C.III.7 Inspections, Tests, Analyses, and Acceptance Criteria for Combined License Applications Referencing a Certified Design and/or Early Site Permit

The requirements of Title 10, Section 52.80(a), of the *Code of Federal Regulations* (10 CFR 52.80(a)) specify that the contents of a combined license (COL) application must include the proposed inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the COL, provisions of the Atomic Energy Act, and U.S. Nuclear Regulatory Commission (NRC) regulations.

COL applications may incorporate by reference early site permits (ESPs), design control documents (DCDs), neither, or both. The requirements for inclusion of inspection, test, analysis, and acceptance criteria (ITAAC) in an ESP are specific to emergency planning ITAAC (EP-ITAAC) and are contained in 10 CFR 52.17(b)(3). The requirements for inclusion of ITAAC in a DCD appear in 10 CFR 52.47(a)(vi). Since the requirement for including ITAAC in an ESP has not existed since the agency first promulgated 10 CFR Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants," there may be ESPs issued by the NRC and referenced in a COL application that do not contain ITAAC. Based on the above requirements, several variations exist for a COL application with respect to the inclusion of ITAAC, as shown in Table C.III.7-1.

Table C.III.7-1 COL Application Variations with Respect to ITAAC

Scenario	COL Application	Early Site Permit		Certified Design
		w/o ITAAC	w/ITAAC	
1	X			
2	X	X		
3	X		X	
4	X	X		X
5	X		X	X
6	X			X

Since COL applications may incorporate by reference ESPs, DCDs, neither, or both, the scope of ITAAC development for a COL applicant will differ, as shown by the COL application scenarios above, and are dependent on the documents that are referenced in the COL application. However, the COL applicant must propose a complete set of ITAAC that addresses the entire facility, including EP-ITAAC and ITAAC on physical security hardware (PS-ITAAC). That is, the entire set of ITAAC for the facility as described in the COL application (i.e., COL-ITAAC) includes the following ITAAC:

(1) design certification ITAAC (DC-ITAAC)
(2) emergency planning ITAAC (EP-ITAAC)
(3) physical security hardware ITAAC (PS-ITAAC)
(4) site-specific ITAAC (SS-ITAAC)

The entire set of ITAAC for the facility described in a COL application can be represented as follows:

$$\text{COL-ITAAC} = (\text{DC} + \text{EP} + \text{PS} + \text{SS})\ \text{ITAAC}$$

COL Application Scenarios 1 and 2

COL application Scenarios 1 and 2, described in Table C.III.7-1 above, require the COL applicant to develop the same scope of ITAAC. That is, the COL applicant needs to develop design ITAAC for the entire facility, including EP-ITAAC and PS-ITAAC. In these two scenarios, the design ITAAC include the equivalent ITAAC normally associated with certified designs and the site-specific design portions (not certified) of the facility. Section C.II.1 of this regulatory guide provides the applicable guidance for development of appropriate ITAAC for the design portions of the facility.

COL Application Scenario 3

COL application Scenario 3, described above, requires the COL applicant to develop the same scope of ITAAC as those in Scenarios 1 and 2, with the exception of EP-ITAAC. The COL applicant in this scenario may only include the generic EP-ITAAC provided in Section C.II.1 of this regulatory guide as part of the ESP referenced in the application. The COL applicant may need to modify the EP-ITAAC as necessary to accommodate any site-specific impacts on the emergency plan. For generic EP-ITAAC that have already been modified to accommodate site-specific impacts, further modifications may be necessary to incorporate site design specific impacts as needed. In addition, the applicant should develop the remaining ITAAC for the facility, including the physical security hardware, in accordance with the guidance in Section C.II.1 of this regulatory guide.

COL Application Scenario 4

The COL application described in Scenario 4 above requires the COL applicant to develop ITAAC for the site-specific design portions of the facility (SS-ITAAC) that are not included in the certified design. In addition, the COL applicant must develop and/or modify, as necessary, PS-ITAAC for the design and the facility. (The certified design referenced in the COL application may include some PS-ITAAC.) The COL applicant in Scenario 4 that references an ESP should incorporate and modify, as necessary to accommodate site-specific impacts, the generic EP-ITAAC in Section C.II.1 of this regulatory guide. This will complete the entire set of facility ITAAC that is required for the COL application.

