STANDARDIZED DCA ITAAC

The following table provides the scope and language for the standardized ITAAC that are expected to be applicable to LWR design certification applications.

Each standardized ITAAC is shown with five columns. The two left columns are included to reference and identify the standardized ITAAC; and are not included in the DCA. The three right columns are the standardized ITAAC that are to be incorporated and adapted as appropriate into a DCA. The row below the standardized ITAAC contains a discussion to further clarify the scope of the ITAAC that should be considered for inclusion in Tier 2 Section 14.3; this discussion is not to be included in Tier 1.

Standardized ITAAC are grouped by technical discipline (e.g., Mechanical, Electrical, etc.). Each standardized ITAAC has a corresponding identifier number (e.g., the "Physical Separation of Class 1E Power Circuits" ITAAC is numbered E02) in the left most columns. The letter designation of the identifier corresponds to the technical discipline as follows:

- A (ASME)
- C (Containment)
- E (Electrical)
- F (Fire Protection)
- H (Human Factors Engineering)
- HB (Hazard Barrier)
- I (Instrumentation and Control)
- M (Mechanical)
- Q (Qualification)
- R (Radiation Protection)
- S (Structural)

The second column from the left contains two important pieces of information about the standardized ITAAC; the ITAAC Category (in bold) and the ITAAC type.

The following are descriptions of the ITAAC Categories:

As-Built Analysis ITAAC - As-built status of the SSC is required in order to perform this ITAAC.

As-Built Inspection ITAAC - As-built (including as-fabricated) status of the SSC is required in order to perform this ITAAC. As-built inspections may be performed at the final installed location or at a vendor/ module manufacturer.

Design Acceptance Criteria ITAAC - Design Acceptance Criteria (DAC) ITAAC are used to verify satisfactory design completion in those areas in which the design cannot be fully completed prior to approval of the DCD.

Design Analysis ITAAC - ITAAC performed for this category do not require manufacture of equipment nor do they require physical work at a vendor, at a module manufacturer, or at a plant under construction.

Equipment Qualification ITAAC - Qualification of safety-related components, to demonstrate the ability of the component to perform its safety function over the full range of operating conditions (functional capability), during a seismic event (seismic qualification), or in a harsh environment (environmental qualification). Equipment qualification is generally performed by a vendor or a manufacturer at their site.

Preoperational Test ITAAC - A Preoperational Test ITAAC is performed in accordance with a Preoperational Test Procedure described in DCD Section 14.2. Typically, the system is as-built and then released to the startup organization in order to perform these ITAAC.

Vendor Test ITAAC - Vendor tests are performed on fabricated equipment. The vendor test may be performed at the site of manufacture or at a third party site. Vendor tests are different than type tests in that each component of an equipment type must be tested.

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">A01</td><td><u>Design Acceptance Criteria</u>
ASME Code Section III Piping System Design Report (As-Designed)
{{DAC}}
(If DAC use approved)</td><td>The [XXX system] ASME Code Class [1, 2 and/or 3] as-designed piping system complies with ASME Code Section III requirements.</td><td>An inspection will be performed of the [XXX system] as-designed ASME Code Class [1, 2 and/or 3] piping system Design Report, required by ASME Code Section III.
{{DAC}}</td><td>The ASME Code Section III Design Report (NCA-3550) exists and concludes that the [XXX system] ASME Code Class [1, 2 and/or 3] as-designed piping system meets the requirements of ASME Code Section III.
{{DAC}}</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
As required by ASME Code Section III NCA-1210, each ASME Code Class 1, 2 and 3 component (including piping systems) of a nuclear power plant requires a Design Report in accordance with NCA-3550.
An ITAAC inspection is performed of the [XXX system] ASME Code Class [1, 2 and/or 3] as-designed piping system Design Report to verify that the requirements of ASME Code Section III are met.</td></tr>
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<table>
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<tr><td rowspan="2">A02</td><td><u>As-Built Inspection</u>
ASME Code Section III Piping System Design Report (As-Built)</td><td>The [XXX system] ASME Code Class [1, 2 and/or 3] piping system complies with the ASME Code Section III.</td><td>An inspection will be performed of the [XXX system] ASME Code Class [1, 2 and/or 3] as-built piping system Design Report, required by ASME Code Section III.</td><td>The ASME Code Section III Design Report (NCA-3550) exists and concludes that the [XXX system] ASME Code Class [1, 2 and/or 3] piping system meets the requirements of ASME Code Section III.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
As required by ASME Code Section III NCA-1210, each ASME Code Class 1, 2 and 3 component (including piping systems) of a nuclear power plant requires a Design Report in accordance with NCA-3550. NCA-3551.1 requires that the drawings used for construction be in agreement with the Design Report before it is certified and be identified and described in the Design Report. It is the responsibility of the N Certificate Holder to furnish a Design Report for each component and support, except as provided in NCA-3551.2 and NCA-3551.3. NCA-3551.1 also requires that the Design Report be certified by a Registered Professional Engineer when it is for Class 1 components and supports, Class CS core support structures, Class MC vessels and supports, Class 2 vessels designed to NC-3200 (NC-3131.1), or Class 2 or Class 3 components designed to Service Loadings greater than Design Loadings. A Class 2 Design Report shall be prepared for Class 1 piping NPS 1 or smaller which is designed in accordance with the rules of Subsection NC. NCA-3554 requires that any modification of any document used for construction, from the corresponding document used for design analysis, shall be reconciled with the Design Report.
An ITAAC inspection is performed of the [XXX system] ASME Code Class [1, 2 and/or 3] as-built piping system Design Report to verify that the requirements of ASME Code Section III are met.</td></tr>
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<table>
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<tr><td rowspan="2">A03</td><td><u>As-Built Inspection and Analysis</u>
ASME Code Section III Code Class 1, 2, and 3 Piping Systems Functional Capability Report

{This ITAAC is for design certifications for which the ASME Code of record is the 1992 Edition with 1994 Addenda through the 2004 Edition with 2005 Addenda.}</td><td>The [XXX system] ASME Code Class [1, 2, and/or 3] piping systems are designed to withstand Level D condition loads without a loss of functional capability.</td><td>An inspection and analysis will be performed of the [XXX system] as-built piping systems.</td><td>A report exists and concludes that each of the as-built lines listed in [Table x.x.x-x] maintains functional capability in Level D conditions.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
This ITAAC applies to ASME Code Section III piping systems that must maintain an adequate fluid flow path to mitigate a Level D plant event and the ASME Code of record is the 1992 Edition with 1994 Addenda through the 2004 Edition with 2005 Addenda. For ASME Codes in this time span, the Level D stress limits in the ASME Code are not considered sufficient to ensure piping functional capability consistent with NUREG-1367, “Functional Capability of Piping Systems,” dated November 1992. Before 1994 and after 2005, the Level D stress limits in the ASME Code are sufficient to ensure piping functional capability consistent with NUREG-1367. Specific verification tasks to ensure piping functional capability are suggested in Section 9.1 of NUREG-1367.
An ITAAC inspection and analysis is performed of the [XXX system] ASME Code Class [1, 2 and/or 3] piping systems to verify a report exists and concludes that each of the lines listed in [Tier 1 Table x.x.x-x] maintains functional capability in Level D conditions.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
A04	**<u>As-Built Inspection</u>** ASME Code Section III Code Class 1, 2 and 3 Data Reports	The [XXX system] ASME Code Class [1, 2 and/or 3] components conform to the rules of construction of ASME Code Section III.	An inspection will be performed of the [XXX system] ASME Code Class [1, 2 and/or 3] as-built component Data Reports, required by ASME Code Section III.	ASME Code Section III Data Reports for the [XXX system] ASME Code Class [1, 2 and/or 3] components listed in [Table x.x.x-x] and interconnecting piping exist and conclude that the requirements of ASME Code Section III are met.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> The ASME Code Section III requires that documentary evidence be available at the construction or installation site before use or installation to ensure that ASME Code Class 1, 2 and 3 components conform to the requirements of the Code. As defined in NCA-9000, a component can be a vessel, pump, pressure relief valve, line valve, storage tank, piping system, or core support structure that is designed, constructed, and stamped in accordance with the rules of Section III. The [XXX system] ASME Code Class [1, 2 and/or 3] components require a Data Report as specified by NCA-1210. The Data Report is prepared by the Certificate Holder or Owner and signed by the Certificate Holder or Owner and the Inspector as specified by NCA-8410. The type of individual Data Report Forms necessary to record the required Code Data is specified in Table NCA-8100-1. An ITAAC inspection is performed of the Data Reports for [XXX system] ASME Code Class [1, 2 and/or 3] as-built components listed in [Tier 1 Table x.x.x-x] and interconnecting piping that is described in Section [x.x] to (1) ensure that the appropriate Data Reports have been provided as specified in Table NCA-8100-1, (2) ensure that the Certificate Holder or Owner and the Authorized Nuclear Inspector (ANI) have signed the Data Reports, and (3) verify that the requirements of ASME Code Section III are met.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
A05	**<u>As-Built Inspection</u>** ASME Code Section III Code Class CS Data Reports	The ASME Code Class CS components conform to the rules of construction of ASME Code Section III.	An inspection will be performed of the ASME Code Class CS as-built component Data Reports, required by ASME Code Section III.	ASME Code Section III Data Reports for the ASME Code Class CS components listed in [Table x.x.x-x] exist and conclude that the requirements of ASME Code Section III are met.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> The ASME Code Section III requires that documentary evidence be available at the construction or installation site before use or installation to ensure that ASME Code CS components conform to the requirements of the Code. The ASME Code Class CS components require a Data Report as specified by NCA-1210. The Data Report is prepared by the Certificate Holder or Owner and signed by the Certificate Holder or Owner and the Inspector as specified by NCA-8410. The type of individual Data Report Forms necessary to record the required Code Data is identified in Table NCA-8100-1. An ITAAC inspection is performed of the Data Reports for the ASME Code Class CS as-built components listed in [Tier 1 Table x.x.x-x] to (1) ensure that the appropriate Data Reports have been provided as specified in Table NCA-8100-1, (2) ensure that the Certificate Holder or Owner and the Inspector have signed the Data Reports, and (3) verify that the requirements of ASME Code Section III are met.			

<table>
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<tr><td rowspan="2">A06</td><td><u>Design Acceptance Criteria</u>
Pipe Break Hazards Analysis Report (As-Designed)
{{DAC}}
(If DAC use approved)</td><td>Safety-related SSCs are protected against the dynamic and environmental effects associated with postulated failures in high- and moderate-energy piping systems.

Note: Protection against dynamic effects is not required for high-energy, ASME Code Section III Class 1 and 2 piping and interconnected equipment nozzles for which LBB criteria is considered applicable.</td><td>A pipe break hazards analysis will be performed to evaluate the effects of postulated failures of high- and moderate-energy piping systems on nearby safety-related SSCs.

{{DAC}}</td><td>A Pipe Break Hazards Analysis Report exists and concludes that the as-designed safety-related SSCs will be protected against:
• The dynamic effects associated with postulated failures in high-energy piping systems.
• The environmental effects associated with postulated failures in high- and moderate-energy piping systems. {{DAC}}</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.6.x discusses that a pipe rupture hazard analysis is prepared based on the as-designed piping stress analyses and pipe whip restraint design information. The as-designed analysis is based on piping routings, layouts, and isometrics. Protection against dynamic effects is not required for high-energy, ASME Code Section III Class 1 and 2 piping and interconnected equipment nozzles for which LBB criteria is considered applicable.
An ITAAC analysis of the as-designed Pipe Break Hazards Analysis Report will be performed to:
• Confirm that the as-designed safety-related SSCs are protected against the dynamic effects (e.g., pipe whip and jet impingement) associated with postulated failures in high-energy piping systems.
• Confirm that the as-designed safety-related SSCs are protected against the environmental effects (e.g., pressurization of compartments, water spray, and flooding) associated with postulated failures in high- and moderate-energy piping systems.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
A07	**<u>As-Built Inspection</u>** Pipe Break Hazards Protective Features Verification	Safety-related SSCs are protected against the dynamic and environmental effects associated with postulated failures in high- and moderate-energy piping systems. Note: Protection against dynamic effects is not required for high-energy, ASME Code Section III Class 1 and 2 piping and interconnected equipment nozzles for which LBB criteria is considered applicable.	An inspection will be performed of the as-built high- and moderate-energy piping systems and protective features for the safety-related SSCs.	The safety-related SSCs are protected against the dynamic and environmental effects associated with postulated failures in high- and moderate-energy piping systems as follows: • Protective features are installed in accordance with the as-built Pipe Break Hazard Analysis Report. • The as-built safety-related SSCs are protected against or qualified to withstand the dynamic effects associated with postulated failures in the as-built high-energy piping systems. • The as-built safety-related SSCs are protected against or qualified to withstand the environmental effects associated with postulated failures in the as-built high- and moderate-energy piping systems.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 3.6.x provides the design bases and criteria for the analysis required to demonstrate that safety-related SSCs are not impacted by the adverse effects of a high- and moderate-energy pipe failure within the plant. Table 3.6-x lists the rooms that contain both high- and moderate-energy pipe break locations and essential SSCs that must be protected. Protection against dynamic effects is not required for high-energy ASME Code Section III Class 1 and 2 piping and interconnected equipment nozzles determined to meet LBB criteria. An ITAAC inspection is performed to verify that the as-built protective features credited in the reconciled Pipe Break Hazards Analysis Report such as pipe whip restraints, pipe whip or jet impingement barriers, jet impingement shields, or guard pipe have been installed in accordance with design drawings of sufficient detail to show the existence and location of the protective hardware. The as-built inspection is intended to verify that changes to postulated pipe failure locations and protective features or protected equipment made during construction do not adversely affect the safety-related functions of the protected equipment.			

<table>
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<tr><td rowspan="2">A08</td><td><u>As-Built Analysis</u>
Leak Before Break (LBB) Analysis (As-Built)</td><td>The [XXX system] ASME Code Class 1 and 2 piping and interconnected equipment nozzles are evaluated for leak-before-break (LBB).</td><td>An analysis will be performed of the ASME Code Class 1 and 2 as-built piping and interconnected equipment nozzles.</td><td>The as-built LBB analysis for the ASME Code Class 1 and 2 piping listed in [Table x.x.x-x] and interconnected equipment nozzles is bounded by the as-designed LBB analysis.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.6.x describes the application of the mechanistic pipe break criteria, commonly referred to as leak-before-break (LBB), to the evaluation of pipe ruptures. The leak-before-break analysis eliminates the need to consider the dynamic effects of postulated pipe breaks for high-energy piping that qualify for LBB.
An analysis, which includes material properties of piping and welds, stress analyses, leakage detection capability, and degradation mechanisms, confirms that the as-designed LBB analysis is bounding for the ASME Code Class 1 and 2 as-built piping listed in [Tier 1 Table x.x.x-x] and interconnected equipment nozzles. A summary of the results of the plant specific LBB analysis, including material properties of piping and welds, stress analyses, leakage detection capability, and degradation mechanisms is provided in the as-built LBB analysis report.</td></tr>
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<tr><td rowspan="2">A09</td><td><u>Vendor Test</u>
Reactor Vessel Charpy Upper-Shelf Energy requirements 10 CFR Part 50, Appendix G</td><td>The reactor pressure vessel (RPV) beltline material has a Charpy upper-shelf energy of no less than 75 ft-lb.</td><td>A vendor test of the Charpy V-Notch specimen of the RPV beltline material will be performed.</td><td>An ASME Code Certified Material Test Report (CMTR) exists and concludes that the initial RPV beltline Charpy upper-shelf energy is no less than 75 ft-lb.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 5.3.x discusses the fracture toughness properties of the reactor pressure vessel (RPV) beltline material and the Material Surveillance Program. A Charpy V-Notch test of the RPV beltline material specimen is performed by the vendor to ensure that the initial RPV beltline Charpy upper-shelf energy is no less than 75 ft-lb.</td></tr>
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<tr><td rowspan="2">C01</td><td><u>As-Built Inspection</u>
Containment Combustible Gas Control</td><td>The [XXX system] controls the combustible gas concentration in the [primary reactor containment].</td><td>An inspection will be performed of the [XXX system] as-built [hydrogen igniters and/or passive autocatalytic recombiners].</td><td>The [XXX system] [hydrogen igniters and/or passive autocatalytic recombiners] identified in [Table x.x.x-x] are:
• located in the [primary reactor containment as shown on [Figure x.x.x-x], and
• conform to the requirements of the approved Hydrogen Combustion Analysis.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 6.2.x provides a discussion of how the [XXX system] limits the buildup and concentration of combustible gases in the [primary reactor containment] to meet the requirements of 10 CFR 50.44, “Combustible gas control for nuclear power reactors.” RG 1.7, “Control of Combustible Gas Concentrations in Containment” provides guidance and identifies the combustible gas control systems required by Section 50.44 that are risk-significant, as they have the ability to mitigate the risk associate with combustible gas generation caused by significant beyond-design-basis accidents.
An ITAAC inspection is performed to verify that the [XXX system] [hydrogen igniters and/or passive autocatalytic recombiners] identified in [Tier 1 Table x.x.x-x] are located as shown in [Tier 1 Figure x.x.x-x] and conform to the requirements in the Hydrogen Combustion Analysis approved for the design.</td></tr>
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<tr><td rowspan="2">C03</td><td><u>Preoperational Test</u>
Containment Combustible Gas Control - Containment Hydrogen Igniters
(Use this ITAAC if hydrogen igniters are used in the design.)</td><td>The [XXX system] controls the combustible gas concentration in the [primary reactor containment].</td><td>A test will be performed of the [XXX system] hydrogen igniters.</td><td>The surface temperature of each hydrogen igniter listed in [Table x.x.x-x] is equal to or greater than [XXX °F] when energized.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 6.2.x provides a discussion of how the [XXX system] limits the buildup and concentration of combustible gases in the [primary reactor containment] to prevent combustible mixtures from occurring. Hydrogen igniters accomplish this. The minimum surface temperature of the hydrogen igniters is discussed in Section 6.2.x.
In accordance with Section 14.2.x, a preoperational test demonstrates that the [XXX system] hydrogen igniters reach a minimum surface temperature of [XXX °F] to control the combustible gas concentration in the [primary reactor containment].</td></tr>
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<tr><td rowspan="2">C04</td><td><u>Preoperational Test</u>
Containment Leak Rate (10 CFR Part 50, Appendix J)</td><td>The [primary reactor containment] serves as an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment.</td><td>i. A leakage test will be performed of the [primary reactor containment].

ii. A leakage test will be performed of the pressure containing or leakage-limiting boundaries, and containment isolation valves.</td><td>i. The leakage rate for the integrated leak rate test (Type A) meets the requirements of 10 CFR Part 50, Appendix J.

ii. The leakage rate for local leak rate tests (Type B and Type C) for pressure containing or leakage-limiting boundaries and containment isolation valves meets the requirements of 10 CFR Part 50, Appendix J.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 6.2.x provides a discussion of the leakage testing requirements of the primary reactor containment, which serves as an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment.
In accordance with Section 14.2.x, a preoperational test demonstrates that the leakage rate for the integrated leak rate test (Type A) of the [primary reactor containment] and the leakage rate for local leak rate tests (Type B and Type C) for pressure containing or leakage-limiting boundaries and containment isolation valves meet the leakage acceptance criterion of 10 CFR Part 50, Appendix J.</td></tr>
</table>

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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">C05</td><td><u>Preoperational Test</u>
Containment Isolation Valve – Closure Time</td><td>Containment isolation valve closure times limit potential releases of radioactivity.</td><td>A test will be performed of the automatic containment isolation valves.</td><td>Each automatic containment isolation valve listed in [Table x.x.x-x] travels from the full open to full closed position in less than or equal to the time listed in [Table x.x.x-x] after receipt of a containment isolation signal.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 6.2.x provides a discussion of how the [XXX system] containment isolation valves close within the required closure time after receipt of a containment isolation signal to meet containment isolation requirements following a radiological release in the [primary reactor containment].
In accordance with Section 14.2.x, a preoperational test demonstrates that each automatic containment isolation valve listed in [Tier 1 Table x.x.x-x] travels from the full open to full closed position in less than or equal to the time listed in [Table 6.2.x-x] after receipt of a containment isolation signal.</td></tr>
</table>

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<tr><td rowspan="2">C06</td><td><u>As-Built Inspection</u>
Containment Isolation Valve – Location</td><td>The length of piping shall be minimized between the containment penetration and the associated outboard containment isolation valves.</td><td>An inspection will be performed of the as-built piping between containment penetrations and associated outboard containment isolation valves.</td><td>The length of piping between each containment penetration and its associated outboard containment isolation valve is less than or equal to the length identified in [Table x.x.x-x].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 6.2.x provides a discussion of the isolation valves outside containment that are located as close to the containment as practical in accordance with the requirements of 10 CFR Part 50, Appendix A, GDC 55, 56 and 57.
An ITAAC inspection is performed to verify the length of piping between each containment penetration and its associated outboard containment isolation valve is less than or equal to the length identified in [Tier 1 Table x.x.x-x].</td></tr>
</table>

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<tr><td rowspan="2">E01</td><td><u>Preoperational Test</u>
Class 1E Electrical Divisional Power Verification</td><td>The [XXX system] Class 1E equipment is powered from its respective Class 1E division.</td><td>A test will be performed of the [XXX system] Class 1E equipment.</td><td>The [XXX system] Class 1E equipment listed in [Table x.x.x-x] is powered from the Class 1E division listed in [Table x.x.x-x].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses the [XXX system] electrical distribution system. Each division of the [XXX system] electrical distribution equipment provides power to Class 1E equipment from its respective Class 1E division.
In accordance with Section 14.2.x, a preoperational test demonstrates that the [XXX system] Class 1E equipment listed in [Tier 1 Table x.x.x-x] is powered from the Class 1E division listed in [Tier 1 Table x.x.x-x].</td></tr>
</table>

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">E02</td><td><u>As-Built Inspection</u>
Class 1E Power Circuits Physical Separation</td><td>Physical separation exists between the redundant divisions of the [XXX system] Class 1E power circuits, and between Class 1E power circuits and non-Class 1E current-carrying circuits.</td><td>An inspection will be performed of the [XXX system] Class 1E as-built power circuits.</td><td>i. Physical separation between redundant divisions of [XXX system] Class 1E power circuits is provided by a minimum separation distance, or by barriers (where the minimum separation distances cannot be maintained), or by a combination of separation distance and barriers.

ii. Physical separation between [XXX system] Class 1E power circuits and non-Class 1E current-carrying circuits is provided by a minimum separation distance, or by barriers (where the minimum separation distances cannot be maintained), or by a combination of separation distance and barriers.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses the independence of [XXX system] Class 1E power circuits per the guidance of Regulatory Guide 1.75, which endorses IEEE Std. 384-1992. Minimum separation distance (as defined in IEEE Std. 384-1992), or barriers or any combination thereof may achieve physical separation as specified in IEEE Std. 384-1992. Per IEEE Std. 384-2008, there is no minimum separation distance criterion between Class 1E circuits (target) and fiber-optic circuits (source). Physical separation is provided to maintain the independence of Class 1E power circuits so that the safety functions required during and following any design basis event can be accomplished.
Separate ITAAC inspections are performed to verify the independence provided by physical separation and the independence provided by electrical isolation. This ITAAC verifies the independence of Class 1E power circuits by physical separation. An ITAAC inspection is performed of physical separation of the [XXX system] Class 1E power circuits. The physical separation ITAAC inspection results verify the following physical separation criteria are met.
i. Physical separation between redundant divisions of [XXX system] Class 1E power circuits is provided by a minimum separation distance, or by barriers (where the minimum separation distances cannot be maintained), or by a combination of separation distance and barriers.
ii. Physical separation between [XXX system] Class 1E power circuits and non-Class 1E current-carrying circuits is provided by a minimum separation distance, or by barriers (where the minimum separation distances cannot be maintained), or by a combination of separation distance and barriers.
In performing the ITAAC, the licensee will verify that the configuration of each as-built barrier agrees with its associated as-built drawing.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
E03	**<u>As-Built Inspection</u>** Class 1E Power Circuits Electrical Isolation	Electrical isolation exists between [XXX system] Class 1E power circuits and connected non-Class 1E power circuits to prevent the propagation of credible electrical faults.	i. Type test, analysis, or a combination of type test and analysis will be performed of the Class 1E isolation devices. ii. An inspection will be performed of the [XXX system] Class 1E as-built power circuits.	i. The Class 1E circuit does not degrade below defined acceptable operating levels when the non-Class 1E side of the isolation device is subjected to the maximum credible voltage, current transients, shorts, grounds, or open circuits. ii. Class 1E electrical isolation devices are installed between [XXX system] Class 1E power circuits and connected non-Class 1E power circuits.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 8.x discusses the independence of [XXX system] Class 1E power circuits per the criteria of Regulatory Guide 1.75, which endorses IEEE Std. 384-1992. Electrical isolation is provided between Class 1E power circuits and non-Class 1E power circuits by Class 1E isolation devices so a failure in a non-Class 1E power circuit does not prevent the safety-related function completion in the Class 1E power circuit. An ITAAC inspection is performed to verify that Class 1E electrical isolation devices are installed between [XXX system] Class 1E power circuits and non-Class 1E power circuits, which satisfy the guidance of Regulatory Guide 1.75.			

