Electrical ITAAC (E#) (Standard Review Plan 14.3.6)

GRP	ITAAC CATEGORY/TYPE	DESIGN COMMITMENT	INSPECTIONS, TESTS, ANALYSES	ACCEPTANCE CRITERIA
E01	**Preoperational Testing** Class 1E Electrical Divisional Power Verification	[XXX system] Class 1E equipment is powered from the appropriate Class 1E division.	A test will be performed of the as-built [XXX system] Class 1E equipment.	[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].
E02	**As-built Inspection** Physical Independence Between Redundant Class 1E Electrical Circuits	Physical separation exists between the redundant divisions of the [XXX system] Class 1E power circuits.	An inspection will be performed of the as-built [XXX system] Class 1E power circuits.	The physical distance between redundant divisions of [XXX system] Class 1E power circuit cable trays, conduits and cables satisfy the physical separation criteria of [Regulatory Guide 1.75], or barriers have been installed in accordance with [the approved design].
E03	**As-built Inspection** Physical Independence Between Class 1E Electrical Equipment and non-Class 1E Circuits	Physical separation exists between [XXX system] Class 1E power circuits and non-Class 1E circuits.	An inspection will be performed of the as-built [XXX system] Class 1E power circuits.	The physical distance between [XXX system] Class 1E power circuit cable trays, conduits and cables and non-Class 1E cable trays, conduits and cables satisfy the physical separation criteria of [Regulatory Guide 1.75], or barriers have been installed in accordance with [the approved design].
E04	**As-built Inspection** Electrical Isolation Between Class 1E Electrical Equipment Connected to non-Class 1E Circuits	Electrical isolation exists between [XXX system] Class 1E power circuits and non-Class 1E circuits.	An inspection will be performed of the as-built [XXX system] Class 1E power circuits.	Isolation devices are installed between [XXX system] Class 1E power circuits and non-Class 1E circuits, which satisfy the criteria of [Regulatory Guide 1.75].
E05	**As-built Inspection** Class 1E AC Electrical Equipment Capacity (Equipment Rating Verification)	[XXX system] Class 1E AC [switchgear, load centers, MCCs, transformers feeder breakers, load breakers, electrical penetrations] are sized to power their design loads.	i. An analysis will be performed of the [XXX system] Class 1E AC [switchgear, load centers, MCCs, transformers, feeder breakers, load breakers, containment electrical penetrations] required electrical rating.	i. The required design electrical rating to power design loads of each [XXX system] Class 1E AC [switchgear, load center, MCC, transformer, feeder breaker, load breaker, containment electrical penetrations] listed in [Table x.x.x-x] is determined. ii. The as-built electrical rating of each [XXX system] Class 1E AC [switchgear, load center, MCC, transformer, feeder breaker, load breaker, containment electrical penetrations] listed in [Table x.x.x-x] satisfies the required design electrical rating.