COL Application Scenario 5

The COL application described in Scenario 5 above requires the COL applicant to develop ITAAC for the site-specific design portions of the facility (SS-ITAAC) that are not included in the certified design. In addition, the COL applicant must develop and/or modify PS-ITAAC for the design and the facility. (The certified design referenced in the COL application may include some PS-ITAAC.) In addition, the COL applicant in this scenario may only have included the generic EP-ITAAC provided in Section C.II.1 of this regulatory guide as part of the ESP referenced in the application. The applicant should modify these generic EP-ITAAC to accommodate site-specific and design-specific impacts. For generic EP-ITAAC that have already been modified to accommodate site-specific impacts, further modifications may be necessary to incorporate design-specific impacts as needed. This will complete the entire set of ITAAC for the facility that is required for the COL application.

COL Application Scenario 6

The COL application in Scenario 6 is identical to that in Scenario 4 with respect to ITAAC development.

C.III.7.1 ***Design Certification ITAAC***

DC-ITAAC correspond to the top-level design and performance criteria established for a standard certified design. DC-ITAAC appear in the Tier 1 portion of the generic DCD referenced in the appendix to 10 CFR Part 52 that applies to the certified design referenced in the COL application. As identified in 10 CFR 52.80(a)(2), if the COL application references a standard certified design, the ITAAC contained in the certified design must apply to those portions of the facility design that are approved in the design certification. Certified designs do not typically include EP-ITAAC because applicants must consider site-specific features, which a certified design does not include, in the development of emergency plans for the facility. This section subsequently discusses EP-ITAAC, and Section C.II.1 of this regulatory guide provides guidance for COL applicants on development and inclusion of EP-ITAAC. Some certified designs may also include PS-ITAAC; however, the NRC is in the process of developing requirements for including physical security aspects in standard certified designs. In conjunction with these regulatory developments, guidance on the development of PS-ITAAC is also under development. Further discussion on security ITAAC is provided later in this section, and Section C.II.1 of this regulatory guide provides guidance on security ITAAC.

As with any other requirement of a design certification, a COL applicant may seek an exemption from the NRC to modify an ITAAC included in the Tier 1 document in the DCD. Section VIII of the appendix to 10 CFR Part 52 that is applicable to the certified design referenced in the COL application discusses the process for seeking exemption from a design certification requirement. Section C.IV.3 of this regulatory guide includes further discussion and guidance on the change process associated with the information contained in a DCD.

C.III.7.2 ***Site-Specific ITAAC***

SS-ITAAC should address each system that is outside the scope of the standard certified design. Applicants should develop ITAAC for the site-specific systems that are designed to meet the significant interface requirements of the standard certified design, that is, the site-specific systems that are needed for operation of the plant (e.g., offsite power, circulating water system). The SS-ITAAC need not address ancillary buildings and structures on the site, such as administrative buildings, parking lots, warehouses, and training facilities.

For certified designs, Section 14.3 of the DCD discusses the selection methodology for structures, systems, and components (SSCs) to be included in ITAAC. The staff expects that COL applicants that reference a certified design will use the selection methodology from the DCD, as supplemented by insights from the plant-specific probabilistic risk assessment, in the selection of site-specific SSCs to be included in an ITAAC. In particular, a system with safety-related functions, safety-significant functions, or risk-significant functions should have entries in ITAAC for those functions. In contrast, for a site-specific system that does not have any functions that meet the Section C.II.1 screening criteria (e.g., cooling towers), the ITAAC table would not identify any specific inspections, tests, or analyses and should simply state, "No entry for this system."