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">E04</td><td><u>As-Built Analysis</u>
Class 1E Circuit Interrupting Devices Coordination</td><td>The [XXX system] Class 1E circuit interrupting devices provide electrical fault protection coordination to limit the loss of equipment due to postulated fault conditions.</td><td>An analysis will be performed of the [XXX system] Class 1E as-built circuit interrupting devices.</td><td>The Coordination Study for the [XXX system] Class 1E circuit interrupting devices exists and concludes that the Class 1E circuit-interrupting device closest to a fault opens before other Class 1E circuit interrupting devices.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses that coordination studies are conducted in accordance with IEEE Std. 242-2001 to verify the protection feature coordination capability to limit the loss of equipment due to postulated fault conditions.
The Coordination Study for the [XXX system] Class 1E circuit interrupting devices confirms that the Class 1E circuit-interrupting device closest to the fault opens before other Class 1E circuit interrupting devices.</td></tr>
</table>

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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">E05</td><td><u>Design Analysis and As-Built Inspection</u>
Class 1E Electrical Equipment Capacity</td><td>The [XXX system] Class 1E [switchgear, load centers, motor control centers (MCCs), transformers, feeder breakers, load breakers, and containment electrical penetration assemblies] are sized to power their design loads.</td><td>i. An analysis will be performed of the [XXX system] as-designed Class 1E [switchgear, load centers, MCCs, transformers, feeder breakers, load breakers, and containment electrical penetration assemblies].

ii. An inspection will be performed of each [XXX system] Class 1E as-built [switchgear, load center, MCC, transformer, feeder breaker, load breaker, and containment electrical penetration assembly].</td><td>i. An electrical rating report exists that defines and identifies the required design electrical rating to power the design loads of each [XXX system] Class 1E [switchgear, load center, MCC, transformer, feeder breaker, load breaker, and containment electrical penetration assembly] listed in [Table x.x.x-x].

ii. The electrical rating of each [XXX system] Class 1E [switchgear, load center, MCC, transformer, feeder breaker, load breaker, and containment electrical penetration assembly] listed in [Table x.x.x-x] is greater than or equal to the required design electrical rating as specified in the electrical rating report.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses that the [XXX system] Class 1E [switchgear, load centers, MCCs, transformers, feeder breakers, load breakers, and containment electrical penetration assemblies] are sized to power their design loads.
i. An analysis determines the required design electrical rating needed to power the design loads of each [XXX system] Class 1E [switchgear, load center, MCC, transformer, feeder breaker, load breaker, and containment electrical penetration assembly] listed in [Tier 1 Table x.x.x-x].
ii. An ITAAC inspection is performed to verify that the electrical rating of each [XXX system] Class 1E [switchgear, load center, MCC, transformer, feeder breaker, load breaker, and containment electrical penetration assembly] listed in [Tier 1 Table x.x.x-x] is greater than or equal to the required design electrical rating. This ITAAC inspection may be performed any time after manufacture of the Class 1E [switchgear, load centers, MCCs, transformers, feeder breakers, load breakers, and containment electrical penetration assemblies].</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">E06</td><td><u>Preoperational Test</u>
Class 1E Inverter Capacity</td><td>The [XXX system] Class 1E inverters are sized to power their design loads.</td><td>A test will be performed of the [XXX system] Class 1E inverters.</td><td>Each [XXX system] Class 1E inverter listed in [Table x.x.x-x] maintains rated voltage and rated frequency while the inverter supplies the design load [XXX amps].</td></tr>
<tr><td colspan="4"><u>Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses that the [XXX system] Class 1E AC inverters are sized to power their design loads.
In accordance with Section 14.2.x, a preoperational test demonstrates that each [XXX system] Class 1E inverter listed in [Tier 1 Table x.x.x-x] maintains rated voltage and rated frequency while the inverter supplies the design load [XXX amps].
This test is performed using installed loads, simulated loads, or a combination of installed and simulated loads.</td></tr>
</table>

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">E07</td><td><u>Preoperational Test</u>
Class 1E Battery Charger Capacity</td><td>The [XXX system] Class 1E battery chargers are sized to power their design loads.</td><td>A test will be performed of the [XXX system] Class 1E battery chargers.</td><td>Each [XXX system] Class 1E battery charger listed in [Table x.x.x-x] maintains rated voltage while the battery charger supplies the design load [XXX amps].</td></tr>
<tr><td colspan="4"><u>Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses that the [XXX system] Class 1E battery chargers are sized to power their design loads.
In accordance with Section 14.2.x, a preoperational test demonstrates that each [XXX system] Class 1E battery charger listed in [Tier 1 Table x.x.x-x] maintains rated voltage acceptable for its AC loads while the battery charger supplies the design load [XXX amps].
This test is performed using installed loads, simulated loads, or a combination of installed and simulated loads.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">E08</td><td><u>Preoperational Test</u>
Class 1E Battery Capacity</td><td>The [XXX system] Class 1E batteries are sized to power their design loads.</td><td>A test will be performed of the [XXX system] Class 1E batteries.</td><td>Each [XXX system] Class 1E battery listed in [Table x.x.x-x] maintains terminal voltage greater than rated voltage [#### volts] while not exceeding individual cell limit of [### volts] with a [### Amp/hour] discharge rate for [## hours].</td></tr>
<tr><td colspan="4"><u>Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses that the [XXX system] Class 1E batteries are sized to power their design loads. Section 8.x discusses that the batteries are capable of maintaining a rated voltage for a specified time while not exceeding individual cell voltage limits with a discharge rate that is based on the manufacturer’s rating of the battery for the selected test length.
In accordance with Section 14.2.x, a preoperational test demonstrates that the terminal voltage for each [XXX system] Class 1E battery is greater than the rated voltage [#### volts] for a specified time [## hours] while not exceeding individual cell limit of [### volts] with a discharge rate that is based on the manufacturer’s rating of the battery for the selected test length.
This test is performed using installed loads, simulated loads, or a combination of installed and simulated loads.</td></tr>
</table>

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">E09</td><td><u>Preoperational Test</u>
Class 1E Emergency Diesel Generator Capacity</td><td>The [XXX system] Class 1E emergency diesel generators are capable of supplying their rated loads.</td><td>A test will be performed of the [XXX system] Class 1E emergency diesel generators.</td><td>Each [XXX system] Class 1E emergency diesel generator listed in [Table x.x.x-x] provides power at the generator terminal rated voltage and frequency when operated at:

• a load equivalent to the short-time rating of the diesel generator for an interval of [2 hours] or greater, and

• a load equivalent of [90-100%] of the continuous rating of the diesel generator for an interval of [22 hours] or greater.</td></tr>
<tr><td colspan="4"><u>Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses that the [XXX system] Class 1E emergency diesel generators are capable of supplying their rated loads. Section 8.x provides the acceptable ranges of generator terminal voltage and frequency for the emergency diesel generator while operating with load.
In accordance with Section 14.2.x, a preoperational test demonstrates that each [XXX system] Class 1E emergency diesel generator listed in [Tier 1 Table x.x.x-x] provides power at the generator terminal rated voltage and frequency when:
• The emergency diesel generator is operated at a load equivalent to the short-time rating of the diesel generator for an interval of [2 hours] or greater.
• The emergency diesel generator is operated at a load equivalent of [90-100%] continuous rating of the diesel generator for an interval of [22 hours] or greater.
This test is performed using installed loads, simulated loads, or a combination of installed and simulated loads.</td></tr>
</table>

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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">E10</td><td><u>Preoperational Test</u>
Class 1E Emergency Diesel Generator Load Shed and Sequencer Operation</td><td>Upon loss of off-site power, the [XXX system] Class 1E emergency diesel generators automatically start and achieve steady-state design voltage and frequency within the required time; the loads are shed from the associated [XXX system] Class 1E bus; and shutdown loads are automatically sequenced onto the Class 1E bus.</td><td>A test will be performed of the [XXX system] Class 1E emergency diesel generators and associated Class 1E buses.</td><td>Upon a simulated loss of off-site power, the following responses are obtained for each [XXX system] Class 1E emergency diesel generator listed in [Table x.x.x-x]:

• The Class 1E emergency diesel generator starts on the auto-start signal from its standby conditions and achieves steady-state generator terminal voltage between [### volts AC] and [### volts AC], and a frequency between [### Hz] and [### Hz] within [### seconds].

• Loads are shed from the associated Class 1E buses.

• Shutdown loads are automatically sequenced onto their associated Class 1E bus.</td></tr>
<tr><td colspan="4"><u>Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses that upon loss of off-site power, the [XXX system] Class 1E emergency diesel generators automatically start and achieve steady-state design voltage and frequency within the required time; the loads are shed from the associated [XXX system] Class 1E bus; and shutdown loads are automatically sequenced onto the Class 1E bus. [Table 8.x-x or Section 8.x] contains a list of loads to be sequenced onto the bus after a loss of loss-site power.
In accordance with Section 14.2.x, a preoperational test demonstrates that upon a simulated loss of off-site power, the following responses are obtained for each [XXX system] Class 1E emergency diesel generator listed in [Tier 1 Table x.x.x-x]:
• The Class 1E emergency diesel generator starts on the auto-start signal from its standby conditions and achieves a steady-state generator terminal voltage [### volts AC +/- ### volts AC] and frequency [### Hz +/- ### Hz] within [### seconds].
• Loads are shed from the associated Class 1E buses.
• Shutdown loads listed in [Table 8.x-x or Section 8.x] are automatically sequenced onto their associated Class 1E bus.
The loads are operated for a minimum of [five minutes]. Sequenced loads are operated at design conditions to the extent practical, consistent with preoperational test limitations. This test is performed using installed loads, simulated loads, or a combination of installed and simulated loads.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
E11	**<u>Preoperational Test</u>** Class 1E Emergency Diesel Generator Automatic Start	Upon a safety injection actuation signal, the [XXX system] Class 1E emergency diesel generators automatically start and attain design voltage and frequency within the required time.	A test will be performed of the [XXX system] Class 1E emergency diesel generators.	Upon a simulated safety injection signal, each [XXX system] Class 1E emergency diesel generator listed in [Table x.x.x-x] starts on the auto-start signal from its standby conditions, and attains design voltage and frequency within the required time.
	<u>Section 14.3 Discussion of ITAAC Implementation</u> Section 8.x discusses that upon a safety injection actuation signal, the [XXX system] Class 1E emergency diesel generators automatically start and attain design voltage and frequency within the required time. Section 8.x provides the time required to obtain rated voltage and frequency. In accordance with Section 14.2.x, a preoperational test demonstrates that upon a simulated safety injection signal, each [XXX system] Class 1E emergency diesel generator listed in [Tier 1 Table x.x.x-x] starts on the auto-start signal from its standby conditions, and attains design voltage and frequency within [xx] seconds. This test is performed using installed loads, simulated loads, or a combination of installed and simulated loads.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
E12	**<u>As-Built Inspection</u>** Class 1E Emergency Diesel Generator Fuel Oil Storage Tank Capacity	The fuel oil storage tank for each [XXX system] Class 1E emergency diesel generator is sufficient to operate the diesel generator at its 100% continuous rating for 7 days.	An inspection will be performed of the [XXX system] Class 1E as-built emergency diesel generator fuel oil storage tanks.	Each [XXX system] diesel generator fuel oil storage tank listed in [Table x.x.x-x] has a useable volume greater than the volume of fuel oil consumed by its associated [XXX system] Class 1E emergency diesel generator operating at its 100% continuous rating for 7 days.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 8.x discusses that fuel oil storage tank for each [XXX system] Class 1E emergency diesel generator is sufficient to operate the diesel generator at its 100% continuous rating following any design basis event for 7 days. Section 8.x provides the required usable fuel oil storage tank volume. An ITAAC inspection is performed to verify that each [XXX system] emergency diesel generator fuel oil storage tank listed in [Tier 1 Table x.x.x-x] has a useable volume greater than the volume of fuel oil consumed by its associated [XXX system] Class 1E emergency diesel generator operating at its 100% continuous rating for 7 days.			

<table>
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<tr><td rowspan="2">E13</td><td><u>Preoperational Test</u>
Class 1E Emergency Diesel Generator Fuel Oil Makeup Flow Rate</td><td>The [XXX system] Class 1E emergency diesel generator has a sufficient fuel makeup flow rate to allow continuous operation of the diesel generator while the diesel generator is operating at its 100% continuous rating.</td><td>A test will be performed of the [XXX system] Class 1E emergency diesel generator fuel oil transfer system.</td><td>Each [XXX system] Class 1E emergency diesel generator fuel oil transfer pump listed in [Table x.x.x-x] operating in normal system alignment to the [XXX system] Class 1E emergency diesel generator day tank provides a fuel makeup rate at least equal to the [XXX system] Class 1E emergency diesel generator fuel oil consumption rate while operating at its 100% continuous rating.</td></tr>
<tr><td colspan="4"><u>Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses that the [XXX system] Class 1E emergency diesel generator has a sufficient fuel makeup flow rate to allow continuous operation of the emergency diesel generator while the diesel generator is operating at its 100% continuous rated load. Section 8.x provides the diesel generator fuel oil consumption rate while operating at its 100% continuous rating.
In accordance with Section 14.2.x, a preoperational test demonstrates that each [XXX system] Class 1E emergency diesel generator fuel oil transfer pump listed in [Tier 1 Table x.x.x-x] operating in normal system alignment to the [XXX system] Class 1E emergency diesel generator day tank provides a fuel makeup rate at least equal to the [XXX system] Class 1E emergency diesel generator fuel oil consumption rate while operating at its 100% continuous rating.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">E14</td><td><u>As-Built Inspection</u>
{Use the following ITAAC if an Alternate AC Source exists}
Alternate AC Source is Diverse from Class 1E Emergency Diesel Generator</td><td>The electrical and mechanical portions of the alternate AC source are diverse from the electrical and mechanical portions of the Class 1E emergency diesel generators.</td><td>An inspection will be performed of the as-built electrical and mechanical portions of the alternate AC source and the Class 1E emergency diesel generators.</td><td>The electrical and mechanical portions of the alternate AC source are diverse from the electrical and mechanical portions of the Class 1E emergency diesel generators.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses that the electrical and mechanical portions of the alternate AC source are diverse from the electrical and mechanical portions of the Class 1E emergency diesel generators to prevent a common mode failure.
An ITAAC inspection is performed to verify that the electrical and mechanical portions of the alternate AC source are diverse from the electrical and mechanical portions of the Class 1E emergency diesel generators. [For example, achieving diversity from the Class 1E emergency diesel generators could be by manufacturer, different models from the same manufacturer, steam supplies, gas turbine, etc.]</td></tr>
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<tr><td rowspan="2">E15</td><td><u>Preoperational Test</u>
Main Control Room and Remote Shutdown Station Normal Illumination</td><td>The [XXX system] provides normal illumination of the operator workstations and safety-related panels in the main control room and [remote shutdown station].</td><td>i. A test will be performed of the main control room operator workstations and safety-related panel illumination.

ii. A test will be performed of the [remote shutdown station] operator workstations and safety-related panel illumination.</td><td>i. The [XXX system] provides at least 100 foot-candles illumination at the main control room operator workstations and at least 50 foot-candles at the safety-related panels.

ii. The [XXX system] provides at least 100 foot-candles illumination at the [remote shutdown station] operator workstations and at least 50 foot-candles at the safety-related panels.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 9.5.x discusses the [XXX system], which provides normal illumination of the operator workstations and safety-related panels in the main control room and [remote shutdown station].
In accordance with Section 14.2.x, a preoperational test demonstrates that the [XXX system] provides at least:
• 100 foot-candles illumination at the main control room operator workstations and at least 50 foot-candles at the safety-related panels.
• 100 foot-candles illumination at the [remote shutdown station] operator workstations and at least 50 foot-candles at the safety-related panels.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">E16</td><td><u>Preoperational Test</u>
Main Control Room and Remote Shutdown Station Emergency Illumination</td><td>The [XXX system] provides emergency illumination of the operator workstations and safety-related panels in the main control room and [remote shutdown station].</td><td>i. A test will be performed of the main control room operator workstations and safety-related panel illumination.

ii. A test will be performed of the [remote shutdown station] operator workstations and safety-related panel illumination.</td><td>i. The [XXX system] provides at least 10 foot-candles of illumination at the main control room operator workstations and safety-related panels when it is the only main control room lighting system in operation.

ii. The [XXX system] provides at least 10 foot-candles at the [remote shutdown station] operator workstations and safety-related panels when it is the only [remote shutdown station] lighting system in operation.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 9.5.x discusses the [XXX system] which provides normal illumination of the operator workstations and safety-related panels in the main control room and [remote shutdown station].
In accordance with Section 14.2.x, a preoperational test demonstrates that when the [XXX system] is the only lighting system it provides at least:
• 10 foot-candles of illumination at the main control room operator workstations and safety-related panels.
• 10 foot-candles at the [remote shutdown station] operator workstations and safety-related panels.</td></tr>
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<tr><td rowspan="2">E17</td><td><u>Preoperational Test</u>
Class 1E Control Power Verification</td><td>Control power for the [XXX system] Class 1E switchgear and load centers is provided from its respective Class 1E [channel or division].</td><td>A test will be performed of the control power for the [XXX system] Class 1E switchgear and load centers.</td><td>The control power for the [XXX system] Class 1E switchgear and load centers listed in [Table x.x.x-x] is provided from its respective Class 1E [channel or division].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses the [XXX system] control power for the Class 1E electrical distribution system. IEEE Std. 603-1991 and IEEE Std. 308-1980 provide requirements for the control power of class 1E equipment including switchgear and load centers. Test signals should be used to determine that the equipment being tested is in fact being powered by the respective division's specified Class 1E power source.
In accordance with Section 14.2.x, a preoperational test demonstrates that control power for the [XXX system] Class 1E switchgear and load centers listed in [Tier 1 Table x.x.x-x] is provided from its respective Class 1E [channel or division].</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
E18	**<u>As-Built Analysis</u>** Class 1E Electrical Equipment Fault Capacity Analysis	The [XXX system] Class 1E [switchgear, load centers, MCCs, transformers, feeder breakers, load breakers, and containment electrical penetration assemblies] are rated to withstand fault currents for the time required to clear the fault from its power source.	An analysis will be performed of the [XXX system] as-built Class 1E [switchgear, load centers, MCCs, transformers, feeder breakers, load breakers, and containment electrical penetration assemblies].	A circuit interrupting device coordination analysis exists and concludes that the current carrying capability for the [XXX system] Class 1E [switchgear, load centers, MCCs, transformers, feeder breakers, load breakers, and containment electrical penetration assemblies] listed in [Table x.x.x-x] is greater than the analyzed fault currents for the time required to clear the fault from its power source.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 8.x discusses instantaneous and thermal overload fault protection to limit the loss of equipment due to postulated fault conditions. A circuit interrupting device coordination analysis confirms that the as-built Class 1E [switchgear, load centers, MCCs, transformers, feeder breakers, load breakers, and containment electrical penetration assemblies] listed in [Tier 1 Table x.x.x-x] can withstand fault currents for the time required to clear the fault from its power source.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
E19	**<u>Preoperational Test</u>** Offsite Preferred Power Supply	If the normal preferred offsite power supply is not available, Class 1E [###] voltage buses are automatically transferred to the alternate preferred offsite power supply.	A test will be performed of the Class 1E [###] voltage buses.	The Class 1E [###] voltage buses are automatically transferred to the alternate preferred offsite power supply on loss of the normal preferred offsite power supply.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 8.x discusses the automatic transfer to the [alternate preferred offsite power supply] for the Class 1E voltage buses if the normal preferred offsite power supply is unavailable. The components associated with the alternate preferred power supply are physically separated and designed to exclude, to the extent practical, the potential for simultaneous failure of the normal and alternate preferred power supply systems under operating, and postulated accident conditions. In accordance with Section 14.2.x, a preoperational test demonstrates that the Class 1E [###] voltage buses are automatically transferred to the alternate preferred offsite power supply on loss of the normal preferred offsite power supply.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
E20	**<u>Preoperational Test</u>** Class 1E Inverter Power Supply	When DC input power to the Class 1E inverter power supply unit is lost, input power to the Class 1E inverter power supply unit is provided by the regulating transformer without interruption of power to the loads.	A test will be performed of the Class 1E inverters.	When DC input power to the Class 1E inverter power supply unit is lost, input power to the Class 1E inverter power supply unit is provided by the regulating transformer without interruption of power to the loads.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 8.x discusses the uninterrupted transfer of the Class 1E inverter power supply from DC input power to the regulating transformer when DC input power is lost. IEEE Std. 603-1991 requires that Class 1E power systems shall perform all safety functions required for a design basis event in the presence of a single failure. IEEE Std. 379-2000 provides additional guidance on the application of the single failure criterion. In accordance with Section 14.2.x, a preoperational test demonstrates that when DC input power to the Class 1E inverter power supply unit is lost, input power to the Class 1E inverter power supply unit is provided by the regulating transformer without interruption of power to the loads, i.e., the loss of the preferred power supply can be detected, and each Class 1E standby power supply can be started and can accept its design load within the time specified in the design basis while maintaining acceptable voltage regulation.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
E21	**<u>Preoperational Test</u>** Class 1E EDG Air Start Capacity	The Class 1E EDG [air start system] receiver tanks of each emergency diesel generator (EDG) have a combined air capacity for five starts of the EDG without replenishing air to the receiver tanks.	A test will be performed of the Class 1E EDG [air start system].	Each Class 1E EDG can be started five times without replenishing air to the receiver tanks.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 8.x and Section 9.5.4.x describe the Class 1E EDG and its associated components and the required combined air capacity for the EDG [air start system]. Guidance is provided in Regulatory Guide 1.9, “Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants.” Additional guidance is available in IEEE 387, “IEEE Standard Criteria for Diesel Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations.” In accordance with Section 14.2.x, a preoperational test demonstrates that each Class 1E EDG can be started five times without replenishing air to the receiver tanks.			

