Enclosure 1

MFN 06-263

Response to NRC Request for Additional Information

Letter No. 24 Related to ESBWR Design Certification Application

Technical Specifications for Limiting Conditions for Operation

RAI Number 16.0-1

RAI 16.0-1

The TSs should include a limiting condition for operation (LCO) for each structure, system, or component (SSC) or process parameter meeting one or more of the four criteria in 10 CFR 50.36(c)(2)(ii) to ensure that the proposed LCOs are sufficient for maintaining the validity of safety analysis (and also the risk analysis). How did GE choose the LCOs and verify that 10 CFR 50.36 is satisfied?

We would like this descriptive information to be included with Revision 1 of Chapter 16 which is scheduled to be submitted on Feb 28.

Response:

General Electric has completed a systematic and comprehensive evaluation of Revision 1 of the ESBWR Design Control Document (DCD) to determine the ESBWR process variables, design features, operating restrictions, and structures, systems, or components (SSCs) that meet one or more of the four criteria in 10 CFR 50.36(c)(2)(ii). This evaluation was used to verify that Revision 1 of DCD Chapter 16, Technical Specifications, includes the Limiting Conditions for Operation (LCOs) required to maintain the validity of the safety analysis and risk analysis described in Revision 1 of the ESBWR DCD.

The 10 CFR 50.36(c)(2)(ii) evaluation and development of matrices to document that evaluation consisted of three parts. First, Revision 1 of the ESBWR DCD was reviewed to identify the process variables, design features, operating restrictions, and SSCs that potentially met one or more of the criteria in 10 CFR 50.36(c)(2)(ii). The identification of all process variables, design features, operating restrictions, and SSCs that potentially met one or more of the criteria in 10 CFR 50.36(c)(2)(ii) used several different methods to ensure that the compilation and evaluation was comprehensive, as described in the introductions to each of the four matrices attached to this response. Second, a matrix was created for each of the four criteria of 10 CFR 50.36(c)(2)(ii) to capture the ESBWR Revision 1 DCD design, safety analysis, and risk analysis reference information for each listed process variable, design feature, operating restriction, and SSC, including the items already addressed in Revision 1 of DCD Chapter 16, Technical Specifications. Finally, an evaluation was performed against the criteria in 10 CFR 50.36(c)(2)(ii) applicable to that matrix to determine whether it would be required to be addressed in DCD Chapter 16, Technical Specifications. For the Loss of Feedwater Heating (LOFWH) with Failure of Selected Control Rod Run-In (SCRRI) infrequent event (IE), the evaluation against the criteria in 10 CFR 50.36(c)(2)(ii) has not been completed, and will be addressed in a supplement to this response when completed.

This evaluation concluded that the Technical Specifications included in Revision 1 of ESBWR DCD Chapter 16 contain the LCOs required to meet 10 CFR 50.36(c)(2)(ii) with four exceptions. First, the SCRRI function of the Rod Control and Information System (RC&IS) has been determined to meet 10 CFR 50.36(c)(2)(ii) Criterion 3 and will therefore result in a revision to Technical Specifications to include a new LCO. This LCO would be similar to the current LCO 3.7.3 for the Main Turbine Bypass System. Second, the float valves for the drywell spillover pipes have been determined to meet 10 CFR 50.36(c)(2)(ii) Criterion 3 and will therefore result in a revision to Technical Specifications to include a new SR to ensure periodic

verification of the appropriate containment or ECCS related Technical Specification function. Third, the Drywell (DW) to Wetwell (WW) vacuum breaker line isolation valves, and the associated actuation instrumentation for the DW to WW vacuum breaker line isolation valves including the proximity switches on the DW to WW vacuum breaker valves, have been determined to meet 10 CFR 50.36(c)(2)(ii) Criterion 3 and will therefore result in a revision to Technical Specifications to include a new SR to ensure periodic verification of the appropriate containment or ECCS related Technical Specification function. Finally, the safety-related main feedwater pump breakers, and the associated instrumentation for tripping the breakers on a Feedwater Line Differential Pressure – High with Drywell Pressure – High automatic actuation signal, have been determined to meet 10 CFR 50.36(c)(2)(ii) Criterion 3 and will therefore result in a revision to Technical Specifications to include new LCO requirements.

Application and Evaluation of 10 CFR 50.36(c)(2)(ii) Criterion 1:

"Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary."

The installed instrumentation included in the evaluation of those potentially used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary were identified consistent with the regulatory guidance provided in Regulatory Guide 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems.". To evaluate the scope of installed instrumentation meeting the requirements of 10 CFR 50.36(c)(2)(ii) Criterion 1, Revision 1 of DCD Subsection 5.2.5.1.1, 5.2.5.8, and 7.3.3 were reviewed, and only the installed instrumentation that the DCD specified as required to meet the guidance of Regulatory Guide 1.45 were evaluated.

In order to document the evaluation as described above to determine the installed instrumentation required to be included in the Technical Specifications in DCD Chapters 16 and 16B to meet the requirements of 10 CFR 50.36(c)(2)(ii) Criterion 1, a matrix was developed from the design and safety analysis information contained in the current revision of the DCD. This matrix (attached) includes the following information:

- DCD References: Identifies the DCD information describing installed instrumentation.
- Installed Instrumentation: Identifies the installed instrumentation being evaluated.
- Instrumentation Safety-Related: Lists the safety classification of the applicable installed instrumentation (Yes – safety-related, No – non-safety).
- Instrumentation Function: Lists a description of the function performed by the installed instrumentation being evaluated against the 10 CFR 50.36(c)(2)(ii) criteria.
- Instrumentation Technical Specification: Lists the current Technical Specifications applicable to the installed instrumentation.
- TS?: Indicates whether the installed instrumentation meets the requirement of 10 CFR 50.36(c)(2)(ii) Criterion 1, and therefore is required to be included in the Technical Specifications.
- Technical Specification Justification: Provides a narrative description of the justification for including or not including the installed instrumentation in the DCD Chapter 16 and 16B Technical Specifications.

The results of the evaluation of 10 CFR 50.36(c)(2)(ii) Criterion 1 using this matrix is described in the overall response to this RAI.

10 CFR 50.36(c)(2)(ii) Criterion 1:

"Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary."

	DCD References	Installed Instrumentation	Instrumentation Safety-Related	Instrumentation Function	Instrumentation Technical Specification	TS?	Technical Specification Justification
1	5.2.5.1.1 Table 5.2-9 7.3.3 Table 7.3-5	Drywell floor drain high conductivity water (HCW) sump monitoring system	Yes	Detect Reactor Coolant System leakage	3.3.4.1	Yes	Instrumentation is used to detect degradation of the reactor coolant pressure boundary to determine if leakage is present that may be detrimental to the safety of the facility. The allowed leakage rates are defined in Technical Specification 3.4.2 (10 CFR 50.36(c)(2)(ii) Criterion 2), and are well below the rates predicted for critical crack sizes to allow for operator actions before a significant break in the reactor coolant pressure boundary can occur. The drywell floor drain HCW sump monitoring system is required to quantify the unidentified leakage. Therefore, this instrumentation meets Criterion 1 and is included in the Technical Specifications.
2	5.2.5.1.1 Table 5.2-9 7.3.3 Table 7.3-5	Drywell fission product monitoring system	Yes	Detect Reactor Coolant System leakage	3.3.4.1	Yes	Instrumentation is used to detect degradation of the reactor coolant pressure boundary to determine if leakage is present that may be detrimental to the safety of the facility. The allowed leakage rates are defined in Technical Specification 3.4.2 (10 CFR 50.36(c)(2)(ii) Criterion 2), and are well below the rates predicted for critical crack sizes to allow for operator actions before a significant break in the reactor coolant pressure boundary can occur. The drywell fission product monitoring system provides early alarms to the operators so closer examination of other detection systems will be made to determine the extent of any corrective action that may be required. Therefore, this instrumentation meets Criterion 1 and is included in the Technical Specifications.
3	5.2.5.1.1 Table 5.2-9 7.3.3 Table 7.3-5	Drywell air coolers condensate flow monitoring system	Yes	Detect Reactor Coolant System leakage	3.3.4.1	Yes	Instrumentation is used to detect degradation of the reactor coolant pressure boundary to determine if leakage is present that may be detrimental to the safety of the facility. The allowed leakage rates are defined in Technical Specification 3.4.2 (10 CFR 50.36(c)(2)(ii) Criterion 2), and are well below the rates predicted for critical crack sizes to allow for operator actions before a significant break in the reactor coolant pressure boundary can occur. The drywell air coolers condensate flow monitoring system provides early alarms to the operators so closer examination of other detection systems will be made to determine the extent of any corrective action that may be required. Therefore, this instrumentation meets Criterion 1 and is included in the Technical Specifications.

Application and Evaluation of 10 CFR 50.36(c)(2)(ii) Criterion 2:

"A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier."

The process variables, design features, or operating restrictions considered in this evaluation was limited to those that are under the control of the plant operators to maintain within required parameters. Process variables, design features, and operating restrictions not under the control of the plant operators, or those already included as an LCO, SR, or required feature in the Technical Specifications in accordance with 10 CFR 50.36(c)(2)(ii) Criterion 3, were not included in the Criterion 2 evaluation. For example, the Gravity-Driven Cooling System (GDCS) was included in Technical Specifications because it met 10 CFR 50.36(c)(2)(ii) Criterion 3. Therefore, operating restrictions under the control of the plant operators such as GDCS pool level, and design features associated with GDCS squib valves, were eliminated from evaluation against 10 CFR 50.36(c)(2)(ii) Criterion 2 because the GDCS LCO includes SRs that address these issues.

The design basis accidents and transients applicable to the ESBWR for this Criterion include anticipated operational occurrences (AOOs), AOOs with a Single Failure (SF), infrequent events (IEs), and accidents as defined in DCD Chapter 15, Safety Analyses. Consistent with past precedents, selected special events (SEs) defined in DCD Section 15.4 are included in the determination of process variables, design features, or operating restrictions meeting Criterion 2. For ESBWR, these selected SEs include Main Steam Isolation Valve (MSIV) Closure with Flux Scram (ASME Overpressure Protection), Shutdown Without Control Rods (i.e., Standby Liquid Control System (SLCS) shutdown capability), and Waste Gas System Leak or Failure, since these non-Design Basis Accidents or transients, or similar type events, were considered in the development of NUREG-1434, “General Electric BWR-6 Standard Technical Specifications,” Revision 3.

Revision 1 of DCD Chapter 15, including the information presented in the Nuclear Safety Operational Analysis (NSOA) in DCD Section 15.1, was reviewed to identify process variables, design features, or operating restrictions meeting the requirements of 10 CFR 50.36(c)(2)(ii) Criterion 2. Specifically, the event evaluations provided in DCD Subsection 15.1.4 and event diagrams provided in DCD Figures 15.1-1 through 15.1-47 were reviewed to identify potential process variables, design features, or operating restrictions related to all of the AOOs, AOOs with a SF, IEs, accidents, and selected SEs for evaluation against the criteria in 10 CFR 50.36(c)(2)(ii). In addition, a review of the associated event descriptions and event sequences in DCD Chapter 15 and DCD Chapter 6, Engineered Safety Features, reviews of the DCD tables describing initial conditions and assumptions of he various safety analyses, and reviews of other DCD chapters, was performed to extract additional design, safety analysis, and risk information relevant to the evaluation. The review of DCD Chapter 6 included review of the assumptions used in the analyses of the response of containment systems, emergency core cooling systems, control room habitability systems, and atmosphere cleanup systems to a loss of coolant accident. Subsection 15.0.1, Classification and Selection of Events, describes the process used for selection and classification of the events included in the safety analyses described in DCD Chapters 15 and 6.

A matrix was developed from the design and safety analysis information contained in the current revision of the DCD to document the evaluation as described above to determine the process variables, design features, or operating restrictions required to be included in the Technical Specifications in DCD Chapters 16 and 16B to meet the requirements of 10 CFR 50.36(c)(2)(ii) Criterion 2. This matrix (attached) includes the following information:

- AOO, IE, Acc, or SE: Identifies if the event associated with the process variables, design features, or operating restrictions being evaluated is classified as an anticipated operational occurrence (AOO), AOO with a Single Failure (SF), infrequent event (IE), accident (Acc), or special event (SE).
- Event: Identifies the AOO, AOO with a SF, IE, Acc, or SE being reviewed as part of the evaluation of the process variables, design features, or operating restrictions.
- NSOA Event Diagram/Event Description: Identifies the event diagram (DCD Figures 15.1-2 through 15.1-47) and the DCD references providing a description of the event and sequence of events associated with the process variables, design features, or operating restrictions being evaluated.
- Variable, Feature, or Restriction: Identifies the process variable, design feature, or operating restriction being evaluated.
- Other DCD References: Identifies other DCD references providing a description of the process variables, design features, or operating restrictions being evaluated, including reference to the DCD tables providing initial conditions and assumptions for the safety analyses.
- Technical Specification: Lists the current Technical Specifications applicable to the process variable, design feature, or operating restriction. If the process variable, design feature, or operating restriction is not currently included in the Technical Specifications, then lists "NONE" if no Technical Specifications are to be proposed, or "To Be Developed" if appropriate Technical Specifications are planned to be added in a future revision.
- TS?: Indicates whether the process variable, design feature, or operating restriction meets the requirement of 10 CFR 50.36(c)(2)(ii) Criterion 2, and therefore is required to be included in the Technical Specifications.
- Technical Specification Justification: Provides a narrative description of the justification for including or not including the process variable, design feature, or operating restriction in the DCD Chapter 16 and 16B Technical Specifications.

The results of the evaluation of 10 CFR 50.36(c)(2)(ii) Criterion 2 using this matrix is described in the overall response to this RAI.

10 CFR 50.36(c)(2)(ii) Criterion 2:

"A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier."

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
1	AOO and AOO with SF	Loss of Feedwater Heating (LOFWH)	Figure 15.1-2 15.2.1.1 Table 15.2-4	Thermal Power (Bounding)	Table 15.2-1	1.0 Operating License	Yes	Analyses of these AOOs assume an initial condition of 4500 MWt (100% RTP). Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications and Operating License.
		Closure of One Turbine Control Valve (TCV)	Figure 15.1-3 15.2.2.1 Table 15.2-6 Table 15.2-7					
		Generator Load Rejection with Turbine Bypass	Figure 15.1-4 15.2.2.2 Table 15.2-8					
		Generator Load Rejection with a Single Failure in the Turbine Bypass System	Figure 15.1-5 15.2.2.3 Table 15.2-9					
		Turbine Trip with Turbine Bypass	Figure 15.1-6 15.2.2.4 Table 15.2-10					
		Turbine Trip with a Single Failure in the Turbine Bypass System	Figure 15.1-7 15.2.2.5 Table 15.2-11					
		Closure of One Main Steam Isolation Valve (MSIV)	Figure 15.1-8 15.2.2.6 Table 15.2-12					
		Closure of All Main Steam Isolation Valves (MSIVs)	Figure 15.1-9 15.2.2.7 Table 15.2-13					
		Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15					
		Inadvertent Isolation Condenser Initiation	Figure 15.1-12 15.2.4.1 Table 15.2-17					

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
1 (cont'd)	AOO and AOO with SF	Runout of One Feedwater Pump	Figure 15.1-13 15.2.4.2 Table 15.2-19	Thermal Power (Bounding)	Table 15.2-1	1.0 Operating License	Yes	Analyses of these AOOs assume an initial condition of 4500 MWt (100% RTP). Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications and Operating License.
		Opening of One Turbine Control Valve (TCV) or Turbine Bypass Valve (TBV)	Figure 15.1-14 15.2.5.1 Table 15.2-20					
		Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21					
		Loss of All Feedwater Flow	Figure 15.1-16 15.2.5.3 Table 15.2-22					
2	IE	Loss of Feedwater Heating (LOFWH) With Failure of Selected Control Rod Run-In (SCRRI)	Figure 15.1-17 15.3.1 Table 15.3-2	Thermal Power (Bounding)	Table 15.3-1 Table 15.3-13	1.0 Operating License	Yes	Analyses of these IEs assume an initial condition of 4500 MWt (100% RTP). Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications and Operating License.
		Feedwater Controller Failure – Maximum Demand	Figure 15.1-18 15.3.2 Table 15.3–3					
		Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-19 15.3.3 Table 15.3–4					
		Pressure Regulator Failure – Closure of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-20 15.3.4 Table 15.3–5					
		Generator Load Rejection with Total Turbine Bypass Failure	Figure 15.1-21 15.3.5 Table 15.3–6					
		Turbine Trip with Total Turbine Bypass Failure	Figure 15.1-22 15.3.6 Table 15.3–7					
		Inadvertent Opening of a Safety Relief Valve (SRV)	Figure 15.1-29 15.3.13 Table 15.3–11					
		Inadvertent Opening of a Depressurization Valve (DPV)	Figure 15.1-30 15.3.14					
		Stuck Open Safety Relief Valve (SRV)	Figure 15.1-31 15.3.15 Table 15.3–12					