			ii. An inspection will be performed of each as-built [XXX system] Class 1E AC [switchgear, load center, MCC, transformer, feeder breaker, load breaker, containment electrical penetrations].	
E06	**<u>As-built Inspection</u>** Class 1E Inverter Capacity	[XXX system] Class 1E inverters are sized to power their design loads.	A test will be performed of the as-built [XXX system] Class 1E inverters.	Each [XXX system] Class 1E inverter maintains rated voltage and rated frequency within tolerances acceptable for its AC loads while the inverter supplies design loads using installed loads, simulated loads, or a combination of installed and simulated loads.
E07	**<u>As-built Inspection</u>** Class 1E Batter Charger Capacity	[XXX system] Class 1E battery chargers are sized to power their design loads.	A test will be performed of the as-built [XXX system] Class 1E battery chargers.	Each [XXX system] Class 1E battery charger maintains rated voltage within tolerances acceptable for its AC loads while the battery charger supplies design loads using installed loads, simulated loads, or a combination of installed and simulated loads.
E08	**<u>As-built Inspection</u>** Class 1E Battery Capacity	[XXX system] Class 1E batteries are sized to power their design loads.	A test will be performed of the as-built [XXX system] Class 1E batteries.	The terminal voltage for each [XXX system] battery is greater than [### volts] for [### 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.
E09	**<u>As-Built Inspection</u>** Class 1E AC and DC Circuit Interrupting Devices Coordination	The as-built [XXX system] Class 1E circuit interrupting devices are evaluated for electrical fault protection coordination.	An analysis will be performed of the as-built [XXX system] Class 1 E circuit interrupting devices.	The **Coordination Study** for the as-built [XXX system] Class 1E circuit interrupting devices confirms that the circuit interrupting device closest to the fault opens before other circuit interrupting devices.
E10	**<u>Preoperational Test</u>** Emergency Diesel Generator Load Test	[XXX system] Class 1E diesel generators are capable of supplying their rated loads.	A rated load test will be performed of the as-built [XXX system] Class 1E diesel generators.	Each [XXX system] Class 1E diesel generator maintains a voltage between [### volts AC] and [### volts AC], and a frequency between [### Hz] and [### Hz] while operating at the following test conditions: i. The diesel generator will be operated at a load equivalent to the short-time rating of the diesel generator for an interval of [2] hours or greater. ii. The diesel generator will be operated at a load equivalent of [90-100%] continuous rating of the diesel generator for an interval of

				[22] hours or greater.
E11	**Preoperational Test** Emergency Diesel Generator Load Shed and Sequencer Test	Upon loss of off-site power the [XXX system] Class 1E diesel generators automatically start and attain design voltage and frequency within the required time; the loads are shed from the associated [XXX system] Class 1E bus; and shut-down loads are automatically sequenced onto the Class 1E bus.	A test will be performed of the as-built [XXX system] Class 1E diesel generators and associated Class 1E buses.	Upon a simulated loss of off-site power the following responses are obtained for each [XXX system] Class 1E diesel generator: i) Loads are shed from the associated Class 1E buses. ii) The Class 1E diesel generator starts on the auto-start signal from its standby conditions, and attains required voltage and frequency in accordance with [the approved design limits and time]. iii) Shutdown loads are automatically sequenced onto their associated Class 1E bus. iv) The loads are operated for a minimum of [five] minutes.
E12	**Preoperational Test** Emergency Diesel Generator Automatic Start	Upon a safety injection actuation signal the [XXX system] Class 1E diesel generators automatically start and attain design voltage and frequency within the required time.	A test will be performed of the as-built [XXX system] Class 1E diesel generators.	Upon a simulated safety injection signal each [XXX system] Class 1E diesel generator : i) Starts on the auto-start signal from its standby conditions, and attains required voltage and frequency in accordance with [the approved design limits and time]. ii) Operates on standby for a minimum of [five] minutes.
E13	**As-built Inspection** Emergency Diesel Generator Fuel Oil Storage Tank Capacity	The fuel oil storage tank for each [XXX system] Class 1E diesel generator is sufficient to operate the diesel generator at its continuous rating following any design basis event for [seven] days.	An inspection will be performed of the as-built [XXX system] Class 1E diesel generator fuel oil storage tanks.	Each [XXX system] diesel generator fuel oil storage tank useable volume is greater than the volume of fuel oil consumed by its associated [XXX system] Class 1E diesel generator operating at its continuous rating for [seven] days.
E14	**Preoperational Test** Emergency Diesel Generator Makeup Flow Rate	The [XXX system] Class 1E 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 rated load.	A test will be performed of the as-built [XXX system] diesel generator fuel oil transfer system.	Each [XXX system] diesel generator fuel oil transfer pump operating in normal system alignment to the [XXX system] diesel generator day tank provides a fuel makeup rate at least equal to [XXX system] Class 1E diesel generator fuel oil consumption rate while operating at its 100% continuous rated load.
E15	**Preoperational Test** Non 1E Backup Diesel Generator Load Test	[XXX system] [nonsafety risk-significant, RTNSS, or defense in depth] diesel generators are capable of supplying their rated loads.	A rated load test will be performed of the as-built [XXX system] [nonsafety risk-significant, RTNSS, or	Each [XXX system] [nonsafety risk-significant, RTNSS, or defense in depth] diesel generator maintains a voltage between [### volts AC] and [### volts AC], and a frequency between [### Hz]and [### Hz] while operating at the following test conditions: i. The diesel generator will be operated at a load equivalent to the