<table>
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<tr><td rowspan="2">E22</td><td><u>Preoperational Test</u>
Class 1E EDG Equipment Protection Trip Bypass</td><td>When the Class 1E EDG is started by an engineered safety feature (ESF) actuation signal, Class 1E EDG equipment protection trips, except for [overspeed and generator differential current], are bypassed.</td><td>A test will be performed of the Class 1E EDG equipment protection trips.</td><td>Class 1E EDG equipment protection trips, except for [overspeed and generator differential current], are bypassed when the Class 1E EDG is started by an ESF actuation signal.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x describes the EDG and its associated components. Section 7.x describes the [Protection System], which provides the ESF actuation signal to the EDG. Table 7.x-x lists the ESF actuation signals, and the associated actions that the ESF signal produces, including the ones that start the EDGs. Section 8.x describes the EDG equipment protection trips that are bypassed when the EDG receives an ESF actuation signal.
In accordance with Section 14.2.x, a preoperational test demonstrates that Class 1E EDG equipment protection trips, except for [overspeed and generator differential current], are bypassed when the Class 1E EDG is started by an ESF actuation signal. This test may be performed using real or simulated signals.</td></tr>
</table>

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<tr><td rowspan="2">E23</td><td><u>Design Analysis</u>
Class 1E EDG Capacity</td><td>The Class 1E EDG output rating is greater than the analyzed loads assigned in the respective [XXX] divisions.</td><td>An analysis will be performed of the Class 1E as-built EDG Loads.</td><td>A report exists and concludes that each Class 1E EDG output rating is greater than the analyzed loads assigned in the respective [XXX] divisions.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses that the Class 1E EDG output ratings are greater than the analyzed loads assigned to their respective divisions. Section 8.x provides the loads assigned to each respective division, which is powered by that division's EDG.
An analysis confirms that each Class 1E EDG output rating is greater than the analyzed loads assigned in the respective [XXX] divisions.</td></tr>
</table>

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<tr><td rowspan="2">E24</td><td><u>Preoperational Test</u>
Eight-Hour Battery Pack Emergency Lighting Fixtures</td><td>Eight-hour battery pack emergency lighting fixtures provide illumination for post-fire safe-shutdown activities performed by operators outside the main control room (MCR) and [remote shutdown station (RSS)] where post-fire safe-shutdown activities are performed.</td><td>A test will be performed of the eight-hour battery pack emergency lighting fixtures.</td><td>Eight-hour battery pack emergency lighting fixtures provide at least one foot-candle illumination in the areas outside the MCR or [RSS] where post-fire safe-shutdown activities are performed.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section [9.x] discusses the use of eight-hour battery pack emergency lighting fixtures, which provide illumination of at least one foot-candle for post-fire safe-shutdown activities outside of the MCR and [RSS]. These units should provide lighting for:
• Areas required for power restoration / recovery to comply with the guidance of Regulatory Guide 1.189 "Fire Protection for Nuclear Power Plants."
• Areas where normal actions are required for operation of equipment needed during fire; and
• Stairwells serving as escape or access routes for firefighting and the remote shutdown area.
In accordance with Section 14.2.x, a preoperational test demonstrates that eight-hour battery pack emergency lighting fixtures illuminate their required target areas and provide at least one foot-candle illumination in the areas outside the MCR or [RSS] where post-fire safe-shutdown activities are performed.</td></tr>
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<tr><td rowspan="2">E25</td><td><u>Preoperational Test</u>
{Use the following ITAAC if an Alternate AC source exists}
Alternate AC Source for Station Blackout</td><td>The alternate AC source can be aligned to one train of safe-shutdown equipment within [10 minutes] [or 60 minutes if a Coping analysis exists and supports the increased time interval].</td><td>A test or test and analysis will be performed of the alternate AC source.</td><td>The alternate AC source can be aligned to one train of safe-shutdown equipment within [10 minutes] [or 60 minutes if a Coping analysis exists and supports the increased time interval].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 8.x discusses that the alternate AC source can be aligned to power one train of safe-shutdown equipment within [10 minutes of a LOOP] [or 60 minutes if a Coping analysis has been performed and supports the longer time interval].
In accordance with Section 14.2.x, a preoperational test demonstrates that the alternate AC source can be aligned to one train of safe-shutdown equipment within [10 minutes] [or 60 minutes if a Coping analysis exists and supports the increased time interval].</td></tr>
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<tr><td rowspan="2">E26</td><td><u>As-Built Inspection</u>
Physical Arrangement</td><td>Each [XXX system] electrical division is physically arranged as described in the Design Description and as shown on [Figure x.x.x-x].</td><td>An inspection will be performed of the [XXX system] as-built electrical equipment physical arrangement.</td><td>The [XXX system] electrical equipment physical arrangement conforms to the Design Description and [Figure x.x.x-x].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion</u>
Section 8.x discusses the [XXX system].
This ITAAC inspection verifies that each [XXX system] electrical division is physically arranged as described in the Tier 1 Design Description and as shown on [Tier 1 Figure x.x.x-x].</td></tr>
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<tr><td rowspan="2">E27</td><td><u>Preoperational Test</u> Class 1E AC and DC Circuit Interrupting Device Verification</td><td>The [XXX system] Class 1E feeder and load circuit breakers for the switchgear, load centers, and MCCs provide instantaneous and thermal overload fault protection.</td><td>A test will be performed of the [XXX system] Class 1E feeder and load circuit breakers.</td><td>For each [XXX system] Class 1E circuit breaker listed in [Table x.x.x-x], the instantaneous and thermal overload trip points conform to the circuit breaker’s design requirements and the breaker coordination analysis.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion</u>
Section 8.x discusses instantaneous and thermal overload fault protection and coordination to limit the loss of equipment due to postulated fault conditions.
This ITAAC (1) verifies that the Class 1E circuit interrupting devices trip points are properly set and will trip open on an instantaneous or thermal overload condition within their design requirements and (2) confirms that the circuit-interrupting device closest to a fault opens before other circuit interrupting devices in accordance with the requirements of the coordination analysis.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">E28</td><td><u>Design Analysis</u>
Harmonic Distortion Waveforms</td><td>The [XXX system] Class 1E equipment is not prevented from performing its safety- related functions by design basis harmonic distortion waveforms.</td><td>Analysis of the as-built electric power distribution system will be performed to determine harmonic distortions.</td><td>The harmonic distortion waveforms do not exceed acceptable voltage distortion limits [#####] on the Class 1E electric power distribution system.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion</u>
Section 8.x discusses harmonic distortion waveforms, and the methods by which the class 1E equipment is not prevented from performing its safety-related functions due to the harmonic distortion waveform. Variations in voltage, frequency, and waveform (harmonic distortion) in the onsite power system and its components during any mode of plant operation must not degrade the performance of any safety system load below an acceptable level. IEEE Standards 308, and 741 provide guidance on system power quality limits and the effects of degraded voltage.
The ITAAC analysis verifies that any harmonic distortion waveforms generated do not exceed the acceptable voltage distortion limits as described in Section 8.x.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">E29</td><td><u>As-Built Inspection and Analysis</u>
EDG air intake and exhaust locations.</td><td>The air intakes for EDG combustion are separated from the EDG exhaust ducts.</td><td>Inspection and analysis of the as-built EDG air intakes and exhaust ducts will be performed.</td><td>The air intakes and exhaust ducts for each EDG are separated by an analyzed distance and orientation to prevent EDG exhaust gases from being drawn into the EDG's air intakes.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion</u>
Section 8.x describes the EDG, and its associated components.
An ITAAC inspection and analysis is performed to verify that the location of the EDG fresh air intake is in a position to prevent EDG exhaust from being drawn into the fresh air intake.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
E30	**<u>As-Built Inspection and Analysis</u>** Class 1E electric power distribution cables and raceways.	[XXX System] Class 1E electric power distribution cables are routed within their respective division and in Seismic Category I raceways in Seismic Category I structures.	Inspection and analysis of the as-built electric power distribution system cables and raceways will be performed.	The [XXX System] Class 1E electric power distribution cables are routed within their respective division and in Seismic Category I raceways in Seismic Category I structures.
	<u>Tier 2 Section 14.3 Discussion</u> Section 8.x discusses the Class 1E power distribution cables and the respective Class 1E raceways. Raceways should not be shared between Class 1E and non-Class 1E cables. Raceways should also not be shared between Class 1E cables of multiple trains or divisions. Standards for Class 1E raceways are provided in IEEE Std 603 "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations," and IEEE Std 628 "IEEE Standard Criteria for the Design, Installation and Qualification of Raceway Systems for Class 1E Circuits for Nuclear Generating Stations. Standards for Class 1E Cables are provided in IEEE Std 323 "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations," and IEEE Std 383 "IEEE Standard for Qualifying Class 1E Electric Cables and Field Splices for Nuclear Power Generating Stations." IEEE Std 384 "IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits," provides guidance on the independence requirements for Class 1E cables and raceways.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
F01	**<u>As-Built Inspection</u>** Fire Protection System Tank Capacity *{For use in the case of separate FWSTs}*	Two separate firewater storage tanks (FWSTs) provide a dedicated volume of water for firefighting.	An inspection will be performed of the as-built FWSTs.	Each FWST provides a usable water volume dedicated for firefighting that is greater than or equal to 300,000 gallons.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 9.5.1 provides a discussion of how the site fire protection water supply system meets the guidance provided by Regulatory Guide 1.189 and applicable NFPA standards. Two separate 100 percent capacity dedicated capacity freshwater storage tanks are provided. An ITAAC inspection is performed to verify that the minimum usable water volume of each firewater storage tank is greater than or equal to [### gallons]. If the firewater storage tanks are also used as backup water sources for other non-fire emergencies, the ITAAC inspection verifies that the non-fire emergencies cannot drain the tank below the minimum dedicated useable water volume of 300,000 gallons required for firefighting.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
F02	**<u>As-Built Inspection</u>** Fire Protection System Water Source *{For a large common water supply}*	Two redundant and separated freshwater intake suctions sources, for the fire protection system fire pumps, are provided in one or more intake structures.	An inspection will be performed of the as-built freshwater intake suction sources.	Two or more redundant freshwater intake suction sources (1) are provided for the fire protection system fire pumps, and (2) are separated, such that the failure of one source will not result in failure of the other source.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Tier 2 Section 9.5.1 provides a discussion of how the site fire protection water supply system meets the guidance provided by Regulatory Guide 1.189 and applicable NFPA standards. An ITAAC inspection is performed to verify that two redundant and separated freshwater intake suction sources are available from a common water source in one or more intake structures. These sources are separated, so that failure of one source will not result in failure of the other source.			

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<tr><td rowspan="2">F03</td><td><u>As-Built Inspection</u>
Remote Shutdown Transfer Switches – Location</td><td>The remote shutdown transfer switches, to transfer control from the main control room to the [remote shutdown station] in the event of a main control room fire, are located in a fire area different than the main control room.</td><td>An inspection will be performed of the location of the as-built remote shutdown transfer switches.</td><td>The remote shutdown transfer switches are located in a fire area different than the main control room fire area.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section [7.4.x] provides a discussion of how the capability to transfer control from the main control room to the [remote shutdown station] exists in a fire area different than the main control room fire area.
An ITAAC inspection is performed of each remote shutdown transfer switch location to verify that the switch exists in a fire area different than the main control room fire area.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">F04</td><td><u>Preoperational Test</u>
Fire Protection System Pump Capacity</td><td>The fire protection system has a sufficient number of fire pumps to satisfy the flow demand for the largest sprinkler or deluge system plus an additional 500 gpm for fire hoses assuming failure of the largest fire pump or loss of off-site power.</td><td>i. An analysis will be performed of the as-built fire pumps.

ii. A test will be performed of the fire pumps.</td><td>i. A report exists and concludes that the fire pumps can provide the flow demand for the largest sprinkler or deluge system plus an additional 500 gpm for fire hoses assuming failure of the largest fire pump or loss of off-site power.

ii. Each fire pump delivers the design flow to the [Fire Water Distribution System], while operating in the fire-fighting alignment.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 9.5.1 provides a discussion of how the capacity of each [Fire Protection System] pump is adequate to supply a [insert criteria]. Section 9.5.1 provides the design flow of the fire pumps.
i. An analysis confirms that the as-built fire pumps provide the flow demand for the largest sprinkler or deluge system plus an additional 500 gpm for fire hoses assuming failure of the largest fire pump or loss of off-site power.
ii. In accordance with Section 14.2.x, a preoperational test demonstrates that each fire pump delivers the design flow to the [Fire Water Distribution System] while operating in the fire-fighting alignment.</td></tr>
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<tr><td rowspan="2">F05</td><td><u>As-Built Analysis</u>
Fire Protection Safe-Shutdown Capability</td><td>Safe-shutdown can be achieved assuming that all equipment in any one fire area (except for the main control room and containment) is rendered inoperable by fire damage and that reentry into the fire area for repairs and operator actions is not possible. An alternative shutdown capability that is physically and electrically independent of the main control room exists. Fire protection features for redundant shutdown systems in [primary reactor containment] exist to ensure that one shutdown division will be free of fire damage. Additionally, smoke, hot gases, or fire suppressant cannot migrate from the affected fire area into other fire areas to the extent that they could adversely affect safe-shutdown capabilities, including operator actions.</td><td>A safe-shutdown analysis of the as-built plant will be performed, including a post-fire safe-shutdown circuit analysis.</td><td>A safe-shutdown analysis report exists and concludes that:
• Safe-shutdown can be achieved assuming that all equipment in any one fire area (except for the main control room and containment) is rendered inoperable by fire and that reentry into the fire area for repairs and operator actions is not possible.
• Smoke, hot gases, or fire suppressant cannot migrate from the affected fire area into other fire areas to the extent that they could adversely affect safe-shutdown capabilities, including operator actions.
• Fire protection features for the redundant shutdown systems in [primary reactor containment] exist to ensure that one shutdown division will be free of fire damage.
• An independent alternative shutdown capability that is physically and electrically independent of the MCR exists.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Sections [9.x ,9.y, 9.z] discuss that (a) safe-shutdown can be achieved assuming that all equipment in any one fire area (except for the main control room and containment) is rendered inoperable by fire and that reentry into the fire area for repairs and operator actions is not possible (b) that smoke, hot gases, or fire suppressant cannot migrate from the affected fire area into other fire areas to the extent that they could adversely affect safe-shutdown capabilities, including operator actions, (c) that fire protection features for the redundant shutdown systems in [primary reactor containment] exist to ensure that one shutdown division will be free of fire damage, and (d) an independent alternative shutdown capability that is physically and electrically independent of the MCR exists.
A safe-shutdown analysis of the as-built plant will be performed, including a post-fire safe-shutdown circuit analysis performed in accordance with RG 1.189 [and NEI 00-01] for all possible fire-induced failures that could affect the safe-shutdown success path, including multiple spurious actuations.
The safe-shutdown analysis will verify that:
• Safe-shutdown can be achieved assuming that all equipment in any one fire area (except for the main control room and containment) is rendered inoperable by fire and that reentry into the fire area for repairs and operator actions is not possible.
• Smoke, hot gases, or fire suppressant cannot migrate from the affected fire area into other fire areas to the extent that they could adversely affect safe-shutdown capabilities, including operator actions.
• Fire protection features for the redundant shutdown systems in [primary reactor containment] ensure that one shutdown division will be free of fire damage.
• An independent alternative shutdown capability that is physically and electrically independent of the MCR exists.</td></tr>
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<tr><td rowspan="2">F06</td><td><u>As-Built Analysis</u>
Fire Hazards Analysis</td><td>A plant fire hazards analysis considers potential fire hazards and ensures the fire protection features in each fire area are suitable for the hazards.</td><td>A fire hazards analysis of the as-built plant will be performed.</td><td>A fire hazards analysis report exists and concludes that:
• Combustible loads and ignition sources are accounted for, and
• Fire protection features are suitable for the hazards they are intended for.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Appendix 9A discusses the methodology and presents the fire hazards analysis (FHA) for each fire area. The FHA must reflect the as-built configuration of the plant. The FHA is an analysis of the fire hazards, including combustible loading and ignition sources, and analysis of the fire protection features required to mitigate each postulated fire.
A fire hazards analysis of the as-built plant will be performed in accordance with RG 1.189, as described in Appendix 9A, for potential fires. The fire hazards analysis will verify that (1) combustible loads and ignition sources are accounted for, and (2) fire protection features are suitable for the hazards they are intended for.</td></tr>
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<tr><td rowspan="2">F07</td><td><u>As-Built Inspection and Analysis</u>
Post-Safe Shutdown Earthquake Fire Protection System Function</td><td>The fire protection system piping and components serving areas containing equipment required for safe plant shutdown are seismically qualified to withstand the effects of the safe shutdown earthquake (SSE) without loss of function or pressure boundary integrity. The seismic qualification extends to the [Fire Water Distribution System], fire pump(s), underground fire mains, and aboveground standpipe system(s) that serve the Fire Protection System standpipe(s) serving areas containing equipment required for safe plant shutdown in the event of an SSE.</td><td>An inspection and analysis will be performed of the as-built fire protection system piping and components serving areas containing equipment required for safe plant shutdown in the event of an SSE.</td><td>The fire protection system piping and components listed in [Table x.x.x-x] are seismically qualified to withstand the effects of the SSE without loss of function or pressure boundary integrity.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 9.x provides a discussion of how the fire protection system piping and components that serve areas containing equipment required for safe plant shutdown are seismically qualified to withstand the effects of the safe shutdown earthquake (SSE) without loss of function or pressure boundary integrity. The seismic qualification extends to the [Fire Water Distribution System], fire pump(s), underground fire mains, and aboveground standpipe system(s) that serve the Fire Protection System standpipe(s) serving areas containing equipment required for safe plant shutdown in the event of an SSE.
An inspection and analysis will be performed of the as-built fire protection system piping and components serving areas containing equipment required for safe plant shutdown to verify that the fire protection system piping and components are seismically qualified to withstand the effects of the SSE without loss of function or pressure boundary integrity.</td></tr>
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<tr><td rowspan="2">H01</td><td><u>Design Analysis</u>
Human Factors Engineering/Main Control Room Design</td><td>The Main Control Room design incorporates human factors engineering principles that reduce the potential for operator error.</td><td>An Integrated System Validation (ISV) test will be performed in accordance with the Verification and Validation Implementation Plan.</td><td>An Integrated System Validation Report exists and concludes that acceptance criteria associated with each test scenario are satisfied upon initial performance of the scenarios or upon remediation of failures.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 18.x describes the Integrated System Validation (ISV), which provides a comprehensive performance-based assessment of the design of the Human-System Interface (HSI) resources, based on their realistic operation within a simulator-driven main control room (MCR). The ISV is part of the overall Human Factors Engineering (HFE) program.
An ISV test is performed in accordance with the Verification and Validation Implementation Plan. The ISV uses a representative set of scenarios to assess the usability of the MCR and HSI resources and the tolerance of or susceptibility to error. The acceptance criteria associated with each test scenario are satisfied upon initial performance of the scenarios or upon remediation of failures.</td></tr>
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<tr><td rowspan="2">H02</td><td><u>As-Built Inspection</u>
Human Factors Engineering/Main Control Room</td><td>The as-built Main Control Room human-system interface is consistent with the final design specifications validated by the Integrated System Validation test.</td><td>An inspection will be performed of the as-built configuration of main control room Human System Interfaces.</td><td>The as-built configuration of main control room Human System Interfaces is consistent with the as-designed configuration of main control room Human System Interfaces as modified by the Integrated System Validation Report.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 18.x describes the implementation of HFE aspects of the plant design.
An ITAAC inspection is performed to verify that the as-built configuration of main control room Human System Interfaces is consistent with the as-designed configuration of main control room Human System Interfaces as modified by the Integrated System Validation Report.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">HB1</td><td><u>As-Built Inspection</u>
Fire and Smoke Barriers</td><td>Fire and smoke barriers provide confinement so that the impact from [internal fires, smoke, hot gases, fire suppressants] is contained within the [YYY structure] fire area of origin.</td><td>An inspection will be performed of the [YYY structure] as-built fire and smoke barriers.</td><td>The following [YYY structure] fire and smoke barriers exist in accordance with the [fire hazards analysis] and have been qualified for the fire rating specified in the [fire hazards analysis].
• Fire-rated doors
• Fire-rated penetration seals
• Fire-rated dampers
• Fire-rated walls, floors, and ceilings
• Smoke barriers</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 9.5 discusses that fire and smoke barriers separate: (1) Safety-related systems from any potential fires in nonsafety-related areas that could affect the ability of safety-related systems to perform their safety-related function. (2) Redundant divisions or trains of safety-related systems from each other to prevent damage that could adversely affect a safe shutdown function from a single fire. (3) Equipment within a single safety-related electrical division that present a fire hazard to equipment in another safety-related division. (4) Electrical circuits (safety-related and nonsafety-related) whose fire-induced failure could cause a spurious actuation that could adversely affect a safe shutdown function.
An ITAAC inspection is performed to verify that the following [YYY structure] as-built fire barriers and smoke barriers are installed in accordance with the [fire hazards analysis] and are qualified for the fire rating specified in the [fire hazards analysis].
• Fire-rated doors
• Fire-rated penetration seals.
• Fire-rated dampers
• Fire-rated walls, floors, and ceilings
• Smoke barriers
The objective of the inspection is to verify that the fire and smoke barriers meet the design requirements, location requirements, and that they are qualified for their intended use based upon visual inspection and review of the as-built drawings and qualification documentation.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">HB2</td><td><u>As-Built Inspection</u>
Internal Flood Protection/Flooding Barriers</td><td>Internal flooding barriers provide confinement so that the impact from internal flooding is contained within the [YYY structure] flooding area of origin.</td><td>An inspection will be performed of the [YYY structure] as-built internal flooding barriers.</td><td>The following [YYY structure] internal flooding barriers are installed and qualified for their intended use:
• [Watertight doors] as described in [Table x.x.x-x or Figure x.x.x-x].
• [Curbs and sills] as described in [Table x.x.x-x or Figure x.x.x-x].
• Walls as described in [Table x.x.x-x or Figure x.x.x-x].
• [Water tight penetration seals] as described in [Table x.x.x-x or Figure x.x.x-x].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.4.1.x discusses the features used to mitigate or eliminate the consequences of internal flooding, which include structural enclosures, barriers, curbs, sills, and watertight seals.
An ITAAC inspection is performed to verify that the following [YYY structure] as-built internal flooding barriers are installed and qualified per their design requirements:
• Watertight doors.
• Curbs and sills.
• Walls.
• Watertight penetration seals.
The objective of the inspection is to verify that the flooding barriers meet the design requirements, location requirements, and that they are qualified for their intended use based upon visual inspection and review of the as-built drawings and qualification documentation.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">HB3</td><td><u>As-Built Inspection</u>
Internal Flood Protection/ Equipment Submergence</td><td>Safety-related components located in the [YYY structure] are located above the internal design flood level or are qualified for submergence.</td><td>An inspection will be performed of the [YYY structure] as-built safety-related components.</td><td>The safety-related components located in the [YYY structure] are located above the internal design flood elevation of [xx ft.], or an [equipment qualification data package] concludes that the components are qualified for submergence.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Sections [3.9, 3.10 and 3.11] discuss the equipment qualification programs for components located in the [YYY structure] that are located below the internal design flood level.
An ITAAC inspection will be performed to verify that the as-built safety-related components are either (1) located above the compartment’s internal design flood level, or (2) qualified for submergence.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">HB4</td><td><u>As-Built Inspection</u>
External Flood Protection</td><td>The Seismic Category I [YYY structure] is protected against external flooding in order to prevent flooding of safety-related SSCs within the structure.</td><td>An inspection will be performed of the [YYY structure] as-built floor elevation at ground entrances.</td><td>The [YYY structure] floor elevation at ground entrances is higher than the maximum external flood elevation.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.4.1.x discusses that Seismic Category I structures that may be subjected to the design basis flood are designed to withstand the maximum external flood level to protect safe shutdown equipment within the structure.
An ITAAC inspection is performed to verify that the [YYY structure] as-built floor elevation at ground entrances is located above the maximum external flood elevation to protect the [YYY structure] from external flooding. The inspection will compare the maximum external flood elevation against the [YYY structure] as-built design drawings to verify that the required margin discussed in Section 3.4.1.x is met.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
HB5	**As-Built Inspection** External Flood Protection/Flooding Barriers	The Seismic Category I [YYY structure] structural walls or floors located below grade elevation are protected against external flooding in order to prevent flooding of safety-related SSC within the structure.	An inspection will be performed of the [YYY structure] as-built exterior flooding barriers.	The following [YYY structure] exterior flooding barriers are installed and qualified for their intended use: • [Water stops in expansion and construction joints located below design basis maximum flood or groundwater levels.] • [Waterproofing of exterior surfaces located below design basis maximum flood or groundwater levels.] • [Watertight seals in exterior wall or floor penetrations located below design basis maximum flood or groundwater levels.]
	Tier 2 Section 14.3 Discussion of ITAAC Implementation Section 3.4.1.x discusses that the [YYY structure] may be subjected to the design basis flood and is designed to withstand the design basis maximum flood levels and design basis groundwater levels. This is done by incorporating structural provisions into the plant design to protect the [YYY structure] from the postulated conditions. An ITAAC inspection is performed to verify that the following [YYY structure] as-built exterior flooding barriers are installed in accordance with the approved design: • [Water stops in expansion and construction joints located below design basis maximum flood or groundwater levels.] • [Waterproofing of exterior surfaces located below design basis maximum flood or groundwater levels.] • [Watertight seals in exterior walls or floors penetrations located below design basis maximum flood or groundwater levels.] The objective of the inspection is to verify the flooding barriers are installed in the required location and that they are qualified for their intended use by visual inspection and review of the as-built drawing(s) and the qualification documentation.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
I01	**<u>Design Analysis</u>** Software Lifecycle	The [XXX system] design and software are implemented using a quality process composed of the following software lifecycle phases, with each phase having outputs which satisfy the requirements of that phase. 1. [Phase Name 1]. 2. [Phase Name 2]. … … N. [Phase Name N].	i. An analysis will be performed of the output documentation of [Phase Name 1]. ii. An analysis will be performed of the output documentation of [Phase Name 2]. … … N. An analysis will be performed of the output documentation of [Phase Name N].	i. The output documentation of the [XXX system] [Phase Name 1] satisfies the requirements of [Phase Name 1]. ii. The output documentation of the [XXX system] [Phase Name 2] satisfies the requirements of [Phase Name 2]. … … N. The output documentation of the [XXX system] [Phase Name N] satisfies the requirements of [Phase Name N].
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> The purpose is to verify software implementation based on licensing commitments to 10 CFR Part 50, Appendix A, General Design Criterion 1 (Quality), Appendix B (Quality Assurance Criteria), BTP 7-14, Regulatory Guides 1.28, 1.152, 1.168, 1.169, 1.170, 1.171, 172, and 173, and the associated IEEE standards. The licensee shall perform analyses for each phase and generate technical reports to conclude that the lifecycle phases were implemented per the licensing commitments. Per Regulatory Guide 1.152, a generic waterfall software life cycle model consists of the following phases: (1) concepts, (2) requirements, (3) design, (4) implementation, (5) test, (6) installation, checkout, and acceptance testing, (7) operation, (8) maintenance, and (9) retirement. Representative output documentation is listed in BTP 7-14, Sections B.2.2, "Software Life Cycle Implementation," and B.2.3, "Software Life Cycle Process Design Output." For acceptance criteria guidance, see BTP 7-14, Sections B.3.2, "Acceptance Criteria for Implementation," and Section B.3.3, "Acceptance Criteria for Design Outputs." The ITAAC verifies that output documentation of each Software Lifecycle phase satisfies the requirements of that phase and that software were implemented per licensing commitments.			

