pressure ECCS injection/spray subsystems. If these permissives are inoperable, manual operation of the affected subsystem is prohibited. Therefore, the affected permissive must be placed in the trip condition within 1 hour. With a permissive in the trip condition, manual operation may be performed.

The Completion Time of 1 hour is intended to allow the operator time to evaluate any discovered inoperabilities and to place the affected channel in trip prior to declaring the affected subsystem inoperable.

D.1

If a LPCI or LPCS Discharge Flow - Low bypass function or HPCS System Discharge Pressure - High or Flow Rate - Low bypass function is inoperable, there is a risk that the associated ECCS pump could overheat when the pump is operating and the associated injection valve is not fully open. In this condition, the operator can take manual control of the pump and the injection valve to ensure the pump does not overheat.

The 24 hour Completion Time was chosen to allow time for the operator to evaluate and repair any discovered

(continued)

BASES

ACTIONS

D.1 (continued)

inoperabilities prior to declaring the affected subsystem inoperable. The Completion Time is appropriate given the ability to manually start the ECCS pumps and open the injection valves as necessary to ensure the affected pump does not overheat.

G.1

With the Required Action and associated Completion Time of Conditions C or D not met, the associated ECCS injection/spray subsystem may be incapable of performing the intended function, and must be declared inoperable immediately.

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each RPV Water Inventory Control instrumentation Function are found in the SRs column of Table 3.3.5.2-1.

SR 3.3.5.2.1

Performance of the CHANNEL CHECK ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL FUNCTIONAL TEST.

Agreement criteria are determined by the plant staff, based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.5.2.1 (continued)

The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.5.2.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests.

Any setpoint adjustment shall be consistent with the assumptions of the current plant-specific setpoint methodology.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. Information Notice 84-81, "Inadvertent Reduction in Primary Coolant Inventory in Boiling Water Reactors During Shutdown and Startup," November 1984.

2. Information Notice 86-74, "Reduction of Reactor Coolant Inventory Because of Misalignment of RHR Valves," August 1986.

3. Generic Letter 92-04, "Resolution of the Issues Related to Reactor Vessel Water Level Instrumentation in BWRs Pursuant to 10 CFR 50.54(f)," August 1992.

4. NRC Bulletin 93-03, "Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs," May 1993.

5. Information Notice 94-52, "Inadvertent Containment Spray and Reactor Vessel Draindown at Millstone 1," July 1994.

B 3.3 INSTRUMENTATION

B 3.3.5.~~32~~ Reactor Core Isolation Cooling (RCIC) System Instrumentation |

BASES

BACKGROUND

The purpose of the RCIC System instrumentation is to initiate actions to ensure adequate core cooling when the reactor vessel is isolated from its primary heat sink (the main condenser) and normal coolant makeup flow from the Reactor Feedwater System is insufficient or unavailable, such that RCIC System initiation occurs and maintains sufficient reactor water level precluding initiation of the low pressure Emergency Core Cooling Systems (ECCS) pumps. A more complete discussion of RCIC System operation is provided in the Bases of LCO 3.5.3, "RCIC System."

The RCIC System may be initiated by either automatic or manual means. Automatic initiation occurs for conditions of Reactor Vessel Water Level Low–Low, Level 2. The variable is monitored by four differential pressure transmitters that are connected to four trip units. The outputs of the trip units are connected to relays whose contacts are arranged in a one-out-of-two taken twice logic arrangement. The logic can also be initiated by use of a manual push button. Once initiated, the RCIC logic seals in and can be reset by the operator only when the reactor vessel water level signals have cleared.

The RCIC test line isolation valve is closed on a RCIC initiation signal to allow full system flow to the reactor vessel.

The RCIC System also monitors the water level in the condensate storage tank (CST), since there are two sources of water for RCIC operation. Reactor grade water in the CST is the normal source. Upon receipt of a RCIC initiation signal, the CST suction valve is automatically signaled to open (it is normally in the open position) unless the pump suction from the suppression pool valve is open. If the water level in the CST falls below a preselected level, first the suppression pool suction valve automatically opens and then the CST suction valve automatically closes. Two level switches are used to detect low water level in the CST. Either switch can cause the suppression pool suction valve to open. To prevent losing suction to the pump,

(continued)

BASES

BACKGROUND (continued)

the suction valves are interlocked so that one suction path must be open before the other automatically closes.

The RCIC System provides makeup water to the reactor until the reactor vessel water level reaches the high water level (Level 8) trip (two-out-of-two logic), at which time the RCIC turbine steam inlet isolation valve closes (the injection valve also closes due to the closure of the RCIC turbine steam inlet isolation valve). The RCIC System restarts if vessel level again drops to the low level initiation point (Level 2).

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The function of the RCIC System, to provide makeup coolant to the reactor, is to respond to transient events. The RCIC System is not an Engineered Safety Feature System and no credit is taken in the safety analysis for RCIC System operation. Based on its contribution to the reduction of overall plant risk, however, the RCIC System, and therefore its instrumentation, meets Criterion 4 of 10 CFR 50.36(c)(2)(ii). Certain instrumentation Functions are retained for other reasons and are described below in the individual Functions discussion.

The OPERABILITY of the RCIC System instrumentation is dependent on the OPERABILITY of the individual instrumentation channel Functions specified in Table 3.3.5.32-1. Each Function must have a required number of OPERABLE channels with their setpoints within the specified Allowable Values, where appropriate. The actual setpoint is calibrated consistent with applicable setpoint methodology assumptions.

Allowable Values are specified for each RCIC System instrumentation Function specified in the Table. Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Value between CHANNEL CALIBRATIONS. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor vessel water level), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The analytic limits (or design limits) are derived from the limiting values of the process parameters obtained from the safety analysis. The trip setpoints are determined from the analytic limits, corrected for defined process, calibration, and instrument errors. The Allowable Values are then determined, based on the trip setpoint values, by accounting for the calibration based errors. These calibration based errors are limited to reference accuracy, instrument drift, errors associated with measurement and test equipment, and calibration tolerance of loop components. The trip setpoints and Allowable Values determined in this manner provide adequate protection because instrument uncertainties, process effects, calibration tolerances, instrument drift, and severe environment errors (for channels that must function in harsh environments as defined by 10 CFR 50.49) are accounted for and appropriately applied for the instrumentation.

The individual Functions are required to be OPERABLE in MODE 1, and in MODES 2 and 3 with reactor steam dome pressure > 150 psig, since this is when RCIC is required to be OPERABLE. Refer to LCO 3.5.3 for Applicability Bases for the RCIC System.

The specific Applicable Safety Analyses, LCO, and Applicability discussions are listed below on a Function by Function basis.

1. Reactor Vessel Water Level—Low Low, Level 2

Low reactor pressure vessel (RPV) water level indicates that normal feedwater flow is insufficient to maintain reactor vessel water level and that the capability to cool the fuel may be threatened. Should RPV water level decrease too far, fuel damage could result. Therefore, the RCIC System is initiated at Level 2 to assist in maintaining water level above the top of the active fuel.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1. Reactor Vessel Water Level—Low Low, Level 2 (continued)

Reactor Vessel Water Level—Low Low, Level 2 signals are initiated from four differential pressure transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel.

The Reactor Vessel Water Level—Low Low, Level 2 Allowable Value is set high enough such that for complete loss of feedwater flow, the RCIC System flow with high pressure core spray assumed to fail will be sufficient to avoid initiation of low pressure ECCS at Level 1.

Four channels of Reactor Vessel Water Level—Low Low, Level 2 Function are available and are required to be OPERABLE when RCIC is required to be OPERABLE to ensure that no single instrument failure can preclude RCIC initiation. Refer to LCO 3.5.3 for RCIC Applicability Bases.

2. Reactor Vessel Water Level—High, Level 8

High RPV water level indicates that sufficient cooling water inventory exists in the reactor vessel such that there is no danger to the fuel. Therefore, the Level 8 signal is used to close the RCIC turbine steam inlet isolation valve to prevent overflow into the main steam lines (MSLs). (The injection valve also closes due to the closure of the RCIC turbine steam inlet isolation valve.)

Reactor Vessel Water Level—High, Level 8 signals for RCIC are initiated from two differential pressure transmitters from the narrow range water level measurement instrumentation, which sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel.

The Reactor Vessel Water Level—High, Level 8 Allowable Value is high enough to preclude isolating the injection valve of the RCIC during normal operation, yet low enough to trip the RCIC System prior to water overflowing into the MSLs.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

2. Reactor Vessel Water Level—High, Level 8 (continued)

Two channels of Reactor Vessel Water Level—High, Level 8 Function are available and are required to be OPERABLE when RCIC is required to be OPERABLE to ensure that no single instrument failure can preclude RCIC initiation. Refer to LCO 3.5.3 for RCIC Applicability Bases.

3. Condensate Storage Tank Level—Low

Low level in the CST indicates the unavailability of an adequate supply of makeup water from this normal source. Normally the suction valve between the RCIC pump and the CST is open and, upon receiving a RCIC initiation signal, water for RCIC injection would be taken from the CST. However, if the water level in the CST falls below a preselected level, first the suppression pool suction valve automatically opens and then the CST suction valve automatically closes. This ensures that an adequate supply of makeup water is available to the RCIC pump. To prevent losing suction to the pump, the suction valves are interlocked so that the suppression pool suction valve must be open before the CST suction valve automatically closes.

Two level switches are used to detect low water level in the CST. The Condensate Storage Tank Level—Low Function Allowable Value is set high enough to ensure adequate pump suction head while water is being taken from the CST.

Two channels of Condensate Storage Tank Level—Low Function are available and are required to be OPERABLE when RCIC is required to be OPERABLE to ensure that no single instrument failure can preclude RCIC swap to suppression pool source. Refer to LCO 3.5.3 for RCIC Applicability Bases.

4. Manual Initiation

The Manual Initiation push button channel introduces a signal into the RCIC System initiation logic that is redundant to the automatic protective instrumentation and provides manual initiation capability. There is one push button channel for the RCIC System.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

4. Manual Initiation (continued)

The Manual Initiation Function is not assumed in any accident or transient analyses in the UFSAR. However, the Function is retained for overall redundancy and diversity of the RCIC function as required by the NRC in the plant licensing basis.

There is no Allowable Value for this Function since the channel is mechanically actuated based solely on the position of the push button. One channel of Manual Initiation is required to be OPERABLE when RCIC is required to be OPERABLE. Refer to LCO 3.5.3 for RCIC Applicability Bases.

ACTIONS

A Note has been provided to modify the ACTIONS related to RCIC System instrumentation channels. Section 1.3, Completion Times, specifies that once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition discovered to be inoperable or not within limits will not result in separate entry into the Condition. Section 1.3 also specifies that Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable RCIC System instrumentation channels provide appropriate compensatory measures for separate inoperable channels. As such, a Note has been provided that allows separate Condition entry for each inoperable RCIC System instrumentation channel.

A.1

Required Action A.1 directs entry into the appropriate Condition referenced in Table 3.3.5.~~32~~-1 in the accompanying LCO. The applicable Condition referenced in the Table is Function dependent. Each time a channel is discovered to be inoperable, Condition A is entered for that channel and provides for transfer to the appropriate subsequent Condition.

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

Required Action B.1 is intended to ensure that appropriate actions are taken if multiple, inoperable, untripped channels within the same Function result in a complete loss of automatic initiation capability for the RCIC System. In this case, automatic initiation capability is lost if two Function 1 parallel contacts (channels) in the same trip system are inoperable and untripped. In this situation (loss of automatic initiation capability), the 24 hour allowance of Required Action B.2 is not appropriate, and the RCIC System must be declared inoperable within 1 hour after discovery of loss of RCIC initiation capability.

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." For Required Action B.1, the Completion Time only begins upon discovery that the RCIC System cannot be automatically initiated due to two inoperable, untripped Reactor Vessel Water Level—Low Low, Level 2 channels (parallel contacts) in the same trip system. The 1 hour Completion Time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Because of the redundancy of sensors available to provide initiation signals and the fact that the RCIC System is not credited in any accident or transient analysis, an allowable out of service time of 24 hours has been shown to be acceptable (Ref. 1) to permit restoration of any inoperable channel to OPERABLE status. If the inoperable channel cannot be restored to OPERABLE status within the allowable out of service time, the channel must be placed in the tripped condition per Required Action B.2. Placing the inoperable channel in trip would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue. Alternately, if it is not desired to place the channel in trip (e.g., as in the case where placing the inoperable channel in trip would result in an initiation), Condition E must be entered and its Required Action taken.