The COL applicant that references a certified design also should establish SS-ITAAC as appropriate to demonstrate compliance with the significant interface requirements, if any, established in Tier 1 of the generic DCD. The agency gives interface requirements under 10 CFR 52.47(b)(3). They must be verifiable through ITAAC under 10 CFR 52.47(b)(4). Tier 1 interface requirements describe the significant design provisions for interfaces between the certified design and SSCs of the facility that are wholly or partially outside the scope of the certified design. Tier 1 interface requirements also define the significant attributes and performance characteristics that the portion of the facility that is outside the

scope of the design certification must have in order to support the in-scope (standard) portion of the design.

The extent of SS-ITAAC to be included in a COL application to address interface requirements will depend on which certified design is referenced in the application. For example, Section 4.0 of the DCD for the advanced boiling-water reactor (ABWR) lists eight systems with Tier 1 interface requirements that must be addressed by a COL applicant referencing the ABWR certified design. They include, among other things, the capacity of the ultimate heat sink (UHS) and the voltage and frequency stability of the offsite power system.

In order to maintain consistency, the format and content of site-specific design ITAAC developed for a COL application should be similar to the DC-ITAAC included in the application. Tables C.III.7-2 and C.III.7-3 identify the ABWR Tier 1 interface requirements and sample ITAAC for the UHS and offsite power system. These ITAAC were established on a generic basis. As such, the COL applicant should provide more specific acceptance criteria that reflect site-specific design information and/or site-specific features.

Table C.III.7-4 identifies the complete set of ABWR Tier 1 interface requirements. In contrast, the Tier 1 information for the AP1000 DCD does not contain any interface requirements for site-specific elements of the facility outside the scope of the certified design because the AP1000 has passive safety functions and does not rely upon systems outside the scope of the certified design to perform any safety-related or safety-significant functions. COL applicants that reference the AP1000 certified design should apply the selection methodology specified in FSAR Section 14.3 and supplemented, as necessary, to determine the site-specific design features of the facility, including physical security hardware, that will require ITAAC in addition to those required for emergency planning.

Site-specific design ITAAC are proposed by the COL applicant and are subject to NRC review and a hearing with respect to whether they satisfy the "necessary and sufficient" requirement of 10 CFR 52.80(a). The NRC will incorporate the complete set of COL-ITAAC into the COL as a license condition to be satisfied prior to fuel load. As such, a COL holder may request a change in one or more of the site-specific design ITAAC via the license amendment process applicable to 10 CFR Part 52.

C.III.7.3 *Emergency Planning ITAAC*

COL applications must include EP-ITAAC, as required by the Energy Policy Act of 1992 and conforming 10 CFR Part 52 amendments. This requirement responds to the singularly contentious and disruptive role played by the late treatment of emergency planning issues in operating license proceedings on completed facilities under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The requirements for inclusion of ITAAC in an ESP are specific to EP-ITAAC and are contained in 10 CFR 52.17(b)(3). The regulations at 10 CFR 52.80(a) contain the requirements for including EP-ITAAC in a COL application. In the staff requirements memorandum (SRM) regarding SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," dated October 28, 2005, the NRC Commission approved EP-ITAAC for use in COL applications. In this SRM, the Commission approved a set of generic EP-ITAAC for use by ESP and COL applicants. Section C.II.1 of this regulatory guide contains a generic set of EP-ITAAC based on those approved in SECY-05-0197.

A series of interactions between industry and the NRC established the scope and general content of the generic EP-ITAAC approved in SRM-SECY-05-0197 that a COL application should include. These EP-ITAAC were established on a generic basis and are not associated with any particular site or

design. As such, several of the generic EP-ITAAC require the COL applicant to provide more specific acceptance criteria that reflect the plant-specific design and site-specific emergency response plans and facilities. Section C.II.1 of this regulatory guide includes these generic EP-ITAAC.

The EP-ITAAC in Table C.II.1-B1 represent an acceptable set of generic EP-ITAAC for a COL application, including ITAAC on emergency response facilities that are within the scope of the design certification. COL applications referencing a certified design must include the design certification ITAAC on emergency response facilities.

EP-ITAAC are proposed by the COL applicant and, except for EP-ITAAC from the referenced design certification or ESP, are subject to NRC review with respect to whether they satisfy the "necessary and sufficient" requirement of 10 CFR 52.80(a). The NRC will incorporate the complete set of COL-ITAAC into the COL as a license condition to be satisfied prior to fuel load. As such, a licensee may request a change in one or more of the EP-ITAAC via the license amendment process, in accordance with Section 52.98(f).