<table>
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<tr><td rowspan="2">I02</td><td><u>Preoperational Test</u>
System Software Modification Restrictions</td><td>Protective measures are provided to restrict modifications to the [XXX system] software.</td><td>A test will be performed on the [XXX system] software.</td><td>Protective measures restrict modification to the [XXX system] software without proper authorization.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x discusses the protective measures that prevent modification of the [XXX system] software without proper authorization. Guidance on this issue is provided in DI&C-ISG-04 Revision 1, “Highly-Integrated Control Rooms – Communications Issues (HICRc)”, under interdivisional communications, staff position 10. Protective measures may include requiring a physical cable disconnect, or a keylock, which can physically open the data transmission circuit or interrupt the hardwired logic connection.
In accordance with Section 14.2.x, a preoperational test demonstrates that protective measures restrict modification to the [XXX system] software without proper authorization. This test will be performed by attempting to modify the software without authorization.</td></tr>
</table>

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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">I03</td><td><u>As-Built Inspection</u>
Class 1E Instrumentation and Control Circuits Physical Separation</td><td>Physical separation exists between the redundant divisions of the [XXX system] Class 1E instrumentation and control current-carrying circuits, and between Class 1E instrumentation and control current-carrying circuits and non-Class 1E instrumentation and control current-carrying circuits.</td><td>An inspection will be performed of the [XXX system] Class 1E as-built instrumentation and control current-carrying circuits.</td><td>i. Physical separation between redundant divisions of [XXX system] Class 1E instrumentation and control current-carrying circuits is provided by a minimum separation distance, or by barriers (where the minimum separation distances cannot be maintained), or by a combination of separation distance and barriers.

ii. Physical separation between [XXX system] Class 1E instrumentation and control current-carrying circuits and non-Class 1E instrumentation and control current-carrying circuits is provided by a minimum separation distance, or by barriers (where the minimum separation distances cannot be maintained), or by a combination of separation distance and barriers.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x discusses the independence of [XXX system] Class 1E instrumentation and control current-carrying circuits per the guidance of Regulatory Guide 1.75, which endorses IEEE Std. 384-1992. Physical separation is provided to maintain the independence of Class 1E instrumentation and control current-carrying circuits so that the safety functions required during and following any design basis event can be accomplished. Minimum separation distance (as defined in IEEE Std. 384-1992), or barriers or any combination thereof may achieve physical separation as specified in IEEE Std. 384-1992.
Section 7.x discussion includes the separation of fiber-optic cables addressed in IEEE Std. 384-2008. Per IEEE Std. 384-2008, there is no minimum separation distance criterion between Class 1E circuits (target) and fiber-optic circuits (source).
Separate ITAAC inspections are performed to verify the independence provided by physical separation and the independence provided by electrical isolation. This ITAAC verifies the independence of Class 1E current-carrying circuits by physical separation. An ITAAC inspection is performed of physical separation of the [XXX system] Class 1E current-carrying circuits. The physical separation ITAAC inspection results verify that the following physical separation criteria are met:
i. Physical separation between redundant divisions of [XXX system] Class 1E instrumentation and control current-carrying circuits is provided by a minimum separation distance, or by barriers (where the minimum separation distances cannot be maintained), or by a combination of separation distance and barriers; and such physical separation satisfies the criteria of Regulatory Guide 1.75. The configuration of each as-built barrier agrees with its associated as-built drawing.
ii. Physical separation between [XXX system] Class 1E instrumentation and control current-carrying circuits and non-Class 1E instrumentation and control current-carrying circuits is provided by a minimum separation distance, or by barriers (where the minimum separation distances cannot be maintained), or by a combination of separation distance and barriers; and such physical separation satisfies the criteria of Regulatory Guide 1.75. The configuration of each as-built barrier agrees with its associated as-built drawing.</td></tr>
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<tr><td rowspan="2">I04</td><td><u>As-Built Inspection</u>
Class 1E Instrumentation and Control Circuits Electrical Isolation</td><td>Electrical isolation exists between the redundant divisions of the [XXX system] Class 1E instrumentation and control circuits, and between Class 1E instrumentation and control circuits and non-Class 1E instrumentation and control circuits to prevent the propagation of credible electrical faults.</td><td>An inspection will be performed of the [XXX system] Class 1E as-built instrumentation and control circuits.</td><td>i. Class 1E electrical isolation devices are installed between redundant divisions of [XXX system] Class 1E instrumentation and control circuits.

ii. Class 1E electrical isolation devices are installed between [XXX system] Class 1E instrumentation and control circuits and non-Class 1E instrumentation and control circuits.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x discusses the independence of [XXX system] Class 1E instrumentation and control circuits per the criteria of Regulatory Guide 1.75, which endorses IEEE Std. 384-1992. Electrical isolation is provided between the redundant divisions of the [XXX system] Class 1E instrumentation and control circuits, and between Class 1E instrumentation and control circuits and non-Class 1E instrumentation and control circuits by Class 1E isolation devices so a failure in an instrumentation and control circuit does not prevent safety-related function completion in a different Class 1E instrumentation and control circuit.
An ITAAC inspection is performed to verify the following electrical isolation criteria are met:
i. Class 1E electrical isolation devices that satisfy the criteria of Regulatory Guide 1.75 are installed between redundant divisions of [XXX system] Class 1E instrumentation and control circuits.
ii. Class 1E electrical isolation devices that satisfy the criteria of Regulatory Guide 1.75 are installed between [XXX system] Class 1E instrumentation and control circuits and non-Class 1E instrumentation and control circuits.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">I05</td><td><u>Preoperational Test</u>
Communication Independence Between Redundant Class 1E Digital Communication Divisions</td><td>Independence exists between redundant divisions of the [XXX system] Class 1E digital communications system.</td><td>A test will be performed of the [XXX system] Class 1E digital communications system.</td><td>Independence between redundant divisions of the [XXX system] Class 1E digital communications system is provided.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x discusses the communication independence between redundant Class 1E digital communication system divisions. The purpose is to verify proper data isolation between redundant divisions. Requirements for independence are given in IEEE Std. 603-1991. Guidance for providing independence between redundant divisions of the Class 1E digital communication system is provided in Digital Instrumentation and Controls Interim Staff Guidance (ISG) 04, and Standard Review Plan (SRP) Section 7.9.
In accordance with Section 14.2.x, a preoperational test demonstrates that independence between redundant divisions of the [XXX system] Class 1E digital communications system is provided.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">I06</td><td><u>Preoperational Test</u>
Communication Independence Between Class 1E Digital Communications Systems and non-Class 1E Digital Communications Systems</td><td>Independence exists between the [XXX system] Class 1E digital communications system and non-Class 1E digital communications systems.</td><td>A test will be performed of the [XXX system] Class 1E digital communications system.</td><td>Independence between the [XXX system] Class 1E digital communications system and non-Class 1E digital communications systems is provided.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x discusses the communication independence between Class 1E digital communication systems and non-Class 1E digital communication systems. The purpose is to verify that logical or software malfunction of the nonsafety-related system cannot affect the functions of the safety system. Requirements for independence are given in IEEE Std. 603-1991. Guidance for providing independence between the Class 1E digital communication system and non-Class 1E digital communication systems is provided in Digital Instrumentation and Controls Interim Staff Guidance (ISG) 04, and Standard Review Plan (SRP) Section 7.9.
In accordance with Section 14.2.x, a preoperational test demonstrates that independence between the [XXX system] Class 1E digital communications system and non-Class 1E digital communications systems is provided.</td></tr>
</table>

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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">I07</td><td><u>Preoperational Test</u>
Protection System - Automatic Reactor Trip Signal Initiation</td><td>The [Protection System] automatically initiates a reactor trip signal.</td><td>A test will be performed of the [Protection System].</td><td>A reactor trip signal is automatically initiated for each reactor trip function listed in [Table x.x.x-x].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x describes automatic and manual reactor trips, variables that are monitored to provide input into automatic reactor trip signals, and the features of the reactor trip system. The reactor trip functions are listed in Table 7.x-x and are discussed in Section 7.x. The reactor trip logic for the monitored variables is provided in Table 7.x-x.
The actuation logic for each reactor trip function is discussed in Section 7.x, as well as the input variables for each trip signal. The [Protection System] initiates an automatic reactor trip signal when the associated plant condition(s) exist.
In accordance with Section 14.2.x, a preoperational test demonstrates that a reactor trip signal is automatically initiated for each reactor trip function listed in [Tier 1 Table x.x.x-x].
[NOTE: The test method to verify how a reactor trip signal is initiated will be described here. The test method is dependent upon the system design.]
The actuation of reactor trip switchgear is not required for this test. The verification of the existence of a reactor trip signal is accomplished using [main control room displays].</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">I08</td><td><u>Preoperational Test</u>
Protection System - Automatic ESF Signal Initiation</td><td>The [Protection System] automatically initiates an engineered safety feature actuation signal.</td><td>A test will be performed of the [Protection System].</td><td>An engineered safety feature actuation signal is automatically initiated for each ESF function listed in [Table x.x.x-x].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x describes automatic and manual engineered safety features actuations, variables that are monitored to provide input into automatic engineered safety features signals, and the features of the engineered safety feature systems. The engineered safety features functions are listed in Table 7.x-x and are discussed in Section 7.x. The engineered safety features logic for the monitored variables is provided in Table 7.x-x.
The actuation logic for each engineered safety feature function is discussed in Section 7.x, as well as the input variables for each actuation signal. The [Protection System] initiates an automatic engineered safety feature actuation signal when the associated plant condition(s) exist.
In accordance with Section 14.2.x, a preoperational test demonstrates that an automatic engineered safety feature actuation signal is automatically initiated for each of the ESF functions listed in [Tier 1 Table x.x.x-x].
[NOTE: The test method to verify the initiation of each engineered safety feature actuation signal will be described here. The test method is dependent upon the system design. ESF equipment operation is not required for this test.]
The actuation of engineered safety features equipment is not required for this test. The verification of the existence of an engineered safety feature actuation signal is accomplished using [main control room displays].</td></tr>
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<tr><td rowspan="2">I09</td><td><u>Preoperational Test</u>
Protection System - Automatic Reactor Trip Actuation</td><td>The [Protection System] automatically actuates a reactor trip.</td><td>A test will be performed of the [Protection System].</td><td>The reactor trip breakers open upon an injection of a single simulated [Protection System] reactor trip signal.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x describes automatic and manual reactor trips, variables that are monitored to provide input into automatic reactor trip signals, and the features of the reactor trip system. The reactor trip functions are listed in Table 7.x-x and are discussed in Section 7.x.
The [Protection System] initiates an automatic reactor trip signal for the reactor trip functions when the associated plant condition(s) exist. The actuation logic for each reactor trip function is discussed in Section 7.x, as well as the input variables for each trip signal.
In accordance with Section 14.2.x, a preoperational test demonstrates that the reactor trip breakers open when any one of the automatic reactor trip functions is initiated from the main control room. The reactor trip breakers are only opened once to satisfy this test objective.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">I10</td><td><u>Preoperational Test</u>
Protection System - Automatic Engineered Safety Feature (ESF) Equipment Actuation</td><td>The [Protection System] automatically actuates the engineered safety feature equipment.</td><td>A test will be performed of the [Protection System].</td><td>The engineered safety feature equipment automatically actuates to perform its safety-related function listed in [Table x.x.x-x] upon an injection of a single simulated [Protection System] signal.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x describes automatic engineered safety features actuation, variables that are monitored to provide input into automatic engineered safety features signals, and the features of the engineered safety feature system. The engineered safety features functions are listed in Table 7.x-x and are discussed in Section 7.x.
The [Protection System] initiates an automatic engineered safety feature actuation signal for the functions listed in [Tier 1 Table x.x.x-x] when the associated plant condition(s) exist. The actuation logic for each engineered safety feature function is discussed in Section 7.x, as well as the input variables for each actuation signal.
In accordance with Section 14.2.x, a preoperational test demonstrates that engineered safety feature equipment automatically actuates to perform its safety-related function listed in [Tier 1 Table x.x.x-x] upon an injection of a single simulated [Protection System] signal.
[NOTE: The test method to verify an engineered safety feature actuation will be described here. The test method is dependent upon the system design.]</td></tr>
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<tr><td rowspan="2">I11</td><td><u>Preoperational Test</u>
Protection System - Manual Reactor Trip Actuation</td><td>The [Protection System] manually actuates a reactor trip.</td><td>A test will be performed of the [Protection System].</td><td>The reactor trip breakers open when a reactor trip is manually initiated from the main control room.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x describes automatic and manual reactor trips, variables that are monitored to provide input into automatic reactor trip signals, and the features of the reactor trip system. A manual reactor trip is one of the [Protection System] manually actuated functions.
In accordance with Section 14.2.x, a preoperational test demonstrates that the reactor trip breakers open when a reactor trip is manually initiated from the main control room.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">I12</td><td><u>Preoperational Test</u>
Protection System - Manual Engineered Safety Feature (ESF) Equipment Actuation</td><td>The [Protection System] manually actuates the engineered safety feature equipment.</td><td>A test will be performed of the [Protection System].</td><td>The [Protection System] actuates the engineered safety feature equipment to perform its safety-related function listed in [Table x.x.x-x] when manually initiated.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x describes manual engineered safety features actuation, variables that are monitored to provide input into automatic engineered safety features signals, and the features of the engineered safety feature system. The engineered safety features functions that can be manually actuated are listed in Table 7.x-x and are discussed in Section 7.x.
In accordance with Section 14.2.x, a preoperational test demonstrates that the [Protection System] actuates the engineered safety feature equipment to perform its safety-related function listed in [Tier 1 Table x.x.x-x] when manually initiated.</td></tr>
</table>

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<tr><td rowspan="2">I13</td><td><u>Preoperational Test</u>
Protection System - Reactor Trip Verification</td><td>The reactor trip logic fails to a safe state such that loss of electrical power to a [Protection System] division results in a reactor trip state for that division.</td><td>A test will be performed of the [Protection System].</td><td>Loss of electrical power in a division results in a reactor trip state for that division.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x describes the [Protection System] reactor trip logic. Guidance provided in SRP Appendix 7.1-C, Section 5.5, “System Integrity,” states that the design provides for safety systems to fail in a safe state.
In accordance with Section 14.2.x, a preoperational test demonstrates that when the loss of electrical power is detected in a division of the [Protection System], that division fails to a safe state resulting in a reactor trip state for that division.</td></tr>
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<tr><td rowspan="2">I14</td><td><u>Preoperational Test</u>
Protection System - Engineered Safety Features (ESF) Actuation Verification</td><td>The engineered safety features logic fails to a safe state such that loss of electrical power to a [Protection System] division results in a predefined safe state for that division.</td><td>A test will be performed of the [Protection System].</td><td>Loss of electrical power in a division results in a predefined safe state for that division, and the ESF components remain in or assume their predefined safe state as identified in [Table x.x.x-x].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x describes the [Protection System] engineered safety features logic. Guidance provided in SRP Appendix 7.1-C, Section 5.5, “System Integrity,” states that the design provides for safety systems to fail in a safe state. Engineered safety feature (ESF) functions should fail to a predefined safe state. For many ESF functions this predefined safe state will be that the actuated component remains as-is.
In accordance with Section 14.2.x, a preoperational test demonstrates that when the loss of electrical power is detected in a division of the [Protection System], the engineered safety features results in a predefined safe state for that division, and the ESF components remain in or assume their predefined safe state as identified in [Tier 1 Table x.x.x-x].</td></tr>
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<tr><td rowspan="2">I15</td><td><u>Preoperational Test</u>
Protection System - Completion of Protective Actions</td><td>A [Protection System] signal once initiated (automatically or manually), results in an intended sequence of protective actions that continue until completion, and requires deliberate operator action in order to return the safety systems to normal.</td><td>A test will be performed of the [Protection System] reactor trip and engineered safety features signals.</td><td>i. Upon initiation of a real or simulated [Protection System] [reactor trip signal], the reactor trip breakers open and do not automatically close when the [Protection System] signal is reset.

ii. Upon initiation of a real or simulated [Protection System] [engineered safety feature actuation signal], the engineered safety features (ESF) equipment actuates to perform its safety-related function and continues to maintains its safety-related position and perform its safety-related function when the [Protection System] signal is reset.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x describes compliance with requirements for completion of protective actions, which requires that, once initiated, the reactor trip and ESF proceed to completion and remain in their required position/condition until the actuation system is reset and operator action is taken.
In accordance with Section 14.2.x, a preoperational test demonstrates that:
i. Upon a [Protection System] reactor trip signal, the reactor trip breakers open and do not automatically close when the [Protection System] reactor trip signal is reset.
ii. Upon a [Protection System] engineered safety feature actuation signal, the ESF equipment actuates to perform its safety-related function and continues to maintain its safety-related position and perform its safety-related function when the [Protection System] signal is reset.</td></tr>
</table>

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<tr><td rowspan="2">I16</td><td><u>Preoperational Test</u>
Protection System - Response Time Testing of Reactor Trip and ESF Equipment Actuation</td><td>The [Protection System] response times from sensor output through equipment actuation for the reactor trip functions and engineered safety feature functions are less than or equal to the value required to satisfy the design basis safety analysis response time assumptions.</td><td>A test will be performed of the [Protection System].</td><td>The [Protection System] reactor trip functions and engineered safety features functions listed in [Table x.x.x-x] have response times that are less than or equal to the design basis safety analysis response time assumptions.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 7.x describes the signals and initiating logic for each reactor trip and required response times. Reactor trip response time is defined in Technical Specification Section 1.1 Definitions as [The RTS RESPONSE TIME is that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage.]
In accordance with Section 14.2.x, a preoperational test demonstrates that the measured time for the reactor trip functions listed in [Tier 1 Table x.x.x-x] is less than or equal to the maximum values assumed in the accident analysis. Technical Specification Section 1.1 Definitions states that [the response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.].