(continued)

BASES

ACTIONS (continued)

C.1

A risk based analysis was performed and determined that an allowable out of service time of 24 hours (Ref. 1) is acceptable to permit restoration of any inoperable channel to OPERABLE status (Required Action C.1). A Required Action (similar to Required Action B.1), limiting the allowable out of service time if a loss of automatic RCIC initiation capability exists, is not required. This Condition applies to the Reactor Vessel Water Level–High, Level 8 Function, whose logic is arranged such that any inoperable channel will result in a loss of automatic RCIC initiation (high water level trip) capability. As stated above, this loss of automatic RCIC initiation (high water level trip) capability was analyzed and determined to be acceptable. This Condition also applies to the Manual Initiation Function. Since this Function is not assumed in any accident or transient analysis, a total loss of manual initiation capability (Required Action C.1) for 24 hours is allowed. The Required Action does not allow placing a channel in trip since this action would not necessarily result in the safe state for the channel in all events.

D.1, D.2.1, and D.2.2

Required Action D.1 is intended to ensure that appropriate actions are taken if multiple inoperable, untripped channels within the same Function result in automatic component initiation (RCIC source swapover) capability being lost for the feature(s). For Required Action D.1, the RCIC System is the only associated feature. In this case, automatic component initiation (RCIC source swapover) capability is lost if two Function 3 channels are inoperable and untripped. In this situation (loss of automatic suction swap), the 24 hour allowance of Required Actions D.2.1 and D.2.2 is not appropriate, and the RCIC System must be declared inoperable within 1 hour from discovery of loss of RCIC initiation capability. As noted, Required Action D.1 is only applicable if the RCIC pump suction is not aligned to the suppression pool since, if aligned, the Function is already performed.

(continued)

BASES

ACTIONS

D.1, D.2.1, and D.2.2 (continued)

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." For Required Action D.1, the Completion Time only begins upon discovery that the RCIC System cannot be automatically aligned to the suppression pool due to two inoperable, untripped channels in the same Function. The 1 hour Completion Time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Because of the redundancy of sensors available to provide initiation signals and the fact that the RCIC System is not assumed in any accident or transient analysis, an allowable out of service time of 24 hours has been shown to be acceptable (Ref. 1) to permit restoration of any inoperable channel to OPERABLE status. If the inoperable channel cannot be restored to OPERABLE status within the allowable out of service time, the channel must be placed in the tripped condition per Required Action D.2.1, which performs the intended function of the channel (shifting the suction source to the suppression pool). Alternatively, Required Action D.2.2 allows the manual alignment of the RCIC suction to the suppression pool, which also performs the intended function. If Required Action D.2.1 or D.2.2 is performed, measures should be taken to ensure that the RCIC System piping remains filled with water. If it is not desired to perform Required Actions D.2.1 and D.2.2 (e.g., as in the case where shifting the suction source could drain down the RCIC suction piping), Condition E must be entered and its Required Action taken.

E.1

With any Required Action and associated Completion Time not met, the RCIC System may be incapable of performing the intended function, and the RCIC System must be declared inoperable immediately.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

As noted in the beginning of the SRs, the SRs for each RCIC System instrumentation Function are found in the SRs column of Table 3.3.5.32-1.

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Functions 2 and 4; and (b) for up to 6 hours for Functions 1 and 3 provided the associated Function maintains RCIC initiation capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. 1) assumption of the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the RCIC will initiate when necessary.

SR 3.3.5.32.1

Performance of the CHANNEL CHECK ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.5.~~32~~.1 (continued)

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.5.~~32~~.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.3.5.~~32~~.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter with the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.5.32.4

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required initiation logic for a specific channel. The system functional testing performed in LCO 3.5.3 overlaps this Surveillance to provide complete testing of the safety function.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. GENE-770-06-2-A, "Addendum to Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," December 1992.

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Allowable Value. Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor vessel water level), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. The trip setpoints are determined from the analytic limits, corrected for defined process, calibration, and instrument errors. The Allowable Values are then determined, based on the trip setpoint values, by accounting for the calibration based errors. These calibration based errors are limited to reference accuracy, instrument drift, errors associated with measurement and test equipment, and calibration tolerance of loop components. The trip setpoints and Allowable Values determined in this manner provide adequate protection because instrument uncertainties, process effects, calibration tolerances, instrument drift, and severe environment errors (for channels that must function in harsh environments as defined by 10 CFR 50.49) are accounted for and appropriately applied for the instrumentation.

Certain Emergency Core Cooling Systems (ECCS) and RCIC valves (e.g., minimum flow) also serve the dual function of automatic PCIVs. The signals that isolate these valves are also associated with the automatic initiation of the ECCS and RCIC. Some instrumentation and ACTIONS associated with these signals are addressed in LCO 3.3.5.1, "ECCS Instrumentation," and LCO 3.3.5.~~2~~3, "RCIC System Instrumentation," and are not included in this LCO.

In general, the individual Functions are required to be OPERABLE in MODES 1, 2, and 3 consistent with the Applicability for LCO 3.6.1.1, "Primary Containment." Functions that have different Applicabilities are discussed below in the individual Functions discussion.

The specific Applicable Safety Analyses, LCO, and Applicability discussions are listed below on a Function by Function basis.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

5.a. Reactor Vessel Water Level—Low, Level 3 (continued)

fuel may be threatened. Should RPV water level decrease too far, fuel damage could result. Therefore, isolation of some reactor vessel interfaces occurs to begin isolating the potential sources of a break. The Reactor Vessel Water Level—Low, Level 3 Function associated with RHR Shutdown Cooling System isolation is not directly assumed in any transient or accident analysis, since bounding analyses are performed for large breaks such as MSLBs. The RHR Shutdown Cooling System isolation on Level 3 supports actions to ensure that the RPV water level does not drop below the top of the active fuel during a vessel draindown event caused by a leak (e.g., pipe break or inadvertent valve opening) in the RHR Shutdown Cooling System.

Reactor Vessel Water Level—Low, Level 3 signals are initiated from differential pressure transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. Four channels (two channels per trip system) of the Reactor Vessel Water Level—Low, Level 3 Function are available and are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function. ~~As noted (footnote (c) to Table 3.3.6.1-1), only one trip system is required to be OPERABLE in MODES 4 and 5 provided the RHR Shutdown Cooling System integrity is maintained. System integrity is maintained provided the piping is intact and no maintenance is being performed that has the potential for draining the reactor vessel through the system.~~

The Reactor Vessel Water Level—Low, Level 3 Function is only required to be OPERABLE in MODE~~S~~ 3~~, 4, and 5~~ to prevent this potential flow path from lowering reactor vessel level to the top of the fuel. In MODES 1 and 2, the Reactor Vessel Pressure—High Function and administrative controls ensure that this flow path remains isolated to prevent unexpected loss of inventory via this flow path.

The Reactor Vessel Water Level—Low, Level 3 Allowable Value was chosen to be the same as the RPS Reactor Vessel Water Level—Low, Level 3 Allowable Value (LCO 3.3.1.1) since the capability to cool the fuel may be threatened.

This Function isolates the Group 6 valves.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1. Reactor Vessel Water Level—Low Low, Level 2 (continued)

Reactor Vessel Water Level—Low Low, Level 2 signals are initiated from differential pressure transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. Four channels of Reactor Vessel Water Level—Low Low, Level 2 Function are available and are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function.

The Reactor Vessel Water Level—Low Low, Level 2 Allowable Value was chosen to be the same as the High Pressure Core Spray (HPCS)/Reactor Core Isolation Cooling (RCIC) Reactor Vessel Water Level—Low Low, Level 2 Allowable Value (LCO 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," and LCO 3.3.5.~~3~~2, "Reactor Core Isolation Cooling (RCIC) System Instrumentation"), since this could indicate the capability to cool the fuel is being threatened.

The Reactor Vessel Water Level—Low Low, Level 2 Function is required to be OPERABLE in MODES 1, 2, and 3 where considerable energy exists in the Reactor Coolant System (RCS); thus, there is a probability of pipe breaks resulting in significant releases of radioactive steam and gas. In MODES 4 and 5, the probability and consequences of these events are low due to the RCS pressure and temperature limitations of these MODES; thus, this Function is not required. ~~In addition, the Function is also required to be OPERABLE during operations with a potential for draining the reactor vessel (OPDRVs) to ensure that offsite dose limits are not exceeded if core damage occurs.~~

2. Drywell Pressure—High

High drywell pressure can indicate a break in the reactor coolant pressure boundary (RCPB). An isolation of the secondary containment and actuation of the SGT System are initiated in order to minimize the potential of an offsite dose release. The isolation and initiation of systems on Drywell Pressure—High supports actions to ensure that any offsite releases are within the limits calculated in the

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

3, 4. Reactor Building Ventilation Exhaust Plenum and Fuel Pool Ventilation Exhaust Radiation—High (continued)

Reactor Building Ventilation Exhaust Plenum Radiation—High signals are initiated from radiation detectors that are located in the reactor building return air riser above the upper area of the steam tunnel prior to the reactor building ventilation isolation dampers. Fuel Pool Ventilation Exhaust Radiation—High signals are initiated from radiation detectors that are located in the reactor building exhaust ducting coming from the refuel floor. The signal from each detector is input to an individual monitor whose trip outputs are assigned to an isolation channel. Four channels of Reactor Building Ventilation Exhaust Plenum Radiation-High Function and four channels of Fuel Pool Ventilation Exhaust Radiation—High Function are available and are required to be OPERABLE to ensure that no single instrument failure can preclude the isolation function.

The Allowable Values are chosen to promptly detect gross failure of the fuel cladding.

The Reactor Building Ventilation Exhaust Plenum and Fuel Pool Ventilation Exhaust Radiation—High Functions are required to be OPERABLE in MODES 1, 2, and 3 where considerable energy exists; thus, there is a probability of pipe breaks resulting in significant releases of radioactive steam and gas. In MODES 4 and 5, the probability and consequences of these events are low due to the RCS pressure and temperature limitations of these MODES; thus, these Functions are not required. In addition, the Functions are required to be OPERABLE during CORE ALTERATIONS~~, OPDRVs,~~ and movement of irradiated fuel assemblies in the secondary containment because the capability of detecting radiation releases due to fuel failures (due to ~~fuel uncovery or~~ dropped fuel assemblies) must be provided to ensure that offsite dose limits are not exceeded.

5. Manual Initiation

The Manual Initiation push button channels introduce signals into the secondary containment isolation logic that are redundant to the automatic protective instrumentation channels, and provide manual isolation capability. There is

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

5. Manual Initiation (continued)

no specific UFSAR safety analysis that takes credit for this Function. It is retained for the overall redundancy and diversity of the secondary containment isolation instrumentation as required by the NRC approved licensing basis.

There is one manual initiation push button for the logic per trip system. Two channels of the Manual Initiation Function are available and are required to be OPERABLE in MODES 1, 2, and 3 and during CORE ALTERATIONS~~, OPDRVs,~~ and movement of irradiated fuel assemblies in the secondary containment, since these are the MODES and other specified conditions in which the Secondary Containment Isolation automatic Functions are required to be OPERABLE. There is no Allowable Value for this Function since the channels are mechanically actuated based solely on the position of the push buttons.

ACTIONS

A Note has been provided to modify the ACTIONS related to secondary containment isolation instrumentation channels. Section 1.3, Completion Times, specifies that once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition discovered to be inoperable or not within limits will not result in separate entry into the Condition. Section 1.3 also specifies that Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable secondary containment isolation instrumentation channels provide appropriate compensatory measures for separate inoperable channels. As such, a Note has been provided that allows separate Condition entry for each inoperable secondary containment isolation instrumentation channel.

A.1

Because of the diversity of sensors available to provide isolation signals and the redundancy of the isolation design, an allowable out of service time of 12 hours or 24 hours, depending on the Function (12 hours for those

(continued)

BASES

LCO (continued)

Each channel must have its setpoint set within the specified Allowable Value of SR 3.3.7.1.3. The actual setpoint is calibrated consistent with applicable setpoint methodology assumptions. Nominal trip setpoints are specified in the setpoint calculations. These nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Value between successive CHANNEL CALIBRATIONS. Operation with a trip setpoint that is less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value.

Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., control room air intake radiation), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. The trip setpoints are determined from the analytic limits, corrected for defined process, calibration, and instrument errors. The Allowable Values are then determined, based on the trip setpoint values, by accounting for the calibration based errors. These calibration based errors are limited to reference accuracy, instrument drift, errors associated with measurement and test equipment, and calibration tolerance of loop components. The trip setpoints and Allowable Values determined in this manner provide adequate protection because instrument uncertainties, process effects, calibration tolerances, instrument drift, and severe environment errors (for channels that must function in harsh environments as defined by 10 CFR 50.49) are accounted for and appropriately applied for the instrumentation.