C.III.7.4 ***Physical Security ITAAC***

COL applicants must include physical security ITAAC identified in the referenced DCD and should supplement them as necessary, consistent with the guidance provided on generic PS-ITAAC in Section C.II.1 and Appendix C.II.1-C of this regulatory guide. In addition, in SRM-SECY-05-0120, "Security Design Expectations for New Reactor Licensing Activities," dated July 6, 2005, the Commission provided direction to the staff to proceed with rulemaking to establish security design requirements for new reactor licensing (i.e., in certified designs). The staff is undertaking several security-related rulemakings and expects to issue further guidance related to the development of PS-ITAAC in conjunction with these security rulemakings. At the present time, the staff anticipates that a set of generic PS-ITAAC that may be modified by each COL applicant to accommodate site-specific design impacts and site-specific features, similar to the EP-ITAAC approach, will be proposed for future NRC endorsement. COL applications that do not reference a certified design must develop the entire set of PS-ITAAC for the facility. The following discussion assumes that the NRC would endorse a generic PS-ITAAC approach similar to the approach for EP-ITAAC.

The generic PS-ITAAC represent the complete scope of PS-ITAAC required for a COL application, including ITAAC on physical security features that are within the scope of the design certification. COL applications referencing a certified design must include the DC-ITAAC on physical security features.

PS-ITAAC are proposed by the COL applicant and, except for PS-ITAAC from the referenced design certification, are subject to NRC review with respect to whether they satisfy the "necessary and sufficient" requirement of 10 CFR 52.80(a). The NRC will incorporate the complete set of COL-ITAAC into the COL as a license condition to be satisfied prior to fuel load. As such, a licensee may request a change in one or more of the PS-ITAAC via the license amendment process in accordance with 10 CFR 52.98(f).

C.III.7.5 ***Terminology***

The specific appendices of 10 CFR Part 52 that are applicable to the certified design provide definitions of terminology used in certified designs. The certified design terminology—such as generic DCD, plant-specific DCD, Tier 1, Tier 2*, and Tier 2—is not applicable to COL applications that do not

reference a certified design. As such, these terms do not have any meaning for a COL application that does not reference a certified design.

The COL applicant that references a certified design must incorporate the DCD in accordance with Section III.B of the applicable appendix to 10 CFR Part 52 for that certified design. Therefore, the terms above have significant meaning for the certified design portion of the COL application. The Tier 1 portion of the DCD includes the ITAAC for the certified design. However, SS-ITAAC, EP-ITAAC, and PS-ITAAC that are developed as part of the COL application are not contained in a document similar to the Tier 1 document. The terminology denotes the origin of the information contained in the COL application and determines the change process that applies to that information. Section VIII of the appendix of 10 CFR Part 52 that is applicable to that certified design governs the change process for COL application information that originates in a DCD. For COL information that does not originate in a DCD, a separate change process applies. Section C.IV.3 of this regulatory guide provides more detailed guidance on the change processes applicable to COL applicants.

In addition, as the terminology associated with the ITAAC denotes its origin, the origin of the ITAAC will also determine the active life of the ITAAC. The ITAAC for the entire facility (COL-ITAAC) will be subject to a license condition that requires successful completion of the ITAAC to obtain Commission approval for fuel load. Compliance with that license condition renders the ITAAC inactive for that licensee (i.e., the ITAAC have been successfully completed and are no longer applicable, as they are a one-time requirement). However, the NRC will not remove them from the design certification rule following completion by a COL holder, and they will remain applicable to all future COL applicants referencing that certified design.