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
3	Acc	Fuel Handling Accident Loss-of-Coolant Accident (LOCA) Inside Containment Main Steamline Break (MSLB) Outside Containment Feedwater Line Break (FWLB) Outside Containment Failure of Small Line Carrying Primary Coolant Outside Containment Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-33 15.4.1 Table 15.4–1 Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10 Figure 15.1-35 15.4.5 Table 15.4–10 Figure 15.1-37 15.4.7 Figure 15.1-38 15.4.8 Figure 15.1-39 15.4.9 Table 15.4–20	Thermal Power (Bounding)	Table 6.2-6 Table 6.3-1 Table 6.3-11 Table 15.4-2 Table 15.4-5 Table 15.4-17 Table 15.4-21	1.0 Operating License	Yes	Analyses of these accidents assume an initial bounding condition of 4590 MWt (102% RTP). Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications and Operating License.
4	SE	Main Steam Isolation Valve (MSIV) Closure with Flux Scram (ASME Overpressure Protection) Shutdown Without Control Rods (i.e., Standby Liquid Control System (SLCS) shutdown capability)	Figure 15.1-41 15.5.1 5.2.2 Figure 15.1-42 15.5.2 9.3.5.3	Thermal Power (Bounding)	N/A	1.0 Operating License	Yes	Analyses of these SEs assume an initial bounding condition of 4500 MWt (100% RTP). Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications and Operating License.
5	AOO and AOO with SF	Generator Load Rejection with a Single Failure in the Turbine Bypass System Turbine Trip with a Single Failure in the Turbine Bypass System Closure of All Main Steam Isolation Valves (MSIVs)	Figure 15.1-4 15.2.2.2 Table 15.2-8 Figure 15.1-7 15.2.2.5 Table 15.2-11 Figure 15.1-9 15.2.2.7 Table 15.2-13	Shutdown Margin (SDM)	Table 15.1-6	3.1.1	Yes	Analyses of these AOOs resulting in reactor scram assume that sufficient SDM exists to shutdown and maintain the reactor subcritical even if the maximum worth control rod or rod pair is fully withdrawn. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
5 (cont'd)	AOO and AOO with SF	Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15	Shutdown Margin (SDM)	Table 15.1-6	3.1.1	Yes	Analyses of these AOOs resulting in reactor scram assume that sufficient SDM exists to shutdown and maintain the reactor subcritical even if the maximum worth control rod or rod pair is fully withdrawn. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21					
		Loss of All Feedwater Flow	Figure 15.1-16 15.2.5.3 Table 15.2-22					
6	IE	Feedwater Controller Failure – Maximum Demand	Figure 15.1-18 15.3.2 Table 15.3–3	Shutdown Margin (SDM)	Table 15.1-6	3.1.1	Yes	Analyses of these IEs resulting in reactor scram assume that sufficient SDM exists to shutdown and maintain the reactor subcritical even if the maximum worth control rod or rod pair is fully withdrawn. Analysis for the Control Rod Withdrawal Error During Refueling IE assumes sufficient SDM exists to prevent inadvertent criticality even if the maximum worth control rod or rod pair is fully withdrawn. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-19 15.3.3 Table 15.3–4					
		Pressure Regulator Failure – Closure of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-20 15.3.4 Table 15.3–5					
		Generator Load Rejection with Total Turbine Bypass Failure	Figure 15.1-21 15.3.5 Table 15.3–6					
		Turbine Trip with Total Turbine Bypass Failure	Figure 15.1-22 15.3.6 Table 15.3–7					
		Control Rod Withdrawal Error During Refueling	Figure 15.1-23 15.3.7					
		Control Rod Withdrawal Error During Startup	Figure 15.1-24 15.3.8 Table 15.3–8					
		Inadvertent Shutdown Cooling (SDC) Function Operation	Figure 15.1-28 15.3.12					
		Inadvertent Opening of a Safety Relief Valve (SRV)	Figure 15.1-29 15.3.13 Table 15.3–11					
		Inadvertent Opening of a Depressurization Valve (DPV)	Figure 15.1-30 15.3.14					

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
7	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Shutdown Margin (SDM)	Table 15.1-6	3.1.1	Yes	Analyses of these accidents resulting in reactor scram assume that sufficient SDM exists to shutdown and maintain the reactor subcritical even if the maximum worth control rod or rod pair is fully withdrawn. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10					
		Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7					
		Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8					
		Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20					
8	SE	Main Steam Isolation Valve (MSIV) Closure with Flux Scram (ASME Overpressure Protection)	Figure 15.1-41 15.5.1 5.2.2	Shutdown Margin (SDM)	Table 15.1-6	3.1.1	Yes	Analyses of these SEs resulting in reactor scram or requiring the capability of the standby liquid control system to shutdown the reactor assume that sufficient SDM exists to shutdown and maintain the reactor subcritical even if the maximum worth control rod or rod pair is fully withdrawn. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Shutdown Without Control Rods (i.e., Standby Liquid Control System (SLCS) shutdown capability)	Figure 15.1-42 15.5.2 9.3.5.3					
9	AOO and AOO with SF	Generator Load Rejection with a Single Failure in the Turbine Bypass System	Figure 15.1-4 15.2.2.2 Table 15.2-8	Reactivity Anomalies	Table 15.1-6	3.1.2	Yes	Analyses of these AOOs resulting in reactor scram assume that sufficient Shutdown Margin (SDM) exists to shutdown and maintain the reactor subcritical. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Turbine Trip with a Single Failure in the Turbine Bypass System	Figure 15.1-7 15.2.2.5 Table 15.2-11					
		Closure of All Main Steam Isolation Valves (MSIVs)	Figure 15.1-9 15.2.2.7 Table 15.2-13					
		Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15					

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
9 (cont'd)	AOO and AOO with SF	Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21	Reactivity Anomalies	Table 15.1-6	3.1.2	Yes	Analyses of these AOOs resulting in reactor scram assume that sufficient Shutdown Margin (SDM) exists to shutdown and maintain the reactor subcritical. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Loss of All Feedwater Flow	Figure 15.1-16 15.2.5.3 Table 15.2-22					
10	IE	Feedwater Controller Failure – Maximum Demand	Figure 15.1-18 15.3.2 Table 15.3–3	Reactivity Anomalies	Table 15.1-6	3.1.2	Yes	Analyses for the IEs resulting in reactor scram assume that sufficient Shutdown Margin (SDM) exists to shutdown and maintain the reactor. Analysis for the Control Rod Withdrawal Error During Refueling IE assumes sufficient SDM exists to prevent inadvertent criticality. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-19 15.3.3 Table 15.3–4					
		Pressure Regulator Failure – Closure of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-20 15.3.4 Table 15.3–5					
		Generator Load Rejection with Total Turbine Bypass Failure	Figure 15.1-21 15.3.5 Table 15.3–6					
		Turbine Trip with Total Turbine Bypass Failure	Figure 15.1-22 15.3.6 Table 15.3–7					
		Control Rod Withdrawal Error During Refueling	Figure 15.1-23 15.3.7					
		Control Rod Withdrawal Error During Startup	Figure 15.1-24 15.3.8 Table 15.3–8					
		Inadvertent Shutdown Cooling (SDC) Function Operation	Figure 15.1-28 15.3.12					
		Inadvertent Opening of a Safety Relief Valve (SRV)	Figure 15.1-29 15.3.13 Table 15.3–11					
		Inadvertent Opening of a Depressurization Valve (DPV)	Figure 15.1-30 15.3.14					

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
11	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Reactivity Anomalies	Table 15.1-6	3.1.2	Yes	Analyses for the accidents resulting in reactor scram assume that sufficient Shutdown Margin (SDM) exists to shutdown and maintain the reactor subcritical. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10					
		Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7					
		Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8					
		Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20					
12	SE	Main Steam Isolation Valve (MSIV) Closure with Flux Scram (ASME Overpressure Protection)	Figure 15.1-41 15.5.1 5.2.2	Reactivity Anomalies	Table 15.1-6	3.1.2	Yes	Analyses for the SEs resulting in reactor scram or requiring the capability of the standby liquid control system to shutdown the reactor assume that sufficient Shutdown Margin (SDM) exists to shutdown and maintain the reactor subcritical. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Shutdown Without Control Rods (i.e., Standby Liquid Control System (SLCS) shutdown capability)	Figure 15.1-42 15.5.2 9.3.5.3					
13	IE	Control Rod Withdrawal Error During Startup	Figure 15.1-24 15.3.8 Table 15.3-8	Rod Pattern Control (Ganged Withdrawal Sequence Restrictions)	Table 15.1-6	3.1.6	Yes	Control rod patterns, enforced by the Rod Worth Minimizer, limit the amount of potential reactivity addition that could occur during a Control Rod Withdrawal Error During Startup. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
14	AOO and AOO with SF	Loss of Feedwater Heating	Figure 15.1-2 15.2.1.1 Table 15.2-4	Linear Heat Generation Rate (LHGR)	Table 15.2-1	3.2.1	Yes	The maximum LHGR allowed during plant operation is established to ensure, with 95% confidence, that the fuel rod with the highest surface heat flux will not exceed stress and strain limits or experience fuel melting under abnormal conditions, including the maximum overpower condition, for the applicable AOOs and AOOs with SF. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Closure of One Turbine Control Valve (TCV)	Figure 15.1-3 15.2.2.1 Table 15.2-6 Table 15.2-7					
		Generator Load Rejection with Turbine Bypass	Figure 15.1-4 15.2.2.2 Table 15.2-8					

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
14 (cont'd)	AOO and AOO with SF	Generator Load Rejection with a Single Failure in the Turbine Bypass System	Figure 15.1-5 15.2.2.3 Table 15.2-9	Linear Heat Generation Rate (LHGR)	Table 15.2-1	3.2.1	Yes	The maximum LHGR allowed during plant operation is established to ensure, with 95% confidence, that the fuel rod with the highest surface heat flux will not exceed stress and strain limits or experience fuel melting under abnormal conditions, including the maximum overpower condition, for the applicable AOOs and AOOs with SF. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Turbine Trip with Turbine Bypass	Figure 15.1-6 15.2.2.4 Table 15.2-10					
		Turbine Trip with a Single Failure in the Turbine Bypass System	Figure 15.1-7 15.2.2.5 Table 15.2-11					
		Closure of One Main Steam Isolation Valve (MSIV)	Figure 15.1-8 15.2.2.6 Table 15.2-12					
		Closure of All Main Steam Isolation Valves (MSIVs)	Figure 15.1-9 15.2.2.7 Table 15.2-13					
		Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15					
		Inadvertent Isolation Condenser Initiation	Figure 15.1-12 15.2.4.1 Table 15.2-17					
		Runout of One Feedwater Pump	Figure 15.1-13 15.2.4.2 Table 15.2-19					
		Opening of One Turbine Control Valve (TCV) or Turbine Bypass Valve (TBV)	Figure 15.1-14 15.2.5.1 Table 15.2-20					
		Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21					
		Loss of All Feedwater Flow	Figure 15.1-16 15.2.5.3 Table 15.2-22					

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
15	AOO and AOO with SF	Loss of Feedwater Heating	Figure 15.1-2 15.2.1.1 Table 15.2-4	Minimum Critical Power Ratio (MCPR)	Table 15.2-1	3.2.2	Yes	The minimum CPR allowed during plant operation is established such that 99.9% of the rods avoid boiling transition during the transient of the limiting analyzed AOO or AOO with SF. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Closure of One Turbine Control Valve (TCV)	Figure 15.1-3 15.2.2.1 Table 15.2-6 Table 15.2-7					
		Generator Load Rejection with Turbine Bypass	Figure 15.1-4 15.2.2.2 Table 15.2-8					
		Generator Load Rejection with a Single Failure in the Turbine Bypass System	Figure 15.1-5 15.2.2.3 Table 15.2-9					
		Turbine Trip with Turbine Bypass	Figure 15.1-6 15.2.2.4 Table 15.2-10					
		Turbine Trip with a Single Failure in the Turbine Bypass System	Figure 15.1-7 15.2.2.5 Table 15.2-11					
		Closure of One Main Steam Isolation Valve (MSIV)	Figure 15.1-8 15.2.2.6 Table 15.2-12					
		Closure of All Main Steam Isolation Valves (MSIVs)	Figure 15.1-9 15.2.2.7 Table 15.2-13					
		Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15					
		Inadvertent Isolation Condenser Initiation	Figure 15.1-12 15.2.4.1 Table 15.2-17					
		Runout of One Feedwater Pump	Figure 15.1-13 15.2.4.2 Table 15.2-19					

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
15 (cont'd)	AOO and AOO with SF	Opening of One Turbine Control Valve (TCV) or Turbine Bypass Valve (TBV) Loss of Non-Emergency AC Power to Station Auxiliaries Loss of All Feedwater Flow	Figure 15.1-14 15.2.5.1 Table 15.2-20 Figure 15.1-15 15.2.5.2 Table 15.2-21 Figure 15.1-16 15.2.5.3 Table 15.2-22	Minimum Critical Power Ratio (MCPR)	Table 15.2-1	3.2.2	Yes	The minimum CPR allowed during plant operation is established such that 99.9% of the rods avoid boiling transition during the transient of the limiting analyzed AOO or AOO with SF. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
16	N/A	Loss-of-Coolant Accident (LOCA) Inside Containment	N/A	RCS Operational Leakage	5.2.5.4	3.4.2	Yes	Limits on leakage from the reactor coolant pressure boundary (RCPB) are required so that appropriate action can be taken before the integrity of the RCPB is impaired. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
17	Acc	Main Steam Line Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	RCS Specific Activity	15.4.5.4 Table 15.4-11 Table 15.4-14 Table 15.4-17 Table 15.4-21	3.4.3	Yes	The specific activity in the reactor coolant (the source term) is an initial condition for evaluation of the consequences of an accident due to a MSLB outside containment. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
18	N/A	Loss-of-Coolant Accident (LOCA) Inside Containment	N/A	RCS Pressure/Temperature (P/T) Limits	N/A	3.4.4	Yes	The P/T limits apply during normal operation to ensure adequate margin to brittle failure during normal operation, AOOs, and system hydrostatic tests. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
19	AOO and AOO with SF	Loss of Feedwater Heating Closure of One Turbine Control Valve (TCV) Generator Load Rejection with Turbine Bypass Generator Load Rejection with a Single Failure in the Turbine Bypass System Turbine Trip with Turbine Bypass	Figure 15.1-2 15.2.1.1 Table 15.2-4 Figure 15.1-3 15.2.2.1 Table 15.2-6 Table 15.2-7 Figure 15.1-4 15.2.2.2 Table 15.2-8 Figure 15.1-5 15.2.2.3 Table 15.2-9 Figure 15.1-6 15.2.2.4 Table 15.2-10	Reactor Steam Dome Pressure	Table 15.2-1	3.4.5	Yes	The reactor steam dome pressure is an assumed initial condition in the analyses of at-power AOOs. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
19 (cont'd)	AOO and AOO with SF	Turbine Trip with a Single Failure in the Turbine Bypass System	Figure 15.1-7 15.2.2.5 Table 15.2-11	Reactor Steam Dome Pressure	Table 15.2-1	3.4.5	Yes	The reactor steam dome pressure is an assumed initial condition in the analyses of at-power AOOs. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Closure of One Main Steam Isolation Valve (MSIV)	Figure 15.1-8 15.2.2.6 Table 15.2-12					
		Closure of All Main Steam Isolation Valves (MSIVs)	Figure 15.1-9 15.2.2.7 Table 15.2-13					
		Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15					
		Inadvertent Isolation Condenser Initiation	Figure 15.1-12 15.2.4.1 Table 15.2-17					
		Runout of One Feedwater Pump	Figure 15.1-13 15.2.4.2 Table 15.2-19					
		Opening of One Turbine Control Valve (TCV) or Turbine Bypass Valve (TBV)	Figure 15.1-14 15.2.5.1 Table 15.2-20					
		Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21					
		Loss of All Feedwater Flow	Figure 15.1-16 15.2.5.3 Table 15.2-22					
20	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7	Reactor Steam Dome Pressure	Table 6.2-6	3.4.5	Yes	The reactor steam dome pressure is an initial condition of the analysis that determines the capability of containment to withstand the effects of a LOCA Inside Containment. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
21	SE	Main Steam Isolation Valve (MSIV) Closure with Flux Scram (Overpressure Protection)	Figure 15.1-41 15.5-1 5.2.2	Reactor Steam Dome Pressure	N/A	3.4.5	Yes	The reactor steam dome pressure is an assumed initial condition of the reactor vessel overpressure protection analysis. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
22	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7	Drywell Pressure	Table 6.2-2 Table 6.2-6	3.6.1.4	Yes	The upper limit for containment drywell pressure is an initial condition in the analyses of a LOCA Inside Containment. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
23	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7	Drywell Air Temperature	Table 6.2-2 Table 6.2-6	3.6.1.5	Yes	Average drywell airspace temperature is an initial condition in the analyses of a LOCA Inside Containment. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
24	AOO	Inadvertent Opening of a Safety Relief Valve (SRV)	Figure 15.1-29 15.3.13 Table 15.3–11	Suppression Pool Average Temperature	Table 15.1-6	3.6.2.1	Yes	Suppression pool average temperature is an initial condition for analyses of this AOO. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
25	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7	Suppression Pool Average Temperature	Table 6.2-2 Table 6.2-6	3.6.2.1	Yes	Suppression pool average temperature is an initial condition for analyses that ensure that the peak containment pressure is maintained below the design pressure during this accident. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
26	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7	Suppression Pool Water Level	Table 6.2-3 Table 6.2-6	3.6.2.2	Yes	Suppression pool water level is an initial condition for analyses that ensure that the peak containment pressure is maintained below the design pressure during this accident. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
27	N/A	N/A	N/A	Containment Oxygen Concentration	6.2.1.1.10.2 Table 6.2-1	NONE	No	The ESBWR containment is inerted with nitrogen during operation to control the potential buildup of hydrogen after a severe accident. In SECY-00-0198, "Status Report on Study of Risk-Informed Changes to the Technical Requirements of 10 CFR Part 50 (Option 3) And Recommendations on Risk-informed Changes to 10 CFR 50.44 (Combustible Gas Control)," dated September 14, 2000, the NRC staff recommended changes to 10 CFR 50.44 that reflect the position that only combustible gas generated by a beyond-design-basis accident is a risk-significant threat to containment integrity. Therefore, since this operating restriction is not required as an initial condition in the analysis of any design-basis event, it does not meet Criterion 2 and was not included in Technical Specifications.
28	SE	Waste Gas System Leak or Failure	Figure 15.1-47 15.5.7 11.3.7	Main Condenser Offgas Activity Release Rate	11.3.7 15.0.3.4.7	3.7.2	Yes	The main condenser offgas activity release rate is an initial condition in the analyses of the calculated offsite doses resulting from a Waste Gas System Leak or Failure. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
29	Acc	Fuel Handling Accident	Figure 15.1-33 15.4.1 Table 15.4–1	Fuel Pool Water Level and Reactor Pressure Vessel (RPV) Level	Table 15.4-2	3.7.4 and 3.9.6	Yes	The water level above the irradiated fuel assemblies is an assumption of the analysis of the radiological consequences of a Fuel Handling Accident. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
30	AOO and AOO with SF	Generator Load Rejection with a Single Failure in the Turbine Bypass System Turbine Trip with a Single Failure in the Turbine Bypass System	Figure 15.1-5 15.2.2.3 Table 15.2-9 Figure 15.1-7 15.2.2.5 Table 15.2-11	Isolation Condenser/Passive Containment Cooling (IC/PCC) Pools Level and Temperature	Table 15.2-1	3.7.5	Yes	Analyses of these AOOs assume IC/PCC Pools are available and that the levels and temperatures, prior to the initiating event, are sufficient to remove decay heat via the ICS or PCCS for 72 hours. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
30 (cont'd)	AOO and AOO with SF	Closure of One Main Steam Isolation Valve (MSIV) Closure of All Main Steam Isolation Valves (MSIVs) Loss of Condenser Vacuum Loss of Non-Emergency AC Power to Station Auxiliaries Loss of All Feedwater Flow	Figure 15.1-8 15.2.2.6 Table 15.2-12 Figure 15.1-9 15.2.2.7 Table 15.2-13 Figure 15.1-10 15.2.2.8 Table 15.2-15 Figure 15.1-15 15.2.5.2 Table 15.2-21 Figure 15.1-16 15.2.5.3 Table 15.2-22	Isolation Condenser/Passive Containment Cooling (IC/PCC) Pools Level and Temperature	Table 15.2-1	3.7.5	Yes	Analyses of these AOOs assume IC/PCC Pools are available and that the levels and temperatures, prior to the initiating event, are sufficient to remove decay heat via the ICS or PCCS for 72 hours. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
31	IE	Feedwater Controller Failure – Maximum Demand Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs) Pressure Regulator Failure – Closure of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs) Generator Load Rejection with Total Turbine Bypass Failure Turbine Trip with Total Turbine Bypass Failure Inadvertent Opening of a Depressurization Valve (DPV) Stuck Open Safety Relief Valve (SRV)	Figure 15.1-18 15.3.2 Table 15.3–3 Figure 15.1-19 15.3.3 Table 15.3–4 Figure 15.1-20 15.3.4 Table 15.3–5 Figure 15.1-21 15.3.5 Table 15.3–6 Figure 15.1-22 15.3.6 Table 15.3–7 Figure 15.1-30 15.3.14 Figure 15.1-31 15.3.15 Table 15.3–12	Isolation Condenser/Passive Containment Cooling (IC/PCC) Pools Level and Temperature	Table 15.3-1 Table 15.3-13	3.7.5	Yes	Analyses of these IEs assume IC/PCC Pools are available and that the levels and temperatures, prior to the initiating event, are sufficient to remove decay heat via the ICS or PCCS for 72 hours. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.