APPLICABILITY

The Control Room Air Intake Radiation–High Function is required to be OPERABLE in MODES 1, 2, and 3, and during CORE ALTERATIONS~~, OPDRVs,~~ and movement of irradiated fuel in the secondary containment to ensure that control room personnel are protected during a LOCA *or a* fuel handling event~~, or a vessel draindown event~~. During MODES 4 and 5, when these specified conditions are not in progress (e.g., CORE ALTERATIONS), the probability of a LOCA or fuel damage is low; thus, the Function is not required.

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.c, 1.d, 1.e, 2.c, 2.d, 2.e. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage) (continued)

generated by either the Reactor Vessel Water Level - Low Low, Level 2 or Drywell Pressure - High ECCS Instrumentation. The required OPERABILITY of this instrumentation is identified on Table 3.3.5.1-1, "Emergency Core Cooling System Instrumentation." Two footnotes have been provided for the Degraded Voltage Time Delay, LOCA, Function to modify its OPERABILITY consistent with the OPERABILITY requirements of the ECCS Instrumentation that generate the associated LOCA signal. Per footnote (a), the Degraded Voltage Time Delay, LOCA, Function is *not* required to be OPERABLE in MODES 4 and 5 *since* ~~when~~ the associated ECCS *subsystems* ~~is~~*are not* required to ~~be OPERABLE for automatic initiation~~*initiate automatically in MODES 4 and 5*. Additionally, footnote (b) states the Degraded Voltage Time Delay, LOCA, Function is not required to be OPERABLE when the reactor vessel is defueled. These footnotes are acceptable because the Degraded Voltage Time Delay, No LOCA, Function provides adequate protection to ensure that other required systems powered from the DG(s) function as designed in any non-LOCA accident in which a loss of offsite power is assumed.

ACTIONS

A Note has been provided to modify the ACTIONS related to LOP instrumentation channels. Section 1.3, Completion Times, specifies that once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition discovered to be inoperable or not within limits will not result in separate entry into the Condition. Section 1.3 also specifies that Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable LOP instrumentation channels provide appropriate compensatory measures for separate inoperable channels. As such, a Note has been provided that allows separate Condition entry for each inoperable LOP instrumentation channel.

(continued)

BASES (continued)

APPLICABILITY

The operation of the RPS electric power monitoring assemblies is essential to disconnect the RPS bus powered components from the inservice MG set or alternate power supply during abnormal voltage or frequency conditions. Since the degradation of a nonclass 1E source supplying power to the RPS bus can occur as a result of any random single failure, the OPERABILITY of the RPS electric power monitoring assemblies is required when the RPS bus powered components are required to be OPERABLE. This results in the RPS Electric Power Monitoring System OPERABILITY being required in MODES 1, 2, and 3, MODES 4 and 5, with residual heat removal (RHR) shutdown cooling isolation valves open, MODE 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies, during movement of irradiated fuel assemblies in the secondary containment, *and* during CORE ALTERATIONS~~, and during operations with a potential for draining the reactor vessel (OPDRVs)~~.

ACTIONS

A.1

If one RPS electric power monitoring assembly for an inservice power supply (MG set or alternate) is inoperable, or one RPS electric power monitoring assembly on each inservice power supply is inoperable, the OPERABLE assembly will still provide protection to the RPS bus powered components under degraded voltage or frequency conditions. However, the reliability and redundancy of the RPS Electric Power Monitoring System are reduced and only a limited time (72 hours) is allowed to restore the inoperable assembly(s) to OPERABLE status. If the inoperable assembly(s) cannot be restored to OPERABLE status, the associated power supply must be removed from service (Required Action A.1). This places the RPS bus in a safe condition. An alternate power supply with OPERABLE power monitoring assemblies may then be used to power the RPS bus.

The 72 hour Completion Time takes into account the remaining OPERABLE electric power monitoring assembly and the low probability of an event requiring RPS Electric Power Monitoring protection occurring during this period. It allows time for plant operations personnel to take corrective actions or to place the plant in the required condition in an orderly manner and without challenging plant systems.

(continued)

BASES

ACTIONS

C.1 (continued)

perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state. The allowed Completion Time is reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

D.1 and D.2

If any Required Action and associated Completion Time of Condition A or B are not met in MODE 4 or 5 with RHR SDC isolation valves open, action must be immediately initiated to either restore one electric power monitoring assembly to OPERABLE status for the inservice power source supplying the required instrumentation powered from the RPS bus (Required Action D.1) or to isolate the RHR SDC System (Required Action D.2). Required Action D.1 is provided because the RHR SDC System may be needed to provide core cooling. All actions must continue until the applicable Required Actions are completed.

E.1

If any Required Action and associated Completion Time of Condition A or B are not met in MODE 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies, the operator must immediately initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies (Required Action E.1). This Required Action results in the least reactive condition for the reactor core and ensures that the safety function of the RPS (e.g., scram of control rods) is not required.

F.1.1, F.1.2, F.2.1, and F.2.2

If any Required Action and associated Completion Time of Condition A or B are not met during movement of irradiated fuel assemblies in the secondary containment~~,~~ *or* during CORE ALTERATIONS, ~~or during OPDRVs,~~ the ability to isolate the

(continued)

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), *REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL*, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

B 3.5.1 ECCS–Operating

BASES

BACKGROUND

The ECCS is designed, in conjunction with the primary and secondary containment, to limit the release of radioactive materials to the environment following a loss of coolant accident (LOCA). The ECCS uses two independent methods (flooding and spraying) to cool the core during a LOCA. The ECCS network is composed of the High Pressure Core Spray (HPCS) System, the Low Pressure Core Spray (LPCS) System, and the low pressure coolant injection (LPCI) mode of the Residual Heat Removal (RHR) System. The ECCS also consists of the Automatic Depressurization System (ADS). The suppression pool provides the required source of water for the ECCS.

On receipt of an initiation signal, ECCS pumps automatically start; the system aligns, and the pumps inject water, taken from the suppression pool, into the Reactor Coolant System (RCS) as RCS pressure is overcome by the discharge pressure of the ECCS pumps. Although the system is initiated, ADS action is delayed, allowing the operator to interrupt the timed sequence if the system is not needed. The HPCS pump discharge pressure almost immediately exceeds that of the RCS, and the pump injects coolant into the spray sparger above the core. If the break is small, HPCS will maintain coolant inventory, as well as vessel level, while the RCS is still pressurized. If HPCS fails, it is backed up by ADS in combination with LPCI and LPCS. In this event, the ADS timed sequence would be allowed to time out and open the selected safety/relief valves (S/RVs), depressurizing the RCS and allowing the LPCI and LPCS to overcome RCS pressure and inject coolant into the vessel. If the break is large, RCS pressure initially drops rapidly, and the LPCI and LPCS systems cool the core.

Water from the break returns to the suppression pool where it is used again and again. Water in the suppression pool is circulated through a heat exchanger cooled by the Residual Heat Removal Service Water (RHRSW) System. Depending on the location and size of the break, portions of

(continued)

BASES (continued)

APPLICABILITY

All ECCS subsystems are required to be OPERABLE during MODES 1, 2, and 3 when there is considerable energy in the reactor core and core cooling would be required to prevent fuel damage in the event of a break in the primary system piping. In MODES 2 and 3, the ADS function is not required when pressure is ≤ 150 psig because the low pressure ECCS subsystems (LPCS and LPCI) are capable of providing flow into the RPV below this pressure. ~~ECCS r~~*R*equirements for MODES 4 and 5 are specified in LCO 3.5.2, "*RPV Water Inventory Control*~~ECCS Shutdown~~."

ACTIONS

A Note prohibits the application of LCO 3.0.4.b to an inoperable HPCS subsystem. There is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable HPCS subsystem 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.

A.1

If any one low pressure ECCS injection/spray subsystem is inoperable, the inoperable subsystem must be restored to OPERABLE status within 7 days. In this Condition, the remaining OPERABLE subsystems provide adequate core cooling during a LOCA. However, overall ECCS reliability is reduced because a single failure in one of the remaining OPERABLE subsystems concurrent with a LOCA may result in the ECCS not being able to perform its intended safety function. The 7 day Completion Time is based on a reliability study (Ref. 12) that evaluated the impact on ECCS availability by assuming that various components and subsystems were taken out of service. The results were used to calculate the average availability of ECCS equipment needed to mitigate the consequences of a LOCA as a function of allowed outage times (i.e., Completion Times).

B.1 and B.2

If the HPCS System is inoperable, and the RCIC System is immediately verified to be OPERABLE (when RCIC is required to be OPERABLE), the HPCS System must be restored to OPERABLE status within 14 days. In this Condition, adequate

(continued)

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), *REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL*, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

B 3.5.2 ~~ECCS–Shutdown~~*RPV Water Inventory Control*

BASES

BACKGROUND

The RPV contains penetrations below the top of the active fuel (TAF) that have the potential to drain the reactor coolant inventory to below the TAF. If the water level should drop below the TAF, the ability to remove decay heat is reduced, which could lead to elevated cladding temperatures and clad perforation. Safety Limit 2.1.1.3 requires the RPV water level to be above the top of the active irradiated fuel at all times to prevent such elevated cladding temperatures.~~A description of the High Pressure Core Spray (HPCS) System, Low Pressure Core Spray (LPCS) System, and low pressure coolant injection (LPCI) mode of the Residual Heat Removal (RHR) System is provided in the Bases for LCO 3.5.1, "ECCS–Operating."~~

APPLICABLE SAFETY ANALYSES

With the unit in MODE 4 or 5, RPV water inventory control is not required to mitigate any events or acidents evaluated in the safety analyses.~~The ECCS performance is evaluated for the entire spectrum of break sizes for a postulated loss of coolant accident (LOCA).~~ *RPV water inventory control is required in MODES 4 and 5 to protect Safety Limit 2.1.1.3 and the fuel cladding barrier to prevent the release of radioactive material to the environment should an unexpected draining event occur.*~~The long term cooling analysis following a design basis LOCA (Ref. 1) demonstrates that only one ECCS injection/spray subsystem is required, post LOCA, to maintain adequate reactor vessel water level in the event of an inadvertent vessel draindown. It is reasonable to assume, based on engineering judgment, that while in MODES 4 and 5, one ECCS injection/spray subsystem can maintain adequate reactor vessel water level. To provide redundancy, a minimum of two ECCS injection/spray subsystems are required to be OPERABLE in MODES 4 and 5.~~

A double-ended guillotine break of the Reactor Coolant System (RCS) is not postulated in MODES 4 and 5 due to the reduced RCS pressure, reduced piping stresses, and ductile piping systems. Instead, an event is considered in which single operator error or initiating event allows draining of the RPV water inventory through a single penetration flow

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

path with the highest flow rate, or the sum of the drain rates through multiple penetration flow paths susceptible to a common mode failure (e.g., seismic event, loss of normal power, single human error). It is assumed, based on engineering judgment, that while in MODES 4 and 5, one low pressure ECCS injection/spray subsystem can maintain adequate reactor vessel water level.~~The ECCS satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).~~

As discussed in References 1, 2, 3, 4, and 5, operating experience has shown RPV water inventory to be significant to public health and safety. Therefore, RPV Water Inventory Control satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

The RPV water level must be controlled in MODES 4 and 5 to ensure that if an unexpected draining event should occur, the reactor coolant water level remains above the top of the active irradiated fuel as required by Safety Limit 2.1.1.3.

The Limiting Condition for Operation (LCO) requires the DRAIN TIME of RPV water inventory to the TAF to be ≥ 36 hours. A DRAIN TIME of 36 hours is considered reasonable to identify and initiate action to mitigate unexpected draining of reactor coolant. An event that could cause loss of RPV water inventory and result in the RPV water level reaching the TAF in greater than 36 hours does not represent a significant challenge to Safety Limit 2.1.1.3 and can be managed as part of normal plant operation.