COL applicants that reference a certified design should seek to use terminology and definitions in the development of ITAAC that are consistent with those used in the Tier 1 information included in the certified design. For example, the terms “basic configuration” used in the ABWR certified design and “functional arrangement” used in the AP1000 certified design, although apparently similar, have very different definitions. COL applicants developing site-specific ITAAC should thoroughly consider the use of appropriate definitions for their SS-ITAAC. “Basic configuration” for a system, as used in an ITAAC, includes verifying the functional arrangement, verifications of welding, environmental qualification, seismic qualification, and motor-operated valves. “Functional arrangement” for a system, as used in an ITAAC, includes verification that the system is constructed as depicted in the Tier 1 design drawings, including equipment and instrument location. Section C.II.1 of this regulatory guide provides additional guidance on ITAAC terminology.

Table C.III.7-2 UHS Strawman ITAAC COL Application that References an ABWR			
	Draft Generic ITAAC		
ABWR Tier 1 Interface Requirement	**Design Requirement**	**Inspections, Tests, Analyses**	**Acceptance Criteria**
(a) Provide cooling water to the RSW system for normal plant operation and to permit safe shutdown and cooldown of the plant and maintain the plant in a safe-shutdown condition for design-basis events. (Interface 4.1(1))	1.(a) The UHS has sufficient cooling water to supply the RSW system for normal plant operation and to permit safe shutdown and cooldown of the plant and maintain the plant in a safe-shutdown condition for design-basis events.	1. Inspections of the configuration of the UHS will be performed.	1.(a) The suction lines from the UHS are located at elevation _____.
(b) Makeup water to the UHS shall not be required for at least 30 days following a design-basis accident. (Interface 4.1(2))	1.(b) Makeup water to the UHS shall not be required for at least 30 days following a design-basis accident.		1.(b) The minimum surface area and capacity of the UHS above the suction lines are _____, respectively. [Note: ITAAC (b) is only needed for those UHSs that do not use natural bodies of water.]

Table C.III.7-2 UHS Strawman ITAAC COL Application that References an ABWR			
	Draft Generic ITAAC		
ABWR Tier 1 Interface Requirement	**Design Requirement**	**Inspections, Tests, Analyses**	**Acceptance Criteria**
Any active safety-related SSCs within the UHS shall have three divisions powered by their respective Class 1E divisions. Each division shall be physically separated and electrically independent of the other divisions. (Interface 4.1(3))	2.(a) Active safety-related SSCs within the UHS shall have three divisions powered by their respective Class 1E divisions. 2.(b) Each division shall be physically separated and 2.(c) electrically independent of the other divisions. [Note: This ITAAC is not needed if there are no active safety-related SSCs in the UHS.]	2.(a) Tests will be performed on the UHS system by providing a test signal to only one Class 1E division at a time. 2.(b) Inspections of the as-built UHS mechanical system components shall be performed. 2.(c) Inspections of the as-built UHS electrical system components shall be performed.	2.(a) The test signal exists in only the Class 1E division under test in the UHS system. 2.(b) Each mechanical division of the UHS system is physically separated from other mechanical divisions of the UHS system by structural and/or fire barriers. 2.(c) Electrical isolation exists between Class 1E divisions.
UHS system divisions A and B components shall have control interfaces with the remote shutdown system (RSS) as required to support UHS operation during RSS design-basis conditions. (Interface 4.1(4))	3. Displays and controls in the main control room and RSS are provided for required functions of the UHS system.	3. Inspections will be performed on the main control room and RSS displays and controls for the UHS system.	3. Displays and controls exist in the main control room and RSS sufficient to support UHS operation during remote shutdown design-basis conditions. [Note: The COL applicant will identify the specific displays and controls.]

Table C.III.7-2 UHS Strawman ITAAC COL Application that References an ABWR			
	Draft Generic ITAAC		
ABWR Tier 1 Interface Requirement	**Design Requirement**	**Inspections, Tests, Analyses**	**Acceptance Criteria**
The UHS shall be classified as seismic Category 1. (Interface 4.1(5))	4. The UHS is able to withstand the structural design-basis loads. [Note: This only applies to onsite manmade features of the UHS and does not apply to natural features, such as oceans, lakes, and rivers.]	4. A structural analysis will be performed that reconciles the as-built data with the structural design basis.	4. An existing structural analysis concludes that the as-built UHS is able to withstand the structural design-basis loads.