	AOO, IE, Acc, or SE	Events	NSOA Event Diagram/Event Description	Variable, Feature, or Restriction	Other DCD References	Technical Specification	TS?	Technical Specification Justification
32	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Isolation Condenser/Passive Containment Cooling (IC/PCC) Pools Level and Temperature	Table 6.2-6 Table 6.3-1 Table 6.3-11 Table 15.4-5 Table 15.4-17 Table 15.4-21	3.7.5	Yes	Analyses of these accidents assume IC/PCC Pools are available and that the levels and temperatures, prior to the initiating event, are sufficient to remove decay heat via the ICS or PCCS for 72 hours. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
		Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10					
		Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7					
		Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8					
		Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20					
33	Acc	Fuel Handling Accident	Figure 15.1-33 15.4.1 Table 15.4–1	Decay Time	Table 15.4-2	3.9.7	Yes	Analysis of a fuel handling accident assumes a minimum decay time of 24 hours. Therefore, this operating restriction meets Criterion 2 and is included in the Technical Specifications.
34	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7	Wetwell Pressure	Table 6.2-2 Table 6.2-6	NONE	No	The upper limit for containment wetwell pressure is an initial condition in the analyses of a LOCA Inside Containment. Maximum wetwell pressure is maintained by the combination of Technical Specification 3.6.1.4, Drywell Pressure, which limits the maximum drywell pressure, and Technical Specification 3.6.1.6, Suppression Chamber to Drywell Vacuum Breakers, which limits the maximum wetwell pressure to ≤ 0.5 psid greater than the drywell pressure. Therefore, this operating restriction does not meet Criterion 2 and is not included in the Technical Specifications.
35	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7	Wetwell Air Temperature	Table 6.2-2 Table 6.2-6	NONE	No	The maximum average wetwell air temperature, prior to the initiating event, is an initial condition in the analyses of a LOCA Inside Containment. Average wetwell airspace temperature remains at equilibrium with the suppression pool water temperature, which is maintained within the required limit by Technical Specification 3.6.2.1, Suppression Pool Average Temperature. Therefore, this operating restriction does not meet Criterion 2 and is not included in the Technical Specifications.

Application and Evaluation of 10 CFR 50.36(c)(2)(ii) Criterion 3:

"A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier."

In the application of this Criterion, the primary success path is defined as the combinations and sequences of equipment needed to operate, which results in acceptable plant accident transient response (including consideration of the single failure criteria). For the ESBWR, the primary success path is met using only safety-related Structures, Systems, and Components (SSCs) and associated Actuation Instrumentation, with non-safety SSCs and Actuation Instrumentation used as backup to these primary success path SSCs. The design basis accidents and transients applicable to the ESBWR for this Criterion include anticipated operational occurrences (AOOs), AOOs with a Single Failure (SF), infrequent events (IEs), and accidents as defined in DCD Chapter 15, Safety Analyses. Consistent with past precedents, selected special events (SEs) defined in DCD Chapter 15 are also included in the determination of SSCs meeting Criterion 3.

Revision 1 of DCD Chapter 15, including the information presented in the Nuclear Safety Operational Analysis (NSOA) in DCD Section 15.1, was reviewed to identify the SSCs and associated Actuation Instrumentation meeting the requirements of 10 CFR 50.36(c)(2)(ii) Criterion 3. Specifically, the event evaluations provided in DCD Subsection 15.1.4 and the event diagrams provided in DCD Figures 15.1-1 through 15.1-47 were reviewed to identify the parameters and SSCs related to the AOOs, AOOs with a SF, IEs, accidents, and selected SEs for evaluation against the criteria in 10 CFR 50.36(c)(2)(ii). In addition, a review of the associated event descriptions and event sequences in DCD Chapter 15 and DCD Chapter 6, Engineered Safety Features, and reviews of other DCD chapters, was performed to extract additional design, safety analysis, and risk information relevant to the evaluation. The review of DCD Chapter 6 included review of the assumptions used in the analyses of the response of containment systems, emergency core cooling systems, control room habitability systems, and atmosphere cleanup systems to a loss of coolant accident. Subsection 15.0.1, Classification and Selection of Events, describes the process used for selection and classification of the events included in the safety analyses described in DCD Chapters 15 and 6.

The evaluation described above to determine the SSCs and Actuation Instrumentation required to be included in the Technical Specifications in DCD Chapters 16 and 16B to meet the requirements of 10 CFR 50.36(c)(2)(ii) Criterion 3 was documented in a matrix developed from the design and safety analysis information contained in the current revision of the DCD. This matrix (attached) includes the following information:

- AOO, IE, Acc, or SE: Identifies if the event associated with the Structure, System, or Component (SSC) being evaluated is classified as an anticipated operational occurrence (AOO), AOO with a Single Failure (SF), infrequent event (IE), accident (Acc), or special event (SE).
- Event: Identifies the AOO, AOO with a SF, IE, Acc, or SE being reviewed as part of the evaluation of the SSC and associated Function.
- NSOA Event Diagram/Event Description: Identifies the event diagram (DCD Figures 15.1-2 through 15.1-47) and the DCD references providing a description of the event and sequence of events associated with the SSC and associated Function being evaluated.

- Structure, System, or Component (SSC): Identifies the SSC being evaluated.
- SSC Safety-Related: Lists the safety classification of the applicable SSC (Yes – safety-related, No – non-safety).
- SSC Function: Lists a description of the function performed by the SSC being evaluated against the 10 CFR 50.36(c)(2)(ii) criteria.
- SSC Technical Specification: Lists the current Technical Specifications applicable to the SSC and associated Function. If the SSC is not required to be included in the Technical Specifications to meet 10 CFR 50.36(c)(2)(ii) Criterion 3, then "NONE" is listed. If appropriate Technical Specifications are planned to be added in a future revision to meet 10 CFR 50.36(c)(2)(ii) Criterion 3, then "To Be Developed" is listed.
- TS?: Indicates whether the SSC and associated Function meets the requirement of 10 CFR 50.36(c)(2)(ii) Criterion 3, and therefore is required to be included in the Technical Specifications.
- Actuation Instrumentation: Identifies the Actuation Instrumentation for the SSC and associated Function being evaluated.
- Actuation Instrumentation Safety-Related: Lists the safety classification of the applicable Actuation Instrumentation (Yes – safety-related, No – non-safety).
- Actuation Instrumentation Technical Specification: Lists the current Technical Specifications applicable to the Actuation Instrumentation. If the Actuation instrumentation is not required to be included in the Technical Specifications, then "NONE" is listed. If appropriate Technical Specifications are planned to be added in a future revision to meet 10 CFR 50.36(c)(2)(ii) Criterion 3, then "To Be Developed" is listed.
- TS?: Indicates whether the Actuation Instrumentation meets the requirement of 10 CFR 50.36(c)(2)(ii) Criterion 3, and therefore is required to be included in the Technical Specifications.
- Technical Specification Justification: Provides a narrative description of the justification for including or not including the SSC and associated Function and Actuation Instrumentation in the DCD Chapter 16 and 16B Technical Specifications.

The results of the evaluation of 10 CFR 50.36(c)(2)(ii) Criterion 3 using this matrix is described in the overall response to this RAI.

10 CFR 50.36(c)(2)(ii) Criterion 3:

"A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier."