One~~Two~~ ECCS injection/spray subsystem~~s~~ is~~are~~ required to be OPERABLE and capable of being manually started to provide defense-in-depth should an unexpected draining event occur. An~~The~~ ECCS injection/spray subsystem~~s~~ is~~are~~ defined as either one of the three Low Pressure Coolant Injection (LPCI) subsystems, the Low Pressure Core Spray (LPCS) System, or~~and~~ the High Pressure Core Spray (HPCS) System. The LPCI~~S~~ ~~System~~ subsystem and the~~each~~ LPCS~~I~~ ~~subs~~System consist of one motor driven pump, piping, and valves to transfer water from the suppression pool to the reactor pressure vessel (RPV). The HPCS System consists of one motor driven pump, piping, and valves to transfer water from the suppression pool to the RPV. The necessary portions of the Diesel Generator Cooling Water System are also required to provide appropriate cooling to each required ECCS

(continued)

BASES

LCO (continued)

injection/spray subsystem. Management of gas voids is important to ECCS injection/spray subsystem OPERABILITY.

A required ECCS subsystem may be aligned with the pump control switch in pull-to-lock and associated ECCS subsystem injection valves may be configured to allow throttling to control RPV makeup flow rates. Operators must be able to take manual action from the control room to provide makeup to the RPV as-necessary with the pump and associated injection valve in this alignment without delay.

The LCO is modified by a Note which allows a required ~~As noted, one~~ LPCI subsystem (A or B) *to*~~may~~ be considered OPERABLE during alignment and operation for decay heat removal, if capable of being manually realigned (remote or local) to the LPCI mode and is not otherwise inoperable. Alignment and operation for decay heat removal includes: a) when the system is realigned to or from the RHR shutdown cooling mode and; b) when the system is in the RHR shutdown cooling mode, whether or not the RHR pump is operating. This allowance is necessary since the RHR System may be required to operate in the shutdown cooling mode to remove decay heat and sensible heat from the reactor. Because of *the restrictions on DRAIN TIME,* ~~low pressure and low temperature conditions in MODES 4 and 5,~~ sufficient time will be available to manually align and *operate the required* ~~initiate~~ LPCI subsystem ~~operation~~ to *maintain RPV inventory* ~~provide core cooling~~ prior to *RPV water level reaching the TAF*~~postulated fuel uncovery~~.

APPLICABILITY

RPV water inventory control ~~OPERABILITY of the ECCS injection/spray subsystems~~ is required in MODES 4 and 5 ~~to ensure adequate coolant inventory and sufficient heat removal capability for the irradiated fuel in the core in case of an inadvertent draindown of the vessel~~. Requirements *on water inventory control* ~~for ECCS OPERABILITY~~ during *other* MODES ~~1, 2, and 3~~ are ~~discussed~~ *contained* in *LCOs in Section 3.3,* Instrumentation, *and other LCOs in Section 3.5, ECCS, RPV Water Inventory Control, and RCIC* ~~the Applicability section of the Bases for LCO 3.5.1~~. *RPV Water Inventory Control is required to protect Safety Limit 2.1.1.3 which is applicable whenever irradiated fuel is in the reactor vessel.* ~~ECCS subsystems are not required to be OPERABLE during MODE 5 with the spent fuel storage pool gates removed and~~

(continued)

BASES (continued)

ACTIONS

A.1 and B.1

~~the water level maintained at ≥ 22 ft above the RPV flange. This provides sufficient coolant inventory to allow operator action to terminate the inventory loss prior to fuel uncovery in case of an inadvertent draindown.~~

~~The Automatic Depressurization System is not required to be OPERABLE during MODES 4 and 5 because the RPV pressure is < 150 psig, and the LPCS, HPCS, and LPCI subsystems can provide core cooling without any depressurization of the primary system.~~*If the required ECCS injection/spray subsystem is inoperable, it must be restored to OPERABLE status within 4 hours. In this Condition, the LCO controls on DRAIN TIME minimize the possibility that an unexpected draining event could necessitate the use of the ECCS injection/spray subsystem, however the defense-in-depth provided by the ECCS injection/spray subsystem is lost. The 4 hour Completion Time for restoring the required ECCS injection/spray subsystem to OPERABLE status is based on engineering judgment that considers the LCO controls on DRAIN TIME and the low probability of a an unexpected draining event that would result in a loss of RPV water inventory.*~~If any one required ECCS injection/spray subsystem is inoperable, the required inoperable ECCS injection/spray subsystem must be restored to OPERABLE status within 4 hours. In this Condition, the remaining OPERABLE subsystem can provide sufficient RPV flooding capability to recover from an inadvertent vessel draindown. However, overall system reliability is reduced because a single failure in the remaining OPERABLE subsystem concurrent with~~ *If the inoperable ECCS injection/spray subsystem is not restored to OPERABLE status within the required Completion Time, action must be initiated immediately to establish a method of water injection capable of operating without offsite electrical power. The method of water injection includes the necessary instrumentation and controls, water sources, and pumps and valves needed to add water to the RPV or refueling cavity should an unexpected draining event occur. The method of water injection may be operated manually, and may consist of one or more systems or subsystems, and must be able to access water inventory capable of maintaining the RPV water level above the TAF for ≥ 36 hours. If recirculation of injected water would occur, it may be credited in determining the necessary water volume.*~~a vessel draindown could result in the ECCS not being able to perform its intended function. The 4 hour Completion Time for restoring the required ECCS injection/spray subsystem to OPERABLE status is based on engineering judgment that considered the availability of one subsystem and the low probability of a vessel draindown event.~~

(continued)

BASES

ACTIONS (continued)

C.1, C.2, ~~D.1, D.2,~~ and ~~C~~D.3

~~With the inoperable subsystem not restored to OPERABLE status within the required Completion Time, action must be initiated immediately to suspend operations with a potential for draining the reactor vessel (OPDRVs) to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.~~

With the DRAIN TIME less than 36 hours but greater than or equal to 8 hours, compensatory measures should be taken to ensure the ability to implement mitigating actions should an unexpected draining event occur. Should a draining event lower the reactor coolant level to below the TAF, there is potential for damage to the reactor fuel cladding and release of radioactive material. Additional actions are taken to ensure that radioactive material will be contained, diluted, and processed prior to being released to the environment.

The secondary containment provides a controlled volume in which fission products can be contained, diluted, and processed prior to release to the environment. Required Action C.1 requires verification of the capability to establish the secondary containment boundary in less than the DRAIN TIME. The required verification confirms actions to establish the secondary containment boundary are preplanned and necessary materials are available. The secondary containment boundary is considered established when one Standby Gas Treatment (SGT) subsystem is capable of maintaining a negative pressure in the secondary containment with respect to the environment.

Verification that the secondary containment boundary can be established must be performed within 4 hours. The required verification is an administrative activity and does not require manipulation or testing of equipment. Secondary containment penetration flow paths form a part of the secondary containment boundary. A secondary containment penetration flow path can be considered isolated when one barrier in the flow path is in place. Examples of suitable barriers include, but are not limited to, a closed secondary containment isolation valve (SCIV), a closed manual valve, a blind flange, or another sealing device that sufficiently seals the penetration flow path. The planned actions are not required to restore secondary containment to an OPERABLE status, only sufficiently sealed to allow one division of

(continued)

BASES

ACTIONS C.1, C.2, ~~D.1, D.2,~~ and ~~C~~D.3 (continued)

SGT to maintain a negative pressure with respect to the environment. Required Action C.2 requires verification of the capability to isolate each secondary containment penetration flow path in less than the DRAIN TIME. The required verification confirms actions to isolate the secondary containment penetration flow paths are preplanned and necessary materials are available. Power operated dampers are not required to receive automatic isolation signals if they can be closed manually within the required time. Verification that the secondary containment penetration flow paths can be isolated must be performed within 4 hours. The required verification is an administrative activity and does not require manipulation or testing of equipment. ~~If both of the required ECCS injection/spray subsystems are inoperable, all coolant inventory makeup capability may be unavailable. Therefore, actions must be initiated immediately to suspend OPDRVs in order to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until OPDRVs are suspended. One ECCS injection/spray subsystem must also be restored to OPERABLE status within 4 hours. The 4 hour Completion Time to restore at least one required ECCS injection/spray subsystem to OPERABLE status ensures that prompt action will be taken to provide the required cooling capacity or to initiate actions to place the plant in a condition that minimizes any potential fission product release to the environment.~~

~~If at least one required ECCS injection/spray subsystem is not restored to OPERABLE status within the 4 hour Completion Time, additional actions are required to minimize any potential fission product release to the environment. This includes ensuring secondary containment is OPERABLE; one standby gas treatment subsystem is OPERABLE; and secondary containment isolation capability is available in each secondary containment penetration flow path not isolated that is assumed to be isolated to mitigate radioactivity~~

One SGT subsystem is capable of maintaining the secondary containment at a negative pressure with respect to the environment and filter gaseous releases. Required Action C.3 requires verification of the capability to place one SGT subsystem in operation in less than the DRAIN TIME. The required verification confirms actions to place a SGT

(continued)

BASES

ACTIONS

C.1, C.2, ~~D.1, D.2, and~~ *C~~D~~*.3 (continued)

subsystem in operation are preplanned and necessary materials are available. Verification that a SGT subsystem can be placed in operation must be performed within 4 hours. The required verification is an administrative activity and does not require manipulation or testing of equipment. ~~releases (i.e., one secondary containment isolation valve and associated instrumentation are OPERABLE or other acceptable administrative controls to assure isolation capability. The administrative controls consist of stationing a dedicated operator, who is in continuous communication with the control room at the controls of the isolation device. In this way, the penetration can be rapidly isolated when a need for secondary containment isolation is indicated.) This may be performed by an administrative check, by examining logs or other information, to determine if the components are out of service for maintenance or other reasons. It is not necessary to perform the Surveillances needed to demonstrate OPERABILITY of the components. If, however, any required component is inoperable, then it must be restored to OPERABLE status. In this case, the Surveillances may need to be performed to restore the component to OPERABLE status. Actions must continue until all required components are OPERABLE.~~

D.1, D.2, D.3, and D.4

With the DRAIN TIME less than 8 hours, mitigating actions are implemented in case an unexpected draining event should occur. Note that if the DRAIN TIME is less than 1 hour, Required Action E.1 is also applicable.

Required Action D.1 requires immediate action to establish an additional method of water injection augmenting the ECCS injection/spray subsystem required by the LCO. The additional method of water injection includes the necessary instrumentation and controls, water sources, and pumps and valves needed to add water to the RPV or refueling cavity should an unexpected draining event occur. The Note to Required Action D.1 states that either the ECCS injection/spray subsystem or the additional method of water injection must be capable of operating without offsite electrical power. The additional method of water injection may be manually initiated and may consist of one or more system or subsystems. The *additional method of water injection must be able to access water inventory capable of*

(continued)

BASES

ACTIONS

D.1, D.2, D.3, and D.4 (continued)

being injected to maintain the RPV water level above the TAF for ≥ 36 hours. The additional method of water injection and the ECCS injection/spray subsystem may share all or part of the same water sources. If recirculation of injected water would occur, it may be credited in determining the required water volume.

Should a draining event lower the reactor coolant level to below the TAF, there is potential for damage to the reactor fuel cladding and release of radioactive material. Additional actions are taken to ensure that radioactive material will be contained, diluted, and processed prior to being released to the environment.

The secondary containment provides a control volume in which fission products can be contained, diluted, and processed prior to release to the environment. Required Action D.2 requires that actions be immediately initiated to establish the secondary containment boundary. With the secondary containment boundary established, one SGT subsystem is capable of maintaining a negative pressure in the secondary containment with respect to the environment.

The secondary containment penetrations form a part of the secondary containment boundary. Required Action D.3 requires that actions be immediately initiated to verify that each secondary containment penetration flow path is isolated or to verify that it can be manually isolated from the control room. Examples of manual isolation from the control room could include the use of manual isolation pushbuttons, control switches, or placing a sufficient number of radiation monitor channels in trip from either unit. A secondary containment penetration flow path can be considered isolated when one barrier in the flow path is in place. Examples of suitable barriers include, but are not limited to, a closed secondary containment isolation valve (SCIV), a closed manual valve, a blind flange, or another sealing device that sufficiently seals the penetration flow path. The actions are not required to restore secondary containment to an OPERABLE status, only sufficiently sealed to allow one division of SGT to maintain a negative pressure with respect to the environment.

(continued)

BASES

ACTIONS

D.1, D.2, D.3, and D.4 (continued)

One SGT subsystem is capable of maintaining the secondary containment at a negative pressure with respect to the environment and filter gaseous releases. Required Action D.4 requires that actions be immediately initiated to verify that at least one SGT subsystem is capable of being placed in operation. The required verification is an administrative activity and does not require manipulation or testing of equipment.

E.1

If the Required Actions and associated Completion Times of Conditions C or D are not met or if the DRAIN TIME is less than 1 hour, actions must be initiated immediately to restore the DRAIN TIME to ≥ 36 hours. In this condition, there may be insufficient time to respond to an unexpected draining event to prevent the RPV water inventory from reaching the TAF. Note that Required Actions D.1, D.2, D.3, and D.4 are also applicable when DRAIN TIME is less than 1 hour.