			defense in depth] diesel generators.	short-time rating of the diesel generator for an interval of [#] hours or greater. and ii. The diesel generator will be operated at a load equivalent of [###] continuous rating of the diesel generator for an interval of [##] hours or greater.
E16	**Preoperational Test** Non 1E Backup Diesel Generator Load Shed and Sequencer Test	Upon loss of off-site power the [XXX system] [nonsafety risk-significant, RTNSS, or defense in depth] diesel generators automatically start and attain design voltage and frequency within the required time; the loads are shed from the associated [XXX system] Class 1E bus; and shut-down loads are automatically sequenced onto the Class 1E bus.	A test will be performed of the as-built [XXX system] [nonsafety risk-significant, RTNSS, or defense in depth] diesel generators and associated Class 1E buses.	Upon a simulated loss of off-site power the following responses are obtained for each [XXX system] [nonsafety risk-significant, RTNSS, or defense in depth]diesel generator: i) Loads are shed from the associated Class 1E buses. ii) The [nonsafety risk-significant, RTNSS, or defense in depth] diesel generator starts on the auto-start signal from its standby conditions, and attains required voltage and frequency in accordance with [the approved design limits and time]. iii) Shutdown loads are automatically sequenced onto their associated Class 1E bus. iv) The loads are operated for a minimum of [five] minutes.
E17	**Preoperational Test** Non 1E Backup Diesel Generator Automatic Start	Upon a safety injection actuation signal the [XXX system] [nonsafety risk-significant, RTNSS, or defense in depth]diesel generators automatically start and attain design voltage and frequency within the required time.	A test will be performed of the as-built [XXX system] [nonsafety risk-significant, RTNSS, or defense in depth] diesel generators.	Upon a simulated safety injection signal each [XXX system] [nonsafety risk-significant, RTNSS, or defense in depth] diesel generator : i) Starts on the auto-start signal from its standby conditions, and attains required voltage and frequency in accordance with [the approved design limits and time]. ii) Operates on standby for a minimum of [five] minutes.
E18	**As-built Inspection** Non 1E Backup Diesel Generator Fuel Oil Storage Tank Capacity	The fuel oil storage tank for each [XXX system] [nonsafety risk-significant, RTNSS, or defense in depth] diesel generator shall be sufficient to operate the diesel generator at its continuous rating following any design basis event for [##] days.	An inspection will be performed of the as-built [XXX system] fuel oil storage tanks.	Each [XXX system] diesel generator fuel oil storage tank useable volume is greater than the volume of fuel oil consumed by its associated [XXX system] [nonsafety risk-significant, RTNSS, or defense in depth] diesel generator operating at its continuous rating for [##] days.
E19	**Preoperational Test** Non 1E Backup Diesel	The [XXX system] [nonsafety risk-significant,	A test will be performed of the as-	Each [XXX system] diesel generator fuel oil transfer pump operating in normal system alignment to the [XXX system] diesel generator day