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
1	AOO	Loss of Feedwater Heating (LOFWH)	Figure 15.1-2 15.2.1.1 Table 15.2-4	Rod Control and Information System (RC&IS)	No	Initiate Selected Control Rod Run-In (SCRRI). Reactor variables settle into new steady state.	To Be Developed	Yes	Actuated by Feedwater (FW) Delta T – High signal from Feedwater Control System (FWCS).	No	To Be Developed	Yes	This SSC and associated actuation instrumentation are required in the primary success path for this AOO. Therefore, this SSC meets Criterion 3 and will be included, along with Surveillance Requirements that ensure the associated actuation instrumentation functions correctly, in a future revision of the Technical Specifications.
2	AOO	Closure of One Turbine Control Valve (TCV)	Figure 15.1-3 15.2.2.1 Table 15.2-6 Table 15.2-7	Steam Bypass and Pressure Control (SB&PC)	No	Opens remaining TCVs and some Turbine Bypass Valves (TBVs). Reactor variables settle into new steady state.	3.7.3	Yes	Controls Reactor Dome Pressure through the SB&PC Pressure Regulator.	No	SR 3.7.3.2	Yes	The TBVs and associated actuation instrumentation are required in the primary success path for this AOO. However, operation of the TCVs is not required to meet the applicable acceptance criteria of this AOO. Therefore, the TBVs meet Criterion 3 and are included, along with Surveillance Requirements that ensure the associated actuation instrumentation functions correctly, in the Technical Specifications. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
3	AOO	Generator Load Rejection with Turbine Bypass	Figure 15.1-4 15.2.2.2 Table 15.2-8	Steam Bypass and Pressure Control (SB&PC)	No	Close Turbine Control Valves (TCVs) and Open Turbine Bypass Valves (TBVs). Reactor variables settle into new steady state.	3.7.3	Yes	Controls Reactor Dome Pressure through the SB&PC Pressure Regulator.	No	SR 3.7.3.2	Yes	The TBVs and associated actuation instrumentation are required in the primary success path for this AOO. However, operation of the TCVs is not required to meet the applicable acceptance criteria of this AOO. Therefore, the TBVs meet Criterion 3 and are included, along with Surveillance Requirements that ensure the associated actuation instrumentation functions correctly, in the Technical Specifications. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
4	AOO	Generator Load Rejection with Turbine Bypass	Figure 15.1-4 15.2.2.2 Table 15.2-8	Rod Control and Information System (RC&IS)	No	Initiate Selected Control Rod Run-In (SCRRI). Reactor variables settle into new steady state.	To Be Developed	Yes	Actuated by Load Rejection signal from Turbine Control System.	No	To Be Developed	Yes	This SSC and associated actuation instrumentation are required in the primary success path for this AOO. Therefore, this SSC meets Criterion 3 and will be included, along with Surveillance Requirements that ensure the associated actuation instrumentation functions correctly, in a future revision of the Technical Specifications.
5	AOO with SF	Generator Load Rejection with a Single Failure in the Turbine Bypass System	Figure 15.1-5 15.2.2.3 Table 15.2-9	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
6	AOO with SF	Generator Load Rejection with a Single Failure in the Turbine Bypass System	Figure 15.1-5 15.2.2.3 Table 15.2-9	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec)	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, no Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
7	AOO with SF	Generator Load Rejection with a Single Failure in the Turbine Bypass System	Figure 15.1-5 15.2.2.3 Table 15.2-9	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, no Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
8	AOO with SF	Generator Load Rejection with a Single Failure in the Turbine Bypass System	Figure 15.1-5 15.2.2.3 Table 15.2-9	Steam Bypass and Pressure Control (SB&PC)	No	Close Turbine Control Valves (TCVs) and Open Turbine Bypass Valves (TBVs). Reactor shutdown.	3.7.3	Yes	Controls Reactor Dome Pressure through the SB&PC Pressure Regulator.	No	SR 3.7.3.2	Yes	The TBVs and associated actuation instrumentation are required in the primary success path for this AOO with SF. However, operation of the TCVs is not required to meet the applicable acceptance criteria of this AOO with SF. Therefore, the TBVs meet Criterion 3 and are included, along with Surveillance Requirements that ensure the associated actuation instrumentation functions correctly, in the Technical Specifications. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
9	AOO with SF	Generator Load Rejection with a Single Failure in the Turbine Bypass System	Figure 15.1-5 15.2.2.3 Table 15.2-9	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Turbine Control Valve (TCV) Fast Closure Trip Oil Pressure – Low.	Yes	3.3.1.1, Fn11 3.3.1.2	Yes	Insufficient turbine bypass capability available. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
10	AOO with SF	Generator Load Rejection with a Single Failure in the Turbine Bypass System	Figure 15.1-5 15.2.2.3 Table 15.2-9	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
11	AOO	Turbine Trip with Turbine Bypass	Figure 15.1-6 15.2.2.4 Table 15.2-10	Steam Bypass and Pressure Control (SB&PC)	No	Open Turbine Bypass Valves (TBVs). Reactor variables settle into new steady state.	3.7.3	Yes	Controls Reactor Dome Pressure through the SB&PC Pressure Regulator.	No	SR 3.7.3.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
12	AOO	Turbine Trip with Turbine Bypass	Figure 15.1-6 15.2.2.4 Table 15.2-10	Rod Control and Information System (RC&IS)	No	Initiate Selected Control Rod Run-In (SCRRI). Reactor variables settle into new steady state.	To Be Developed	Yes	Actuated by Turbine Trip signal from Turbine Control System.	No	To Be Developed	Yes	Have determined that this SSC and associated actuation instrumentation are required to be added to the Technical Specifications. May also be automatically actuated by Load Rejection signal from the Turbine Control System and Feedwater (FW) Delta T – High from Feedwater Control System (FWCS) through the Non-Essential Distributed Control and Information System (NE-DCIS), and manually actuated by two manual SCRRI pushbuttons on the Main Control Room Panel.
13	AOO with SF	Turbine Trip with a Single Failure in the Turbine Bypass System	Figure 15.1-7 15.2.2.5 Table 15.2-11	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
14	AOO with SF	Turbine Trip with a Single Failure in the Turbine Bypass System	Figure 15.1-7 15.2.2.5 Table 15.2-11	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, no Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
15	AOO with SF	Turbine Trip with a Single Failure in the Turbine Bypass System	Figure 15.1-7 15.2.2.5 Table 15.2-11	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, no Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
16	AOO with SF	Turbine Trip with a Single Failure in the Turbine Bypass System	Figure 15.1-7 15.2.2.5 Table 15.2-11	Steam Bypass and Pressure Control (SB&PC)	No	Open Turbine Bypass Valves (TBVs). Reactor shutdown.	3.7.3	Yes	Controls Reactor Dome Pressure through the SB&PC Pressure Regulator.	No	SR 3.7.3.2	Yes	The TBVs and associated actuation instrumentation are required in the primary success path for this AOO with SF. However, operation of the Turbine Control Valves (TCVs) is not required to meet the applicable acceptance criteria of this AOO with SF. Therefore, the TBVs meet Criterion 3 and are included, along with Surveillance Requirements that ensure the associated actuation instrumentation functions correctly, in the Technical Specifications. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
17	AOO with SF	Turbine Trip with a Single Failure in the Turbine Bypass System	Figure 15.1-7 15.2.2.5 Table 15.2-11	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Turbine Stop Valve (TSV) Closure Trip.	Yes	3.3.1.1, Fn10 3.3.1.2	Yes	Insufficient turbine bypass capability available. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
18	AOO with SF	Turbine Trip with a Single Failure in the Turbine Bypass System	Figure 15.1-7 15.2.2.5 Table 15.2-11	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
19	AOO	Closure of One Main Steam Isolation Valve (MSIV)	Figure 15.1-8 15.2.2.6 Table 15.2-12	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Main Steam Line Flow – High.	Yes	3.3.6.1, Fn04 3.3.6.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
20	AOO	Closure of One Main Steam Isolation Valve (MSIV)	Figure 15.1-8 15.2.2.6 Table 15.2-12	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.1.1, Fn07 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
21	AOO	Closure of One Main Steam Isolation Valve (MSIV)	Figure 15.1-8 15.2.2.6 Table 15.2-12	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
22	AOO	Closure of One Main Steam Isolation Valve (MSIV)	Figure 15.1-8 15.2.2.6 Table 15.2-12	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
23	AOO	Closure of One Main Steam Isolation Valve (MSIV)	Figure 15.1-8 15.2.2.6 Table 15.2-12	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
24	AOO	Closure of One Main Steam Isolation Valve (MSIV)	Figure 15.1-8 15.2.2.6 Table 15.2-12	Steam Bypass and Pressure Control (SB&PC)	No	Open Turbine Bypass Valves (TBVs). Reactor variables settle into new steady state.	3.7.3	Yes	Controls Reactor Dome Pressure through the SB&PC Pressure Regulator.	No	SR 3.7.3.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
25	AOO	Closure of All Main Steam Isolation Valves (MSIVs)	Figure 15.1-9 15.2.2.7 Table 15.2-13	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.1.1, Fn07 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
26	AOO	Closure of All Main Steam Isolation Valves (MSIVs)	Figure 15.1-9 15.2.2.7 Table 15.2-13	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
27	AOO	Closure of All Main Steam Isolation Valves (MSIVs)	Figure 15.1-9 15.2.2.7 Table 15.2-13	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
28	AOO	Closure of All Main Steam Isolation Valves (MSIVs)	Figure 15.1-9 15.2.2.7 Table 15.2-13	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
29	AOO	Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15	Steam Bypass and Pressure Control (SB&PC)	No	Close Turbine Stop Valves (TSVs) and Open Turbine Bypass Valves (TBVs).	NONE	No	Actuated by Condenser Vacuum – Low.	No	NONE	No	TSV closure is input to Reactor Protection System (RPS) Trip Instrumentation (TS 3.3.1.1) Fn10, and addresses the intent of SB&PC. This event is bounded by Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs). If SB&PC fails to respond, a slow pressure decrease to point of Reactor Low Pressure Main Steam Isolation Valve (MSIV) isolation and scram would occur, which would be a non-challenging event for AOO Criteria. Therefore, this SSC and associated actuation instrumentation are not required as the primary success path for meeting acceptance criteria. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
30	AOO	Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15	Steam Bypass and Pressure Control (SB&PC)	No	Close Turbine Bypass Valves (TBVs). Protect main condenser from overpressurization and release of reactor coolant to environment.	3.7.3	Yes	Actuated by Condenser Vacuum – Low Low.	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory and reactor pressure vessel pressure are maintained in accordance with the acceptance criteria for the applicable event even if the non-safety SB&PC were to fail. If SB&PC fails to respond, damage to the main condenser and main turbine equipment could occur, which would be a non-challenging event for AOO Criteria. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
31	AOO	Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
32	AOO	Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
33	AOO	Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Condenser Vacuum – Low.	Yes	3.3.6.1, Fn05 3.3.6.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
34	AOO	Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Main Condenser Pressure – High.	Yes	3.3.1.1, Fn12 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
35	AOO	Loss of Condenser Vacuum	Figure 15.1-10 15.2.2.8 Table 15.2-15	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
36	AOO	Loss of Shutdown Cooling Function of Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System	Figure 15.1-11 15.2.2.9	Planned Operation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	All normally operating systems remain in operation, and no SSC and associated actuation instrumentation are credited in the analysis of this AOO. Therefore, Criterion 3 is not applicable.
37	AOO	Inadvertent Isolation Condenser Initiation	Figure 15.1-12 15.2.4.1 Table 15.2-17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	All normally operating systems remain in operation, and no SSC and associated actuation instrumentation are credited in the analysis of this accident. Therefore, Criterion 3 is not applicable.
38	AOO	Runout of One Feedwater Pump	Figure 15.1-13 15.2.4.2 Table 15.2-19	Feedwater Control System (FWCS)	No	Reduce Feedwater Flow from Other Pumps. Water level is maintained at normal level.	NONE	No	Controls feedwater flow.	No	NONE	No	The function of this SSC and associated actuation instrumentation is for turbine protection only, and has no safety implications since it is not required as a primary success path for meeting acceptance criteria (i.e., MCPR acceptance criterion is not exceeded if this SSC or actuation instrumentation fail). Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
39	AOO	Opening of One Turbine Control Valve (TCV) or Turbine Bypass Valve (TBV)	Figure 15.1-14 15.2.5.1 Table 15.2-20	Steam Bypass and Pressure Control (SB&PC)	No	Close TCVs. Reactor variables settle into new steady state.	NONE	No	Controls Reactor Dome Pressure through the SB&PC Pressure Regulator.	No	NONE	No	TSV closure is input to Reactor Protection System (RPS) Trip Instrumentation (TS 3.3.1.1) Fn10, and addresses the intent of SB&PC. This event is bounded by Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs). If SB&PC fails to respond, a slow pressure decrease to point of Reactor Low Pressure Main Steam Isolation Valve (MSIV) isolation and scram would occur, which would be a non-challenging event for AOO Criteria. Therefore, this SSC and associated actuation instrumentation are not required as the primary success path for meeting acceptance criteria. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
40	AOO	Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21	Steam Bypass and Pressure Control (SB&PC)	No	Close Turbine Control Valves (TCVs) and Open Turbine Bypass Valves (TBVs). Pressure stabilized.	3.7.3	Yes	Controls Reactor Dome Pressure through the SB&PC Pressure Regulator.	No	SR 3.7.3.2	Yes	The TBVs and associated actuation instrumentation are required in the primary success path for this AOO. However, operation of the TCVs is not required to meet the applicable acceptance criteria of this AOO. Therefore, the TBVs meet Criterion 3 and are included, along with Surveillance Requirements that ensure the associated actuation instrumentation functions correctly, in the Technical Specifications. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
41	AOO	Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21	Steam Bypass and Pressure Control (SB&PC)	No	Close Turbine Bypass Valves (TBVs). Protect main condenser from overpressurization and release of reactor coolant to environment.	3.7.3	No	Actuated by Condenser Vacuum – Low Low.	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory and reactor pressure vessel pressure are maintained in accordance with the acceptance criteria for the applicable event even if the non-safety SB&PC were to fail. If SB&PC fails to respond, damage to the main condenser and main turbine equipment could occur, which would be a non-challenging event for AOO Criteria. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
42	AOO	Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
43	AOO	Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
44	AOO	Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Condenser Vacuum – Low.	Yes	3.3.6.1, Fn05 3.3.6.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
45	AOO	Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Loss of Power Generation Bus (Loss of Feedwater Flow).	Yes	3.3.5.3, Fn06 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
46	AOO	Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Loss of Power Generation Bus (Loss of Feedwater Flow).	Yes	3.3.1.1, Fn13 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
47	AOO	Loss of Non-Emergency AC Power to Station Auxiliaries	Figure 15.1-15 15.2.5.2 Table 15.2-21	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
48	AOO	Loss of All Feedwater Flow	Figure 15.1-16 15.2.5.3 Table 15.2-22	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Loss of Power Generation Bus (Loss of Feedwater Flow).	Yes	3.3.1.1, Fn13 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
49	AOO	Loss of All Feedwater Flow	Figure 15.1-16 15.2.5.3 Table 15.2-22	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
50	AOO	Loss of All Feedwater Flow	Figure 15.1-16 15.2.5.3 Table 15.2-22	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
51	AOO	Loss of All Feedwater Flow	Figure 15.1-16 15.2.5.3 Table 15.2-22	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
52	AOO	Loss of All Feedwater Flow	Figure 15.1-16 15.2.5.3 Table 15.2-22	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Loss of Power Generation Bus (Loss of Feedwater Flow).	Yes	3.3.5.3, Fn06 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
53	IE	Loss of Feedwater Heating (LOFWH) With Failure of Selected Control Rod Run-In (SCRRI)	Figure 15.1-17 15.3.1 Table 15.3-2	Rod Control and Information System (RC&IS)	No	Initiation of Selected Control Rod Run-In (SCRRI) assumed to fail.	N/A	No	Actuation by Feedwater (FW) Delta T – High signal from Feedwater Control System (FWCS) assumed to fail.	No	N/A	No	This SSC and associated actuation instrumentation are not credited in the analysis of this IE, since failure of SCRRI is assumed to occur. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
54	IE	Loss of Feedwater Heating (LOFWH) With Failure of Selected Control Rod Run-In (SCRRI)	Figure 15.1-17 15.3.1 Table 15.3-2	Nuclear Monitoring System (NMS) and Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.4 3.3.1.5 3.3.1.1 3.3.1.2	Yes	Actuated by Average Power Range Monitor (APRM) Simulated Thermal Power – High.	Yes	3.3.1.4, Fn02b 3.3.1.5 3.3.1.1, Fn02 3.3.1.2	Yes	Setpoint may not be reached for some LOFWH events. However, this SSC and associated actuation instrumentation represent a primary success path in mitigating this event when the setpoint is reached. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
55	IE	Feedwater Controller Failure – Maximum Demand	Figure 15.1-18 15.3.2 Table 15.3–3	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Reactor Vessel Water Level – High, Level 8.	Yes	3.3.1.1, Fn06 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
56	IE	Feedwater Controller Failure – Maximum Demand	Figure 15.1-18 15.3.2 Table 15.3–3	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
57	IE	Feedwater Controller Failure – Maximum Demand	Figure 15.1-18 15.3.2 Table 15.3–3	Steam Bypass and Pressure Control (SB&PC)	No	Turbine Trip. Reactor pressure control.	NONE	No	Actuated by Reactor Vessel Water Level – High, Level 8.	No	NONE	No	DCD Section 15.3.2.2 states that this is for turbine protection only, and has no safety implications. Therefore, this SSC and associated actuation instrumentation is not required as the primary success path for meeting acceptance criteria. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
58	IE	Feedwater Controller Failure – Maximum Demand	Figure 15.1-18 15.3.2 Table 15.3–3	Steam Bypass and Pressure Control (SB&PC)	No	Open Turbine Bypass Valves (TBVs). Reactor pressure control.	3.7.3	No	Actuated by Reactor Vessel Water Level – High, Level 8.	No	NONE	No	DCD Section 15.3.2.2 states that this is for turbine protection only, and has no safety implications. Therefore, this SSC and associated actuation instrumentation is not required as the primary success path for meeting acceptance criteria. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
59	IE	Feedwater Controller Failure – Maximum Demand	Figure 15.1-18 15.3.2 Table 15.3–3	Feedwater Control System (FWCS)	No	Initiate Feedwater Pump Runback (FWRB). Inventory control.	NONE	No	Actuated by Reactor Vessel Water Level – High, Level 8.	No	NONE	No	The function of this SSC and associated actuation instrumentation is for turbine protection only, and has no safety implications since it is not required as a primary success path for meeting acceptance criteria (i.e., MCPR acceptance criterion is not exceeded if this SSC or actuation instrumentation fail). Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
60	IE	Feedwater Controller Failure – Maximum Demand	Figure 15.1-18 15.3.2 Table 15.3–3	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
61	IE	Feedwater Controller Failure – Maximum Demand	Figure 15.1-18 15.3.2 Table 15.3–3	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
62	IE	Feedwater Controller Failure – Maximum Demand	Figure 15.1-18 15.3.2 Table 15.3–3	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
63	IE	Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-19 15.3.3 Table 15.3–4	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Main Steam Line Pressure – Low.	Yes	3.3.6.1, Fn03 3.3.6.2	Yes	Identified as Low Turbine Inlet Pressure in NSOA Event Diagram, but is Main Steam Line Pressure – Low in Technical Specifications. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
64	IE	Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-19 15.3.3 Table 15.3–4	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.1.1, Fn07 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
65	IE	Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-19 15.3.3 Table 15.3–4	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
66	IE	Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-19 15.3.3 Table 15.3–4	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
67	IE	Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-19 15.3.3 Table 15.3–4	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
68	IE	Pressure Regulator Failure – Closure of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-20 15.3.4 Table 15.3–5	Nuclear Monitoring System (NMS) and Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.4 3.3.1.5 3.3.1.1 3.3.1.2	Yes	Actuated by Average Power Range Monitor (APRM) Fixed Neutron Flux – High.	Yes	3.3.1.4, Fn02c 3.3.1.5 3.3.1.1, Fn02 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
69	IE	Pressure Regulator Failure – Closure of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-20 15.3.4 Table 15.3–5	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
70	IE	Pressure Regulator Failure – Closure of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-20 15.3.4 Table 15.3–5	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Steam Dome Pressure - High with 10 sec Time Delay.	Yes	3.3.5.3, Fn01 3.3.5.4	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, noTechnical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
71	IE	Pressure Regulator Failure – Closure of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-20 15.3.4 Table 15.3–5	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, no Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
72	IE	Pressure Regulator Failure – Closure of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-20 15.3.4 Table 15.3–5	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, no Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
73	IE	Pressure Regulator Failure – Closure of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs)	Figure 15.1-20 15.3.4 Table 15.3–5	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
74	IE	Generator Load Rejection with Total Turbine Bypass Failure	Figure 15.1-21 15.3.5 Table 15.3–6	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
75	IE	Generator Load Rejection with Total Turbine Bypass Failure	Figure 15.1-21 15.3.5 Table 15.3–6	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, noTechnical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
76	IE	Generator Load Rejection with Total Turbine Bypass Failure	Figure 15.1-21 15.3.5 Table 15.3–6	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, no Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
77	IE	Generator Load Rejection with Total Turbine Bypass Failure	Figure 15.1-21 15.3.5 Table 15.3–6	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Steam Dome Pressure - High with 10 sec Time Delay.	Yes	3.3.5.3, Fn01 3.3.5.4	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
78	IE	Generator Load Rejection with Total Turbine Bypass Failure	Figure 15.1-21 15.3.5 Table 15.3–6	Steam Bypass and Pressure Control (SB&PC)	No	Open Turbine Bypass Valves (TBVs) (failure to open assumed).	N/A	No	N/A	No	N/A	No	Opening of TBV not credited. Therefore, this SSC and associated actuation instrumentation is not required as the primary success path for meeting acceptance criteria. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
79	IE	Generator Load Rejection with Total Turbine Bypass Failure	Figure 15.1-21 15.3.5 Table 15.3–6	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Turbine Control Valve (TCV) Fast Closure Trip Oil Pressure – Low.	Yes	3.3.1.1, Fn11 3.3.1.2	Yes	Insufficient turbine bypass capability available. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
80	IE	Generator Load Rejection with Total Turbine Bypass Failure	Figure 15.1-21 15.3.5 Table 15.3–6	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
81	IE	Turbine Trip with Total Turbine Bypass Failure	Figure 15.1-22 15.3.6 Table 15.3–7	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
82	IE	Turbine Trip with Total Turbine Bypass Failure	Figure 15.1-22 15.3.6 Table 15.3–7	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, no Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
83	IE	Turbine Trip with Total Turbine Bypass Failure	Figure 15.1-22 15.3.6 Table 15.3–7	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, no Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
84	IE	Turbine Trip with Total Turbine Bypass Failure	Figure 15.1-22 15.3.6 Table 15.3–7	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Steam Dome Pressure - High with 10 sec Time Delay.	Yes	3.3.5.3, Fn01 3.3.5.4	No	This is not a primary success path SSC, since the analysis of this event demonstrates that the acceptance criteria for this event are met and sequence of events terminated prior to the possibility of this actuation occurring. Therefore, no Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
85	IE	Turbine Trip with Total Turbine Bypass Failure	Figure 15.1-22 15.3.6 Table 15.3–7	Steam Bypass and Pressure Control (SB&PC)	No	Open Turbine Bypass Valves (TBVs) (failure to open assumed).	N/A	No	N/A	No	N/A	No	Opening of TBV not credited. Therefore, this SSC and associated actuation instrumentation is not required as the primary success path for meeting acceptance criteria. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
86	IE	Turbine Trip with Total Turbine Bypass Failure	Figure 15.1-22 15.3.6 Table 15.3–7	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Turbine Stop Valve (TSV) Closure Trip.	Yes	3.3.1.1, Fn10 3.3.1.2	Yes	Insufficient turbine bypass capability available. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
87	IE	Turbine Trip with Total Turbine Bypass Failure	Figure 15.1-22 15.3.6 Table 15.3–7	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
88	IE	Control Rod Withdrawal Error During Refueling	Figure 15.1-23 15.3.7	Rod Control and Information System (RC&IS) and Refueling Equipment	Yes	Prevent movement of refueling platform with fuel on hoist over core. Fuel insertion with control rod withdrawn prevented by refueling equipment interlocks.	3.9.1 3.9.3 3.9.4 3.9.5	Yes	Actuated by Refueling Equipment Interlocks – Control rod not at full-in position.	Yes	3.9.1	Yes	This has been evaluated to not be a credible event. No protection sequence required. However, this SSC and actuation instrumentation is the basis for preventing this event. Therefore, Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
89	IE	Control Rod Withdrawal Error During Refueling	Figure 15.1-23 15.3.7	Rod Control and Information System (RC&IS) and Refueling Equipment	Yes	Rod Block. Fuel insertion with control rod withdrawn prevented by refueling equipment interlocks.	3.9.1 3.9.3 3.9.4 3.9.5	Yes	Actuated by Refueling Equipment Interlocks – Refueling Equipment platform over core with fuel on hoist.	Yes	3.9.1	Yes	This has been evaluated to not be a credible event. No protection sequence required. However, this SSC and actuation instrumentation is the basis for preventing this event. Therefore, Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
90	IE	Control Rod Withdrawal Error During Refueling	Figure 15.1-23 15.3.7	Rod Control and Information System (RC&IS)	Yes	Rod Block. Second control rod removal or withdrawal prevented.	3.9.2 3.9.3 3.9.4 3.9.5	Yes	Actuated by Refuel Position One-Rod/Rod-Pair-Out Interlock – One control rod or control rod pair withdrawn in Refueling.	Yes	3.9.2	Yes	This has been evaluated to not be a credible event. No protection sequence required. However, this SSC and actuation instrumentation is the basis for preventing this event. Therefore, Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
91	IE	Control Rod Withdrawal Error During Refueling	Figure 15.1-23 15.3.7	Control Rod Drive System (CRDS)	Yes	Design Feature of Control Rods.	3.1.3 3.1.4 3.1.5	No	N/A	N/A	N/A	N/A	This is the passive design feature of the bayonet coupling that does not allow upward removal of control rod without decoupling and removal of all four adjacent fuel bundles, and does not have an active function to mitigate this IE. Therefore, no Technical Specifications for the SSC are required in accordance with Criterion 3.
92	IE	Control Rod Withdrawal Error During Startup	Figure 15.1-24 7.7.2.2.7.4	Rod Control and Information System (RC&IS)	Yes	Rod Block. Prevents event by preventing rod withdrawal.	3.3.2.1	Yes	Actuated by Reactor Mode Switch – Shutdown Position.	Yes	3.3.2.1, Fn02	Yes	This has been evaluated to not be a credible event. No protection sequence required. However, this SSC and actuation instrumentation is the basis for preventing this event. Therefore, Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
93	IE	Control Rod Withdrawal Error During Startup	Figure 15.1-24 15.3.8 Table 15.3–8	Rod Control and Information System (RC&IS)	Yes	Rod Block. Prevents event by preventing rod withdrawal.	3.3.2.1	Yes	Actuated by Rod Worth Minimizer – Gang Withdrawal Sequence Restrictions exceeded.	Yes	3.1.6 3.3.2.1, Fn01b	Yes	This has been evaluated to not be a credible event. No protection sequence required. However, this SSC and actuation instrumentation is the basis for preventing this event. Therefore, Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