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1~~ and SR 3.5.2.2~~

This Surveillance verifies that the DRAIN TIME of RPV water inventory to the TAF is ≥ 36 hours. The period of 36 hours is considered reasonable to identify and initiate action to mitigate draining of reactor coolant. Loss of RPV water inventory that would result in the RPV water level reaching the TAF in greater than 36 hours does not represent a significant challenge to Safety Limit 2.1.1.3 and can be managed as part of normal plant operation.

The definition of DRAIN TIME states that realistic cross-sectional areas and drain rates are used in the calculation. A realistic drain rate may be determined using a single, step-wise, or integrated calculation considering the changing RPV water level during a draining event. For a Control Rod RPV penetration flow path with the Control Rod Drive Mechanism removed and not replaced with a blank flange, the realistic cross-sectional area is based on the control rod blade seated in the control rod guide tube. If the control rod blade will be raised from the penetration to

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1 ~~and SR 3.5.2.2~~ (continued)

adjust or verify seating of the blade, the exposed cross-sectional area of the RPV penetration flow path is used.

The definition of DRAIN TIME excludes from the calculation those penetration flow paths connected to an intact closed system, or isolated by manual or automatic valves that are locked, sealed, or otherwise secured in the closed position, blank flanges, or other devices that prevent flow of reactor coolant through the penetration flow paths. A blank flange or other bolted device must be connected with a sufficient number of bolts to prevent draining in the event of an Operating Basis Earthquake. Normal or expected leakage fromclosed systems or past isolation devices is permitted. Determination that a system is intact and closed or isolated must consider the status of branch lines and ongoing plant maintenance and testing activities.

The Residual Heat Removal (RHR) Shutdown Cooling System is only considered an intact closed system when misalignment issues (Reference 6) have been precluded by functional valve interlocks or by isolation devices, such that redirection of RPV water out of an RHR subsystem is precluded. Further, RHR Shutdown Cooling System is only considered an intact closed system if its controls have not been transferred to Remote Shutdown, which disables the interlocks and isolation signals.

The exclusion of penetration flow paths from the determination of DRAIN TIME must consider the potential effects of a single operator error or initiating event on items supporting maintenance and testing (rigging, scaffolding, temporary shielding, piping plugs, snubber removal, freeze seals, etc.). If failure of such items could result and would cause a draining event from a closed system or between the RPV and the isolation device, the penetration flow path may not be excluded from the DRAIN TIME calculation.

Surveillance Requirement 3.0.1 requires SRs to be met between performances. Therefore, any changes in plant conditions that would change the DRAIN TIME requires that a new DRAIN TIME be determined.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.2.2 and SR 3.5.2.3

The minimum water level of -12 ft 7 in (referenced to a plant elevation of 699 ft 11 in) required for the suppression pool, equivalent to a contained water volume of 70,000 ft^3, is periodically verified to ensure that the suppression pool will provide adequate net positive suction head (NPSH) for the ECCS pumps, recirculation volume, and vortex prevention. With the suppression pool water level less than the required limit, all ECCS injection/spray subsystems are inoperable.

The Surveillance Frequencies are controlled under the Surveillance Frequency Control Program.

SR 3.5.2.~~43, SR 3.5.2.5, and SR 3.5.2.6~~

The Bases provided for SR 3.5.1.1~~, SR 3.5.1.5, and SR 3.5.1.6~~ are applicable to SR 3.5.2.~~43, SR 3.5.2.5, and SR 3.5.2.6, respectively~~.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.5.2.~~54~~

Verifying the correct alignment for manual, power operated, and automatic valves in the *required* ECCS *subsystem* flow path~~s~~ provides assurance that the proper flow paths will *be available*~~exist~~ for ECCS operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since these valves were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an initiation signal is allowed to be in a nonaccident position provided the valve will automatically

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.2.*54* (continued)

reposition in the proper stroke time. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

The Surveillance 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 flow path who is in continuous communication with the operators in the control room. This individual will have a method to rapidly close the system vent flow path if directed.

SR 3.5.2.6

Verifying that the required ECCS injection/spray subsystem can be manually started and operate for at least 10 minutes demonstrates that the subsystem is available to mitigate a draining event. Testing the ECCS injection/spray subsystem through the full flow test recirculation line is adequate to confirm the operational readiness of the required ECCS injection/spray subsystem. The minimum operating time of 10 minutes was based on engineering judgement.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.5.2.7

Verifying that each valve credited for automatically isolating a penetration flow path actuates to the isolation position on an actual or simulated RPV water level isolation signal is required to prevent RPV water inventory from dropping below the TAF should an unexpected draining event occur.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.2.8

The required ECCS subsystem shall be capable of being manually operated from the main control room. This Surveillance verifies that the required LCPI subsystem, LPCS System, or HPCS System (including the associated pump and valve(s)) can be manually operated, including throttling injection valves, as necessary, to provide additional RPV Water Inventory, if needed, without delay.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

This SR is modified by a Note that excludes vessel injection/spray during the Surveillance. Since all active components are testable and full flow can be demonstrated by recirculation through the full flow test line, coolant injection into the RPV is not required during the Surveillance.

REFERENCES

1. *Information Notice 84-81, "Inadvertent Reduction in Primary Coolant Inventory in Boiling Water Reactors During Shutdown and Startup," November 1984.~~UFSAR, Section 6.3.3.2.~~*

2. *Information Notice 86-74, "Reduction of Reactor Coolant Inventory Because of Misalignment of RHR Valves," August 1986.*

3. *Generic Letter 92-04, "Resolution of the Issues Related to Reactor Vessel Water Level Instrumentation in BWRs Pursuant to 10 CFR 50.54(f)," August 1992.*

4. *NRC Bulletin 93-03, "Resolution of Issues Related to Reactor Vessel Water Level Instrumentation in BWRs," May 1993.*

5. *Information Notice 94-52, "Inadvertent Containment Spray and Reactor Vessel Draindown at Millstone 1," July 1994.*

6. *General Electric Service Information Letter No. 388, "RHR Valve Misalignment During Shutdown Cooling Operation for BWR 3/4/5/6," February 1983.*

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), *REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL*, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

B 3.5.3 RCIC System

BASES

BACKGROUND

The RCIC System is not part of the ECCS; however, the RCIC System is included with the ECCS section because of their similar functions.

The RCIC System is designed to operate either automatically or manually following reactor pressure vessel (RPV) isolation accompanied by a loss of coolant flow from the feedwater system to provide adequate core cooling and control of RPV water level. Under these conditions, the High Pressure Core Spray (HPCS) and RCIC systems perform similar functions. The RCIC System design requirements ensure that the criteria of Reference 1 are satisfied.

The RCIC System (Ref. 2) consists of a steam driven turbine pump unit, piping and valves to provide steam to the turbine, as well as piping and valves to transfer water from the suction source to the core via the head spray nozzle. A 1" H_2 purge line is connected from the injection line to the reactor head vent to prevent hydrogen buildup (Ref. 4). The purge line contains an orifice to minimize RCIC flow bypassing the RPV and ensures that sufficient injection flow is delivered to the RPV.

Suction piping is provided from the condensate storage tank (CST) and the suppression pool. Pump suction is normally aligned to the CST to minimize injection of suppression pool water into the RPV. However, if the CST water supply is low an automatic transfer to the suppression pool water source ensures a water supply for continuous operation of the RCIC System. The steam supply to the turbine is piped from main steam line B, upstream of the inboard main steam line isolation valve.

The RCIC System is designed to provide core cooling for a wide range of reactor pressures, 135 psig to 1185 psig. Upon receipt of an initiation signal, the RCIC turbine accelerates to a specified speed. As the RCIC flow increases, the turbine control valve is automatically adjusted to maintain design flow. Exhaust steam from the

(continued)

BASES

BACKGROUND (continued)	RCIC turbine is discharged to the suppression pool. A full flow test line is provided to route water to the CST or the suppression pool to allow testing of the RCIC System during normal operation without injecting water into the RPV. The RCIC pump is provided with a minimum flow bypass line, which discharges to the suppression pool. The valve in this line automatically opens to prevent pump damage due to overheating when other discharge line valves are closed. To ensure rapid delivery of water to the RPV and to minimize water hammer effects, the RCIC System discharge line "keep fill" system is designed to maintain the pump discharge line filled with water.
APPLICABLE SAFETY ANALYSES	The function of the RCIC System is to respond to transient events by providing makeup coolant to the reactor. The RCIC System is not an Engineered Safety Feature System and no credit is taken in the safety analyses for RCIC System operation. Based on its contribution to the reduction of overall plant risk, the system satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).
LCO	The OPERABILITY of the RCIC System provides adequate core cooling such that actuation of any of the ECCS subsystems is not required in the event of RPV isolation accompanied by a loss of feedwater flow. The RCIC System has sufficient capacity to maintain RPV inventory during an isolation event. Management of gas voids is important to RCIC System OPERABILITY.
APPLICABILITY	The RCIC System is required to be OPERABLE in MODE 1, and MODES 2 and 3 with reactor steam dome pressure > 150 psig since RCIC is the primary non-ECCS water source for core cooling when the reactor is isolated and pressurized. In MODES 2 and 3 with reactor steam dome pressure ≤ 150 psig, and in MODES 4 and 5, RCIC is not required to be OPERABLE since the ECCS injection/spray subsystems can provide sufficient flow to the vessel.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.3.3 and SR 3.5.3.4 (continued)

assumed that the low pressure test has been satisfactorily completed and there is no indication or reason to believe that RCIC is inoperable. Therefore, these SRs are modified by Notes that state the Surveillances are not required to be performed until 12 hours after the reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for the flow tests after the required pressure and flow are reached are sufficient to achieve stable conditions for testing and provides a reasonable time to complete the SRs. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.5.3.5

The RCIC System is required to actuate automatically to perform its design function. This Surveillance verifies that with a required system initiation signal (actual or simulated) the automatic initiation logic of RCIC will cause the system to operate as designed, i.e., actuation of the system throughout its emergency operating sequence, which includes automatic pump startup and actuation of all automatic valves to their required positions. This Surveillance also ensures that the RCIC System will automatically restart on an actual or simulated RPV low water level (Level 2) signal received subsequent to an actual or simulated RPV high water level (Level 8) shutdown signal, and that the suction is automatically transferred from the CST to the suppression pool. The LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.~~2~~3 overlaps this Surveillance to provide complete testing of the assumed design function.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

This SR is modified by a Note that excludes vessel injection during the Surveillance. Since all active components are testable and full flow can be demonstrated by recirculation through the test line, coolant injection into the RPV is not required during the Surveillance.

(continued)

BASES (continued)

LCO

PCIVs form a part of the primary containment boundary. The PCIV safety function is related to minimizing the loss of reactor coolant inventory and establishing the primary containment boundary during a DBA.

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

The normally closed manual PCIVs are considered OPERABLE when the valves are closed and blind flanges are in place, or open under administrative controls. Normally closed automatic PCIVs which are required by design (e.g., to meet 10 CFR 50 Appendix R requirements) to be de-activated and closed, are considered OPERABLE when the valves are de-activated and closed. These passive isolation valves and devices are those listed in Reference 1. MSIVs and hydrostatically tested valves must meet additional leakage rate requirements. Other PCIV leakage rates are addressed by LCO 3.6.1.1, "Primary Containment," as Type B or C testing.

This LCO provides assurance that the PCIVs will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the primary containment boundary during accidents.

APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause a release of radioactive material to primary containment. In MODES 4 and 5, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. ~~Therefore, most PCIVs are not required to be OPERABLE and the primary containment purge valves are not required to be normally closed in MODES 4 and 5. Certain valves are required to be OPERABLE, however, to prevent inadvertent reactor vessel draindown. These valves are those whose associated instrumentation is required to be OPERABLE according to LCO 3.3.6.1, "Primary Containment Isolation Instrumentation." (This does not include the valves that isolate the associated instrumentation.)~~

(continued)

BASES

ACTIONS

D.1 (continued)

leakage rate for the isolated penetration is assumed to be the actual pathway leakage through the isolation device. If two isolation devices are used to isolate the penetration, the leakage rate is assumed to be the lesser actual pathway leakage of the two devices. The 4 hour Completion Time for hydrostatically tested line leakage not on a closed system is reasonable considering the time required to restore leakage by isolating the penetration and the relative importance of the hydrostatically tested line leakage to the overall containment function. The Completion Time of 8 hours for MSIV leakage allows a period of time to restore the MSIV leakage rate to within limit given the fact that MSIV closure will result in isolation of the main steam line(s) and a potential for plant shutdown. The 72 hour Completion Time for hydrostatically tested line leakage on a closed system is acceptable based on the available water seal expected to remain as a gaseous fission product boundary during the accident, and, in many cases, the associated closed system. The closed system must meet the requirements of Reference 5.