Table C.III.7-3 Offsite Power System Strawman Inspection, Test, Analysis, & Acceptance Criteria (ITAAC) for a Combined License (COL) Application That References an Advanced Boiling-Water Reactor (ABWR)			
	Draft Generic ITAAC		
ABWR Tier 1 Interface Requirement	**Design Requirement**	**Inspections, Tests, Analyses**	**Acceptance Criteria**
A minimum of two independent offsite transmission circuits from the transmission network (TN).	1. There is redundancy and independence in the offsite power system.	1.(a) Inspections of the as-built offsite power supply transmission system will be performed. 1.(b) Tests of the as-built offsite power system will be conducted by providing a test signal in only one offsite power circuit/system at a time.	1.(a)(i) Two or more offsite transmission circuits exist. (ii) The offsite transmission circuits are separated by a minimum distance of_____. (iii) The offsite transmission lines do not have a common takeoff structure or use a common structure for support. 1.(b) A test signal exists in only the circuit under test.

Table C.III.7-3 Offsite Power System
Strawman Inspection, Test, Analysis, & Acceptance Criteria (ITAAC) for a
Combined License (COL) Application That References an Advanced Boiling-Water Reactor (ABWR)

	Draft Generic ITAAC		
ABWR Tier 1 Interface Requirement	**Design Requirement**	**Inspections, Tests, Analyses**	**Acceptance Criteria**
Voltage variations of the offsite TN during steady-state operation shall not cause voltage variations at the loads of more than plus or minus 10% of the loads' nominal ratings.	2. Site loads are protected from offsite voltage variations during steady-state operation.	2. Analyses of TN voltage variability and steady-state load requirements for as-built SSCs will be performed.	2. An existing report concludes that voltage variations of the offsite TN during steady-state operation will not cause voltage variations at the loads of more than plus or minus 10% of the loads' nominal ratings.
The normal steady-state frequency of the offsite TN shall be within plus or minus 2 hertz of 60 hertz during recoverable periods of system instability.	3. Site loads are protected from offsite frequency variations.	3. Analyses of as-built site loads on the TN and TN frequency variability during normal steady-state conditions and periods of instability will be performed.	3. An existing report concludes that the normal steady-state frequency of the offsite TN will be within plus or minus 2 hertz of 60 hertz during recoverable periods of system instability.
The offsite transmission circuits from the TN through and including the main step-up power transformers and RATs shall be sized to supply their load requirements, during all design operating modes, of their respective Class 1E divisions and non-Class 1E load groups.	4. The offsite power system is adequately sized to supply necessary load requirements during all design operating modes.	4. Analyses of the as-built 1E divisions and non-Class 1E load groups will be performed to determine their load requirements during all design operating modes.	4. An existing report concludes that the offsite transmission circuits from the TN through and including the main step-up power transformers and RATs are sized to supply their load requirements, during all design operating modes, of their respective Class 1E divisions and non-Class 1E load groups.
The impedance of the main step-up transformer and RATs shall be compatible with the interrupting capability of the plant's circuit interrupting devices.	5. The impedance of the offsite power system shall be compatible with the interrupting capability of the plant's circuit interrupting devices.	5. Analyses of the impedance of the as-built main step-up transformer and RATs will be performed.	5. An existing report concludes that the impedance of the main step-up transformer and RATs are compatible with the interrupting capability of the plant's circuit interrupting devices.
The independence of offsite transmission power, instrumentation, and control circuits shall be compatible with the portion of the offsite transmission power, instrumentation, and control circuits with the GE design scope.	6. The offsite transmission power, instrumentation, and control circuits are independent.	6. Tests of the as-built offsite power, instrumentation, and control system will be conducted by providing a test signal in only one offsite power circuit/system at a time.	6. A test signal exists in only the circuit under test.