94	IE	Control Rod Withdrawal Error During Startup	Figure 15.1-24 15.3.8 Table 15.3–8	Rod Control and Information System (RC&IS)	No	Rod Block. Terminate rod withdrawal.	NONE	No	Actuated by Source Range Neutron Monitor (SRNM) Neutron Flux – Short Period.	No	NONE	No	15.3.8.3.3 shows an analysis with APRM startup mode 15% scram providing adequate protection. Therefore, this SSC and associated actuation instrumentation are not required as the primary success path for meeting acceptance criteria. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
95	IE	Control Rod Withdrawal Error During Startup	Figure 15.1-24 15.3.8 Table 15.3–8	Nuclear Monitoring System (NMS) and Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.4 3.3.1.5 3.3.1.1 3.3.1.2	Yes	Actuated by Source Range Neutron Monitor (SRNM) Neutron Flux – Short Period.	Yes	3.3.1.4, Fn01b 3.3.1.5 3.3.1.1, Fn01 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
96	IE	Control Rod Withdrawal Error During Startup	Figure 15.1-24 15.3.8 Table 15.3–8	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
97	IE	Control Rod Withdrawal Error During Power Operation	Figure 15.1-25 15.3.9	Rod Control and Information System (RC&IS)	Yes	Rod Block. Terminate rod withdrawal.	3.3.2.1	Yes	Actuated by Automated Thermal Limit Monitor (ATLM).	Yes	3.3.2.1, Fn01a	Yes	This has been evaluated to not be a credible event. No protection sequence required. However, this SSC and actuation instrumentation is the basis for preventing this event. Therefore, Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
98	IE	Fuel Assembly Loading Error, Mislocated Bundle	Figure 15.1-26 15.3.10 Table 15.3–9	Planned Operation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	All normally operating systems remain in operation, and no SSC and associated actuation instrumentation are credited in the analysis of this IE. Therefore, Criterion 3 is not applicable.
99	IE	Fuel Assembly Loading Error, Misoriented Bundle	Figure 15.1-27 15.3.11 Table 15.3–10	Planned Operation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	All normally operating systems remain in operation, and no SSC and associated actuation instrumentation are credited in the analysis of this IE. Therefore, Criterion 3 is not applicable.
100	IE	Inadvertent Shutdown Cooling (SDC) Function Operation	Figure 15.1-28 15.3.12	Nuclear Monitoring System (NMS) and Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.4 3.3.1.5 3.3.1.1 3.3.1.2	Yes	Actuated by Average Power Range Monitor (APRM) Fixed Neutron Flux – High.	Yes	3.3.1.4, Fn02c 3.3.1.5 3.3.1.1, Fn02 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
101	IE	Inadvertent Shutdown Cooling (SDC) Function Operation	Figure 15.1-28 15.3.12	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
102	IE	Inadvertent Opening of a Safety Relief Valve (SRV)	Figure 15.1-29 15.3.13 Table 15.3–11	Steam Bypass and Pressure Control (SB&PC)	No	Close Turbine Control Valves (TCVs). Pressure stabilized.	NONE	No	Controls Reactor Dome Pressure through the SB&PC Pressure Regulator.	No	NONE	No	TCV closure is input to Reactor Protection System (RPS) Trip Instrumentation (TS 3.3.1.1) Fn11, and addresses the intent of SB&PC. This event is bounded by Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs). If SB&PC fails to respond, a slow pressure decrease to point of Reactor Low Pressure Main Steam Isolation Valve (MSIV) isolation and scram would occur, which would be a non-challenging event for AOO Criteria. Therefore, this SSC is not required as the primary success path for meeting acceptance criteria. Therefore, no Technical Specifications for the SSC are required in accordance with Criterion 3. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
103	IE	Inadvertent Opening of a Safety Relief Valve (SRV)	Figure 15.1-29 15.3.13 Table 15.3–11	Fuel and Auxiliary Pools Cooling System (FAPCS)	No	Initiate Suppression Pool Cooling. Decrease containment pressure.	NONE	No	Actuated by Suppression Pool Temperature – High from Suppression Pool Temperature Monitoring Subsystem (SPTMS) of Containment Monitoring System (CMS).	Yes	NONE	No	This is not a primary success path SSC, since the operation of this non-safety system only provides additional margin to the acceptance criteria for applicable event (i.e., provides additional margin to the containment pressure design limit, which would still be met even if this system were not placed in service during the first 72 hours of the event). Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
104	IE	Inadvertent Opening of a Safety Relief Valve (SRV)	Figure 15.1-29 15.3.13 Table 15.3–11	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Suppression Pool Temperature – High from Suppression Pool Temperature Monitoring Subsystem (SPTMS) of Containment Monitoring System (CMS).	Yes	3.3.1.1, Fn09 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
105	IE	Inadvertent Opening of a Safety Relief Valve (SRV)	Figure 15.1-29 15.3.13 Table 15.3–11	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
106	IE	Inadvertent Opening of a Depressurization Valve (DPV)	Figure 15.1-30 15.3.14	Steam Bypass and Pressure Control (SB&PC)	No	Close Turbine Control Valves (TCVs). Pressure stabilized.	NONE	No	Controls Reactor Dome Pressure through the SB&PC Pressure Regulator.	No	NONE	No	TCV closure is input to Reactor Protection System (RPS) Trip Instrumentation (TS 3.3.1.1) Fn11, and addresses the intent of SB&PC. This event is bounded by Pressure Regulator Failure - Opening of All Turbine Control Valves (TCVs) and Turbine Bypass Valves (TBVs). If SB&PC fails to respond, a slow pressure decrease to point of Reactor Low Pressure Main Steam Isolation Valve (MSIV) isolation and scram would occur, which would be a non-challenging event for AOO Criteria. Therefore, this SSC is not required as the primary success path for meeting acceptance criteria. Therefore, no Technical Specifications for the SSC are required in accordance with Criterion 3. Further evaluation of the non-safety SB&PC is presented in the Criterion 4 evaluation.
107	IE	Inadvertent Opening of a Depressurization Valve (DPV)	Figure 15.1-30 15.3.14	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Drywell Pressure – High.	Yes	3.3.1.1, Fn08 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
108	IE	Inadvertent Opening of a Depressurization Valve (DPV)	Figure 15.1-30 15.3.14	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
109	IE	Inadvertent Opening of a Depressurization Valve (DPV)	Figure 15.1-30 15.3.14	Passive Containment Cooling System (PCCS)	Yes	Initiate PCCS (passive initiation). Limit containment pressure.	3.6.1.7	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
110	IE	Inadvertent Opening of a Depressurization Valve (DPV)	Figure 15.1-30 15.3.14	Fuel and Auxiliary Pools Cooling System (FAPCS)	No	Initiate Suppression Pool Cooling. Decrease containment pressure.	NONE	No	Actuated by Suppression Pool Temperature – High from Suppression Pool Temperature Monitoring Subsystem (SPTMS) of Containment Monitoring System (CMS).	Yes	NONE	No	This is not a primary success path SSC, since the operation of this non-safety system only provides additional margin to the acceptance criteria for applicable event (i.e., provides additional margin to the containment pressure design limit, which would still be met even if this system were not placed in service during the first 72 hours of the event). Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
111	IE	Stuck Open Safety Relief Valve (SRV)	Figure 15.1-31 15.3.15 Table 15.3–12	Fuel and Auxiliary Pools Cooling System (FAPCS)	No	Initiate Suppression Pool Cooling. Decrease containment pressure.	NONE	No	Actuated by Suppression Pool Temperature – High from Suppression Pool Temperature Monitoring Subsystem (SPTMS) of Containment Monitoring System (CMS).	Yes	NONE	No	This is not a primary success path SSC, since the operation of this non-safety system only provides additional margin to the acceptance criteria for applicable event (i.e., provides additional margin to the containment pressure design limit, which would still be met even if this system were not placed in service during the first 72 hours of the event). Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
112	IE	Stuck Open Safety Relief Valve (SRV)	Figure 15.1-31 15.3.15 Table 15.3–12	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
113	IE	Stuck Open Safety Relief Valve (SRV)	Figure 15.1-31 15.3.15 Table 15.3–12	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Main Steam Line Pressure – Low.	Yes	3.3.6.1, Fn03 3.3.6.2	Yes	Identified as Low Turbine Inlet Pressure in NSOA Event Diagram, but is Main Steam Line Pressure – Low in Technical Specifications. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
114	IE	Stuck Open Safety Relief Valve (SRV)	Figure 15.1-31 15.3.15 Table 15.3–12	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
115	IE	Liquid-Containing Tank Failure	Figure 15.1-32 15.3.16	Planned Operation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	All normally operating systems remain in operation, and no SSC and associated actuation instrumentation are credited in the analysis of this IE. Therefore, Criterion 3 is not applicable.
116	Acc	Fuel Handling Accident	Figure 15.1-33 15.4.1 Table 15.4–1	Reactor Building Heating and Ventilation System (RBHVS)	No	Isolate RBHVS. Radiation release control.	NONE	No	Actuated by Reactor Building Exhaust Radiation – High or Refueling Area Exhaust Radiation – High.	No	3.3.6.3, Fn13 and Fn14 3.3.6.4, Fn07 and Fn10	No	This is not a primary success path SSC, since the operation of this non-safety system only provides additional margin to the acceptance criteria for applicable event (i.e., provides additional margin to the radiological dose acceptance criteria). Isolation is not credited in the radiological dose analysis for offsite dose and dose to the main control room operators. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
117	Acc	Fuel Handling Accident	Figure 15.1-33 15.4.1 Table 15.4–1	Fuel Building Heating and Ventilation System (FBHVS)	No	Isolate FBHVS. Radiation release control.	NONE	No	Actuated by Fuel Building Main Area Exhaust Radiation – High.	No	NONE	No	This is not a primary success path SSC, since the operation of this non-safety system only provides additional margin to the acceptance criteria for applicable event (i.e., provides additional margin to the radiological dose acceptance criteria). Isolation is not credited in the radiological dose analysis for offsite dose and dose to the main control room operators. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
118	Acc	Fuel Handling Accident	Figure 15.1-33 15.4.1 Table 15.4–1	Process Radiation Monitoring System (PRMS)	No	Initiate radiation release control.	NONE	No	Manual Operation based on High Radiation Level.	No	NONE	No	This is not a primary success path SSC, since the operation of this non-safety system only provides additional margin to the acceptance criteria for applicable event (i.e., provides additional margin to the radiological dose acceptance criteria). Operator action for radiation release control is not credited in the radiological dose analysis for offsite dose and dose to the main control room operators. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
119	Acc	Fuel Handling Accident	Figure 15.1-33 15.4.1 Table 15.4–1	Planned Operation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	All normally operating systems remain in operation, and no SSC and associated actuation instrumentation are credited in the analysis of this accident. Therefore, Criterion 3 is not applicable.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
120	Acc	Fuel Handling Accident	Figure 15.1-33 15.4.1 Table 15.4–1	Control Room Habitability Area Heating and Ventilation System (CRHAHVS)	No	Initiate CRHAHVS Emergency Filtration and Pressurization Mode. Main control room habitability.	NONE	No	Actuated by Control Room Air Intake Radiation – High.	No	3.3.7.1, Fn01 3.3.7.2	No	Non-safety CRHAHVS emergency filtration and pressurization is not primary success path for ensuring main control room habitability, but serves as a backup to Emergency Breathing Air System (EBAS) actuation. However, CRHAHVS emergency filtration and pressurization is conservatively assumed in the evaluation of main control room operator dose. Therefore, Technical Specifications for the CRHAHVS and associated actuation instrumentation are not required in accordance with Criterion 3, but Technical Specifications for the associated actuation instrumentation are conservatively included. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
121	Acc	Fuel Handling Accident	Figure 15.1-33 15.4.1 Table 15.4–1	Emergency Breathing Air System (EBAS)	Yes	Initiate Control Room Habitability Area (CRHA) Isolation and EBAS Actuation. Main control room habitability.	3.7.1	Yes	Actuated by Loss of Onsite and Offsite AC Power.	Yes	3.3.7.1, Fn02 3.3.7.2	Yes	This SSC and associated actuation instrumentation represent the primary success path for mitigating radiological dose to the main control room operators. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
122	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Loss of Power Generation Bus (Loss of Feedwater Flow).	Yes	3.3.1.1, Fn13 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
123	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Drywell Pressure – High.	Yes	3.3.1.1, Fn08 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
124	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 3.	Yes	3.3.1.1, Fn05 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
125	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
126	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
127	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
128	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5.	Yes	3.3.5.3, Fn03 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
129	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Steam Dome Pressure - High with 10 sec Time Delay.	Yes	3.3.5.3, Fn01 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
130	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-1 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Loss of Power Generation Bus (Loss of Feedwater Flow).	Yes	3.3.5.3, Fn06 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
131	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Drywell Pressure - High (greater than 5 psig).	Yes	3.3.5.1, Fn01 with Fn04 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
132	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.	Yes	3.3.5.1, Fn02 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
133	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 without Drywell Pressure – High (greater than 5 psig) with Initiation Timer (15 min).	Yes	3.3.5.1, Fn01 with Fn05 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
134	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Drywell Pressure - High (greater than 5 psig).	Yes	3.3.5.1, Fn01 with Fn04 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
135	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.	Yes	3.3.5.1, Fn02 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
136	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 without Drywell Pressure – High (greater than 5 psig) with Initiation Timer (15 min).	Yes	3.3.5.1, Fn01 with Fn05 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
137	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Control Room Habitability Area Heating and Ventilation System (CRHAHVS)	No	Initiate CRHAHVS Emergency Filtration and Pressurization Mode. Main control room habitability.	NONE	No	Actuated by Control Room Air Intake Radiation – High.	No	3.3.7.1, Fn01 3.3.7.2	No	Non-safety CRHAHVS emergency filtration and pressurization is not primary success path for ensuring main control room habitability, but serves as a backup to Emergency Breathing Air System (EBAS) actuation. However, CRHAHVS emergency filtration and pressurization is conservatively assumed in the evaluation of main control room operator dose. Therefore, Technical Specifications for the CRHAHVS and associated actuation instrumentation are not required in accordance with Criterion 3, but Technical Specifications for the associated actuation instrumentation are conservatively included. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
138	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Emergency Breathing Air System (EBAS)	Yes	Initiate Control Room Habitability Area (CRHA) Isolation and EBAS Actuation. Main control room habitability.	3.7.1	Yes	Actuated by Loss of Onsite and Offsite AC Power.	Yes	3.3.7.1, Fn02 3.3.7.2	Yes	This SSC and associated actuation instrumentation represent the primary success path for mitigating radiological dose to the main control room operators. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
139	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
140	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Gravity-Driven Cooling System (GDCS)	Yes	Initiate GDCS Injection to Reactor Pressure Vessel (RPV). Extended core cooling.	3.5.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Initiation Timer (150 sec).	Yes	3.3.5.1, Fn01 with Fn06 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
141	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Gravity-Driven Cooling System (GDCS)	Yes	Initiate GDCS Equalizing Lines. Extended core cooling.	3.5.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Initiation Timer (30 min) and with Reactor Vessel Water Level – Low, Level 0.5.	Yes	3.3.5.1, Fn01 with Fn05 and with Fn03 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
142	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Containment Isolation	Yes	Close Containment Isolation Valves. Containment Operability and Isolation.	3.6.1.1 3.6.1.2 3.6.1.3 3.6.1.6 3.6.3.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.3, Fn01 with SR 3.3.6.3.4 3.3.6.4, Fn01, Fn02, Fn04, Fn05, Fn06, Fn07, Fn08, Fn09, Fn10	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
143	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
144	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5,	Yes	3.3.6.1, Fn02 3.3.6.2	Yes	Technical Specification 3.3.6.1 Fn02 is currently for a Level 1 actuation. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
145	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Inventory Control.	3.1.7	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 and with Average Power Range Monitor (APRM) Not Downscale with Initiation Timer (3 min).	No	3.1.7	No	This is an ATWS initiation signal only. ATWS is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the actuation instrumentation are required in accordance with Criterion 3.
146	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Inventory Control.	3.1.7	Yes	Actuated by all Depressurization Valve (DPV) initiation signals.	Yes	3.3.5.1, Fn01, Fn02, Fn03, Fn04, Fn05, and Fn06 3.3.5.2	Yes	DCD Section 7.3.1.1.2 states that SLCS receives the same ECCS initiation signals as ADS, and DCD Chapter 7 does not discuss an actual initiation signal from DPV opening to SLCS actuation. Therefore, this item represents all of the ECCS initiation signals. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
147	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Figure 15.1-34 15.4.2, 15.4.3, 15.4.4 Table 6.2-7 Table 6.3-7 Table 6.3-8 Table 6.3-9 Table 6.3-10	Passive Containment Cooling System (PCCS)	Yes	Initiate PCCS (passive initiation). Limit containment pressure.	3.6.1.7	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
148	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	6.2.1.1.2 Table 6.2-7	Float valves to spillover pipes	Yes	Open float valves. Long--term RPV water level recovery.	To Be Developed	Yes	Self-actuated by high water level in drywell annulus.	N/A	N/A	N/A	There are 12 8-inch spillover pipes each with a safety-related float valve. These pipes connect the DW annulus at 10.65 m elevation and the suppression pool at 4.95 m elevation (near pool bottom). These valves are normally closed and will open when the water level in the DW annulus rises to the elevation of the float valves. This SSC is required in the primary success path for this accident. Therefore, this SSC meets Criterion 3 and will be included in a future revision of the Technical Specifications.
149	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Table 6.2-7	Connection valves (Dryer/Separator storage pool to Passive Containment Cooling (PCC) pool)	Yes	Open connection valves. Long-term PCC pool water inventory.	3.7.5	Yes	Actuated by low water level in PCC pool.	Yes	SR 3.7.5.5	Yes	There are 2 valves connecting the Dryer/Separator storage pool and the PCC inner expansion pools, at an elevation near the pool bottom. These valves are normally closed and will open when the water level in the PCC pool drops below the elevation of 29.6 m. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
150	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Table 6.2-1	Drywell (DW) to Wetwell (WW) vacuum breaker valves	Yes	Protect Integrity of Diaphragm Floor Slab and Vent Wall Between DW and WW, and DW Structure and Liner, and Prevent Back-flooding of the Suppression Pool Water into the DW	3.6.1.6	Yes	Self-actuated by differential pressure between DW and WW, similar to a check valve.	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
151	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	Table 6.2-1	Drywell (DW) to Wetwell (WW) vacuum breaker valves and line isolation valves	Yes	DW to WW vacuum breaker valves are normally closed to prevent steam generated in the DW from bypassing the suppression pool vent path. If the valves are not closed, the DW to WW vacuum breaker line isolation valves close automatically. DW to WW vacuum breaker valves open to prevent external overpressure of the DW structure and liner including the diaphragm floor slab and vent wall, and to prevent back-flooding of the suppression pool water into the DW.	3.6.1.6	Yes	DW to WW vacuum breaker valves are self-actuated by differential pressure between DW and WW, similar to a check valve. The DW to WW vacuum breaker line isolation valves are actuated by proximity switches that indicate when the associated vacuum breaker valve is not closed.	Yes	To Be Developed	Yes	These SSCs and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSCs and associated actuation instrumentation are required in accordance with Criterion 3.
152	Acc	Loss-of-Coolant Accident (LOCA) Inside Containment	6.2	Main Feedwater Pumps Breakers	Yes	Trip Main Feedwater Pumps Breakers on Feedwater Line Break Inside Containment. Reducing feedwater flow to 0 gpm required by 20 minutes after the event occurs to maintain containment integrity by limiting amount of water inventory inside containment.	To Be Developed	Yes	Feedwater Line Differential Pressure - High with Drywell Pressure - High	Yes	To Be Developed	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
153	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Loss of Power Generation Bus (Loss of Feedwater Flow).	Yes	3.3.1.1, Fn13 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
154	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.1.1, Fn07 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
155	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 3.	Yes	3.3.1.1, Fn05 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
156	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
157	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
158	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
159	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5.	Yes	3.3.5.3, Fn03 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
160	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Steam Dome Pressure - High with 10 sec Time Delay.	Yes	3.3.5.3, Fn01 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
161	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.	Yes	3.3.5.1, Fn02 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
162	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 without Drywell Pressure – High (greater than 5 psig) with Initiation Timer (15 min).	Yes	3.3.5.1, Fn01 with Fn05 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
163	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.	Yes	3.3.5.1, Fn02 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
164	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 without Drywell Pressure – High (greater than 5 psig) with Initiation Timer (15 min).	Yes	3.3.5.1, Fn01 with Fn05 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
165	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Control Room Habitability Area Heating and Ventilation System (CRHAHVS)	No	Initiate CRHAHVS Emergency Filtration and Pressurization Mode. Main control room habitability.	NONE	No	Actuated by Control Room Air Intake Radiation – High.	No	3.3.7.1, Fn01 3.3.7.2	No	Non-safety CRHAHVS emergency filtration and pressurization is not primary success path for ensuring main control room habitability, but serves as a backup to Emergency Breathing Air System (EBAS) actuation. However, CRHAHVS emergency filtration and pressurization is conservatively assumed in the evaluation of main control room operator dose. Therefore, Technical Specifications for the CRHAHVS and associated actuation instrumentation are not required in accordance with Criterion 3, but Technical Specifications for the associated actuation instrumentation are conservatively included. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
166	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Emergency Breathing Air System (EBAS)	Yes	Initiate Control Room Habitability Area (CRHA) Isolation and EBAS Actuation. Main control room habitability.	3.7.1	Yes	Actuated by Loss of Onsite and Offsite AC Power.	Yes	3.3.7.1, Fn02 3.3.7.2	Yes	This SSC and associated actuation instrumentation represent the primary success path for mitigating radiological dose to the main control room operators. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
167	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
168	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Gravity-Driven Cooling System (GDCS)	Yes	Initiate GDCS Injection to Reactor Pressure Vessel (RPV). Extended core cooling.	3.5.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Initiation Timer (150 sec).	Yes	3.3.5.1, Fn01 with Fn06 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
169	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Gravity-Driven Cooling System (GDCS)	Yes	Initiate GDCS Equalizing Lines. Extended core cooling.	3.5.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Initiation Timer (30 min) and with Reactor Vessel Water Level – Low, Level 0.5.	Yes	3.3.5.1, Fn01 with Fn05 and with Fn03 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
170	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Containment Isolation	Yes	Close Containment Isolation Valves. Isolation.	3.6.1.3 3.6.3.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.3, Fn01 with SR 3.3.6.3.4 3.3.6.4, Fn01, Fn02, Fn04, Fn05, Fn06, Fn07, Fn08, Fn09, Fn10	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
171	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Inventory Control.	3.1.7	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 and with Average Power Range Monitor (APRM) Not Downscale with Initiation Timer (3 min).	No	3.1.7	No	This is an ATWS initiation signal only. ATWS is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
172	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Inventory Control.	3.1.7	Yes	Actuated by all Depressurization Valve (DPV) initiation signals.	Yes	3.3.5.1, Fn01, Fn02, Fn03, Fn04, Fn05, and Fn06 3.3.5.2	Yes	DCD Section 7.3.1.1.2 states that SLCS receives the same ECCS initiation signals as ADS, and DCD Chapter 7 does not discuss an actual initiation signal from DPV opening to SLCS actuation. Therefore, this item represents all of the ECCS initiation signals. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
173	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
174	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5,	Yes	3.3.6.1, Fn02 3.3.6.2	Yes	Technical Specification 3.3.6.1 Fn02 is currently for a Level 1 actuation. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
175	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Main Steam Line Pressure – Low.	Yes	3.3.6.1, Fn03 3.3.6.2	Yes	Identified as Low Turbine Inlet Pressure in NSOA Event Diagram, but is Main Steam Line Pressure – Low in Technical Specifications. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
176	Acc	Main Steamline Break (MSLB) Outside Containment	Figure 15.1-35 15.4.5 Table 15.4–10	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Main Steam Line Flow – High.	Yes	3.3.6.1, Fn04 3.3.6.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
177	Acc	Control Rod Drop Accident	Figure 15.1-36 15.4.6	N/A	N/A	N/A	N/A	No	N/A	N/A	N/A	No	This has been evaluated to not be a credible event. No protection sequence required. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
178	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Loss of Power Generation Bus (Loss of Feedwater Flow).	Yes	3.3.1.1, Fn13 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
179	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.1.1, Fn07 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
180	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 3.	Yes	3.3.1.1, Fn05 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
181	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
182	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
183	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
184	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5.	Yes	3.3.5.3, Fn03 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
185	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Steam Dome Pressure - High with 10 sec Time Delay.	Yes	3.3.5.3, Fn01 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
186	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.	Yes	3.3.5.1, Fn02 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
187	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 without Drywell Pressure – High (greater than 5 psig) with Initiation Timer (15 min).	Yes	3.3.5.1, Fn01 with Fn05 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
188	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.	Yes	3.3.5.1, Fn02 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
189	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 without Drywell Pressure – High (greater than 5 psig) with Initiation Timer (15 min).	Yes	3.3.5.1, Fn01 with Fn05 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
190	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Control Room Habitability Area Heating and Ventilation System (CRHAHVS)	No	Initiate CRHAHVS Emergency Filtration and Pressurization Mode. Main control room habitability.	NONE	No	Actuated by Control Room Air Intake Radiation – High.	No	3.3.7.1, Fn01 3.3.7.2	No	Non-safety CRHAHVS emergency filtration and pressurization is not primary success path for ensuring main control room habitability, but serves as a backup to Emergency Breathing Air System (EBAS) actuation. However, CRHAHVS emergency filtration and pressurization will be conservatively assumed in the evaluation of main control room operator dose for this event, and will be included in a future revision of the DCD. Therefore, Technical Specifications for the CRHAHVS and associated actuation instrumentation are not required in accordance with Criterion 3, but Technical Specifications for the associated actuation instrumentation are conservatively included. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