Section 7.x describes the signals and initiating logic for each engineered safety feature and the required response times. Engineered safety feature response time is defined in Technical Specification Section 1.1 Definitions as [The ESF RESPONSE TIME is that time interval from when the monitored parameter exceeds its actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.).]
In accordance with Section 14.2.x, a preoperational test demonstrates that the measured time for the engineered safety feature functions listed in [Tier 1 Table x.x.x-x] is less than or equal to the maximum values assumed in the accident analysis. Technical Specification Section 1.1 Definitions states that the [response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured].</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
I17	**<u>Preoperational Test</u>** Protection System - Operating Bypasses	The [Protection System] automatically removes the [operating bypasses] of the reactor trip and engineered safety feature actuation system when the permissive conditions are not met; and automatically inserts the [operating bypasses] when the permissive conditions are met.	A test will be performed of the [Protection System].	The [Protection System] [operating bypasses] listed in [Table x.x.x-x] are automatically removed when a test signal simulates that the associated permissive condition is not met; and are automatically inserted when a test signal simulates that the associated permissive condition is met.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> NOTE: The term “block” may be used as an alternate term to “operating bypasses” in specific designs. Section 7.x describes [Protection System] operating bypasses for reactor trip functions. Section 7.x describes [Protection System] operating bypasses for engineered safety feature actuations. The operating bypasses are applied automatically when plant conditions dictate that the safety function is not needed, or that the safety function prevents proper plant operation at a specific mode of operation. In accordance with Section 14.2.x, a preoperational test demonstrates that the [Protection System] [operating bypasses] are automatically removed when a test signal simulates that the associated permissive condition is not met; and are automatically inserted when the test signal simulates that the associated permissive condition is met.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
I18	**<u>Preoperational Test</u>** Protection System - Maintenance Bypasses	The [Protection System] is capable of performing its safety-related functions when one of its [channels or divisions] is placed in maintenance bypass.	A test will be performed of the [Protection System].	Each [Protection System] [channel or division] [two-out-of-four] coincidence logic reverts to a [two-out-of-three] coincidence logic when the [channel or division] is placed in maintenance bypass.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 7.1.x describes the [Protection system] maintenance bypass operation mode. An individual [channel or division] can be placed in a maintenance bypass operation mode to allow manual testing and maintenance during power operation, while ensuring that the minimum redundancy required by the Technical Specifications is maintained. When a [Protection system] [channel or division] with [two-out-of-four] coincidence logic is placed in maintenance bypass operation, the logic of the reactor trip function reverts to a [two-out-of-three] coincidence logic and the logic of an engineered safety features function reverts to a [two-out-of-three] coincidence logic. The reactor trip functions are listed in Table 7.x-x and are discussed in Section 7.x. The engineered safety features signals are listed in Table 7.x-x and are discussed in Section 7.x. In accordance with Section 14.2.x, a preoperational test demonstrates that each [Protection system] [channel or division] [two-out-of-four] coincidence logic reverts to a [two-out-of-three] coincidence logic when the [channel or division] is placed in maintenance bypass. Each [channel or division] of the reactor trip functions listed in Table 7.x-x and each [channel or division] of the engineered safety features signals listed in Table 7.x-x is tested by placing the [channel or division] in maintenance bypass and verifying the resultant coincidence logic is [two-out-of-three].			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
I19	**<u>Preoperational Test</u>** Protection System - Bypass Indication	Bypassed and inoperable [Protection system] indications are indicated in the main control room.	A test will be performed of the [Protection system] [channels or divisions].	Each bypassed or inoperable [Protection system] [channel or division] is indicated in the main control room.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 7.x describes the [Protection System] maintenance bypass operation mode. An individual [channel or division] can be placed in a maintenance bypass operation mode to allow manual testing and maintenance during power operation, while ensuring that the minimum redundancy required by the Technical Specifications is maintained. Section 7.x discusses the bypassed and inoperable status indication of [Protection System] [channels or divisions] placed in maintenance bypass operation mode. In accordance with Section 14.2.x, a preoperational test demonstrates that each bypassed or inoperable [Protection System] [channel or division] is indicated in the main control room.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
I20	**Preoperational Test** Protection System – Interlocks	The [Protection System] interlocks function as required when associated conditions are met.	A test will be performed of the [Protection System].	The [Protection System] interlocks listed in [Table x.x.x-x] function as required when test signals simulate that the associated conditions are met.
	Tier 2 Section 14.3 Discussion of ITAAC Implementation Section 7.x describes [Protection System] interlocks that reduce the probability of occurrence of specific events, or maintain safety systems in a state that provides reasonable assurance of their availability. Interlocks are applied automatically when plant conditions dictate that the safety function is not needed, or that the safety function prevents proper plant operation at a specific mode of operation. When plant conditions dictate that an interlock be activated, the interlock signal is generated by the [Protection System]. When plant conditions are such that an interlock can be removed, the [Protection System] removes the interlock signal which allows the actuator to be influenced by other control systems. In accordance with Section 14.2.x, a preoperational test demonstrates that the [Protection System] interlocks listed in [Tier 1 Table x.x.x-x] function as required when test signals simulate that the associated conditions are met.			

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">I21</td><td><u>Vendor Test</u>
Protection System - Self-Testing Features</td><td>The [Protection System] self-test features detect faults in the system and provide an alarm in the main control room and [remote shutdown station].</td><td>A vendor test will be performed of the [Protection System].</td><td>A report exists and concludes that:
• Self-testing features verify that faults requiring detection are detected.
• Self-testing features verify that upon detection, the system responds according to the type of fault.
• Self-testing features verify that faults are detected and responded to within a sufficient timeframe to ensure safety function is not lost.
• The presence and type of fault is indicated by the [Protection System] alarms and displays.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
This ITAAC is intended to address self-testing features credited towards surveillance or other operational testing. Given the nature of this ITAAC, it is acceptable to verify ITAAC completion during the factory acceptance testing (FAT). Self-testing features include, but are not limited to, watchdog timers, automated channel checks, and signal input comparisons.
Section 7.x discusses the self-testing features of the [Protection system], including the types of faults that should be detected, the system responses to such faults, the required response times, and the ability for alarms and displays in the main control room and remote shutdown system to provide indication of such faults' existence. Branch Technical Position (BTP) 7-17 provides guidance on self-testing and surveillance test provisions.
These tests of the [Protection system] self-testing features ensure that a) faults requiring detection are detected, b) the system responds appropriately to each fault based on the type of fault, c) the response occurs within a sufficient timeframe to ensure safety function is not lost, and d) that alarms and indications that will be located in the main control room and remote shutdown station indicate the type of fault present.
A vendor test demonstrates and a report exists and concludes that:
• Self-testing features verify that faults requiring detection are detected.
• Self-testing features verify that upon detection, the system responds according to the type of fault.
• Self-testing features verify that faults are detected and responded to within a sufficient timeframe to ensure safety function is not lost.
• Self-testing features verify that detected faults are indicated by alarms and displays.</td></tr>
</table>

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">I22</td><td><u>Preoperational Test</u>
Main Control Room and [Remote Shutdown Station] Displays and Alarms</td><td>The [XXX system] Displays and Alarms identified by the human factors engineering process are indicated on the [XXX system] operator workstation in the main control room (MCR) and [remote shutdown station (RSS)].</td><td>i. An inspection will be performed for the ability to retrieve the [XXX system] as-built displays and alarms on the operator workstations in the MCR.

ii. An inspection will be performed for the ability to retrieve the [XXX system] as-built displays and alarms on the operator workstation in the [RSS].</td><td>i. The [XXX system] displays and alarms listed in [Table x.x.x-x] are retrieved and displayed on the operator workstations in the MCR.

ii. The [XXX system] displays and alarms listed in [Table x.x.x-x] are retrieved and displayed on the operator workstation in the [RSS].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
[Section x.x] describes the [XXX system] Displays and Alarms indicated on the operator workstations in the MCR and [RSS].
An inspection for the ability to retrieve and display the various system parameters and alarms at the as-built operator work stations in the main control room and [remote shutdown station] will be performed. [The intent is to verify that the displays and alarms function during testing of the integrated as-built system; however, separate testing of the actual operation of the system alarms and displays using simulated signals may be acceptable where this is not practical.]</td></tr>
</table>

<table>
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<tr><td rowspan="2">I23</td><td><u>Preoperational Test</u>
Controls Located on the Operator Workstations in the Main Control Room and [Remote Shutdown Station] Controls</td><td>The [XXX system] controls located on the operator workstations in the main control room (MCR) and [remote shutdown station (RSS)] operate to perform their required function(s).</td><td>i. Tests will be performed of the [XXX system] controls on the operator workstations in the MCR.

ii. Tests will be performed of the [XXX system] controls on the operator workstation in the [RSS].</td><td>i. The [XXX system] controls provided on the operator workstations in the MCR perform the functions listed in [Table x.x.x-x].

ii. The [XXX system] controls provided on the operator workstation in the [RSS] perform the functions listed in [Table x.x.x-x].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
[Section x.x] describes the [XXX system] controls on the [XXX] operator workstations in the MCR and [RSS].
In accordance with Section 14.2.x, a preoperational test will be performed to verify the [XXX system] components can be manually operated from the operator workstations in the main control room and [remote shutdown station].</td></tr>
</table>

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">I24</td><td><u>As-Built Inspection</u>
Spatially Dependent Sensors</td><td>The [Protection System] is provided with the minimum number and locations of spatially dependent sensors that monitor protective variables.</td><td>An inspection will be performed of the as-built spatially dependent sensors.</td><td>The minimum number of spatially dependent sensors that provide input into the [Protection System] are installed at the locations specified in [Table x.x.x-x].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section [x.x] discusses spatially dependent sensors, i.e., where the variable varies as a function of position in a particular region, and the minimum number and location of the sensors. Guidance provided in SRP, Appendix 7.1-C, “Guidance for Evaluation of Conformance to IEEE Std. 603,” Section 4, discusses Clause 4.6 of IEEE Std. 603-1991, and states that the applicant’s analysis should demonstrate that the number and location of sensors are adequate.
This ITAAC verifies that the minimum number of spatially dependent sensors that provide input into the [Protection System] are installed at the locations specified in [Tier 1 Table x.x.x-x].</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">I25</td><td><u>As-Built Inspection</u>
Protection System Reactor Trip Breakers Installation and Arrangement.</td><td>The reactor trip breakers are lubricated, installed, and arranged in order to successfully accomplish the reactor trip function under design conditions.</td><td>An inspection of the as-built reactor trip breakers, including the connections for the shunt and undervoltage trip mechanism and auxiliary contacts, will be performed.</td><td>The reactor trip breakers are lubricated, have the proper connections for the shunt and undervoltage trip mechanisms and auxiliary contacts, and are arranged as shown in [Figure x.x.x-x] to successfully accomplish the reactor trip function under design conditions.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion</u>
Section 7.x discusses the arrangement of the protection system reactor trip breakers. Figure 7.x-x provides the arrangement of the reactor trip breakers. This ITAAC inspection verifies that the reactor trip breakers conform to the arrangement indicated in the Tier 1 design figure in order to support breaker operation (such as 2 out of 4 voting) and testing for various combinations of trip signals. In addition, the ITAAC inspection verifies correct installation of the reactor trip breakers including, but not limited to: (1) lubrication (an issue during the Salem ATWS event) and (2) proper connection of the shunt and undervoltage trip mechanisms and other auxiliary contacts.</td></tr>
</table>

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">M01</td><td><u>As-Built Inspection</u>
Reactor Pressure Vessel Surveillance Specimen Guide Baskets</td><td>The reactor pressure vessel (RPV) is provided with irradiation specimen guide baskets to hold a capsule containing RPV material surveillance specimens.</td><td>An inspection will be performed of the as-built reactor pressure vessel irradiation specimen guide baskets.</td><td>[###] guide baskets are installed in the reactor vessel beltline region [as shown in Figure x.x.x-x or description of capsule locations].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 5.3.x, Material Surveillance, discusses the use of specimen capsules installed in specimen guide baskets.
An ITAAC inspection is performed to verify that the correct number of guide baskets are installed in the reactor pressure vessel beltline region at the locations [as shown in Tier 1 Figure x.x.x-x or description of capsule locations].</td></tr>
</table>

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">M02</td><td><u>Preoperational Test and As-Built Inspection</u>
Reactor Pressure Vessel Internals Flow Induced Vibration</td><td>The reactor pressure vessel internals withstand the effects of flow-induced vibration.</td><td>A pre-test inspection, hot functional flow test, and post-test inspection will be performed on the reactor pressure vessel internals.</td><td>The reactor pressure vessel internals have no observable damage or loose parts after hot functional testing.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.9.x, describes the flow-induced vibration testing and assessment of the dynamic response of the reactor vessel internals to flow-induced vibration. The reactor internals are inspected prior to and at the completion of pre-core load hot functional testing. Testing of the reactor internals for flow-induced vibration is performed during pre-core load hot functional testing using the guidance of Regulatory Guide 1.20, “Comprehensive Vibration Assessment Program for Reactor Internals During Preoperational and Initial Startup Testing.”
In accordance with Section 14.2.x, a preoperational test verifies that flow induced vibration during hot functional testing does not result in observable damage or loose parts to the reactor pressure vessel internals.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M03	**<u>As-Built Inspection and Analysis Steam Dryer</u>** Flow Induced Vibration *{BWR ONLY}*	The steam dryer withstands the effects of flow-induced vibration.	i. An as-built inspection and analysis will be performed of the steam dryer pressure sensors installed for startup testing. ii. An as-built inspection and analysis will be performed of the steam dryer strain gages and accelerometers installed for startup testing. iii. A Fatigue Analysis will be performed of the as-built steam dryer using an NRC-approved methodology that conforms to Regulatory Guide 1.20 Revision 4 (or a later revision). iv. An as-built inspection and analysis will be performed to verify the acoustic resonance of the as-built main steam lines and SRV/SV branch piping for normal plant operating conditions.	i. The number and location of steam dryer pressure sensors will ensure accurate pressure predictions at the steam dryer critical locations. ii. The number and location of steam dryer strain gages and accelerometers are sufficient to: • Monitor the most highly stressed steam dryer components based on the as-built frequency analysis. • Identify potential steam dryer rocking and measure the accelerations resulting from the support and vessel movements. iii. The maximum calculated alternating stress intensity provides a Minimum Alternating Stress Ratio of [2.0] to the allowable alternating stress intensity of 93.7 MPa (13,600 psi). iv. The main steam line and SRV/SV branch-piping geometry precludes first and second shear layer wave acoustic resonance conditions from occurring at normal plant operating conditions.

<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>

Inspections and analysis are performed to support installing test equipment to monitor the steam dryer during critical operations, to perform a Fatigue Analysis of the as-built steam dryer, and to evaluate the acoustic resonance of the as-built main steam lines and SRV/SV branch piping during normal operation.

[The appropriate Minimum Alternating Stress Ratio for the BWR steam dryer to include in Acceptance Criterion iii will depend on the reactor design.]

[Revision 4 to Regulatory Guide 1.20 should be specified in ITAAC M03 to help support justification for the absence of the need for a Tier 2* item for steam dryer pressure load analysis methodology in the design certification rulemaking.]

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">M04</td><td><u>Preoperational Test</u>
Safety-Related Pump Capacity</td><td>The [XXX system] safety-related pumps provide the design flow for removing design heat loads.</td><td>A test will be performed of the [XXX system] safety-related pumps.</td><td>Each [XXX system] safety-related pump listed in [Table x.x.x-x] provides the design flow for removing design heat loads, while the system is aligned in an emergency operating lineup.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section [x.x] discusses the [XXX system] safety-related pumps. These pumps provide required flow to safety-related components to remove design heat loads, while operating in an emergency operating lineup. Section [x.x] provides the required flow to the safety-related components.
In accordance with Section 14.2.x, a preoperational test demonstrates that each [XXX system] safety-related pump listed in [Tier 1 Table x.x.x-x] provides the design flow for removing design heat loads, while the system is aligned in an emergency operating lineup.</td></tr>
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<tr><td rowspan="2">M05</td><td><u>Preoperational Test</u>
Safety-Related Pump NPSH</td><td>The [XXX system] safety-related pumps have a net positive suction head available (NPSHA) that is greater than or equal to their net positive suction head required (NPSHR).</td><td>A test will be performed of the [XXX system] safety-related pumps.</td><td>Each [XXX system] safety-related pump listed in [Table x.x.x-x] has a NPSHA that is greater than or equal to the NPSHR while the system is aligned in an emergency operating lineup.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
The NPSH required by a pump must be less than or equal to the NPSH available under all operating conditions to prevent cavitation of the pump.
In accordance with Section 14.2.x, a preoperational test demonstrates that the NPSH available to each [XXX system] safety-related pump listed in [Tier 1 Table x.x.x-x] is greater than or equal to the required NPSH while the system is aligned in an emergency operating lineup. By design, this verifies that the pump has NPSHA greater than or equal to the NPSHR under the limiting design conditions (i.e., temperature, pressure, flow, strainer blockage). Preoperational test conditions are established that approximate design conditions to the extent practical, consistent with preoperational test limitations.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M06	**<u>Preoperational Test</u>** Safety-Related Valve Operation	The [XXX system] safety-related valves change position under design-basis temperature, differential pressure, and flow conditions.	A diagnostic stroke test will be performed of the [XXX system] safety-related valves under preoperational temperature, differential pressure, and flow conditions.	Each [XXX system] safety-related valve listed in [Table x.x.x-x] strokes fully open and fully closed by remote operation (or manual operation if a manually operated valve) under preoperational temperature, differential pressure, and flow conditions with sufficient diagnostic data to correlate valve performance to its design-basis capability as established by the type test performed in accordance with [ITAAC Q06].
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> The [XXX system] safety-related valves are diagnostically tested by remote operation (or manual operation if a manually operated valve) to demonstrate the capability to perform their function to transfer open and transfer closed under preoperational temperature, differential pressure, and flow conditions sufficient to correlate valve performance to its design-basis capability as established by the type test performed in accordance with [ITAAC Q06]. In accordance with Section 14.2.x, a preoperational test demonstrates that the [XXX system] safety-related valves listed in [Tier 1 Table x.x.x-x] stroke fully open and fully closed by remote operation (or manual operation if a manually operated valve) under preoperational test conditions with the evaluation of diagnostic data. Preoperational test conditions are established that approximate design-basis temperature, differential pressure, and flow conditions to the extent practical, consistent with preoperational test limitations.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M07	**<u>Preoperational Test</u>** Safety-Related Check Valve Operation	The [XXX system] safety-related check valves will open and close under design-basis temperature, differential pressure and flow conditions.	Stroke tests will be performed of the [XXX system] safety-related check valves under preoperational temperature, differential pressure and flow conditions.	Each [XXX system] safety-related check valve listed in [Table x.x.x-x] strokes fully open and closed (under forward and reverse flow conditions, respectively) under preoperational temperature, differential pressure, and flow conditions sufficient to correlate valve performance to its design-basis capability as established by the type test performed in accordance with [ITAAC Q06].
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> The [XXX system] safety-related check valves are tested to demonstrate the capability to perform their function to transfer open and transfer closed (under forward and reverse flow conditions, respectively) under preoperational temperature, differential pressure, and flow conditions sufficient to correlate valve performance to its design-basis capability as established by the type test performed in accordance with [ITAAC Q06]. In accordance with Section 14.2.x, a preoperational test demonstrates that the [XXX system] check valves listed in [Tier 1 Table x.x.x-x] strokes fully open and closed under forward and reverse flow conditions, respectively. Preoperational test conditions are established that approximate design-basis temperature, differential pressure and flow conditions to the extent practical, consistent with preoperational test limitations.			