	Generator Makeup Flow Rate	RTNSS, or defense in depth] 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 continuous rating.	built [XXX system] diesel generator fuel oil transfer system.	tank provides a fuel makeup rate at least equal to the [XXX system] [nonsafety risk-significant, RTNSS, or defense in depth] diesel generator fuel oil consumption rate while operating at its continuous rating.
E20	**Preoperational Test** Station Blackout Backup Diesel Generator Load Test	[XXX system] station blackoutdiesel generators are capable of supplying their rated loads.	A rated load test will be performed of the as-built [XXX system] station blackout diesel generators.	Each [XXX system] station blackout diesel generator maintains a voltage between [### volts AC] and [### volts AC], and a frequency between [### Hz]and [### Hz] while operating at the following test conditions: i. The diesel generator will be operated at a load equivalent to the short-time rating of the diesel generator for an interval of [#] hours or greater. and ii. The diesel generator will be operated at a load equivalent of [###] continuous rating of the diesel generator for an interval of [##] hours or greater.
E21	**As-built Inspection** Station Blackout Diesel Generator Fuel Oil Storage Tank Capacity	The fuel oil storage tank for each [XXX system] station blackout diesel generator shall be sufficient to operate the diesel generator at its continuous rating following any design basis event for [##] days.	An inspection will be performed of the as-built [XXX system] fuel oil storage tanks.	Each [XXX system] diesel generator fuel oil storage tank useable volume is greater than the volume of fuel oil consumed by its associated [XXX system] station blackout diesel generator operating at its continuous rating for [##] days.
E22	**As-built Inspection** Alternate AC Power Source Independent of Emergency AC Power Source	The electrical and mechanical portions of the alternate AC (AAC) power source are independent of the electrical and mechanical portions of the [emergency AC] power source.	An inspection will be performed of the as-built electrical and mechanical portions of the alternate AC (AAC) power source.	[The electrical and mechanical portions of the alternate AC (AAC) power source are independent of the electrical and mechanical portions of the [emergency AC] power source.]
E23	**Preoperational Test** MCR and RSW Workstation Normal Illumination	The [XXX system] provides normal illumination of the operator workstations and safety-related panels in the main control room and [remote shutdown station].	i. A test will be performed of the as-built main control room operator workstations and safety-related	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. ii. A test will be performed of the as-built [remote shutdown station] operator workstations and safety-related panels.	panels.
E24	**<u>Preoperational Test</u>** MCR and RSW Workstation Emergency Illumination	The [XXX system] provides emergency illumination of the operator workstations and safety-related panels in the main control room and [remote shutdown station].	i. A test will be performed of the as-built main control room operator workstations and safety-related panels. ii. A test will be performed of the as-built [remote shutdown station] operator workstations and safety-related panels.	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.

I&C ITAAC (I#) (Standard Review Plan 14.3.5)

GRP	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
I01	**Design Acceptance Criteria** Software Lifecycle (*If DAC use approved)*	The [Protection System or Diverse Actuation System] design and application software are developed using a process composed of the following 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 outputs of [Phase Name 1]. {{DAC}} ii. An analysis will be performed of the outputs of [Phase Name 2]. {{DAC}} . . N. An analysis will be performed of the outputs of [Phase Name N]. {{DAC}}	i. The outputs of the [Protection System or Diverse Actuation System] [Phase Name 1] satisfy the requirements of that phase. {{DAC}} ii. The outputs of the [Protection System or Diverse Actuation System] [Phase Name 2] satisfy the requirements of that phase. {{DAC}} . . N. The outputs of the [Protection System or Diverse Actuation System] [Phase Name N] satisfy the requirements of that phase. {{DAC}}
I02	**As-built Inspection** Physical Independence Between Redundant Class 1E I&C Circuits	Physical separation exists between the redundant divisions of the [XXX system] Class 1E instrument and control circuits.	An inspection will be performed of the as-built [XXX system] Class 1E instrument and control circuits.	The physical distance between redundant divisions of [XXX system] Class 1E instrument and control circuit cable trays, conduits and cables satisfy the criteria of [Regulatory Guide 1.75], or barriers have been installed in accordance with [the approved design].
I03	**As-built Inspection** Physical Independence Between Class 1E I&C Circuits and non-Class 1E Circuits	Physical separation exists between [XXX system] Class 1E instrument and control circuits and non-Class 1E circuits.	An inspection will be performed of the as-built [XXX system] Class 1E instrument and control circuits.	The physical distance between [XXX system] Class 1E instrument circuit cable trays, conduits and cables and non-Class 1E cable trays, conduits and cables satisfy the criteria of [Regulatory Guide 1.75], or barriers have been installed in accordance with [the approved design].
I04	**As-built Inspection** Electrical Isolation Between Redundant Class 1E I&C Circuits	Redundant divisions of [XXX system] Class 1E instrumentation and control circuits are electrically isolated from each other.	An inspection will be performed of the as-built [XXX system] Class 1E instrument and control circuits.	Isolation devices are installed between redundant divisions of [XXX system] Class 1E instrumentation and control circuits, which satisfythe criteria of [Regulatory Guide 1.75].
I05	**As-built Inspection** Electrical Isolation Between Class 1E I&C Circuits and non-Class 1E Circuits	[XXX system] Class 1E instrumentation and control circuits are electrically isolated from non-Class 1E circuits.	An inspection will be performed of the as-built [XXX system] Class 1E instrument and control circuits.	Isolation devices are installed between [XXX system] Class 1E instrumentation and control circuits and non-Class 1E circuits, which satisfy the criteria of [Regulatory Guide 1.75].