191	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Emergency Breathing Air System (EBAS)	Yes	Initiate Control Room Habitability Area (CRHA) Isolation and EBAS Actuation. Main control room habitability.	3.7.1	Yes	Actuated by Loss of Onsite and Offsite AC Power.	Yes	3.3.7.1, Fn02 3.3.7.2	Yes	This SSC and associated actuation instrumentation represent the primary success path for mitigating radiological dose to the main control room operators, with CRHA Heating and Ventilation System (CRHAHVS) emergency filtration and pressurization to be conservatively assumed in the evaluation of main control room operator dose for this event to be included in a future revision of the DCD. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
192	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
193	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Gravity-Driven Cooling System (GDCS)	Yes	Initiate GDCS Injection to Reactor Pressure Vessel (RPV). Extended core cooling.	3.5.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Initiation Timer (150 sec).	Yes	3.3.5.1, Fn01 with Fn06 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
194	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Gravity-Driven Cooling System (GDCS)	Yes	Initiate GDCS Equalizing Lines. Extended core cooling.	3.5.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Initiation Timer (30 min) and with Reactor Vessel Water Level – Low, Level 0.5.	Yes	3.3.5.1, Fn01 with Fn05 and with Fn03 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
195	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Containment Isolation	Yes	Close Containment Isolation Valves. Isolation.	3.6.1.3 3.6.3.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.3, Fn01 with SR 3.3.6.3.4 3.3.6.4, Fn01, Fn02, Fn04, Fn05, Fn06, Fn07, Fn08, Fn09, Fn10	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
196	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Inventory Control.	3.1.7	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 and with Average Power Range Monitor (APRM) Not Downscale with Initiation Timer (3 min).	No	3.1.7	No	This is an ATWS initiation signal only. ATWS is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the actuation instrumentation are required in accordance with Criterion 3.
197	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Inventory Control.	3.1.7	Yes	Actuated by all Depressurization Valve (DPV) initiation signals.	Yes	3.3.5.1, Fn01, Fn02, Fn03, Fn04, Fn05, and Fn06 3.3.5.2	Yes	DCD Section 7.3.1.1.2 states that SLCS receives the same ECCS initiation signals as ADS, and DCD Chapter 7 does not discuss an actual initiation signal from DPV opening to SLCS actuation. Therefore, this item represents all of the ECCS initiation signals. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
198	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
199	Acc	Feedwater Line Break (FWLB) Outside Containment	Figure 15.1-37 15.4.7	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5,	Yes	3.3.6.1, Fn02 3.3.6.2	Yes	Technical Specification 3.3.6.1 Fn02 is currently for a Level 1 actuation. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
200	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Loss of Power Generation Bus (Loss of Feedwater Flow).	Yes	3.3.1.1, Fn13 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
201	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.1.1, Fn07 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
202	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 3.	Yes	3.3.1.1, Fn05 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
203	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
204	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
205	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
206	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5.	Yes	3.3.5.3, Fn03 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
207	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Steam Dome Pressure - High with 10 sec Time Delay.	Yes	3.3.5.3, Fn01 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
208	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.	Yes	3.3.5.1, Fn02 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
209	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 without Drywell Pressure – High (greater than 5 psig) with Initiation Timer (15 min).	Yes	3.3.5.1, Fn01 with Fn05 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
210	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.	Yes	3.3.5.1, Fn02 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
211	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 without Drywell Pressure – High (greater than 5 psig) with Initiation Timer (15 min).	Yes	3.3.5.1, Fn01 with Fn05 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
212	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Control Room Habitability Area Heating and Ventilation System (CRHAHVS)	No	Initiate CRHAHVS Emergency Filtration and Pressurization Mode. Main control room habitability.	NONE	No	Actuated by Control Room Air Intake Radiation – High.	No	3.3.7.1, Fn01 3.3.7.2	No	Non-safety CRHAHVS emergency filtration and pressurization is not primary success path for ensuring main control room habitability, but serves as a backup to Emergency Breathing Air System (EBAS) actuation. However, CRHAHVS emergency filtration and pressurization will be conservatively assumed in the evaluation of main control room operator dose for this event, and will be included in a future revision of the DCD. Therefore, Technical Specifications for the CRHAHVS and associated actuation instrumentation are not required in accordance with Criterion 3, but Technical Specifications for the associated actuation instrumentation are conservatively included. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
213	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Emergency Breathing Air System (EBAS)	Yes	Initiate Control Room Habitability Area (CRHA) Isolation and EBAS Actuation. Main control room habitability.	3.7.1	Yes	Actuated by Loss of Onsite and Offsite AC Power.	Yes	3.3.7.1, Fn02 3.3.7.2	Yes	This SSC and associated actuation instrumentation represent the primary success path for mitigating radiological dose to the main control room operators, with CRHA Heating and Ventilation System (CRHAHVS) emergency filtration and pressurization to be conservatively assumed in the evaluation of main control room operator dose for this event to be included in a future revision of the DCD. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
214	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
215	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Gravity-Driven Cooling System (GDCS)	Yes	Initiate GDCS Injection to Reactor Pressure Vessel (RPV). Extended core cooling.	3.5.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Initiation Timer (150 sec).	Yes	3.3.5.1, Fn01 with Fn06 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
216	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Gravity-Driven Cooling System (GDCS)	Yes	Initiate GDCS Equalizing Lines. Extended core cooling.	3.5.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Initiation Timer (30 min) and with Reactor Vessel Water Level – Low, Level 0.5.	Yes	3.3.5.1, Fn01 with Fn05 and with Fn03 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
217	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Containment Isolation	Yes	Close Containment Isolation Valves. Isolation.	3.6.1.3 3.6.3.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.3, Fn01 with SR 3.3.6.3.4 3.3.6.4, Fn01, Fn02, Fn04, Fn05, Fn06, Fn07, Fn08, Fn09, Fn10	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
218	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Inventory Control.	3.1.7	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 and with Average Power Range Monitor (APRM) Not Downscale with Initiation Timer (3 min).	No	3.1.7	No	This is an ATWS initiation signal only. ATWS is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the actuation instrumentation are required in accordance with Criterion 3.
219	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Inventory Control.	3.1.7	Yes	Actuated by all Depressurization Valve (DPV) initiation signals.	Yes	3.3.5.1, Fn01, Fn02, Fn03, Fn04, Fn05, and Fn06 3.3.5.2	Yes	DCD Section 7.3.1.1.2 states that SLCS receives the same ECCS initiation signals as ADS, and DCD Chapter 7 does not discuss an actual initiation signal from DPV opening to SLCS actuation. Therefore, this item represents all of the ECCS initiation signals. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
220	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
221	Acc	Failure of Small Line Carrying Primary Coolant Outside Containment	Figure 15.1-38 15.4.8	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5,	Yes	3.3.6.1, Fn02 3.3.6.2	Yes	Technical Specification 3.3.6.1 Fn02 is currently for a Level 1 actuation. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
222	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Loss of Power Generation Bus (Loss of Feedwater Flow).	Yes	3.3.1.1, Fn13 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
223	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.1.1, Fn07 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
224	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 3.	Yes	3.3.1.1, Fn05 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
225	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
226	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
227	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
228	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5.	Yes	3.3.5.3, Fn03 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
229	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	Yes	Actuated by Reactor Vessel Steam Dome Pressure - High with 10 sec Time Delay.	Yes	3.3.5.3, Fn01 3.3.5.4	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
230	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.	Yes	3.3.5.1, Fn02 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
231	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 without Drywell Pressure – High (greater than 5 psig) with Initiation Timer (15 min).	Yes	3.3.5.1, Fn01 with Fn05 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
232	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.	Yes	3.3.5.1, Fn02 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
233	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 without Drywell Pressure – High (greater than 5 psig) with Initiation Timer (15 min).	Yes	3.3.5.1, Fn01 with Fn05 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
234	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Control Room Habitability Area Heating and Ventilation System (CRHAHVS)	No	Initiate CRHAHVS Emergency Filtration and Pressurization Mode. Main control room habitability.	NONE	No	Actuated by Control Room Air Intake Radiation – High.	No	3.3.7.1, Fn01 3.3.7.2	No	Non-safety CRHAHVS emergency filtration and pressurization is not primary success path for ensuring main control room habitability, but serves as a backup to Emergency Breathing Air System (EBAS) actuation. However, CRHAHVS emergency filtration and pressurization will be conservatively assumed in the evaluation of main control room operator dose for this event, and will be included in a future revision of the DCD. Therefore, Technical Specifications for the CRHAHVS and associated actuation instrumentation are not required in accordance with Criterion 3, but Technical Specifications for the associated actuation instrumentation are conservatively included. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
235	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Emergency Breathing Air System (EBAS)	Yes	Initiate Control Room Habitability Area (CRHA) Isolation and EBAS Actuation. Main control room habitability.	3.7.1	Yes	Actuated by Loss of Onsite and Offsite AC Power.	Yes	3.3.7.1, Fn02 3.3.7.2	Yes	This SSC and associated actuation instrumentation represent the primary success path for mitigating radiological dose to the main control room operators, with CRHA Heating and Ventilation System (CRHAHVS) emergency filtration and pressurization to be conservatively assumed in the evaluation of main control room operator dose for this event to be included in a future revision of the DCD. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
236	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
237	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Gravity-Driven Cooling System (GDCS)	Yes	Initiate GDCS Injection to Reactor Pressure Vessel (RPV). Extended core cooling.	3.5.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Initiation Timer (150 sec).	Yes	3.3.5.1, Fn01 with Fn06 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
238	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Gravity-Driven Cooling System (GDCS)	Yes	Initiate GDCS Equalizing Lines. Extended core cooling.	3.5.2	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Initiation Timer (30 min) and with Reactor Vessel Water Level – Low, Level 0.5.	Yes	3.3.5.1, Fn01 with Fn05 and with Fn03 3.3.5.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
239	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Containment Isolation	Yes	Close Containment Isolation Valves. Isolation.	3.6.1.3 3.6.3.1	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.3, Fn01 with SR 3.3.6.3.4 3.3.6.4, Fn01, Fn02, Fn04, Fn05, Fn06, Fn07, Fn08, Fn09, Fn10	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
240	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Inventory Control.	3.1.7	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 and with Average Power Range Monitor (APRM) Not Downscale with Initiation Timer (3 min).	No	3.1.7	No	This is an ATWS initiation signal only. ATWS is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the actuation instrumentation are required in accordance with Criterion 3.
241	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Inventory Control.	3.1.7	Yes	Actuated by all Depressurization Valve (DPV) initiation signals.	Yes	3.3.5.1, Fn01, Fn02, Fn03, Fn04, Fn05, and Fn06 3.3.5.2	Yes	DCD Section 7.3.1.1.2 states that SLCS receives the same ECCS initiation signals as ADS, and DCD Chapter 7 does not discuss an actual initiation signal from DPV opening to SLCS actuation. Therefore, this item represents all of the ECCS initiation signals. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
242	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
243	Acc	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC) System Line Failure Outside Containment	Figure 15.1-39 15.4.9 Table 15.4–20	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	Yes	Actuated by Reactor Vessel Water Level – Low, Level 1.5,	Yes	3.3.6.1, Fn02 3.3.6.2	Yes	Technical Specification 3.3.6.1 Fn02 is currently for a Level 1 actuation. This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
244	Acc	Spent Fuel Cask Drop Accident	Figure 15.1-40 15.4.10	Planned Operation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	All normally operating systems remain in operation, and no SSC and associated actuation instrumentation are credited in the analysis of this accident. Therefore, Criterion 3 is not applicable.
245	SE	Main Steam Isolation Valve (MSIV) Closure with Flux Scram (ASME Overpressure Protection)	Figure 15.1-41 15.5.1 5.2.2	Nuclear Monitoring System (NMS) and Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.4 3.3.1.5 3.3.1.1 3.3.1.2	Yes	Actuated by Average Power Range Monitor (APRM) Fixed Neutron Flux – High.	Yes	3.3.1.4, Fn02c 3.3.1.5 3.3.1.1, Fn02 3.3.1.2	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
246	SE	Main Steam Isolation Valve (MSIV) Closure with Flux Scram (ASME Overpressure Protection)	Figure 15.1-41 15.5.1 5.2.2	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	Yes	N/A	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
247	SE	Main Steam Isolation Valve (MSIV) Closure with Flux Scram (ASME Overpressure Protection)	Figure 15.1-41 15.5.1 5.2.2	Safety Relief Valves (SRVs)	Yes	Open SRVs. Reactor pressure control.	3.4.1	Yes	Self-actuated by reactor pressure.	N/A	N/A	N/A	This SSC represents a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
248	SE	Shutdown Without Control Rods (i.e., Standby Liquid Control System (SLCS) shutdown capability)	Figure 15.1-42 15.5.2 9.3.5.3	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Reactor Shutdown.	3.1.7	Yes	Manual Operation - Failure of control rods to insert.	Yes	3.1.7	Yes	This SSC and associated actuation instrumentation represent a primary success path in mitigating this event. Therefore, Technical Specifications for the SSC and associated actuation instrumentation are required in accordance with Criterion 3.
249	SE	Shutdown from Outside Main Control Room	Figure 15.1-43 15.5.3 7.4.2	Rod Control and Information System (RC&IS)	No	Initiate Fine Motion Control Rod Drive (FMCRD) electrical control rod insertion. Reactor shutdown.	NONE	No	Manual Operation - Use Remote Shutdown System.	Yes	3.3.3.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the Remote Shutdown System functions is presented in the Criterion 4 evaluation.
250	SE	Shutdown from Outside Main Control Room	Figure 15.1-43 15.5.3 7.4.2	Reactor Protection System (RPS)	Yes	Initiate Manual Hydraulic Scram from Main Control Room before evacuation. Reactor shutdown.	3.3.1.3	No	Manual Operation – Use Main Control Room Manual Scram.	Yes	3.3.1.3	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
251	SE	Shutdown from Outside Main Control Room	Figure 15.1-43 15.5.3 7.4.2	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC)	No	Initiate RWCU/SDC cooldown. Cold shutdown.	NONE	No	Manual Operation - Use Remote Shutdown System.	Yes	3.3.3.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the Remote Shutdown System functions is presented in the Criterion 4 evaluation.
252	SE	Shutdown from Outside Main Control Room	Figure 15.1-43 15.5.3 7.4.2	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
253	SE	Shutdown from Outside Main Control Room	Figure 15.1-43 15.5.3 7.4.2	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
254	SE	Shutdown from Outside Main Control Room	Figure 15.1-43 15.5.3 7.4.2	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5.	Yes	3.3.5.3, Fn03 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
255	SE	Shutdown from Outside Main Control Room	Figure 15.1-43 15.5.3 7.4.2	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
256	SE	Shutdown from Outside Main Control Room	Figure 15.1-43 15.5.3 7.4.2	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5.	Yes	3.3.6.1, Fn02 3.3.6.2	No	Technical Specification 3.3.6.1 Fn02 is currently for a Level 1 actuation. This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
257	SE	Shutdown from Outside Main Control Room	Figure 15.1-43 15.5.3 7.4.2	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is not a primary success path SSC, since the safety-related ADS, ICS, and GDCS would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
258	SE	Anticipated Transients Without Scram (ATWS)	15.5.4 Table 15.5-3 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Fine Motion Control Rod Drives (FMCRDs)	No	Initiate FMCRD electrical control rod insertion. Reactor shutdown.	NONE	No	Actuated by Reactor Vessel Steam Dome Pressure - High.	No	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
259	SE	Anticipated Transients Without Scram (ATWS)	15.5.4 Table 15.5-3 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Fine Motion Control Rod Drives (FMCRDs)	No	Initiate FMCRD electrical control rod insertion. Reactor shutdown.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2.	No	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
260	SE	Anticipated Transients Without Scram (ATWS)	15.5.4 Table 15.5-3 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Alternate Rod Insertion (ARI)	No	Initiate ARI. Reactor shutdown.	NONE	No	Actuated by Reactor Vessel Steam Dome Pressure - High.	No	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
261	SE	Anticipated Transients Without Scram (ATWS)	15.5.4 Table 15.5-3 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Alternate Rod Insertion (ARI)	No	Initiate ARI. Reactor shutdown.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2.	No	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
262	SE	Anticipated Transients Without Scram (ATWS)	Figure 15.1-44 15.5.4 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Reactor shutdown.	3.1.7	No	Actuated by Reactor Vessel Water Level – Low, Level 2 and with Average Power Range Monitor (APRM) Not Downscale with Initiation Timer (3 min).	No	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
263	SE	Anticipated Transients Without Scram (ATWS)	Figure 15.1-44 15.5.4 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Reactor shutdown.	3.1.7	No	Actuated by Reactor Vessel Steam Dome Pressure - High and with Average Power Range Monitor (APRM) Not Downscale with Initiation Timer (3 min).	No	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
264	SE	Anticipated Transients Without Scram (ATWS)	Figure 15.1-44 15.5.4 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
265	SE	Anticipated Transients Without Scram (ATWS)	Figure 15.1-44 15.5.4 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Safety Relief Valves (SRVs)	Yes	Open SRVs. Pressure relief.	3.4.1	No	Self-actuated by reactor pressure.	N/A	N/A	N/A	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC are required in accordance with Criterion 3.
266	SE	Anticipated Transients Without Scram (ATWS)	Figure 15.1-44 15.5.4 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Automatic Depressurization System (ADS)	Yes	Inhibit ADS Actuation. Control pressure.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Source Range Neutron Monitor (SRNM) Greater than 6% Rated Power.	No	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
267	SE	Anticipated Transients Without Scram (ATWS)	Figure 15.1-44 15.5.4 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Automatic Depressurization System (ADS)	Yes	Inhibit ADS Actuation. Control pressure.	NONE	No	Actuated by Reactor Vessel Steam Dome Pressure - High and with Source Range Neutron Monitor (SRNM) Greater than 6% Rated Power with Initiate Timer (60 sec).	No	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
268	SE	Anticipated Transients Without Scram (ATWS)	Figure 15.1-44 15.5.4 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Feedwater Control System (FWCS)	No	Initiate Feedwater Pump Runback (FWRB). Power suppression.	NONE	No	Actuated by Reactor Vessel Steam Dome Pressure - High with APRM Not Downscale.	No	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
269	SE	Anticipated Transients Without Scram (ATWS)	Figure 15.1-44 15.5.4 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
270	SE	Anticipated Transients Without Scram (ATWS)	Figure 15.1-44 15.5.4 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
271	SE	Anticipated Transients Without Scram (ATWS)	Figure 15.1-44 15.5.4 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5.	Yes	3.3.5.3, Fn03 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
272	SE	Anticipated Transients Without Scram (ATWS)	Figure 15.1-44 15.5.4 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Steam Dome Pressure - High with 10 sec Time Delay.	Yes	3.3.5.3, Fn01 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
273	SE	Anticipated Transients Without Scram (ATWS)	15.5.4 Table 15.5-3 Table 15.5-4d Table 15.5-5b Table 15.5-6b Table 15.5-7b Table 15.5-8b Table 15.5-9b	Fuel and Auxiliary Pools Cooling System (FAPCS)	No	Initiate Suppression Pool Cooling. Decrease containment pressure.	NONE	No	Actuated by Suppression Pool Temperature – High from Suppression Pool Temperature Monitoring Subsystem (SPTMS) of Containment Monitoring System (CMS).	Yes	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
274	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Reactor Protection System (RPS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.3.1.1 3.3.1.2	No	Actuated by Loss of Power Generation Bus (Loss of Feedwater Flow).	Yes	3.3.1.1, Fn13 3.3.1.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
275	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Control Rod Drive System (CRDS)	Yes	Initiate Hydraulic Scram of Control Rods. Reactor shutdown.	3.1.3 3.1.4 3.1.5	No	N/A	N/A	N/A	N/A	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC are required in accordance with Criterion 3.
276	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Passive Containment Cooling System (PCCS)	Yes	Initiate PCCS (passive initiation). Limit containment pressure.	3.6.1.7	No	N/A	N/A	N/A	N/A	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC are required in accordance with Criterion 3.
277	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
278	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5.	Yes	3.3.5.3, Fn03 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
279	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Loss of Power Generation Bus (Loss of Feedwater Flow).	Yes	3.3.5.3, Fn06 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
280	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Drywell Pressure - High (greater than 5 psig).	Yes	3.3.5.1, Fn01 with Fn04 3.3.5.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
281	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	No	Actuated by Reactor Vessel Water Level – Low, Level 1.	Yes	3.3.5.1, Fn02 3.3.5.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
282	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Automatic Depressurization System (ADS)	Yes	Initiate ADS. Reactor vessel depressurization.	3.5.1	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5 without Drywell Pressure – High (greater than 5 psig) with Initiation Timer (15 min).	Yes	3.3.5.1, Fn01 with Fn05 3.3.5.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
283	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Drywell Pressure - High (greater than 5 psig).	Yes	3.3.5.1, Fn01 with Fn04 3.3.5.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
284	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	No	Actuated by Reactor Vessel Water Level – Low, Level 1.	Yes	3.3.5.1, Fn02 3.3.5.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
285	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Depressurization Valves (DPVs)	Yes	Open DPVs. Reactor vessel depressurization.	3.5.1	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5 without Drywell Pressure – High (greater than 5 psig) with Initiation Timer (15 min).	Yes	3.3.5.1, Fn01 with Fn05 3.3.5.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
286	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Inventory Control.	3.1.7	No	Actuated by Reactor Vessel Water Level – Low, Level 2 and with Average Power Range Monitor (APRM) Not Downscale with Initiation Timer (3 min).	No	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
287	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Standby Liquid Control System (SLCS)	Yes	Initiate SLCS. Inventory Control.	3.1.7	No	Actuated by all Depressurization Valve (DPV) initiation signals.	Yes	3.3.5.1, Fn01, Fn02, Fn03, Fn04, Fn05, and Fn06 3.3.5.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. DCD Section 7.3.1.1.2 states that SLCS receives the same ECCS initiation signals as ADS, and DCD Chapter 7 does not discuss an actual initiation signal from DPV opening to SLCS actuation. Therefore, this item represents all of the ECCS initiation signals.
288	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Gravity-Driven Cooling System (GDCS)	Yes	Initiate GDCS Injection to Reactor Pressure Vessel (RPV). Extended core cooling.	3.5.2	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Initiation Timer (150 sec).	Yes	3.3.5.1, Fn01 with Fn06 3.3.5.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
289	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Gravity-Driven Cooling System (GDCS)	Yes	Initiate GDCS Equalizing Lines. Extended core cooling.	3.5.2	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5 with Initiation Timer (30 min) and with Reactor Vessel Water Level – Low, Level 0.5.	Yes	3.3.5.1, Fn01 with Fn05 and with Fn03 3.3.5.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
290	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Containment Isolation	Yes	Close Containment Isolation Valves. Containment Operability and Isolation.	3.6.1.1 3.6.1.2 3.6.1.3 3.6.3.1	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.3, Fn01 with SR 3.3.6.3.4 3.3.6.4, Fn01, Fn02, Fn04, Fn05, Fn06, Fn07, Fn08, Fn09, Fn10	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
291	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
292	SE	Station Blackout (SBO)	Figure 15.1-45 15.5.5 Appendix 8B	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5.	Yes	3.3.6.1, Fn02 3.3.6.2	No	Technical Specification 3.3.6.1 Fn02 is currently for a Level 1 actuation. This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
293	SE	Safe Shutdown Fire	Figure 15.1-46 15.5.6 9A.2.5 9A.2.6 Table 9A.2-2	Rod Control and Information System (RC&IS)	No	Initiate Fine Motion Control Rod Drive (FMCRD) electrical control rod insertion. Reactor shutdown.	NONE	No	Manual Operation - Use Remote Shutdown System.	Yes	3.3.3.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the Remote Shutdown System functions is presented in the Criterion 4 evaluation.
294	SE	Safe Shutdown Fire	Figure 15.1-46 15.5.6 9A.2.5 9A.2.6 Table 9A.2-2	Reactor Protection System (RPS)	Yes	Initiate Manual Hydraulic Scram from Main Control Room before evacuation. Reactor shutdown.	3.3.1.3	No	Manual Operation – Use Main Control Room Manual Scram.	Yes	3.3.1.3	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
295	SE	Safe Shutdown Fire	Figure 15.1-46 15.5.6 9A.2.5 9A.2.6 Table 9A.2-2	Reactor Water Cleanup/Shutdown Cooling (RWCU/SDC)	No	Initiate RWCU/SDC cooldown. Cold shutdown.	NONE	No	Manual Operation - Use Remote Shutdown System.	Yes	3.3.3.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of the Remote Shutdown System functions is presented in the Criterion 4 evaluation.
296	SE	Safe Shutdown Fire	Figure 15.1-46 15.5.6 9A.2.5 9A.2.6 Table 9A.2-2	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.5.3, Fn02 with Fn05 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
297	SE	Safe Shutdown Fire	Figure 15.1-46 15.5.6 9A.2.5 9A.2.6 Table 9A.2-2	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Main Steam Isolation Valve – Closure.	Yes	3.3.5.3, Fn04 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
298	SE	Safe Shutdown Fire	Figure 15.1-46 15.5.6 9A.2.5 9A.2.6 Table 9A.2-2	Isolation Condenser System (ICS)	Yes	Initiate ICS. Steam condensation and reactor vessel depressurization.	3.5.4 3.5.5	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5.	Yes	3.3.5.3, Fn03 3.3.5.4	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.