Table C.III.7-3 Offsite Power System Strawman Inspection, Test, Analysis, & Acceptance Criteria (ITAAC) for a Combined License (COL) Application That References an Advanced Boiling-Water Reactor (ABWR)			
	Draft Generic ITAAC		
ABWR Tier 1 Interface Requirement	**Design Requirement**	**Inspections, Tests, Analyses**	**Acceptance Criteria**
Instrumentation and control system loads shall be compatible with the capacity and capability design requirements of DC systems within the GE design scope.	7. Instrumentation and control system loads shall be compatible with the capacity and capability design requirements of the DC systems.	7. Analyses of offsite power control system and instrumentation loads shall be conducted.	7. An existing report concludes that the offsite power control system and instrumentation loads are compatible with the capacity and capability of the DC systems.

Table C.III.7-4 ABWR Tier 1 Interface Requirements	
1.	**Ultimate Heat Sink**
(a)	The system must provide cooling water to the RSW system to support normal plant operation and to permit safe shutdown and cooldown of the plant and maintain the plant in a safe-shutdown condition for design-basis events.
(b)	Makeup water to the UHS shall not be required for at least 30 days following a design-basis accident.
(c)	Any active safety-related SSCs within the UHS shall have three divisions powered by their respective Class 1E divisions. Each division shall be physically separated and electrically independent of the other divisions.
(d)	UHS system divisions A and B components shall have control interfaces with the RSS as required to support UHS operation during RSS design-basis conditions.
(e)	The UHS must be classified as seismic Category 1.
2.	**Offsite Power System (Table 2-1)**
(a)	A minimum of two independent offsite transmission circuits from the TN must be available.
(b)	Voltage variations of the offsite TN during steady-state operation shall not cause voltage variations at loads of more than plus or minus 10% of the loads' nominal ratings.
(c)	The normal steady-state frequency of the offsite TN shall be within plus or minus 2 hertz of 60 hertz during recoverable periods of system instability.
(d)	The offsite transmission circuits from the TN through and including the main step-up power transformers and RATs shall be sized to supply the load requirements, during all design operating modes, of their respective Class 1E divisions and non-Class 1E load groups.
(e)	The impedance of the main step-up transformer and RATs shall be compatible with the interrupting capability of the plant's circuit interrupting devices.
(f)	The independence of offsite transmission power, instrumentation, and control circuits shall be compatible with the portion of the offsite transmission power, instrumentation, and control circuits with the GE design scope.
(g)	Instrumentation and control system loads shall be compatible with the capacity and capability design requirements of DC systems within the GE design scope.
3.	**Makeup Water Preparation System**
(a)	This system serves as the makeup water supply to the makeup water purified system.

Table C.III.7-4 ABWR Tier 1 Interface Requirements	
4.	**Reactor Service Water System**
(a)	Design features limit maximum flooding height to 5 meters in each RSW heat exchanger room.
(b)	The design shall have three physically separated divisions. The respective Class 1E division will power each division. Each division shall be capable of removing the design heat capacity of the RSW heat exchangers in that division. Any structures housing RSW components shall have interdivisional boundaries (walls, floors, doors, and penetrations) with a 3-hour fire rating. Interdivisional flood control shall be provided to preclude flooding in more than one division.
(c)	Upon receipt of a loss-of-coolant accident signal, components in the standby mode shall start and/or realign to the operating mode.
(d)	RSW divisions A and B shall have control interfaces with the RSS as required to support RSW operation during RSS design-basis conditions.
(e)	If required by the elevation relationships between the UHS and RSW system components in the control building (CB), the RSW system shall have an antisiphon capability to prevent a CB flood after an RSW system break and after the RSW pumps have stopped.
(f)	RSW system pumps in any division shall be tripped on receipt of a signal indicating flooding in that division of the CB basement.
(g)	Any tunnel structures used to route the RSW system piping to the CB shall be seismic Category 1. Tunnel flooding due to site flood conditions shall be precluded.
5.	**Communication System**
(a)	The offsite emergency communication capability is supplied.
6.	**Site Security (none specified)**
7.	**Circulating Water System**
(a)	Design features limit flooding in the turbine building.
8.	**Heating, Ventilating, and Air Conditioning Systems**
(a)	Heating, ventilation, and air conditioning (HVAC) system includes control room habitability area HVAC system toxic gas monitoring.
(b)	HVAC system includes clean area HVAC system toxic gas monitoring.