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<tr><td rowspan="2">M08</td><td><u>Preoperational Test</u>
Safety-Related Air-Operated Valve Operation on Loss of Motive Power</td><td>The [XXX system] safety-related air-operated valves perform their function to fail to (or maintain) their safety-related position on loss of motive power under design-basis temperature, differential pressure, and flow conditions.</td><td>A stroke test will be performed of the safety-related air-operated valves under preoperational temperature, differential pressure and flow conditions.</td><td>Each [XXX system] safety-related air-operated valve listed in [Table x.x.x-x] performs its function to fail to (or maintain) its safety-related position on loss of motive power under preoperational temperature, differential pressure, and flow conditions sufficient to correlate valve performance to its design-basis capability as established by the type test performed in accordance with [ITAAC Q06].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
The [XXX system] safety-related air-operated valves are tested to demonstrate the capability to perform their function to fail to or maintain their safety-related position on loss of motive power under preoperational temperature, differential pressure, and flow conditions sufficient to correlate valve performance to its design-basis capability as established by the type test performed in accordance with [ITAAC Q06].
In accordance with Section 14.2.x, a preoperational test demonstrates that each [XXX system] safety-related air-operated valves listed in [Tier 1 Table x.x.x-x] repositions to or maintains its safety-related position on loss of motive power (electric power to the valve actuating solenoid(s) is lost, or pneumatic pressure to the valve(s) is lost).
Preoperational test conditions are established that approximate design-basis temperature, differential pressure, and flow conditions to the extent practical, consistent with preoperational test limitations.</td></tr>
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<tr><td rowspan="2">M09</td><td><u>As-Built Inspection</u>
Safety-Related [Accumulator or Tank] Capacity</td><td>The [XXX system] safety-related [accumulator(s) or tank(s)] provide a design usable water volume for [insert criteria].</td><td>An inspection will be performed of the as-built safety-related [accumulator(s) or tank(s)].</td><td>The usable water volume of each [XXX system] safety-related [accumulator or tank] listed in [Table x.x.x-x] is greater than or equal to [### gallons].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section x.x discusses that the [XXX system] [accumulator or tank] provides a usable water volume for [insert criteria]. Section x.x provides the design usable water volume.
An ITAAC inspection is performed to verify that each [XXX system] safety-related [accumulator or tank] listed in [Tier 1 Table x.x.x-x] provides the design usable water volume.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M10	**<u>As-Built Inspection</u>** Safety-Related High Point Vent Valves Location	High point vent valves are installed in the safety-related [XXX system] piping high points to allow venting of non-condensable gases from the system.	An inspection will be performed of the safety-related [XXX system] as-built high point vent valves.	High point vent valves are installed in the safety-related [XXX system] at the piping system high point locations.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 5.4.x discusses that the [XXX system] high point vent valves can remove non-condensable gases from the [XXX system] to mitigate a possible condition of inadequate core cooling resulting from the accumulation of non-condensable gases in the [XXX system]. An ITAAC inspection is performed to verify that the [XXX system] as-built safety-related high point vent valves are installed at the required locations, in accordance with [piping isometrics or other drawings that indicate the location and elevation of the high point vents].			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M11	**<u>Vendor Test</u>** RCP Flywheel Integrity Overspeed Test	The reactor coolant pump (RCP) flywheel maintains its structural integrity during an overspeed event equal to at least 125 percent of the motor's synchronous speed.	A vendor test will be performed on each as-built RCP flywheel to an overspeed condition.	Each RCP flywheel maintains its structural integrity during overspeed testing at greater than or equal to [### rpm].
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 5.4.x discusses that each reactor coolant pump (RCP) flywheel is tested to an overspeed condition of at least 125 percent of the synchronous speed of the motor in accordance with Regulatory Guide 1.14, to verify the flywheel's structural integrity. In accordance with Regulatory Guide 1.14, the flywheel's design speed should be at least 125 percent of the motor's synchronous speed at 60 hertz. A vendor test demonstrates that each RCP flywheel maintains its structural integrity to at least 125 percent of the motor's synchronous speed, which is equivalent to [### rpm].			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M13	**<u>Preoperational Test</u>** Safety-Related Fan Capacity	The [XXX system] safety-related fans provide the flow rate required to perform their safety-related function during design-basis accident conditions.	A test will be performed of the [XXX system] safety-related fans.	Each [XXX system] safety-related fan listed in [Table x.x.x-x] provides the minimum airflow rate required during design basis accident conditions to perform its safety-related function, while the system is aligned in an emergency operating lineup.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section [x.x] discusses the [XXX system] safety-related fans. These fans provide the minimum airflow rate required to perform their safety-related function, while operating in in an emergency-operating lineup. Section [x.x] provides the minimum required airflow rate. In accordance with Section 14.2.x, a preoperational test demonstrates that each [XXX system] safety-related fan listed in [Tier 1 Table x.x.x-x] provides the minimum required air flow rate to perform its safety-related function during design basis accident conditions, while the system is aligned in an emergency operating lineup.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M14	**<u>Preoperational Test</u>** Safety-Related Damper Operation	The [XXX system] safety-related dampers change position under design-basis temperature, differential pressure and flow conditions.	A stroke test will be performed of the [XXX system] safety-related dampers.	Each [XXX system] safety-related damper listed in [Table x.x.x-x] strokes fully open and fully closed by remote operation under preoperational temperature, differential pressure, and flow conditions sufficient to correlate damper performance to its design-basis capability.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> The [XXX system] safety-related dampers listed in [Tier 1 Table x.x.x-x] are tested to demonstrate the capability to transfer open and transfer closed. In accordance with Section 14.2.x, a preoperational test demonstrates that the [XXX system] safety-related dampers listed in [Tier 1 Table x.x.x-x] stroke fully open and fully closed by remote operation under preoperational temperature, differential pressure, and flow conditions. Preoperational test conditions are established that approximate design-basis temperature, differential pressure, and flow conditions to the extent practical, consistent with preoperational test limitations.			

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">M15</td><td><u>Preoperational Test</u>
Main Control Room Envelope Unfiltered Air In-leakage</td><td>The unfiltered air in-leakage into the Control Room Envelope does not exceed the assumptions in the main control room operator dose analysis.</td><td>A test will be performed of the Control Room Envelope.</td><td>The unfiltered air in-leakage measured by tracer gas testing does not exceed the unfiltered air in-leakage assumed in the main control room operator dose analysis.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Testing is performed on the Control Room Envelope (CRE) in accordance with Regulatory Guide 1.197, “Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors,” Revision 0, to demonstrate that leakage from adjacent environmental zones into the CRE is limited. Regulatory Guide 1.197 allows two options for CRE testing; either integrated testing (tracer gas testing) or component testing. Section 9.4.1 describes the system design requirements and Section 6.4.x describes the testing requirements for the Control Room Envelope habitability program. Section [x.x] provides the maximum unfiltered air in-leakage allowed into the Control Room Envelope.
In accordance with Section 14.2.x, a preoperational test using the tracer gas test method demonstrates that the unfiltered air in-leakage inside the Control Room Envelope. Tracer gas testing in accordance with ASTM E741 will be performed to measure the unfiltered in-leakage into the Control Room Envelope with the [XXX system] operating.</td></tr>
</table>

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">M16</td><td><u>Preoperational Test</u>
Main Control Room Habitability System Automatic Alignment</td><td>Upon receipt of a [required isolation] signal, the [XXX system] automatically aligns to isolate the Control Room Envelope.</td><td>A test will be performed of the [XXX system].</td><td>Upon receipt of each [required isolation] actuation signal, the [XXX system] dampers automatically align to the position listed in [Table x.x.x-x].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 9.4.x provides a description of the main control room HVAC system alignments in response to a [required isolation] signal.
In accordance with Section 14.2.x, a preoperational test demonstrates that upon receipt of each [required isolation] signal, the [XXX system] automatically aligns to the position listed in [Tier 1 Table x.x.x-x].</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M17	**<u>As-Built Analysis</u>** Main Control Room Envelope Passive Temperature Control	The Control Room Envelope heat sink passively maintains the temperature of the Control Room Envelope within an acceptable range for the first 72 hours following a design basis accident.	An analysis will be performed of the as-built Control Room Envelope heat sinks.	A report exists and concludes that the Control Room Envelope heat sink passively maintains the temperature of the Control Room Envelope within an acceptable range for the first 72 hours following a design basis accident.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section [x.x] discusses the use of passive heat sinks in the Control Room Envelope to maintain the temperature within the Control Room Envelope within an acceptable range for the first 72 hours following a design basis accident. An analysis confirms that the Control Room Envelope bulk average air temperature is acceptable on a loss of active cooling for the first 72 hours following a design basis accident. The analysis uses the as-built Control Room Envelope data and design bulk average air temperature as discussed in Section [x.x].			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M18	**<u>Preoperational Test</u>** Battery Room Ventilation Flow Rate (Hydrogen Control)	The [XXX system] maintains the hydrogen concentration levels in the battery rooms containing safety-related batteries below one percent by volume.	A test and analysis will be performed to verify the [XXX system] has sufficient airflow to maintain the battery room's hydrogen concentration below one percent by volume during the period of maximum hydrogen generation.	A report exists and concludes the airflow capability of the [XXX system] is sufficient to maintain the hydrogen concentration levels in the battery rooms containing safety-related batteries below one percent by volume during the period of maximum hydrogen generation.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section [9.4.x] provides a discussion of how the [XXX system] maintains the hydrogen concentration levels in the battery rooms containing safety-related batteries below one percent by volume. Sections 8.x and 8.y discuss the Class 1E batteries and battery chargers. In accordance with Section 14.2.x, a preoperational test and analysis demonstrates that the airflow capability of the [XXX system] maintains the hydrogen concentration levels in the battery rooms containing safety-related batteries below one percent by volume.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M19	**<u>As-Built Inspection</u>** Turbine Electrical Overspeed and Backup Overspeed Systems Independence	The trip signals from the redundant turbine electrical overspeed protection trip systems are isolated from, and independent of, each other.	An inspection will be performed of the as-built redundant turbine electrical overspeed protection systems.	The redundant turbine electrical overspeed protection systems are supplied from different [circuit breakers and/or fuses] and do not share common equipment.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 10.2.x provides a description of the turbine generator system and its redundant independent turbine overspeed protection systems. An ITAAC inspection is performed of the redundant turbine electrical overspeed protection systems to verify that the trip circuitry for the [XXX system] and the [YYY system] are supplied from different [circuit breakers and/or fuses] and that the redundant turbine electrical overspeed protection systems do not share common equipment.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M20	**<u>As-Built Inspection</u>** Crane Hoist Single Failure Proof Configuration	The single failure proof [ZZZ crane] hoist is constructed to provide assurance that a failure of a single hoist mechanism component does not result in the uncontrolled movement of the lifted load.	An inspection will be performed of the as-built [ZZZ crane] hoist.	The [ZZZ crane] hoist is single failure proof.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section [9.1.4.x or 9.1.5.x] describes that the [ZZZ crane] is classified as a Type I crane as defined by the ASME NOG-1 Code, Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder), or equivalent. An ITAAC inspection is performed of the [ZZZ crane] hoist machinery arrangement to verify the existence of the following single-failure proof features: (a) non redundant structural components (i.e., bridge, trolley, wire rope drum, and hook) are designed to appropriate standards, constructed from base material demonstrated to meet appropriate material properties, and pass appropriate non-destructive examination of critical welds and forgings; and, (b) redundant design features to stop and hold the load following: 1. Specified component failures (e.g., wire rope, drive train, and control system). 2. Operator errors (e.g., two-blocking and overload). This ITAAC inspection may be performed any time after manufacture of the [ZZZ crane] (at the factory or later).			

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">M21</td><td><u>Preoperational Test</u>
Crane Capacity</td><td>The [ZZZ crane] is capable of lifting and supporting its rated load, holding the rated load, and transporting the rated load.</td><td>A rated load test will be performed of the [ZZZ crane].</td><td>The [ZZZ crane] lifts, supports, holds with the brakes, and transports a load of 125 to 130 percent of the manufacturer’s rated capacity.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section [9.1.4.x or 9.1.5.x] describes that the [ZZZ crane] can be classified as a Type I crane as defined by the ASME NOG-1 Code, Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder), or equivalent. [In accordance with ASME NOG-1 paragraph 7422, the [ZZZ crane] is full load tested at a maximum of 100% of the hoist manufacturer’s rating. After the full load test is completed, and prior to use of the crane to handle loads, the [ZZZ crane] is rated load tested at 125% (+5%, −0%) of the manufacturer’s rating in accordance with ASME NOG-1 paragraph 7423.]
In accordance with Section 14.2.x, a preoperational test demonstrates that each single failure proof [ZZZ crane] is rated load tested at 125% (+5%, −0%) of the manufacturer’s rating.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">M22</td><td><u>As-Built Inspection</u>
Crane NDE</td><td>Single failure proof [ZZZ crane] welds are inspected.</td><td>An inspection will be performed of the as-built [ZZZ crane] welds.</td><td>The results of the non-destructive examination of the [ZZZ crane] welds comply with [ASME NOG-1 Code, or equivalent].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section [9.1.4.x or 9.1.5.x] discusses that the single failure proof [ZZZ crane] can be classified as a Type I crane as defined by the ASME NOG-1 Code, Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder), or equivalent.
An ITAAC inspection is performed to verify that the ASME Type I as-built [ZZZ crane] welds are nondestructively examined in accordance with the standards of ASME NOG-1 paragraph 4251.4 and/or the [ZZZ crane] purchase specification.
This ITAAC inspection may be performed any time after manufacture of the single failure proof [ZZZ crane] (at the factory or later).</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M23	**<u>Preoperational Test</u>** RCS Pressure Boundary Leakage Detection–Sump Level Sensors	[Reactor Containment Building] sump level sensors support Reactor Coolant System Pressure Boundary leakage detection.	A test will be performed of the [Reactor Containment Building] sump level sensors.	The [Reactor Containment Building] sump level sensors detect a sump level increase, which correlates to a detection of unidentified leakage rate of [### gpm] within 1 hour.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 5.2.5 discusses that RCPB leakage detection systems are designed to detect and, to the extent practical, identify the source of reactor coolant leakage. The RCPB leakage detection systems conform to the guidance of Regulatory Guide 1.45, Revision 1 regarding detection, monitoring, quantifying, and identification of reactor coolant leakage. In accordance with Section 14.2.x, a preoperational test demonstrates that the [Reactor Containment Building] sump level sensors detect a sump level increase, which correlates to a detection of unidentified leakage rate of [### gpm] within 1 hour. The analysis of the correlation will consider the level increase per unit volume added to the sump.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M24	**<u>Preoperational Test</u>** RCS Pressure Boundary Leakage Detection–Radiation Monitors	The [Reactor Containment Building] radiation monitors support Reactor Coolant System Pressure Boundary leakage detection.	A test and analysis will be performed of the [Reactor Containment Building] radiation monitors.	The [Reactor Containment Building] radiation monitors detect a radiation level increase, which correlates to a detection of unidentified leakage rate of [### gpm] within 1 hour.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 5.2.5 discusses that RCPB leakage detection systems are designed to detect and, to the extent practical, identify the source of reactor coolant leakage. The RCPB leakage detection systems conform to the guidance of Regulatory Guide 1.45, regarding detection, monitoring, quantifying, and identification of reactor coolant leakage. In accordance with Section 14.2.x, a preoperational test demonstrates that the [Reactor Containment Building] radiation monitors detect a radiation level increase, which correlates to a detection of unidentified leakage rate of [### gpm] within 1 hour. The analysis of the correlation will consider such features as line losses, sampling delays, and background radiation.			

<table>
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<tr><td rowspan="2">M25</td><td><u>Preoperational Test</u>
RCS Pressure Boundary Leakage Detection–Alternative Method

{This ITAAC is only necessary if one or both of M25 and M26 for RCPB detection are not applicable to the design}</td><td>The [XXX system] supports Reactor Coolant System Pressure Boundary leakage detection.</td><td>A test and analysis will be performed of the [XXX system].</td><td>The [XXX system] [detection method(s)] detect(s) a [measured parameter] increase which correlates to a detection of unidentified leakage rate of [### gpm] within 1 hour.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 5.2.5 discusses that RCPB leakage detection systems are designed to detect and, to the extent practical, identify the source of reactor coolant leakage. The RCPB leakage detection systems conform to the guidance of Regulatory Guide 1.45, regarding detection, monitoring, quantifying, and identification of reactor coolant leakage.
In accordance with Section 14.2.x, a preoperational test demonstrates that the [XXX system] [detection method(s)] detect(s) a [measured parameter] increase which correlates to a detection of unidentified leakage rate of [### gpm] within 1 hour.
The analysis of the correlation will consider such features as [insert criteria].</td></tr>
</table>

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">M26</td><td><u>Preoperational Test</u>
Main Turbine Isolation Valve Operation</td><td>The main turbine isolation valves close in response to a turbine trip signal.</td><td>A test will be performed of the main turbine isolation valves.</td><td>The main turbine isolation valves listed in [Table x.x.x-x] close on a turbine trip signal.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
[Section xx] discusses the main turbine and the associated turbine trip signals.
In accordance with Section 14.2.x, a preoperational test will be performed to verify the main turbine isolation valves listed in [Tier 1 Table x.x.x-x] close on a turbine trip signal.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M28	**<u>As-Built Inspection and Analysis</u>** Physical separation of divisions.	Each division of the [XXX system] is physically separated from the other divisions to preclude the loss of the safety-related function by common-cause failure from postulated dynamic effects (i.e. missile and pipe break hazards), internal flooding, and fire.	Inspection and analysis of the as-built [XXX system] divisions will be performed.	The components for each division of the [XXX system] located outside containment are located in a separate enclosed area as identified in [Table x.x.x-x], [and the components for each division of the [XXX system] located within containment are physically separated to the extent practical] to preclude the loss of the safety-related function by common-cause failure from postulated dynamic effects (i.e. missile and pipe break hazards), internal flooding, and fire.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> [Section xx] describes the physical separation of [XXX system] divisions. An inspection and analysis is performed to verify each division of the [XXX system] is physically separated to preclude the loss of the safety-related function by common-cause failure from postulated dynamic effects (i.e. missile and pipe break hazards), internal flooding, and fire.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M30	**<u>Vendor Test</u>** Reactor Coolant Pump (RCP) Coastdown Flow	The RCPs provide the coastdown flow assumed in the plant safety analyses.	A vendor test will be performed of each RCP to demonstrate its capability to provide the coastdown flow assumed in the plant safety analyses.	Each RCP's coastdown flow is equal to or greater than the coastdown flow assumed in the plant safety analyses.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> As discussed in Section 5.4.x, the RCPs provide coastdown flow following a loss of electric power to provide adequate cooling of the reactor core. Vendor testing will be performed to verify that the coastdown flow of each as-built RCP is equal to or greater than the flow assumed in the plant safety analyses.			

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">M31</td><td><u>As-Built Inspection</u>
New Fuel Storage Racks</td><td>The new fuel storage racks maintain an effective neutron multiplication factor (k-effective) within the following limits at a 95 percent probability, 95 percent confidence level when loaded with fuel of the maximum reactivity to assure sub-criticality during plant life, including normal operations and postulated accident conditions:

• k-effective must not exceed 0.95 if flooded with unborated water, and

• k-effective must not exceed 0.98 if flooded with low-density hydrogenous fluid.</td><td>An inspection will be performed of the as-built new fuel storage racks, their configuration in the new fuel storage area, and the associated documentation.</td><td>The as-built new fuel storage racks, including any neutron absorbers, and their configuration within the new fuel storage area conform to the design values for materials and dimensions and their tolerances, as shown to be acceptable in the approved new fuel storage criticality analysis.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Sections 9.1.1 discusses the criticality analysis of the new fuel storage racks.
An ITAAC inspection is performed to verify that the as-built new fuel storage racks, including any neutron absorbers, conform to the design values for materials and dimensions and their tolerances, as were shown to be acceptable in the approved criticality analysis.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">M32</td><td><u>As-Built Inspection</u>
Spent Fuel Storage Racks Criticality</td><td>The spent fuel storage racks maintain an effective neutron multiplication factor (k-effective) within the following limits at a 95 percent probability, 95 percent confidence level when loaded with fuel of the maximum reactivity to assure sub-criticality during plant life, including normal operations and postulated accident conditions:

• If no credit for soluble boron is taken, k-effective must not exceed 0.95 if flooded with unborated water.

• If credit for soluble boron is taken, k-effective must not exceed 0.95 if flooded with borated water, and k-effective must not exceed 1.0 if flooded with unborated water.</td><td>An inspection will be performed of the as-built spent fuel storage racks, their configuration in the spent fuel pool, and the associated documentation.</td><td>The as-built spent fuel storage racks, including any neutron absorbers, and their configuration within the spent fuel pool conform to the design values for materials and dimensions and their tolerances, as shown to be acceptable in the approved spent fuel storage criticality analysis.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 9.1.1 discusses the criticality analysis of the spent fuel storage racks.
An ITAAC inspection is performed to verify that the as-built spent fuel storage racks, including any neutron absorbers, conform to the design values for materials and dimensions and their tolerances, as were shown to be acceptable in the approved criticality analysis.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M33	**<u>As-Built Inspection</u>** Spent Fuel Pool Drain Down Prevention	The spent fuel storage pool piping and connections are designed and located to prevent the drain down of the spent fuel pool water level below the minimum safety water level.	An inspection will be performed of the as-built spent fuel pool piping and connections.	The following conditions exist for the spent fuel storage pool. 1. There are no openings, piping, or connections below the top of the irradiated fuel assemblies. 2. All piping and connections below [the minimum safety water level] elevation are either: • Seismic Category I, or • are equipped with anti-siphon devices at or above the [minimum safety water level] elevation.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 9.1.2 discusses spent fuel storage. An ITAAC inspection of the as-built spent fuel storage pool is performed to verify the design features of the spent fuel pool, piping, and connections prevent drain down of the spent fuel pool water level below the minimum safety water level.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
M34	**<u>As-Built Analysis</u>** Potential for Gas Entrainment During Mid-Loop Operations *(PWR Only)*	The decay heat removal function of the [XXX system] will not be impaired by gas entrainment during mid-loop operation while the system is operating at its maximum allowable flow rate and the reactor coolant hot leg level is at the lowest level allowable for decay heat removal.	An analysis of the potential for gas entrainment during mid-loop operation will be performed on the as-built configuration of the [XXX system].	A report exist and concludes that the decay heat removal function of the [XXX system] will not be impaired by gas entrainment during mid-loop operation while the system is operating at its maximum allowable flow rate and the reactor coolant hot leg level is at the lowest level allowable for decay heat removal.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section 5.4.x discusses decay heat removal during mid-loop operation. An analysis will be performed to verify that the decay heat removal function of the [XXX system] will not be impaired by gas entrainment during mid-loop operation while the system is operating at its maximum allowable flow rate and the reactor coolant hot leg level is at the lowest level allowable for decay heat removal.			