	AOO, IE, Acc, or SE	Event	NSOA Event Diagram/Event Description	Structure, System, or Component (SSC)	SSC Safety-Related	SSC Function	SSC Technical Specification	TS?	Actuation Instrumentation	Actuation Instrumentation Safety-Related	Actuation Instrumentation Technical Specification	TS?	Technical Specification Justification
299	SE	Safe Shutdown Fire	Figure 15.1-46 15.5.6 9A.2.5 9A.2.6 Table 9A.2-2	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	No	Actuated by Reactor Vessel Water Level – Low, Level 2 with Initiation Timer (30 sec).	Yes	3.3.6.1, Fn01 with SR 3.3.6.1.4 3.3.6.2	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
300	SE	Safe Shutdown Fire	Figure 15.1-46 15.5.6 9A.2.5 9A.2.6 Table 9A.2-2	Main Steam Isolation Valves (MSIVs)	Yes	Initiate MSIV Closure. Isolation.	3.6.1.3	No	Actuated by Reactor Vessel Water Level – Low, Level 1.5.	Yes	3.3.6.1, Fn02 3.3.6.2	No	Technical Specification 3.3.6.1 Fn02 is currently for a Level 1 actuation. This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
301	SE	Safe Shutdown Fire	Figure 15.1-46 15.5.6 9A.2.5 9A.2.6 Table 9A.2-2	High Pressure Control Rod Drive (HP_CRD)	No	Initiate HP_CRD Makeup Water. Water level recovery.	NONE	No	Actuated by Reactor Vessel Water Level – Low, Level 2 signal from Feedwater Control System (FWCS).	No	NONE	No	This is a SE that is not considered a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3. Further evaluation of this non-safety system is presented in the Criterion 4 evaluation.
302	SE	Waste Gas System Leak or Failure	Figure 15.1-47 15.5.7 11.3.7	Offgas System	No	Manual Isolation of Offgas System. Offgas release terminated.	NONE	No	Manual Operation - Offgas Post-treatment Radiation Monitoring System – High.	No	NONE	No	This is not a primary success path SSC or actuation instrumentation, since the operation of these non-safety systems only provide additional margin to the acceptance criteria for applicable event (i.e., provides additional margin to the radiological dose acceptance criteria). Isolation is not credited in the radiological dose analysis for offsite dose, and will not be credited in the radioactive dose analysis to the main control room operators for this event to be included in a future revision of the DCD. Therefore, no Technical Specifications for the SSC or actuation instrumentation are required in accordance with Criterion 3.
303	N/A	Not Applicable	N/A	24-hour DC Sources	Yes	Support for all safety-related DC power operated SSCs.	3.8.1 3.8.3	Yes	N/A	N/A	N/A	N/A	This SSC provides required support to other SSCs included in the Technical Specifications. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
304	N/A	Not Applicable	N/A	72-hour DC Sources	Yes	Support for all safety-related DC power operated instrumentation.	3.8.2	Yes	N/A	N/A	N/A	N/A	This SSC provides required support to other SSCs included in the Technical Specifications. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
305	N/A	Not Applicable	N/A	Battery Parameters	Yes	Support for all safety-related DC power operated SSCs and instrumentation.	3.8.4	Yes	N/A	N/A	N/A	N/A	This SSC provides required support to other SSCs included in the Technical Specifications. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
306	N/A	Not Applicable	N/A	Inverters	Yes	Support for all safety-related AC power operated SSCs.	3.8.5 3.8.6	Yes	N/A	N/A	N/A	N/A	This SSC provides required support to other SSCs included in the Technical Specifications. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.
307	N/A	Not Applicable	N/A	Distribution Systems	Yes	Support for all safety-related DC and AC power operated SSCs and instrumentation.	3.8.7 3.8.8	Yes	N/A	N/A	N/A	N/A	This SSC provides required support to other SSCs included in the Technical Specifications. Therefore, Technical Specifications for the SSC are required in accordance with Criterion 3.