E.1, and E.2

If any Required Action and associated Completion Time cannot be met in MODE 1, 2, or 3, 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 12 hours and to MODE 4 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.

~~F.1 and F.2~~

~~If any Required Action and associated Completion Time cannot be met for PCIV(s) required OPERABLE in MODE 4 or 5, the plant must be placed in a condition in which the LCO does not apply. Action must be immediately initiated to suspend operations with a potential for draining the reactor vessel (OPDRVs) to minimize the probability of a vessel draindown~~

(continued)

BASES *(continued)*

~~ACTIONS~~ ~~F.1 and F.2 (continued)~~

~~and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended. If suspending the OPDRVs would result in closing the residual heat removal (RHR) shutdown cooling isolation valves, an alternative Required Action is provided to immediately initiate action to restore the valves to OPERABLE status. This allows RHR shutdown cooling to remain in service while actions are being taken to restore the valve.~~

SURVEILLANCE REQUIREMENTS

SR 3.6.1.3.1

This SR verifies that the 8 inch and 26 inch primary containment purge valves are closed as required or, if open, opened for an allowable reason.

The SR is modified by a Note stating that the SR is not required to be met when the purge valves are open for the stated reasons. The Note states that these valves may be opened for inerting, de-inerting, pressure control, ALARA, or air quality considerations for personnel entry, or for Surveillances that require the valves to be open, provided the drywell purge valves and suppression chamber purge valves are not open simultaneously. This is required to prevent a bypass path between the suppression chamber and the drywell, which would allow steam and gases from a LOCA to bypass the downcomers to the suppression pool. These primary containment purge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.6.1.3.2

This SR verifies that each primary containment isolation manual valve and blind flange that is located outside primary containment and not locked, sealed, or otherwise secured and is required to be closed during accident conditions, is closed. The SR helps to ensure that post

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

Suppression pool water level satisfies Criteria 2 and 3 of 10 CFR 50.36(c)(2)(ii).

LCO

A limit that suppression pool water level be ≥ -4.5 inches and ≤ 3 inches (referenced to plant elevation 699 ft 11 inches) is required to ensure that the primary containment conditions assumed for the safety analysis are met. Either the high or low water level limits were used in the safety analysis, depending upon which is conservative for a particular calculation.

APPLICABILITY

In MODES 1, 2, and 3, a DBA could cause significant loads on the primary containment. In MODES 4 and 5, the probability and consequences of these events are reduced because of the pressure and temperature limitations in these MODES. The requirements for maintaining suppression pool water level within limits in MODE 4 or 5 is addressed in LCO 3.5.2, "*RPV Water Inventory Control*~~ECCS-Shutdown~~."

ACTIONS

A.1

With suppression pool water level outside the limits, the conditions assumed for the safety analysis are not met. If water level is below the minimum level, the pressure suppression function still exists as long as the downcomers are covered, RCIC turbine exhausts are covered, and S/RV quenchers are covered. If suppression pool water level is above the maximum level, protection against overpressurization still exists due to the margin in the peak containment pressure analysis and the capability of the suppression pool sprays. Therefore, continued operation for a limited time is allowed. The 2 hour Completion Time is sufficient to restore suppression pool water level to within specified limits. Also, it takes into account the low probability of an event impacting the suppression pool water level occurring during this interval.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

structure will be treated by the SGT System prior to discharge to the environment.

Secondary containment satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

An OPERABLE secondary containment provides a control volume into which fission products that bypass or leak from primary containment, or are released from the reactor coolant pressure boundary components located in secondary containment, can be diluted and processed prior to release to the environment. For the secondary containment to be considered OPERABLE, it must have adequate leak tightness to ensure that the required vacuum can be established and maintained.

APPLICABILITY

In MODES 1, 2, and 3, a LOCA could lead to a fission product release to primary containment that leaks to secondary containment. Therefore, secondary containment OPERABILITY is required during the same operating conditions that require primary containment OPERABILITY.

In MODES 4 and 5, the probability and consequences of the LOCA are reduced due to the pressure and temperature limitations in these MODES. Therefore, maintaining secondary containment OPERABLE is not required in MODE 4 or 5 to ensure a control volume, except for other situations for which significant releases of radioactive material can be postulated, such as ~~during operations with a potential for draining the reactor vessel (OPDRVs),~~ during CORE ALTERATIONS~~,~~ or during movement of irradiated fuel assemblies in the secondary containment.

(continued)

BASES (continued)

ACTIONS

A.1

If secondary containment is inoperable, it must be restored to OPERABLE status within 4 hours. The 4 hour Completion Time provides a period of time to correct the problem that is commensurate with the importance of maintaining secondary containment during MODES 1, 2, and 3. This time period also ensures that the probability of an accident (requiring secondary containment OPERABILITY) occurring during periods where secondary containment is inoperable is minimal.

B.1

If the secondary containment cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours. Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 3), because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state. The allowed Completion Time is 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~~,~~ *and* C.2~~, and C.3~~

Movement of irradiated fuel assemblies in the secondary containment~~,~~ *and* CORE ALTERATIONS~~, and OPDRVs~~ can be postulated to cause fission product release to the secondary containment. In such cases, the secondary containment is the only barrier to release of fission products to the environment. CORE ALTERATIONS and movement of irradiated fuel assemblies must be immediately suspended if the secondary containment is inoperable.

Suspension of these activities shall not preclude completing an action that involves moving a component to a safe position. ~~Also, action must be immediately initiated to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.~~

(continued)

BASES

ACTIONS

C.1~~,~~ *and* C.2~~, and C.3~~ (continued)

Required Action C.1 has been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1.1

This SR ensures that the secondary containment boundary is sufficiently leak tight to preclude exfiltration. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.6.4.1.2

Verifying that one secondary containment access door in each access opening is closed provides adequate assurance that exfiltration from the secondary containment will not occur. An access opening contains at least one inner and one outer door. In some cases a secondary containment barrier contains multiple inner or multiple outer doors. For these cases, the access openings share the inner door or the outer door, i.e., the access openings have a common inner door or outer door. The intent is to not breach the secondary containment, which is achieved by maintaining the inner or outer portion of the barrier closed except when the access opening is being used for entry and exit; i.e., all inner doors closed or all outer doors closed. Thus each access opening has one door closed. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

the boundary established by SCIVs is required to ensure that leakage from the primary containment is processed by the Standby Gas Treatment (SGT) System before being released to the environment.

Maintaining SCIVs OPERABLE with isolation times within limits ensures that fission products will remain trapped inside secondary containment so that they can be treated by the SGT System prior to discharge to the environment.

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

LCO

SCIVs form a part of the secondary containment boundary. The SCIV safety function is related to control of offsite radiation releases resulting from DBAs.

The power operated, automatic isolation valves are considered OPERABLE when their isolation times are within limits and the valves actuate on an automatic isolation signal. The valves covered by this LCO, along with their associated stroke times, are listed in the Technical Requirements Manual (Ref. 3).

The normally closed manual SCIVs are considered OPERABLE when the valves are closed and blind flanges are in place, or open under administrative controls. These passive isolation valves or devices are listed in Reference 3.

APPLICABILITY

In MODES 1, 2, and 3, a DBA could lead to a fission product release to the primary containment that leaks to the secondary containment. Therefore, OPERABILITY of SCIVs is required.

In MODES 4 and 5, the probability and consequences of these events are reduced due to pressure and temperature limitations in these MODES. Therefore, maintaining SCIVs OPERABLE is not required in MODE 4 or 5, except for other situations under which significant releases of radioactive material can be postulated, such as ~~during operations with a potential for draining the reactor vessel (OPDRVs),~~ during CORE ALTERATIONS~~,~~ or during movement of irradiated fuel assemblies in the secondary containment.

(continued)

BASES

ACTIONS

B.1 (continued)

The Condition has been modified by a Note stating that Condition B is only applicable to penetration flow paths with two isolation valves. This clarifies that only Condition A is entered if one SCIV is inoperable in each of two penetrations.

C.1 and C.2

If any Required Action and associated Completion Time cannot be met, 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 12 hours and to MODE 4 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.

D.1~~,~~ *and* D.2~~, and D.3~~

If any Required Action and associated Completion Time cannot be met, the plant must be placed in a condition in which the LCO does not apply. If applicable, CORE ALTERATIONS and the movement of irradiated fuel assemblies in the secondary containment must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position.~~ Also, if applicable, action must be immediately initiated to suspend OPDRVs in order to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until OPDRVs are suspended.~~

Required Action D.1 has been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown.

(continued)

BASES

APPLICABILITY (continued)

other situations under which significant releases of radioactive material can be postulated, such as ~~during operations with a potential for draining the reactor vessel (OPDRVs),~~ during CORE ALTERATIONS~~,~~ or during movement of irradiated fuel assemblies in the secondary containment.

ACTIONS

A.1

With one SGT subsystem inoperable, the inoperable subsystem must be restored to OPERABLE status within 7 days. In this condition, the remaining OPERABLE SGT subsystem is adequate to perform the required radioactivity release control function. However, the overall system reliability is reduced because a single failure in the OPERABLE subsystem could result in the radioactivity release control function not being adequately performed. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant SGT subsystem and the low probability of a DBA occurring during this period.

B.1

If the SGT subsystem cannot be restored to OPERABLE status within the required Completion Time in MODE 1, 2, or 3, the plant must be brought to a MODE in which the overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours. Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 5) and because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state. The allowed Completion Time is 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, C.2.1, *and* C.2.2~~, and C.2.3~~

During movement of irradiated fuel assemblies in the secondary containment~~,~~ *or* during CORE ALTERATIONS~~, or during OPDRVs,~~ when Required Action A.1 cannot be completed within the required Completion Time, the OPERABLE SGT subsystem

(continued)

BASES

ACTIONS

C.1, C.2.1, *and* C.2.2~~, and C.2.3~~ (continued)

should be immediately placed in operation. This Required Action ensures that the remaining subsystem is OPERABLE, that no failures that could prevent automatic actuation will occur, and that any other failure would be readily detected.

An alternative to Required Action C.1 is to immediately suspend activities that represent a potential for releasing radioactive material to the secondary containment, thus placing the unit in a condition that minimizes risk. If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position.~~ Also, if applicable, action must be immediately initiated to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Action must continue until OPDRVs are suspended.~~

The Required Actions of Condition C have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown.

D.1

If both SGT subsystems are inoperable in MODE 1, 2, or 3, the SGT system may not be capable of supporting the required radioactivity release control function. Therefore, the plant must be brought to a MODE in which the overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours. Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 5) and because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state. The allowed Completion Time is reasonable, based on operating experience,

(continued)

BASES

ACTIONS

D.1 (continued)

to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

E.1~~, E.2,~~ and E.~~2~~3

When two SGT subsystems are inoperable, if applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment must be immediately suspended. Suspension of these activities shall not preclude completion of movement of a component to a safe position.~~ Also, if applicable, action must be immediately initiated to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Action must continue until OPDRVs are suspended.~~

Required Action E.1 has been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies would not be a sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.3.1

Operating (from the control room) each SGT subsystem for ≥ 15 continuous minutes ensures that both subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

(continued)

BASES

LCO (continued)

Additionally, the portions of the Control Room Area HVAC System that supply the outside air to the EMUs are required to be OPERABLE. This includes the outside air intakes, associated dampers and ductwork.

In order for the CRAF subsystems to be considered OPERABLE, the CRE boundary must be maintained such that the CRE occupant dose from a large radioactive release does not exceed the calculated dose in the licensing basis consequence analysis for DBAs, and that CRE occupants are protected from hazardous chemicals and smoke.

The LCO is modified by a Note allowing the CRE boundary to be opened intermittently under administrative controls. This Note only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the operators in the CRE. This individual will have a method to rapidly close the opening and to restore the CRE boundary to a condition equivalent to the design condition when a need for the CRAF System to be in the pressurization mode of operation is indicated.

APPLICABILITY

In MODES 1, 2, and 3, the CRAF System must be OPERABLE to ensure that the CRE will remain habitable during and following a DBA, since the DBA could lead to a fission product release.