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">Q01</td><td><u>Equipment Qualification and As-Built Inspection</u>
Seismic Category I Equipment Qualification/ Installation</td><td>The [XXX system] Seismic Category I equipment, including its associated supports and anchorages, withstands design basis seismic loads without loss of its safety function(s) during and after a safe-shutdown earthquake (SSE).</td><td>i. A type test, analysis, or a combination of type test and analysis will be performed of the [XXX system] Seismic Category I equipment, including its associated supports and anchorages.

ii. An inspection will be performed of the [XXX system] Seismic Category I as-built equipment, including its associated supports and anchorages.</td><td>i. A [seismic qualification report] performed in conformance to IEEE 344-2004 and ASME QME-1-2007 (or later editions), as accepted in Regulatory Guide 1.100 Revision 3 (or later revision), exists and concludes that the [XXX system] Seismic Category I equipment listed in [Table x.x.x-x], including its associated supports and anchorages, will withstand the design-basis seismic loads and perform its safety function during and after an SSE.

ii. The [XXX system] Seismic Category I equipment listed in [Table x.x.x-x], including its associated supports and anchorages, is installed in its design location in a Seismic Category I structure in a configuration bounded by the equipment's [seismic qualification report].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.10 presents information to demonstrate that the Seismic Category I equipment, including its associated supports and anchorages, is qualified by type test, analysis, or a combination of type test and analysis to perform its safety function under the design basis seismic loads during and after a safe-shutdown earthquake (SSE). The qualification method employed for the Seismic Category I equipment is the same as the qualification method described for that type of equipment in Section 3.10.x. This method conforms to IEEE-344-2004 and ASME QME-1-2007 (or later editions), as accepted by the NRC staff in Regulatory Guide 1.100 Revision 3 (or later revision), with specific revision years and numbers as presented in Section 3.10.x.
The ITAAC verifies that: (1) a [seismic qualification report] exists for each Seismic Category I component type, and (2) the [seismic qualification report] concludes that the Seismic Category I equipment listed in [Table x.x.x-x], including its associated supports and anchorages, is qualified to perform its safety function(s) under the seismic design-basis load conditions specified in the [seismic qualification report].
After installation in the plant, an ITAAC inspection is performed to verify that the Seismic Category I equipment listed in [Table x.x.x-x], including its associated supports and anchorages, is installed in its design location in a Seismic Category I structure in a configuration bounded by the [seismic qualification report].
[The editions of IEEE 344 and ASME QME-1 and revision to Regulatory Guide 1.100 should be specified in ITAAC Q01 to help support justification for the absence of the need for a Tier 2* item for seismic qualification in the design certification rulemaking.]</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">Q02</td><td><u>Equipment Qualification and As-Built Inspection</u>
Class 1E Electrical Equipment Harsh Environment Qualification/ Installation</td><td>The [XXX system] Class 1E electrical equipment located in a harsh environment, including its connection assemblies, withstands the design basis harsh environmental conditions experienced during normal operations, anticipated operational occurrences, design-basis accidents, and post-accident conditions and performs its function for the period of time required to complete the function.</td><td>i. A type test or a combination of type test and analysis will be performed of the [XXX system] Class 1E electrical equipment, including its connection assemblies.

ii. An inspection will be performed of the [XXX system] Class 1E as-built electrical equipment, including its connection assemblies.</td><td>i. An [equipment qualification data report] exists and concludes that the [XXX system] Class 1E electrical equipment listed in [Table x.x.x-x], including its connection assemblies, performs its function under the environmental conditions specified in the [equipment qualification data report] for the period of time required to complete the function.

ii. The [XXX system] Class 1E electrical equipment listed in [Table x.x.x-x], including its connection assemblies, is installed in its design location in a configuration bounded by the equipment's [equipment qualification data report].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.11 presents information to demonstrate that the Class 1E electrical equipment, including its connection assemblies, located in a harsh environment is qualified by type test or a combination of type test and analysis to perform its safety-related function under design basis harsh environmental conditions, experienced during normal operations, anticipated operational occurrences, design-basis accidents, and post-accident conditions in accordance with 10 CFR 50.49. As defined in IEEE-Std-572-1985, IEEE Standard for Qualification of Class 1E Connection Assemblies for Nuclear Power Generating Stations, a connection assembly is any connector or termination combined with related cables or wires as an assembly. The qualification method employed for the equipment is the same as the qualification method described for that type of equipment in Section 3.11.x. The ITAAC verifies that: (1) an [equipment qualification data report] exists for the Class 1E electrical equipment listed in [Tier 1 Table x.x.x-x] and addresses connection assemblies, (2) the [equipment qualification data report] concludes that the Class 1E electrical equipment, including its connection assemblies, performs its safety-related function under the environmental conditions specified in Section 3.11 and the [equipment qualification data report], and (3) the required post-accident operability time for the Class 1E electrical equipment in the [equipment qualification data report] is in agreement with Section 3.11.x.
After installation in the plant, an ITAAC inspection is performed to verify that the Class 1E electrical equipment listed in [Tier 1 Table x.x.x-x], including its connection assemblies, is installed in its design location in a configuration bounded by the [equipment qualification data report].</td></tr>
</table>

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">Q03</td><td><u>Equipment Qualification</u>
Safety-Related Mechanical Equipment Harsh Environment Qualification</td><td>The [XXX system] non-metallic parts, materials, and lubricants used in safety-related mechanical equipment perform their safety-related function up to the end of their qualified life in the design basis harsh environmental conditions (both internal service conditions and external environmental conditions) experienced during normal operations, anticipated operational occurrences, design-basis accidents, and post-accident conditions.</td><td>A type test or a combination of type test and analysis will be performed of the [XXX system] non-metallic parts, materials, and lubricants used in safety-related mechanical equipment.</td><td>A qualification report exists and concludes that the non-metallic parts, materials, and lubricants used in safety-related mechanical equipment listed in [Table x.x.x-x] perform their safety-related function up to the end of their qualified life under the design basis harsh environmental conditions (both internal service conditions and external environmental conditions) specified in the qualification report.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.11 presents information to demonstrate that the non-metallic parts, materials, and lubricants used in safety-related mechanical equipment located in a harsh environment are qualified using a type test or a combination of type test and analysis to perform their safety-related function up to the end of their qualified life in design basis harsh environmental conditions experienced during normal operations, anticipated operational occurrences, design-basis accidents, and post-accident conditions. Environmental conditions include both internal service conditions and external environmental conditions for the non-metallic parts, materials, and lubricant. The qualification method employed for the equipment is the same as the qualification method described for that type of equipment in Section 3.11.x.
The ITAAC verifies that: (1) an equipment qualification data report or ASME QME-1 report exists for the non-metallic parts, materials, and lubricants used in safety-related mechanical equipment designated for a harsh environment, and (2) the qualification report concludes that the non-metallic parts, materials, and lubricants used in safety-related mechanical equipment listed in [Tier 1 Table x.x.x-x] perform their intended function up to the end of their qualified life under the design basis environmental conditions (both internal service conditions and external environmental conditions) specified in the qualification report.</td></tr>
</table>

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">Q04</td><td><u>Equipment Qualification and As-Built Inspection</u>
Class 1E Digital or Analog Equipment Mild Environment Qualification/ Installation</td><td>The [XXX system] Class 1E equipment located in a mild environment withstands design basis mild environmental conditions without loss of safety□related function.</td><td>i. A type test or a combination of type test and analysis will be performed of the [XXX system] Class 1E equipment located in a mild environment.

ii. ii.An inspection will be performed of the [XXX system] Class 1E as-built equipment located in a mild environment.</td><td>i. An [equipment qualification data report] exists and concludes that the [XXX system] Class 1E equipment listed in [Table x.x.x-x] performs its function under the environmental conditions specified in the [equipment qualification data report].

ii. The [XXX system] Class 1E equipment listed in [Table x.x.x-x] is installed in its design location in a configuration bounded by the equipment's [equipment qualification data report].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.11 presents information to demonstrate that the Class 1E equipment located in a mild environment is qualified by type test or a combination of type test and analysis to perform its safety-related function under the design basis mild environmental conditions. The qualification method employed for the equipment is the same as the qualification method described for that type of equipment in Section 3.11.x.
The ITAAC verifies that: (1) an [equipment qualification data report] exists for the Class 1E equipment listed in [Tier 1 Table x.x.x-x], and (2) the [equipment qualification data report] concludes that the Class 1E equipment performs its safety-related function under the design basis mild environmental conditions specified in Section 3.11 and the [equipment qualification data report].
After installation in the plant, an ITAAC inspection is performed of the installation to verify that the Class 1E equipment listed in [Tier 1 Table x.x.x-x] is installed in its design location in a configuration bounded by the equipment's [equipment qualification data report].</td></tr>
</table>

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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">Q05</td><td><u>Equipment Qualification</u>
Class 1E Digital Equipment EMI, RFI, ESD and SWC Qualification</td><td>The [XXX system] Class 1E digital equipment performs its safety-related function when subjected to the design basis electromagnetic interference, radio frequency interference, electrostatic discharge, and electrical surges that would exist before, during, and following a design basis accident.</td><td>A type test, analysis, or a combination of type test and analysis will be performed of the [XXX system] Class 1E digital equipment.</td><td>An [equipment qualification report] exists and concludes that the Class 1E digital equipment listed in [Table x.x.x-x] withstands the design basis electromagnetic interference, radio frequency interference, electrostatic discharge, and electrical surges that would exist before, during, and following a design-basis accident without loss of safety-related function.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.11 presents information to demonstrate that the Class 1E digital equipment is qualified using a type test, analysis, or a combination of type test and analysis to perform its safety-related function when subjected to electromagnetic interference, radio frequency interference, electrostatic discharge, and electrical surges that would exist before, during, and following a design basis accident. The qualification method employed for Class 1E digital equipment is the same as the qualification method described for that type of equipment in Section 3.11.x.
The ITAAC verifies that: (1) an [equipment qualification data report] exists for the [XXX system] Class 1E digital equipment listed in [Tier 1 Table x.x.x-x], and (2) the [equipment qualification data report] concludes that the Class 1E digital equipment withstands the design basis electromagnetic interference, radio frequency interference, electrostatic discharge, and electrical surges that would exist before, during, and following a design basis accident without loss of safety-related function.</td></tr>
</table>

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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">Q06</td><td><u>Equipment Qualification</u>
Safety-Related Valve Functional Qualification</td><td>The [XXX system] safety-related valves are functionally designed and qualified to perform their safety-related function under the full range of fluid flow, differential pressure, electrical conditions, and temperature conditions [with debris-laden coolant fluids] up to and including design basis accident conditions.</td><td>A type test or a combination of type test and analysis will be performed of the [XXX system] safety-related valves.</td><td>A [Functional Qualification Report] performed in conformance to ASME QME-1-2007 (or later edition), as accepted in Regulatory Guide 1.100 Revision 3 (or later revision), exists and concludes that the [XXX system] safety-related valves listed in [Table x.x.x-x] are capable of performing their safety-related function under the full range of fluid flow, differential pressure, electrical conditions, and temperature conditions [with debris-laden coolant fluids] up to and including design basis accident conditions.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.9.x discusses that the functional qualification of safety-related valves is performed in accordance with ASME QME-1-2007 (or later edition), as accepted in Regulatory Guide 1.100 Revision 3 (or later revision), with specific revision years and numbers as presented in Section 3.9.x. The qualification method employed for the valves agrees with the qualification method described in Section 3.9.x.
The ITAAC verifies that: (1) An [Functional Qualification Report] exists for the [XXX system] safety-related valves listed in [Tier 1 Table x.x.x-x], and (2) the [Functional Qualification Report] concludes that [XXX system] safety-related valves are capable of performing their safety-related function under the full range of fluid flow, differential pressure, electrical conditions, and temperature conditions [with debris-laden coolant fluids] up to and including design basis accident conditions. [The edition of ASME QME-1 and revision to Regulatory Guide 1.100 should be specified in ITAAC Q06 to help support justification for the absence of the need for a Tier 2* item for seismic qualification in the design certification rulemaking.]</td></tr>
</table>

<table>
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<tr><td rowspan="2">Q07</td><td><u>Equipment Qualification</u>
Safety-Related Pump Functional Qualification</td><td>The [XXX system] safety-related pumps are functionally designed and qualified to perform their safety-related function under the full range of fluid flow, differential pressure, electrical conditions, and temperature conditions [with debris-laden coolant fluids] up to and including design basis accident conditions.</td><td>A type test or a combination of type test and analysis will be performed of the [XXX system] safety-related pumps.</td><td>A [Functional Qualification Report] performed in conformance to ASME QME-1, as accepted in Regulatory Guide 1.100, exists and concludes that the [XXX system] safety-related pumps listed in [Table x.x.x-x] are capable of performing their safety-related function under the full range of fluid flow, differential pressure, electrical conditions, and temperature conditions [with debris-laden coolant fluids] up to and including design basis accident conditions.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.9.x discusses that the functional qualification of safety-related pumps is performed in accordance with ASME QME-1, as accepted in Regulatory Guide 1.100, with specific revision years and numbers as presented in Section 3.9.x. The qualification method employed for the pumps agrees with the qualification method described in Section 3.9.x.
The ITAAC verifies that: (1) A [Functional Qualification Report] exists for the [XXX system] safety-related pumps listed in [Tier 1 Table x.x.x-x], and (2) the [Functional Qualification Report] concludes that [XXX system] safety-related pumps are capable of performing their safety-related function under the full range of fluid flow, differential pressure, electrical conditions, and temperature conditions [with debris-laden coolant fluids] up to and including design basis accident conditions.</td></tr>
</table>

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">Q08</td><td><u>Equipment Qualification</u>
ASME Code Section III Relief Valve Capacity Qualification</td><td>The [XXX system] safety-related relief valves provide overpressure protection.</td><td>i. A vendor test will be performed of each [XXX system] safety-related relief valve.

ii. An inspection will be performed of each [XXX system] safety-related as-built relief valve.</td><td>i. An ASME Code Section III Data Report exists and concludes that the [XXX system] relief valves listed in [Table x.x.x-x] meet the valve’s required set pressure, capacity, and overpressure design requirements.

ii. Each [XXX system] relief valve listed in [Table x.x.x-x] is provided with an ASME Code Certification Mark that identifies the relief valve’s set pressure, capacity, and overpressure.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.9.x discusses the qualification of relief valves to provide overpressure protection in accordance with the ASME Code Section III.
The ITAAC verifies that: (1) each [XXX system] relief valve listed in [Tier 1 Table x.x.x-x] meets the set pressure, capacity, and overpressure design requirements; and (2) each [XXX system] relief valve listed in [Tier 1 Table x.x.x-x] is provided with an ASME Code Certification Mark that identifies the valve’s set pressure, capacity, and overpressure.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
Q09	**<u>Equipment Qualification</u>** Safety-Related Heat Exchanger Capacity Qualification	The [XXX system] safety-related heat exchangers have the heat removal capacity to transfer their design heat load.	A test or a combination of test and analysis will be performed of the [XXX system] safety-related heat exchangers.	A report exists and concludes that the [XXX system] safety-related heat exchangers listed in [Table x.x.x-x] have a heat removal capacity sufficient to transfer their design heat load.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> [Section x.x] discusses that the [XXX system] heat exchangers provide the safety-related function of transferring their design heat load from the [XXX system] during [mode of operation]. After manufacture of the [XXX system] heat exchangers, a test or a combination of test and analysis is performed to validate that the [XXX system] heat exchangers are capable of meeting the specified heat transfer performance requirements. Section [x.x] provides the design heat transfer capability, UA, i.e., the product of the overall heat transfer coefficient and the effective heat transfer area. The ITAAC verifies that the safety-related heat exchangers listed in [Tier 1 Table x.x.x-x] have a heat removal capacity sufficient to transfer their design heat load.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
Q10	**<u>Equipment Qualification</u>** Safety-Related Tornado Damper Qualification	The [XXX system] safety-related tornado dampers function to change position under the design basis tornado conditions.	i. A type test or combination of type test and analysis will be performed of the safety-related tornado dampers. ii. A test will be performed of the tornado dampers.	i. A report exists and concludes that the [XXX system] safety-related tornado dampers listed in [Table x.x.x-x] can perform their function under design basis tornado conditions. ii. Each tornado damper listed in [Table x.x.x-x] has freedom of motion.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> Section [x.x] discusses the tornado dampers safety-related function to [transfer open and transfer closed] for a design basis tornado condition. i. The ITAAC verifies that the [XXX system] safety-related tornado dampers listed in [Tier 1 Table x.x.x-x] can perform their function under design basis tornado conditions. ii. In accordance with Section 14.2.x, a preoperational test demonstrates that each installed tornado damper listed in [Tier 1 Table x.x.x-x] has freedom of motion.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
R01	**As-Built Inspection** Radiation Shielding Barriers – Thickness	The [YYY structure] includes radiation shielding barriers for normal operation and post-accident radiation shielding.	An inspection will be performed of the as-built [YYY structure] radiation shielding barriers.	The thickness of [YYY structure] radiation shielding barriers is greater than or equal to the required thickness [specified in Table x.x.x-x or shown on Figure x.x.x-x].
	Tier 2 Section 14.3 Discussion of ITAAC Implementation Section 12.2 and Section 12.3.x provides the design bases for radiation shielding, including type, form and material properties utilized in specific locations. Radiation shielding is provided to meet the radiation zone and access requirements for normal operation and post-accident conditions, and to demonstrate compliance with 10 CFR 50.49, GDC 4, and GDC 19. Compartment walls, ceilings, and floors, or other barriers provide shielding. An ITAAC inspection is performed to verify that the thickness of [YYY structure] radiation barriers is greater than or equal to the required thicknesses. The required thicknesses [are specified in Tier 1 Table x.x.x-x or shown on Tier 1 Figure x.x.x-x].			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
R02	**As-Built Inspection** Radiation Shielding Barriers – Radiation Attenuating Doors	The [YYY structure] includes radiation attenuating doors for normal operation and for post-accident radiation shielding. These doors have a radiation attenuation capability that meets or exceeds that of the wall within which they are installed and include locking features to prevent unauthorized access and allow unfettered egress.	An inspection will be performed of the as-built [YYY structure] radiation attenuating doors.	i. The [YYY structure] radiation attenuating doors listed in [Table x.x.x-x] are installed in their design location and have a radiation attenuation capability that meets or exceeds that of the wall within which they are installed. ii. The [YYY structure] radiation attenuating doors listed in [Table x.x.x-x] include locking features to prevent unauthorized access and allow unfettered egress.
	Tier 2 Section 14.3 Discussion of ITAAC Implementation Section 12.2 and Section 12.3.x provides the design bases for radiation shielding. Radiation shielding is provided to meet the radiation zone and access requirements for normal operation and post-accident conditions and the requirements of 10 CFR 50.49, GDC 4, and GDC 19. Radiation attenuating doors must meet or exceed the radiation attenuation capability of the wall within which they are installed. An ITAAC inspection is performed to verify that the [YYY structure] radiation attenuating doors are installed in their design location in accordance with [Tier 1 Table x.x.x-x] and (1) have a radiation attenuation capability that meets or exceeds that of the wall within which they are installed and (2) contain locking devices to prevent unauthorized access and allow unfettered egress.			