Application and Evaluation of 10 CFR 50.36(c)(2)(ii) Criterion 4:

"A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety."

Historically, there have been no definitive qualitative standard associated with application of this Criterion and its associated phrase "significant to public health and safety." The Final Rule associated with this Criterion (60 FR 36953) expressly recognized the lack of explicit quantitative standards and that future experience and refinement would result.

The ESBWR evaluation against Criterion 4 was performed in two phases: (1) For safety-related structures, systems, and components (SSCs); and (2) for non-safety SSCs.

For safety-related SSCs, Technical Specifications generally include Limiting Conditions for Operation (LCOs) (and include LCOs for certain safety-related SSCs as support systems governed by the definition of operability) as part of the evaluation of Criterion 3 of 10 CFR 50.36(c)(2)(ii) during review of the analyzed transients and accidents. Refer to the presentation of the Criterion 3 evaluation showing the safety-related SSCs that are a part of the primary success path and are retained in, or have commitments made to add to, the Technical Specifications. Furthermore, all safety-related SSCs as presented in DCD Table 3.2-1 have been reviewed and those not identified in the Criterion 3 evaluation are included in the associated Criterion 4 evaluation. In this evaluation, all these remaining safety-related SSCs are shown to be included in the ESBWR Technical Specifications (i.e., Category 1 Post Accident Monitoring Instrumentation and the Remote Shutdown System). This evaluation against Criterion 4 draws its qualitative conclusions based on "operating experience" decisions as presented in the Final Rule associated with these criteria (60 FR 36953) and in Revision 3 of NUREG-1434. As such, all safety-related SSCs are captured within the proposed Technical Specification for the ESBWR.

For non-safety SSCs, the evaluation required to address the issue of regulatory treatment of non-safety systems (RTNSS) has been used to support implementation of 10 CFR 50.36(c)(2)(ii) Criterion 4. In SECY-94-084, "Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems in Passive Plant Designs," dated March 28, 1994, the staff discussed the issue of the RTNSS. The staff's position on RTNSS as discussed in SECY-94-084 was approved by the Commission (staff requirements memorandum (SRM) dated June 30, 1994). The staff subsequently issued SECY-95-132, "Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems in Passive Plant Designs (SECY-94-084)," dated May 22, 1995, which was essentially a revised version of SECY-94-084, however, the position on RTNSS was unchanged in SECY-95-132.

The RTNSS criteria in SECY-94-084 and SECY-95-132 (and presented in DCD Appendix 1D and Section 19.6) were applied to determine which non-safety SSC functions should be candidates for regulatory oversight. If a specific non-safety SSC was determined to have a risk impact that would <u>not</u> require "regulatory treatment," then that SSC would not meet Technical Specification Criterion 4 mandating Technical Specification regulation. For those SSCs meeting the RTNSS threshold criteria, the SECY provided the following in Section II ("Specific Steps in the RTNSS Process for Each Design"), Step 6 ("Regulatory Oversight Evaluation"), Item c:

> Review [the DCD] to determine that it includes proper short-term availability control mechanisms, if required for safety and determined by risk significance, such as simple technical specifications.

Consistent with this guidance, in a subsequent revision to the DCD, GE will provide appropriate "short-term availability controls" in the form of "simple Technical Specification" for the RTNSS SSCs identified in DCD Appendix 1D. These controls will be presented in the DCD consistent with forthcoming guidance being developed as DG-1145. While it is anticipated that these RTNSS controls will not be located in Chapter 16, they will be similar in nature to those previously approved for the AP1000 in DCD Tier 2, Section 16.3.

The commitment for future inclusion of RTNSS Availability Controls for these SSCs provides adequate risk reduction to preclude the need for Criterion 4 designation. These future revisions to the DCD will provide the appropriate regulatory control to assure there is no significant impact to public health and safety, and therefore preclude the need to present additional Technical Specifications to meet Criterion 4.

The evaluation that identified the SSCs required to be included in the Technical Specifications in DCD Chapters 16 and 16B to meet the requirements of 10 CFR 50.36(c)(2)(ii) Criterion 4 and identified those SSCs that may require appropriate "short-term availability controls" in the form of "simple technical specifications" was documented in a matrix developed from the design and probabilistic risk assessment information contained in the current revision of the DCD. This matrix (attached) includes the following information:

- Reference: Lists the references to the applicable DCD Chapters, Sections, Figures, and Tables providing the design and probabilistic risk assessment information utilized in this evaluation.
- Structure, System, or Component (SSC): Lists the applicable SSC as described in the DCD.
- Safety-Related: Lists the safety classification of the applicable SSC (Yes – safety-related, No – non-safety).
- Function: Lists a description of the function performed by the SSC being evaluated against the 10 CFR 50.36(c)(2)(ii) criteria.
- Technical Specification: Lists the current Technical Specifications applicable to the SSC and associated Function. If the SSC is not required to be included in the Technical Specifications to meet 10 CFR 50.36(c)(2)(ii) Criterion 4, then "NONE" is listed. If appropriate Technical Specifications are planned to be added in a future revision to meet 10 CFR 50.36(c)(2)(ii) Criterion 4, then "To Be Developed" is listed.
- TS?: Indicates whether the SSC and associated Function meets the requirement of 10 CFR 50.36(c)(2)(ii) Criterion 4, and therefore is required to be included in the Technical Specifications.
- RTNSS: Lists the RTNSS criteria applicable to the SSC and associated Function, if applicable (see previous discussion above).
- Technical Specification Justification: Provides a narrative description of the justification for including or not including the SSC and associated Function in the DCD Chapter 16 and 16B Technical Specifications.

The results of the evaluation of 10 CFR 50.36(c)(2)(ii) Criterion 4 using this matrix is described in the overall response to this RAI.

10 CFR 50.36(c)(2)(ii) Criterion 4:

"A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety."

	Reference	Structure, System, or Component (SSC)	Safety-Related	Function	Technical Specification	TS?	RTNSS Criteria	Technical Specification Justification
1	19.5.10 19.6 Appendix 1D Table 1D-1	Fire Protection System	No	Provides makeup water to the Isolation Condenser/Passive Containment Cooling (IC/PCC) and Spent Fuel pools to extend passive cooling to at least 7 days from the initiating event.	NONE	No	B	Not required during the first 72 hours following the initiating event. Portions of the system required for the IC/PCC and Spent Fuel pools makeup function are considered for RTNSS designation. The commitment for future inclusion of RTNSS Availability Controls for this system provides adequate risk reduction to preclude the need for Criterion 4 designation. Therefore, no Technical Specifications are required for this SSC in accordance with Criterion 4.
2	19.3.5.2 19.4.8 19.6 Appendix 1D Table 1D-1	Basemat-Internal Melt Arrest Coolability (BiMAC) System	No	Provided in the event of a severe accident to ensure coolability of corium that melts through the bottom of the reactor vessel and relocates to the lower drywell floor.	NONE	No	B	Only required in the event of a beyond-design-basis event. Because of the low probability of this event, and the passive nature of the BiMAC System, no Technical Specifications are required for this SSC in accordance with Criterion 4. Furthermore, the commitment for future inclusion of RTNSS Availability Controls for this system provides adequate risk reduction to preclude the need for Criterion 4 designation.
3	Appendix 1D 19.4.2	Standby Liquid Control System (SLCS)	Yes	Provides backup reactor shutdown capability.	3.1.7	Yes	N/A	SLCS is designated as meeting Criterion 4 in Revision 3 of NUREG-1434. Therefore, it is retained in the Technical Specifications in accordance with Criterion 4.
4	7.4.2 Table 7.4-1 Figure 7.4-1	Post-Accident Monitoring (PAM) Instrumentation	Yes	Provides the requirements for the OPERABILITY of the instrumentation necessary to display of plant variables required by the control room operators during accident conditions.	3.3.3.1	Yes	N/A	PAM Instrumentation for ESBWR is designated only as Category 1, non-Type A, in accordance with Regulatory Guide 1.97. This category of PAM instruments is designated as meeting Criterion 4 in Revision 3 of NUREG-1434 because it is intended to assist operators in minimizing the consequences of accidents, and therefore deemed to be significant to reducing risk to the public health and safety. Based on the past precedent, it is retained in the Technical Specifications in accordance with Criterion 4.
5	7.4.2 Table 7.4-1 Figure 7.4-1	Remote Shutdown System	No	Provides the requirements for the OPERABILITY of the instrumentation and controls necessary to place and maintain the plant in MODE 3 from a location other than the control room.	3.3.3.2	Yes	N/A	Remote Shutdown System is designated as meeting Criterion 4 in Revision 3 of NUREG-1434, and therefore deemed to be significant to reducing risk to the public health and safety. Based on the past precedent, it is retained in the Technical Specifications in accordance with Criterion 4.
6	19.4.7.1	Gravity-Driven Cooling System (GDCS)	Yes	Provides additional water inventory inside the containment to respond to loss of decay heat removal capability or a loss of reactor coolant inventory in MODES 5 and 6.	3.5.3	Yes	N/A	Residual Heat Removal System (similar in function to GDCS during shutdown conditions) is designated as meeting Criterion 4 in Revision 3 of NUREG-1434, and therefore deemed to be significant to reducing risk to the public health and safety. Based on the past precedent, it is retained in the Technical Specifications in accordance with Criterion 4.
To 7	19.4.7.1	Isolation Condenser System (ICS)	Yes	Provides a highly reliable, safety-related, and passive alternative to RWCU/SDC for decay heat removal when shutdown is not required for mitigation of any event or accident evaluated in the safety analyses.	3.5.5	Yes	N/A	Residual Heat Removal System (similar in function to ICS during shutdown conditions) is designated as meeting Criterion 4 in Revision 3 of NUREG-1434, and therefore deemed to be significant to reducing risk to the public health and safety. Based on the past precedent, it is retained in the Technical Specifications in accordance with Criterion 4.

	Reference	Structure, System, or Component (SSC)	Safety-Related	Function	Technical Specification	TS?	RTNSS Criteria	Technical Specification Justification
8		Automatic Depressurization System (ADS) Inhibit Logic	No	Inhibit ADS actuation to control pressure during an Anticipated Transient Without Scram (ATWS) event.	NONE	No	N/A	The logic to inhibit ADS actuation in the event of an ATWS was not found to be risk-significant in the RTNSS review as described in DCD Appendix 1D. Therefore, no Technical Specifications are required for this SSC in accordance with Criterion 4.
9		Control Room Habitability Area Heating and Ventilation System (CRHAHVS)	No	Provides emergency filtration and pressurization of the CRHA during radiological events to minimize dose to the control room operators.	NONE	No	N/A	Actuation of the CRHAHVS on a Control Room Air Intake Radiation – High actuation signal serves as a backup to Emergency Breathing Air System (EBAS) actuation, and was not found to be risk-significant in the RTNSS review as described in DCD Appendix 1D. Therefore, no Technical Specifications are required for this SSC in accordance with Criterion 4.
10		Fuel and Auxiliary Pools Cooling System (FAPCS)	No	Provides suppression pool cooling to decrease containment pressure.	NONE	No	N/A	Actuation of the FAPCS to provide suppression pool cooling on a Suppression Pool Temperature – High actuation signal only serves to provide additional margin to the containment pressure design limit, which would still be met even if this system were not placed in service during the first 72 hours of the event. Furthermore, it was not found to be risk-significant in the RTNSS review as described in DCD Appendix 1D. Therefore, no Technical Specifications are required for this SSC in accordance with Criterion 4.
11		Fuel Building Heating, Ventilation, and Air Condition System (FBHVS)	No	Provides isolation in the event of a Fuel Handling Accident in the Fuel Building to minimize offsite dose and dose to the control room operators.	NONE	No	N/A	Isolation of the FBHVS on a Fuel Building Main Area Exhaust Radiation – High actuation signal only serves to provide additional margin to the offsite and control room dose limits, which would still be met even if the Fuel Building were not isolated during the event as described in DCD Subsection 15.4.1.4.1. Furthermore, it was not found to be risk-significant in the RTNSS review as described in DCD Appendix 1D. Therefore, no Technical Specifications are required for this SSC in accordance with Criterion 4.
12		Feedwater Control System (FWCS)	No	Reduces feedwater flow by normal feedwater control functions, or initiates feedwater pump runback (FWRB), to maintain water level.	NONE	No	N/A	Operation of this non-safety system only provides additional margin to the acceptance criteria for applicable events or to provide for protection of the turbine. Furthermore, it was not found to be risk-significant in the RTNSS review as described in DCD Appendix 1D. Therefore, no Technical Specifications are required for this SSC in accordance with Criterion 4.
13		High Pressure Control Rod Drive (HP_CRD)	No	Provides makeup water inventory to aid in short-term reactor vessel water level recovery.	NONE	No	N/A	HP_CRD is a non-safety backup to the safety-related ADS, ICS, and GDCS, which would ensure water inventory is maintained in accordance with the acceptance criteria for the applicable event even if the non-safety HP_CRD were to fail. Furthermore, it was not found to be risk-significant in the RTNSS review as described in DCD Appendix 1D. Therefore, no Technical Specifications are required for this SSC in accordance with Criterion 4.
14		Process Radiation Monitoring System (PRMS)	No	Provides information to the control room operator to determine when manual operations for radiation release control are required to minimize offsite dose and dose to the control room operators.	NONE	No	N/A	Manual isolation of the FBHVS or RBHVS only serves to provide additional margin to the offsite and control room dose limits, which would still be met even if the Fuel Building or Reactor Building were not isolated during the event. Furthermore, it was not found to be risk-significant in the RTNSS review as described in DCD Appendix 1D. Therefore, no Technical Specifications are required for this SSC in accordance with Criterion 4.

	Reference	Structure, System, or Component (SSC)	Safety-Related	Function	Technical Specification	TS?	RTNSS Criteria	Technical Specification Justification
15		Reactor Building Heating, Ventilation, and Air Condition System (RBHVS)	No	Provides isolation in the event of a Fuel Handling Accident in the Reactor Building to minimize offsite dose and dose to the control room operators.	NONE	No	N/A	Isolation of the RBHVS on a Reactor Building Exhaust Radiation – High or Refueling Area Exhaust Radiation – High actuation signal only serves to provide additional margin to the offsite and control room dose limits, which would still be met even if the Reactor Building were not isolated during the event. Furthermore, it was not found to be risk-significant in the RTNSS review as described in DCD Appendix 1D. Therefore, no Technical Specifications are required for this SSC in accordance with Criterion 4.
16		Rod Control and Information System (RC&IS)	No	Provides rod block in response to a possible Control Rod Withdrawal Error During Startup event.	NONE	No	N/A	Initiation of a rod block on a Source Range Neutron Monitor (SRNM) Neutron Flux – Short Period actuation signal only serves as a backup to the Average Power Range Monitor (APRM) startup mode 15% scram for the applicable event. Furthermore, it was not found to be risk-significant in the RTNSS review as described in DCD Appendix 1D. Therefore, no Technical Specifications are required for this SSC in accordance with Criterion 4.
17		Steam Bypass and Pressure Control (SB&PC)	No	Provides reactor pressure control functions using the Turbine Stop Valves (TSVs), Turbine Control Valves (TCVs), and Turbine Bypass Valves (TBVs).	NONE	No	N/A	Only specific control functions of the SB&PC related to opening of the TBVs to reduce primary reactor pressure are credited in the analysis of the applicable events (and are addressed in the Criterion 3 evaluation). Controls to close the TBVs or otherwise operate the TSVs and TCVs were not found to be risk-significant in the RTNSS review as described in DCD Appendix 1D. Therefore, no Technical Specifications are required for this SSC in accordance with Criterion 4.