In MODES 4 and 5, the probability and consequences of a DBA are reduced due to the pressure and temperature limitations in these MODES. Therefore, maintaining the CRAF System OPERABLE is not required in MODE 4 or 5, except ~~for the following situations under which significant radioactive releases can be postulated:~~

~~a.~~ ~~d~~During movement of irradiated fuel assemblies in the secondary containment~~;~~ *and*

~~b. d~~During CORE ALTERATIONS~~; and~~.

(continued)

BASES (continued)

APPLICABILITY (continued)

~~c. During operations with a potential for draining the reactor vessel (OPDRVs).~~

ACTIONS

A.1

With one CRAF subsystem inoperable, for reasons other than an inoperable CRE boundary, the inoperable CRAF subsystem must be restored to OPERABLE status within 7 days. With the unit in this condition, the remaining OPERABLE CRAF subsystem is adequate to perform the CRE occupant protection function. However, the overall reliability is reduced because a failure in the OPERABLE subsystem could result in loss of CRAF System function. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and that the remaining subsystem can provide the required capabilities.

B.1, B.2 and B.3

If the unfiltered inleakage of potentially contaminated air past the CRE boundary and into the CRE can result in CRE occupant radiological dose greater than the calculated dose of the licensing basis analyses of DBA consequences (allowed to be up to 5 rem TEDE), or inadequate protection of CRE occupants from hazardous chemicals or smoke, the CRE boundary is inoperable. Actions must be taken to restore an OPERABLE CRE boundary within 90 days.

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implantation upon entry into the condition, regardless of whether entry is intentional or unintentional.

(continued)

BASES

ACTIONS

B.1, B.2 and B.3 (continued)

The 24 hour completion time is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions. The 90 day Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE occupants will have to implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. In addition, the 90 day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

C.1

In MODE 1, 2, or 3, if the inoperable CRAF subsystem or the CRE boundary cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE that minimizes overall plant risk. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours. Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in MODE 4 (Ref. 6) and because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state. The allowed Completion Time is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

D.1, D.2.1, *and* D.2.2~~, and D.2.3~~

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the Required Actions of Condition D are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require

(continued)

BASES

ACTIONS

D.1, D.2.1, *and* D.2.2~~, and D.2.3~~ (continued)

the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

During movement of irradiated fuel assemblies in the secondary containment~~,~~ *or* during CORE ALTERATIONS, ~~or during OPDRVs,~~ if the inoperable CRAF subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE CRAF subsystem may be placed in the pressurization mode. This action ensures that the remaining subsystem is OPERABLE, that no failures that would prevent automatic actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action D.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require the CRAF System to be in the pressurization mode of operation. This places the unit in a condition that minimizes the accident risk.

If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. ~~Also, if applicable, action must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Action must continue until the OPDRVs are suspended.~~

E.1

If both CRAF subsystems are inoperable in MODE 1, 2, or 3, for reasons other than an inoperable CRE boundary (i.e., Condition B), the CRAF System may not be capable of performing the intended function. Therefore, the plant must be brought to a MODE in which the overall plant risk is minimized. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours. Remaining in the Applicability of the LCO is acceptable because the plant risk in MODE 3 is similar to or lower than the risk in

(continued)

BASES

ACTIONS

E.1 (continued)

MODE 4 (Ref. 6) and because the time spent in MODE 3 to perform the necessary repairs to restore the system to OPERABLE status will be short. However, voluntary entry into MODE 4 may be made as it is also an acceptable low-risk state. The allowed Completion Time is reasonable, based on operating experience, to reach the required plant conditions from full power conditions is an orderly manner and without challenging plant systems.

F.1~~,~~ *and* F.2~~, and F.3~~

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the Required Actions of Condition F are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

During movement of irradiated fuel assemblies in the secondary containment~~,~~ *or* during CORE ALTERATIONS, ~~or during OPDRVs,~~ with two CRAF subsystems inoperable, or with one or more CRAF subsystems inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require the CRAF System to be in the pressurization mode of operation. This places the unit in a condition that minimizes the accident risk.

If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. ~~If applicable, action must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Action must continue until the OPDRVs are suspended.~~

(continued)

BASES

LCO (continued)

The Control Room Area Ventilation AC System is considered OPERABLE when the individual components necessary to maintain the control room and AEERs temperatures are OPERABLE in both subsystems. These components include the supply and return air fans, direct expansion cooling coils, an air-cooled condenser, a refrigerant compressor and receiver, ductwork, dampers, and instrumentation and controls.

APPLICABILITY

In MODE 1, 2, or 3, the Control Room Area Ventilation AC System must be OPERABLE to ensure that the control room and AEERs temperatures will not exceed equipment OPERABILITY limits during operation of the Control Room Area Filtration (CRAF) System in the pressurization mode.

In MODES 4 and 5, the probability and consequences of a Design Basis Accident are reduced due to the pressure and temperature limitations in these MODES. Therefore, maintaining the Control Room Area Ventilation AC System OPERABLE is not required in MODE 4 or 5, except ~~for the following situations under which significant radioactive releases can be postulated:~~

~~a. d~~During movement of irradiated fuel assemblies in the secondary containment *and*~~;~~

~~b. d~~During CORE ALTERATIONS~~.; and~~

~~c. During operations with a potential for draining the reactor vessel (OPDRVs).~~

ACTIONS

A.1

With one control room area ventilation AC subsystem inoperable, the inoperable control room area ventilation AC subsystem must be restored to OPERABLE status within 30 days. With the unit in this condition, the remaining OPERABLE control room area ventilation AC subsystem is adequate to perform the control room air conditioning function. However, the overall reliability is reduced because a single failure in the OPERABLE subsystem could result in loss of the control room area ventilation air conditioning function. The 30 day Completion Time is based

(continued)

BASES

ACTIONS (continued)

D.1, D.2.1, *and* D.2.2~~, and D.2.3~~

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the Required Actions of Condition D are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

During movement of irradiated fuel assemblies in the secondary containment~~,~~ *or* during CORE ALTERATIONS,~~ or during OPDRVs,~~ if Required Action A.1 cannot be completed within the required Completion Time, the OPERABLE control room AC subsystem may be placed immediately in operation.

This action ensures that the remaining subsystem is OPERABLE, that no failures that would prevent actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action D.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk.

If applicable, CORE ALTERATIONS and movement of irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position.~~ Also, if applicable, action must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Action must continue until the OPDRVs are suspended.~~

(continued)

BASES

ACTIONS (continued)

E.1~~,~~ *and* E.2~~, and E.3~~

The Required Actions of Condition E.1 are modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

During movement of irradiated fuel assemblies in the secondary containment~~,~~ *or* during CORE ALTERATIONS, ~~or during OPDRVs~~ if Required Actions B.1 and B.2 cannot be met within the required Completion Times action must be taken to immediately suspend activities that present a potential for releasing radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk.

If applicable, CORE ALTERATIONS and handling of irradiated fuel in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. ~~Also, if applicable, action must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Action must continue until the OPDRVs are suspended.~~

SURVEILLANCE REQUIREMENTS

SR 3.7.5.1

This SR monitors the control room and AEER temperatures for indication of Control Room Area Ventilation AC System performance. Trending of control room area temperature will provide a qualitative assessment of refrigeration unit OPERABILITY. Limiting the average temperature of the Control Room and AEER to less than or equal to 85°F provides a threshold beyond which the operating control room area ventilation AC subsystem is no longer demonstrating capability to perform its function. This threshold provides margin to temperature limits at which equipment qualification requirements could be challenged. Subsystem operation is routinely alternated to support planned maintenance and to ensure each subsystem provides reliable service. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

(continued)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 AC Sources—Shutdown

BASES

BACKGROUND

A description of the AC sources is provided in the Bases for LCO 3.8.1, "AC Sources—Operating."

APPLICABLE SAFETY ANALYSES

The OPERABILITY of the minimum AC sources during MODES 4 and 5, and during movement of irradiated fuel assemblies in the secondary containment ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate AC electrical power is provided to mitigate events postulated during shutdown, such as ~~an inadvertent draindown of the vessel or~~ a fuel handling accident.

In general, when the unit is shutdown the Technical Specifications (TS) requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or loss of all onsite power is not required. The rationale for this is based on the fact that many Design Basis Accidents (DBAs) that are analyzed in MODES 1, 2, and 3 have no specific analyses in MODES 4 and 5. Worst case bounding events are deemed not credible in MODES 4 and 5 because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence significantly reduced or eliminated, and minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

(continued)

BASES

LCO (continued)

powered from offsite power. An OPERABLE unit DG, associated with a Division 1 or Division 2 Distribution System emergency bus required OPERABLE by LCO 3.8.8, ensures a diverse power source is available to provide electrical power support, assuming a loss of the offsite circuit. Similarly, when the High Pressure Core Spray (HPCS) System is required to be OPERABLE, an OPERABLE Division 3 DG ensures a diverse source of power for the HPCS System is available to provide electrical power support, assuming a loss of the offsite power circuit. Additionally, when the Standby Gas Treatment (SGT) System, Control Room Area Filtration (CRAF) System, or Control Room Area Ventilation Air Conditioning System is required to be OPERABLE, one qualified offsite circuit (normal or alternate) between the offsite transmission network and the opposite unit Division 2 onsite Class 1E AC electrical power distribution subsystem or an opposite unit DG capable of supporting the opposite unit Division 2 onsite Class 1E AC electrical power distribution subsystem is required to be OPERABLE. Together, OPERABILITY of the required offsite circuit(s) and DG(s) ensure the availability of sufficient AC sources to operate the plant in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents~~, reactor vessel draindown~~).

The qualified offsite circuit(s) must be capable of maintaining rated frequency and voltage while connected to their respective emergency bus(es), and of accepting required loads during an accident. Qualified offsite circuits are those that are described in the UFSAR and are part of the licensing basis for the plant. An OPERABLE qualified normal offsite circuit consists of the required incoming breaker(s) and disconnects from the 345 kV switchyard to and including the SAT or UAT (backfeed mode), the respective circuit path to and including the feeder breakers to the required Division 1, 2, and 3 emergency buses.

An OPERABLE qualified alternate offsite circuit consists of the required incoming breaker(s) and disconnects from the 345 kV switchyard to and including the SAT or UAT (backfeed mode), to and including the opposite unit 4.16 kV emergency bus, the opposite unit circuit path to and including the unit tie breakers (breakers 1414, 1424, 2414, and 2424), and the respective circuit path to the required Division 1 and 2 emergency buses.

(continued)

BASES

LCO (continued)

The required DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective emergency bus on detection of bus undervoltage, and accepting required loads. This sequence must be accomplished within 13 seconds. Each DG must also be capable of accepting required loads within the assumed loading sequence intervals, and must continue to operate until offsite power can be restored to the emergency buses. These capabilities are required to be met from a variety of initial conditions such as: DG in standby with the engine hot and DG in standby with the engine at ambient conditions. Additional DG capabilities must be demonstrated to meet required Surveillances, e.g., capability of the Division 1 and 2 DGs to revert to standby status on an ECCS signal while operating in parallel test mode.

Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY. The necessary portions of the DG Cooling Water System and Ultimate Heat Sink capable of providing cooling to the required DG(s) are also required.

It is acceptable for divisions to be cross tied during shutdown conditions, permitting a single offsite power circuit to supply all required divisions.

APPLICABILITY

The AC sources required to be OPERABLE in MODES 4 and 5 and during movement of irradiated fuel assemblies in the secondary containment provide assurance that:

a. Systems *that provide core cooling* ~~to provide adequate coolant inventory makeup~~ are available ~~for the irradiated fuel in the core in case of an inadvertent draindown of the reactor vessel~~;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

(continued)

BASES

APPLICABILITY (continued)

The AC power requirements for MODES 1, 2, and 3 are covered in LCO 3.8.1.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

A.1

An offsite circuit is considered inoperable if it is not available to one required 4.16 kV emergency bus. If two or more 4.16 kV emergency buses are required per LCO 3.8.8, division(s) with offsite power available may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS~~,~~ *and* fuel movement~~, and operations with a potential for draining the reactor vessel~~. By the allowance of the option to declare required features inoperable that are not capable of being powered from offsite power, appropriate restrictions can be implemented in accordance with the required feature(s) LCOs' ACTIONS. Required features remaining capable of being powered from a qualified offsite circuit, even if that circuit is considered inoperable because it is not capable of powering other required features, are not declared inoperable by this Required Action. For example, if both Division 1 and 2 emergency buses are required OPERABLE by LCO 3.8.8 and only the Division 1 emergency buses are not capable of being powered from offsite power, then only the required features powered from Division 1 emergency buses are required to be declared inoperable.