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">R04</td><td><u>Preoperational Test</u>
Fuel Handling Equipment Lift Height Interlock</td><td>The [Refueling Machine] and [Spent Fuel Machine] [gripper masts’] travel is limited such that the operator dose rate is no greater than 2.5 mrem/hr when an irradiated fuel unit, control component, or both is elevated to the up position interlock with the pool at the lower limit of the normal operating low water level.</td><td>i. A test will be performed of the [Refueling Machine gripper mast] limit switch.

ii. A test will be performed of the [Spent Fuel Machine gripper mast] limit switch.</td><td>i. The [Refueling Machine gripper mast] limit switch prevents lifting the top of the irradiated fuel unit or control component above [### ft] as measured from the bottom of the [refueling canal].

ii. The [Spent Fuel Machine gripper mast] limit switch prevents lifting the top of the irradiated fuel unit or control component above [### ft] as measured from the bottom of the [spent fuel pool].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 9.1.4.x and Section 12.3 provide descriptions of how the limit switches on the [Refueling Machine and Spent Fuel Machine] [gripper masts] limit travel such that the dose rate is less than 2.5 mrem/hr when an irradiated fuel unit, control component, or both is elevated to the up position interlock setting with the pool at the normal operating low water level.
In accordance with Section 14.2.x, a preoperational test demonstrates that the [Refueling Machine gripper mast] limit switch prevents lifting the top of the irradiated fuel unit or control component above [### ft] as measured from the bottom of the [refueling canal].
In accordance with Section 14.2.x, a preoperational test demonstrates that the [Spent Fuel Machine gripper mast] limit switch prevents lifting the top of the irradiated fuel unit or control component above [### ft] as measured from the bottom of the [spent fuel pool].</td></tr>
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<tr><td rowspan="2">R05</td><td><u>Preoperational Test</u>
[YYY Structure] Differential Pressure</td><td>The [XXX system] maintains a [positive, negative] pressure in the [YYY structure/room] relative to the outside environment and adjacent areas.</td><td>i. A test will be performed of the [XXX system] while operating in the normal operating alignment.

ii. A test will be performed of the [XXX system] while operating in the design basis accident alignment.</td><td>i. The [XXX system] maintains a [positive, negative] pressure of [greater than, less than or equal to ### inches water gauge] in the [YYY structure/room] relative to the outside environment and adjacent areas, while operating in the normal operating alignment.

ii. The [XXX system] maintains a [positive, negative] pressure of [greater than, less than or equal to ### inches water gauge] in the [YYY structure/room] relative to the outside environment and adjacent areas, while operating in the design basis accident alignment.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
[Section 9 and Section 12.3] discuss the operation of the [XXX system], which maintains a [positive, negative] pressure in the [YYY structure/room] relative to the outside environment and adjacent areas. Section [x.x] provides the required [positive, negative] pressure in the [YYY structure/room] relative to the outside environment and adjacent areas. This is consistent with the requirements of 10 CFR Part 20, Subparts E and H and 10 CFR Part 50, Appendix I.
In accordance with Section 14.2.x, a preoperational test demonstrates the [XXX system] will maintain a [positive, negative] pressure of [greater than, less than or equal to ### inches water gauge] in the [YYY structure/room] relative to the outside environment and adjacent areas, while operating in a normal operating alignment and maintain a [positive, negative] pressure of [greater than, less than or equal to ### inches water gauge] in the [YYY structure/room] relative to the outside environment and adjacent areas, while operating in a design basis accident alignment.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
R06	**<u>Preoperational Test</u>** [XXX system] Automatic Isolation /Alignment test.	The [XXX system] automatically respond(s) to mitigate the release of radioactivity.	A test, using a test source, will be performed of the [XXX system].	For each radiation monitor listed in [Table x.x.x-x], the [XXX system] automatically aligns/actuates the identified component(s) to the position(s) identified in the table when the associated radiation monitor listed in the table detects a radioactivity level exceeding its trip set point.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> [Section x.x] discusses the operation of the [XXX system]. For each radiation monitor listed in [Tier 1 Table x.x.x-x], the [XXX system] automatically aligns the component(s) identified in [Tier 1 Table x.x.x-x] to the required position(s) identified in the table when the associated radiation monitor listed in the table detects a radioactivity level exceeding its trip set point. In accordance with Section 14.2.x, a preoperational test demonstrates the [XXX system] automatically aligns the component(s) identified in [Tier 1 Table x.x.x-x] to the required position(s) identified in the table when the associated radiation monitor detects a radioactivity level exceeding its trip set point established for the test. A low activity test or calibration source should be used to cause a radiation response above the minimum level needed to actuate the instrument trip set point established for the test.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
R07	**<u>As-Built Inspection and Reconciliation Analysis</u>** [XXX system] [RW-XX] Equipment.	The [XXX system] non-Seismic Category I [RW-XX] equipment, constructed to the standards of RG 1.143, will withstand design loads without loss of structural integrity.	An inspection and reconciliation analysis will be performed of the as-built [XXX system] non-Seismic Category I [RW-XX] equipment.	The deviations between the drawings used for construction and the as-built [RW-XX] equipment listed in [Table x.x.x-x] have been reconciled and the [XXX system] non-Seismic Category I [RW-XX] equipment will maintain its structural integrity under designs loads
	<u>Tier 2 Section 14.3 Discussion</u> [Section XX] provides a discussion of the [XXX system], which is non-Seismic Category I [RW-XX] and is designed and constructed to the standards of RG 1.143 to withstand the design loads without loss of structural integrity. RG 1.143 Table 1 “Codes and Standards for the Design of SSC in Radwaste Facilities,” describes the design codes and standards expected to be met to demonstrate that the health and safety of members of the public and workers at the facility will be protected for the operational conditions described within RG 1.143 Table 2 “Natural Phenomena and Internal/External Man-Induced Hazard Design Criteria for Safety Classification” and Table 3 “Design Load Combinations.” [The design should specify which structures are designed to meet the criteria specified in RG 1.143, including the associated RW classification.] An ITAAC inspection and reconciliation analysis is performed for the [XXX system] non-Seismic Category I [RW-XX] equipment to verify that the equipment will maintain its structural integrity under designs loads.			

<table>
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<tr><td rowspan="2">R08</td><td><u>Design Analysis</u>
Primary to Secondary Leakage Detection

{PWR Plants Only}</td><td>The [XXX system] monitors for primary to secondary leakage to provide early indication of a potential steam generator tube leak.</td><td>An analysis will be performed to verify the as-built [XXX system] can detect a primary to secondary leak rate equal to [### gallons per day].</td><td>The [XXX system] detects a primary to secondary leak rate equal to [### gallons per day].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion</u>
[Section XX] discusses the primary to secondary leakage detection radiation monitoring instrumentation and its compliance with the “Operational Leakage,” detection criteria provided in NEI 97-06 and its referenced EPRI guidelines. The analysis demonstrates that with normally expected values of reactor coolant activity, maximum expected condenser air in leakage, loop transit times and radiation detection instrument background conditions, that the leakage detection criteria outlined in EPRI “PWR Primary-to-Secondary Leak Guidelines”, are met for the credited radiation monitoring system(s) to provide for rapid detection and response to indicated steam generator tube leakage.</td></tr>
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<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">R09</td><td><u>As-Built Inspection and Analysis</u>
Containment High Range Radiation Monitor - Location</td><td>The Containment High Range Radiation Monitors provide independent measurements such that each detector has a direct, unimpeded exposure path of the containment atmosphere free volume to permit assessment of containment conditions following a design basis LOCA.</td><td>An inspection will be performed of the as-built Containment High Range Radiation Monitors.</td><td>[The unimpeded locations of the high range radiation monitors are as specified in [Table x.x.x-x],

OR If the free volume view of the detectors was specified in the design,

Each detector has a direct, unimpeded exposure path of [xx%] of the containment atmosphere free volume to permit assessment of containment conditions following a design basis LOCA, as specified in Table x.x.x-x.].</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion</u>
10 CFR 50.34(f)(xvii) contains the requirement for containment high radiation monitors. The guidance contained in Item II.F.1 of NUREG 0737 states that monitors be located in containment to view a large segment of the containment atmosphere which will more accurately reflect and monitor accident conditions. The design should either explicitly specify in [Tier 1 Table x.x.x-x] the horizontal and vertical location of the radiation monitors and the major structural materials that could shield the radiation monitors, or the design should specify in [Tier 1 Table x.x.x-x] a criteria, representing the minimum unimpeded exposure path view, expressed as a percent of the containment atmosphere free volume. This ITAAC checks that either the radiation monitors were installed in the location described in in [Tier 1 Table x.x.x-x], and no obstructions to the view of the radiation monitors were added to the design, or if the design specified a percent of the containment atmosphere free volume view for each radiation monitor, that the radiation monitors have been installed in a location and manner that satisfies the percentage view criteria specified in in [Tier 1 Table x.x.x-x].</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
R11	**<u>Preoperational Test</u>** Engineered Safety Features (ESF) Heating, Ventilation, and Air Conditioning (HVAC) Duct Leakage Test	The [XXX] ESF System HVAC duct leakage rate is less than the values assumed in the post-accident dose consequence design bases.	The [XXX] ESF System HVAC ducts will be tested for leakage.	The leakage of the [XXX] ESF System HVAC ducts is less than [ZZZ].
	<u>Tier 2 Section 14.3 Discussion</u> Consistent with the guidance of RG 1.52, the ducting of ESF HVAC described in Chapters 6, 9, 12, and 15, should be tested to assure that the total leakage rate from ducting is less than the values assumed in the post-accident dose consequence design bases. Verifying that the leakage from ESF system ducting is less than [XXX] ensures that the criteria of 10 CFR 50.34(a)(1)(ii)(D) and GDC 19 will be met under design basis conditions.			

<table>
<tr><th>No.</th><th>ITAAC Category/Type</th><th>Design Commitment</th><th>Inspections, Tests, Analyses</th><th>Acceptance Criteria</th></tr>
<tr><td rowspan="2">**S01**</td><td>**As-Built Analysis and As-Built Inspection**
Seismic Category I Structure</td><td>The [YYY structure or containment internal structures] is Seismic Category I and maintains its structural integrity under the design basis loads.</td><td>i. An inspection and analysis will be performed of the as-built [YYY structure or containment internal structures].

ii. An inspection will be performed of the as-built [YYY structure or containment internal structures].</td><td>i. A design report exists and concludes that the deviations between the drawings used for construction and the as-built [YYY structure or containment internal structures] have been reconciled, and the [YYY structure or containment internal structures] maintains its structural integrity under the design basis loads.

ii. The dimensions of the [YYY structure or containment internal structures] critical sections conform to design requirements identified in [Figure(s) x.x.x-x or Table(s) x.x.x-x].</td></tr>
<tr><td colspan="4">**Tier 2 Section 14.3 Discussion of ITAAC Implementation**
Section 3.8.x provides descriptive information, including plans and sections of each Seismic Category I structure, to establish that there is sufficient information to define the primary structural aspects and elements relied upon for the structure to perform the intended safety functions. The [YYY structure or containment internal structures] and its design basis loads are discussed in Section 3.8.x. Critical sections are the subcomponents of individual Seismic Category I structures (i.e., shear walls, floor slabs and roofs, structure-to-structure connections) that are analytically representative of an essentially complete design. Design basis loads are:
• Normal plant operation (e.g., dead loads, live loads, lateral earth pressure loads, equipment loads, hydrostatic loads, hydrodynamic loads, and temperature loads).
• Internal events (e.g., internal flood loads, accident pressure loads, accident thermal loads, pipe break loads, including reaction loads, jet impingement loads, cubicle pressurization loads, and missile impact loads).
• External events (e.g., wind, extreme winds, rain, snow, flood, extreme winds-generated missiles and earthquake).
Guidance for the content and structure of the design report is provided in Standard Review Plan (SRP) Section 3.8.4, Appendix C.
An ITAAC inspection and analysis is performed of the as-built [YYY structure or containment internal structures] to ensure that deviations between the drawings used for construction and the as-built [YYY structure or containment internal structures] are reconciled and the [YYY structure or containment internal structures] maintains its structural integrity under the design basis loads. The design report provides criteria for the reconciliation between design and as-built conditions.
An ITAAC inspection is performed of the as-built [YYY structure or containment internal structures] to verify that the dimensions of the [YYY structure or containment internal structures] critical sections conform to design requirements identified in [Tier 1 Figure(s) x.x.x-x or Table(s) x.x.x-x].</td></tr>
</table>

<table>
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<tr><td rowspan="2">S02</td><td><u>As-Built Analysis</u>
Non-Seismic Category I Structures, Systems, and Components (SSCs) Seismic Interaction</td><td>Non-Seismic Category I SSCs located within an impact zone of Seismic Category I SSCs will not impair the ability of Seismic Category I SSCs to perform their safety functions during or following a safe-shutdown earthquake (SSE).</td><td>An analysis will be performed of the as-built non-Seismic Category I SSCs.</td><td>A report exists and concludes that the Non-Seismic Category I SSCs located within an impact zone of Seismic Category I SSCs will not impair the ability of Seismic Category I SSCs to perform their safety functions during or following an SSE as demonstrated by one or more of the following criteria:
• Seismic Category I SSCs are isolated from non-Seismic Category I SSCs so that interaction does not occur.
• Seismic Category I SSCs are analyzed to confirm that the ability to perform their safety functions is not impaired as a result of impact from non-Seismic Category I SSCs.
• A non-Seismic Category I restraint system designed to Seismic Category I requirements is used to assure that no interaction occurs between Seismic Category I SSCs and non-Seismic Category I SSCs.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
Section 3.7.x discusses that per Regulatory Guide 1.29, some SSCs that perform no safety-related functions could, if they failed under seismic loading, prevent or reduce the functioning of Seismic Category I SSCs.
An ITAAC analysis is performed to verify that the as-built non-Seismic Category I SSCs located within an impact zone of Seismic Category I SSCs will not impair the ability of Seismic Category I SSCs to perform their safety functions as demonstrated by one or more of the following criteria:
• Seismic Category I SSCs are isolated from non-Seismic Category I SSCs so that interaction does not occur.
• Seismic Category I SSCs are analyzed to confirm that the ability to perform their safety functions is not impaired as a result of impact from non-Seismic Category I SSCs.
• A non-Seismic Category I restraint system designed to Seismic Category I requirements is used to assure that no interaction occurs between Seismic Category I SSCs and non-Seismic Category I SSCs.</td></tr>
</table>

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
S03	**As-Built Inspection** ASME Code Section III Class MC Primary Reactor Containment Design Report (As-Built)	The ASME Code Class MC [primary reactor containment], including the penetration assemblies, complies with the ASME Code Section III.	An inspection will be performed of the ASME Code Class MC as-built [primary reactor containment] Design Report required by ASME Code Section III.	The ASME Code Section III Design Report (NCA-3550) for the ASME Code Class MC [primary reactor containment], including the penetration assemblies, exists and concludes that the requirements of ASME Code Section III are met.
	Tier 2 Section 14.3 Discussion of ITAAC Implementation As required by ASME Code Section III NCA-1210, the ASME Code Class MC [primary reactor containment] requires a Design Report in accordance with NCA-3550. NCA-3551.1 requires that the drawings used for construction shall be in agreement with the Design Report before it is certified and shall be identified and described in the Design Report. It is the responsibility of the N Certificate Holder to furnish a Design Report for each component and support, except as provided in NCA-3551.2 and NCA-3551.3. NCA-3551.1 also requires that a Registered Professional Engineer certify the Design Report when it is for Class MC vessels and supports. NCA-3554 requires that any modification of any document used for construction, from the corresponding document used for design analysis, shall be reconciled with the Design Report. An ITAAC inspection is performed of the ASME Code Class MC as-built [primary reactor containment], including the penetration assemblies, Design Report (NCA-3550) to verify that the requirements of ASME Code Section III are met.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
S04	**As-Built Inspection** ASME Code Section III Code Class MC Data Reports	The ASME Code Class MC components conform to the rules of construction of ASME Code Section III.	An inspection will be performed of the ASME Code Class MC as-built component Data Reports, required by ASME Code Section III.	ASME Code Section III Data Reports for the ASME Code Class MC components listed in [Table x.x.x-x] exist and conclude that the requirements of ASME Code Section III are met.
	Tier 2 Section 14.3 Discussion of ITAAC Implementation The ASME Code Section III requires documentary evidence be available at the construction or installation site before use or installation to ensure that ASME Code Class MC components conform to the requirements of the Code. As defined in NCA-9000, a component can be a vessel, pump, pressure relief valve, line valve, storage tank, piping system, or core support structure that is designed, constructed, and stamped in accordance with the rules of Section III. The ASME Code Class MC components require a Data Report as specified by NCA-1210. The Data Report is prepared by the Certificate Holder or Owner and signed by the Certificate Holder or Owner and the Inspector as specified by NCA-8410. The type of individual Data Report Forms necessary to record the required Code Data is specified in the Table NCA-8100-1. An ITAAC inspection is performed of the Data Reports for the ASME Code Class MC as-built components listed in [Tier 1 Table x.x.x-x] to (1) ensure that the appropriate Data Reports have been provided as specified in Table NCA-8100-1, (2) ensure that the Certificate Holder or Owner and the Authorized Nuclear Inspector have signed the Data Reports, and (3) ensure that the requirements of ASME Code Section III are met.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
S05	**<u>Preoperational Test</u>** ASME Code Section III, Division 1, Class MC Primary Reactor Containment - Pressure Test.	The ASME Code Class MC [primary reactor containment] maintains its pressure boundary integrity when subjected to the containment design pressure.	An ASME Code Section III pressure test will be performed of the ASME Code Class MC as-built [primary reactor containment].	The pressure test results for the ASME Code Class MC [primary reactor containment] meet the requirements of ASME Code Section III, Division 1 NE-6000.
	<u>Tier 2 Section 14.3 Discussion</u> Following fabrication of the ASME Code Class MC [primary reactor containment], fabricated to ASME Code Section III, Division 1, a proof test of the ASME Code Class MC [primary reactor containment] is performed to demonstrate the quality of fabrication and to verify the acceptable performance of new design features. In accordance with Section 14.2.x, a preoperational pressure test demonstrates that the structural integrity of the ASME Code Class MC [primary reactor containment] meets the requirements of ASME Code Section III, Division 1 NE-6000.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
S06	**<u>As-Built Inspection</u>** ASME Code Section III, Division 2, Class CC Concrete Primary Reactor Containment Design and Construction Reports	The ASME Code Class CC concrete [primary reactor containment], including the liner plate and penetration liners, complies with the ASME Code Section III.	An inspection will be performed of the Design and Construction Reports required by ASME Code Section III for the ASME Code Class CC as-built concrete [primary reactor containment], including the liner plate and penetration liners.	The ASME Code Section III Design Report (NCA-3350) and Construction Report (NCA-3380) for the ASME Code Class CC concrete [primary reactor containment], including the liner plate and penetration liners, exist and conclude that the requirements of ASME Code, Section III are met.
	<u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u> As required by ASME Code Section III, NCA-3300, the ASME Code Class CC concrete [primary reactor containment] requires a Design and Construction Report. NCA-3350 requires that the Designer shall prepare a Design Report in sufficient detail to show that the applicable stress limitations are satisfied when the component is subject to the loading conditions specified in the Design Specification and this Section. NCA-3380 requires that the Designer, who shall certify that the Construction Report conforms to the requirements of Division 2 and the Design Specification, shall evaluate the Construction Report. Prior to certification, the Designer shall review the file of as-built, design, shop, and field drawings to establish that the list provided by the Constructor in the Construction Report corresponds to the as-built, design, shop, and field drawings that will be maintained as a file by the Owner. An ITAAC inspection is performed of the Design Report (NCA-3350) and Construction Report (NCA-3380) for the ASME Code Class CC as-built concrete [primary reactor containment] including the liner plate and penetration liners, to verify that the requirements of ASME Section III are met.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
S07	**As-Built Inspection** ASME Code Section III Code Class CC Data Reports	The ASME Code Class CC concrete [primary reactor containment], including the liner plate and penetration liners, conforms to the rules of construction of ASME Code Section III.	An inspection will be performed of the ASME Code Class CC as-built concrete [primary reactor containment] Data Reports required by ASME Code Section III.	ASME Code Section III Data Reports for the ASME Code Class CC concrete [primary reactor containment], including the liner plate and penetration liners, exist and conclude that the requirements of ASME Code Section III are met.
	Tier 2 Section 14.3 Discussion of ITAAC Implementation The ASME Code Section III requires documentary evidence be available at the construction or installation site before use or installation to ensure that the ASME Code Class CC concrete [primary reactor containment], including the liner plate and penetration liners, conforms to the requirements of the Code. The ASME Code Class CC concrete [primary reactor containment] requires a Data Report as specified by NCA-1210. The Data Report is prepared by the Certificate Holder or Owner and signed by the Certificate Holder or Owner and the Inspector as specified by NCA-8410. The type of individual Data Report Forms necessary to record the required Code Data is specified in the Table NCA-8100-1. An ITAAC inspection is performed of the Data Reports for the ASME Code Class CC as-built concrete [primary reactor containment] including the liner plate and penetration liners to (1) ensure that the appropriate Data Reports have been provided as specified in Table NCA-8100-1, (2) ensure that the Certificate Holder or Owner and the Authorized Nuclear Inspector have signed the Data Reports, and (3) ensure that the requirements of ASME Code Section III are met.			

No.	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
S08	**Preoperational Test** ASME Section III, Division 2, Class CC Concrete Primary Reactor Containment - Structural Integrity	The ASME Code Class CC concrete [primary reactor containment] pressure boundary retains its structural integrity when subjected to the containment design pressure.	A Structural Integrity Test will be performed of the ASME Code Class CC as-built concrete [primary reactor containment].	The Structural Integrity Test results for the ASME Code Class CC concrete [primary reactor containment], including the liner plate and penetration liners, meet the requirements of ASME Code Section III, Division 2, CC-6000.
	Tier 2 Section 14.3 Discussion of ITAAC Implementation Following construction of the ASME Code Class CC concrete [primary reactor containment], constructed to ASME Code, Section III, Division 2, a proof test of the concrete [primary reactor containment] is performed to demonstrate the quality of construction and to verify the acceptable performance of new design features. [For pressure suppression type containments, the test shall include a differential pressure test of the boundary between the drywell and wetwell compartments if the boundary loading induces stresses in the containment structure.] In accordance with Section 14.2.x, a preoperational test demonstrates that the structural integrity test of the ASME Code Class CC concrete [primary reactor containment], including the liner plate and penetration liners, meets the requirements of ASME Code Section III, Division 2, CC-6000.			

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<tr><td rowspan="2">S09</td><td><u>As-Built Analysis</u>
Radwaste Category [RW-XX] Structure</td><td>The [YYY structure] is a non-Seismic Category I [RW-XX] structure and maintains its structural integrity under the design basis loads as provided in RG 1.143.</td><td>An inspection and reconciliation analysis will be performed of the as-built [RW-XX] [YYY structure].</td><td>A reconciliation report exists and concludes that the deviations between the drawings used for construction and the as-built [RW-XX] [YYY structure] have been reconciled and that the as-built [RW-XX] [YYY structure] maintains its structural integrity under the design basis loads.</td></tr>
<tr><td colspan="4"><u>Tier 2 Section 14.3 Discussion of ITAAC Implementation</u>
The [RW-XX] [YYY structure] and its design basis loads are discussed in Section 3.8.x. Guidance for the content and structure of the as-built design report is provided in Standard Review Plan (SRP) Section 3.8.4, Appendix C.
The scope of this ITAAC is a reconciliation of deviations between the issued for construction drawings that implement the seismic and dynamic analyses and the as-built structures. The design report provides criteria for the reconciliation. Design basis loads as listed in RG 1.143 are:
• Earthquake
• Wind
• [Tornado and Hurricane]
• [Tornado and Hurricane Missile]
• Flood
• Precipitation (Rain, Snow)
• [Accidental Explosion (Fixed Facility)]
• [Accidental Explosion (Transportation Vehicle)]
• [Malevolent Vehicle Assault]
• [Small Aircraft Crash]
An ITAAC inspection and reconciliation analysis is performed of the as-built [RW-XX] [YYY structure] to ensure that deviations between the drawings used for construction and the as-built [RW-XX] [YYY structure] are reconciled and the as-built [RW-XX] [YYY structure] maintains its structural integrity under the design basis loads.</td></tr>
</table>