(continued)

BASES

ACTIONS (continued)

A.2.1, A.2.2, A.2.3, ~~A.2.4,~~ B.1, B.2, *and* B.3~~, and B.4~~

With the offsite circuit not available to all required divisions, the option still exists to declare all required features inoperable per Required Action A.1. Since this option may involve undesired administrative efforts, the allowance for sufficiently conservative actions is made. With the required DG inoperable, the minimum required diversity of AC power sources is not available. It is, therefore, required to suspend CORE ALTERATIONS~~,~~ *and* movement of irradiated fuel assemblies in the secondary containment~~, and activities that could potentially result in inadvertent draining of the reactor vessel~~.

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize probability of the occurrence of postulated events. It is further required to initiate action immediately to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the plant safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the plant safety systems may be without sufficient power.

Pursuant to LCO 3.0.6, the Distribution System ACTIONS are not entered even if all AC sources to it are inoperable, resulting in de-energization. Therefore, the Required Actions of Condition A have been modified by a Note to indicate that when Condition A is entered with no AC power to any required emergency bus, ACTIONS for LCO 3.8.8 must be immediately entered. This Note allows Condition A to provide requirements for the loss of the offsite circuit whether or not a division is de-energized. LCO 3.8.8 provides the appropriate restrictions for the situation involving a de-energized division.

(continued)

BASES

ACTIONS (continued)

C.1

When the HPCS System is required to be OPERABLE, and the Division 3 DG is inoperable, the required diversity of AC power sources to the HPCS System is not available. Since these sources only affect the HPCS System, the HPCS System is declared inoperable and the Required Actions of LCO 3.5.2, "*RPV Water Inventory Control*~~Emergency Core Cooling Systems Shutdown~~," entered.

In the event all sources of power to Division 3 are lost, Condition A will also be entered and direct that the ACTIONS of LCO 3.8.8 be taken. If only the Division 3 DG is inoperable, and power is still supplied to HPCS System, 72 hours is allowed to restore the DG to OPERABLE. This is reasonable considering the HPCS System will still perform its function, absent a loss of offsite power.

D.1

When the SGT System, CRAF System, or Control Room Area Ventilation Air Conditioning System is required to be OPERABLE, and the required opposite unit Division 2 AC source is inoperable, the associated SGT subsystem, CRAF subsystem, and control room ventilation area air conditioning subsystem are declared inoperable and the Required Actions of the affected LCOs are entered.

The immediate Completion Time is consistent with the required times for actions requiring prompt attention. The restoration of the required opposite unit Division 2 AC electrical power source should be completed as quickly as possible in order to minimize the time during which the aforementioned safety systems are without sufficient power.

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1

SR 3.8.2.1 requires the SRs from LCO 3.8.1 that are necessary for ensuring the OPERABILITY of the AC sources in other than MODES 1, 2, and 3 to be applicable. SR 3.8.1.8 is not required to be met since only one offsite circuit is required to be OPERABLE. SR 3.8.1.17 is not required to be

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1 (continued)

met because the required OPERABLE DG(s) is not required to undergo periods of being synchronized to the offsite circuit. SR 3.8.1.20 is excepted because starting independence is not required with the DG(s) that is not required to be OPERABLE. Refer to the corresponding Bases for LCO 3.8.1 for a discussion of each SR.

This SR is modified by two Notes. The reason for Note 1 is to preclude requiring the OPERABLE DG(s) from being paralleled with the offsite power network or otherwise rendered inoperable during the performance of SRs, and to preclude de-energizing a required 4.16 kV emergency bus or disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the DG. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the DG and offsite circuit are required to be OPERABLE. Note 2 states that SRs 3.8.1.12 and 3.8.1.19 are not required to be met ~~when its associated ECCS subsystem(s) are not required to be OPERABLE~~. ~~These SRs demonstrate the DG response to an ECCS initiation signal (either alone or in conjunction with a loss of offsite power signal). This is consistent with the ECCS instrumentation requirements that do not require the ECCS initiation signals when the associated ECCS subsystem is not required to be OPERABLE per LCO 3.5.2, "ECCS—Shutdown."~~

REFERENCES None.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.5 DC Sources—Shutdown

BASES

BACKGROUND

A description of the DC sources is provided in the Bases for LCO 3.8.4, "DC Sources—Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume that Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the diesel generators, emergency auxiliaries, and control and switching during all MODES of operation and during movement of irradiated fuel assemblies in the secondary containment.

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum DC electrical power sources during MODES 4 and 5 and during movement of irradiated fuel assemblies in the secondary containment ensures that:

a. The facility can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate DC electrical power is provided to mitigate events postulated during shutdown, such as ~~an inadvertent draindown of the vessel or~~ a fuel handling accident.

In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. The rationale for this is based on the fact that many Design Basis Accidents (DBAs) that are analyzed in MODES 1, 2, and 3 have no specific analyses in MODES 4

(continued)

BASES

LCO (continued)

consequences of postulated events during shutdown (e.g., fuel handling accidents ~~and inadvertent reactor vessel draindown~~).

APPLICABILITY

The DC electrical power sources required to be OPERABLE in MODES 4 and 5 and during movement of irradiated fuel assemblies in the secondary containment provide assurance that:

a. Required features to provide *core cooling* ~~adequate coolant inventory makeup~~ are available ~~for the irradiated fuel assemblies in the core in case of an inadvertent draindown of the reactor vessel~~;

b. Required features needed to mitigate a fuel handling accident are available;

c. Required features necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The DC electrical power requirements for MODES 1, 2, and 3 are covered in LCO 3.8.4.

ACTIONS

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

(continued)

BASES

ACTIONS (continued)

B.1, B.2.1, B.2.2, *and* B.2.3~~, and B.2.4~~

By allowing the option to declare required features inoperable with associated DC electrical power subsystems inoperable, appropriate restrictions are implemented in accordance with the affected system LCOs' ACTIONS. However, in many instances this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS~~,~~ *and* movement of irradiated fuel assemblies in the secondary containment~~, and any activities that could result in inadvertent draining of the reactor vessel~~).

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required DC electrical power subsystems and to continue this action until restoration is accomplished in order to provide the necessary DC electrical power to the plant safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required DC electrical power subsystems should be completed as quickly as possible in order to minimize the time during which the plant safety systems may be without sufficient power.

SURVEILLANCE REQUIREMENTS

SR 3.8.5.1

SR 3.8.5.1 requires all Surveillances required by SR 3.8.4.1 through SR 3.8.4.4 to be applicable. Therefore, see the corresponding Bases for LCO 3.8.4 for a discussion of each SR.

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE DC sources from being discharged below their capability to provide the required power supply or otherwise rendered inoperable during the performance of SRs. It is the intent that these SRs must still be capable of being met, but actual performance is not required.

(continued)

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.8 Distribution Systems–Shutdown

BASES

BACKGROUND

A description of the AC and DC electrical power distribution systems is provided in the Bases for LCO 3.8.7, "Distribution Systems–Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume Engineered Safety Feature (ESF) systems are OPERABLE. The AC and DC electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded.

The OPERABILITY of the AC and DC electrical power distribution system is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum AC and DC electrical power sources and associated power distribution subsystems during MODES 4 and 5, and during movement of irradiated fuel assemblies in the secondary containment ensures that:

a. The facility can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate power is provided to mitigate events postulated during shutdown, such as ~~an inadvertent draindown of the vessel or~~ a fuel handling accident.

The AC and DC electrical power distribution systems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

(continued)

BASES (continued)

LCO

Various combinations of subsystems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support features. This LCO explicitly requires energization of the portions of the electrical distribution system, including the opposite unit Division 2 electrical distribution subsystem, necessary to support OPERABILITY of Technical Specifications' required systems, equipment, and components–both specifically addressed by their own LCOs, and implicitly required by the definition of OPERABILITY.

Maintaining these portions of the distribution system energized ensures the availability of sufficient power to operate the plant in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents ~~and inadvertent reactor vessel draindown~~).

APPLICABILITY

The AC and DC electrical power distribution subsystems required to be OPERABLE in MODES 4 and 5 and during movement of irradiated fuel assemblies in the secondary containment provide assurance that:

a. Systems *that provide core cooling* ~~to provide adequate coolant inventory makeup~~ are available ~~for the irradiated fuel in the core in case of an inadvertent draindown of the reactor vessel~~;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown or refueling condition.

The AC and DC electrical power distribution subsystem requirements for MODES 1, 2, and 3 are covered in LCO 3.8.7.

(continued)

BASES (continued)

ACTIONS

LCO 3.0.3 is not applicable while in MODE 4 or 5. However, since irradiated fuel assembly movement can occur in MODE 1, 2, or 3, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 4 or 5, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Entering LCO 3.0.3 while in MODE 1, 2, or 3 would require the unit to be shutdown, but would not require immediate suspension of movement of irradiated fuel assemblies. The Note to the ACTIONS, "LCO 3.0.3 is not applicable," ensures that the actions for immediate suspension of irradiated fuel assembly movement are not postponed due to entry into LCO 3.0.3.

A.1, A.2.1, A.2.2, A.2.3, *and* A.2.4~~, and A.2.5~~

Although redundant required features may require redundant divisions of electrical power distribution subsystems to be OPERABLE, one OPERABLE distribution subsystem division may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS~~,~~ *and* fuel movement~~, and operations with a potential for draining the reactor vessel~~. By allowing the option to declare required features associated with an inoperable distribution subsystem inoperable, appropriate restrictions are implemented in accordance with the affected distribution subsystem LCO's Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS~~,~~ *and* movement of irradiated fuel assemblies in the secondary containment~~ and any activities that could result in inadvertent draining of the reactor vessel~~).

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the plant safety systems.

(continued)

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, *and* A.2.4~~, and A.2.5~~ (continued)

Notwithstanding performance of the above conservative Required Actions, a required residual heat removal—shutdown cooling (RHR-SDC) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.~~3~~4 do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the RHR-SDC ACTIONS would not be entered. Therefore, Required Action A.2.~~4~~5 is provided to direct declaring RHR-SDC inoperable, which results in taking the appropriate RHR-SDC ACTIONS.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the plant safety systems may be without power.

SURVEILLANCE REQUIREMENTS

SR 3.8.8.1

This Surveillance verifies that the AC and DC electrical power distribution subsystem is functioning properly, with the buses energized. The verification of proper voltage availability on the buses ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these buses. The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. UFSAR, Chapter 6.

2. UFSAR, Chapter 15.

BASES

APPLICABLE SAFETY ANALYSES (continued)

In the *unlikely* event of any primary system leak *that could result in draining of the RPV*, the reactor vessel would rapidly depressurize~~, allowing the low pressure core cooling systems to operate~~. The *make-up* capability ~~of the low pressure coolant injection and low pressure core spray subsystems, as~~ required in MODE 4 by LCO 3.5.2, "*RPV Water Inventory Control*~~ECCS - Shutdown~~," would be more than adequate to keep the *RPV water level above the TAF* ~~core flooded~~ under this low decay heat load condition. Small system leaks would be detected by leakage inspections before significant inventory loss occurred.

For the purposes of these tests, the protection provided by normally required MODE 4 applicable LCOs, in addition to the secondary containment requirements required to be met by this Special Operations LCO, will ensure acceptable consequences during normal hydrostatic test conditions and during postulated accident conditions.

As described in LCO 3.0.7, compliance with Special Operations LCOs is optional, and therefore, no criteria of 10 CFR 50.36(c)(2)(ii) apply. Special Operations LCOs provide flexibility to perform certain operations by appropriately modifying requirements of other LCOs. A discussion of the criteria satisfied for the other LCOs is provided in their respective Bases.

LCO

As described in LCO 3.0.7, compliance with this Special Operations LCO is optional. Operation at reactor coolant temperatures > 200°F, can be in accordance with Table 1.1-1 for MODE 3 operation without meeting this Special Operations LCO or its ACTIONS. This option may be required due to P/T limits, however, which require testing at temperatures > 200°F, performance of inservice leak and hydrostatic testing would also necessitate the inoperability of some subsystems normally required to be OPERABLE when > 200°F. Additionally, even with required minimum reactor coolant temperatures ≤ 200°F, RCS temperatures may drift above 200°F during the performance of inservice leak and hydrostatic testing or during subsequent control rod scram time testing, which is typically performed in conjunction with inservice leak and hydrostatic testing. While this Special Operations LCO is provided for inservice leak and hydrostatic testing, and for scram time testing initiated in conjunction with an inservice leak or hydrostatic test, parallel performance of other tests and inspections is not precluded.

(continued)