GRP	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
I06	**As-built Inspection** Physical Independence of Class 1E Fiber Optic Cables	Physical separation exists between [XXX system] Class 1E I&C fiber-optic cables, and Class 1E and non-Class 1E current carrying circuits.	An inspection will be performed of the as-built [XXX system] Class 1E I&C fiber-optic cables.	The physical distance between [XXX system] Class 1E I&C fiber-optic cables, and Class 1E and non-Class 1E current carrying circuits satisfy the physical separation criteria areas of [IEEE std. 384-2008], or barriers have been installed in accordance with [the approved design].
I07	**Preoperational Test** Communication Independence Between Redundant Class 1E Digital Communication Divisions	Independence exists between redundant divisions of the [XXX system] Class 1E digital communication system.	A test will be performed of the as-built [XXX system] Class 1E digital communications system.	Independence between redundant divisions of the [XXX system] Class 1E digital communications system is provided by [criteria].
I08	**Preoperational Test** Communication Independence Between Class 1E Digital Communications and non-Class 1EDigital Communications	Independence exists between [XXX system] Class 1E digital communications system and non-Class 1E communications systems.	A test will be performed of the as-built [XXX system] Class 1E digital communications system.	Independence between [XXX system] Class 1E digital communications system and non-Class 1E communications systems is provided by [criteria].
I09	**Preoperational Test** Protection System Automatic Control – Reactor Trip Signal Initiation	The [Protection System] automatically initiates a reactor trip signal.	A test of the as-built [Protection System] will be performed.	The [Protection System] initiates a reactor trip signal for the reactor trips listed in [Table x.x.x-x] when a test signal(s) simulating the associated plant condition(s) exist.
I10	**Preoperational Test** Protection System Automatic Control – Reactor Trip Actuation	The [Protection System] automatically actuates a reactor trip.	A test of the as-built [Protection System] will be performed.	The [Reactor Trip System] reactor trip breakers open upon an injection of a single simulated [Protection System] reactor trip signal.
I11	**Preoperational Test** Protection System Automatic Control – ESF Signal Initiation	The [Protection System] automatically initiates an engineered safeguards features signal.	A test of the as-built [Protection System] will be performed.	The [Protection System] initiates an engineered safeguards actuation signal for the engineered safeguards features listed in [Table x.x.x-x] when a test signal(s) simulating the associated plant condition(s) exists.

GRP	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
I12	**Preoperational Test** Protection System Automatic Control – ESF Equipment Actuation	The [Protection System] automatically actuates engineered safeguards features.	A test of the as-built [Protection System] will be performed.	{*The following statement is used for components listed in a table*} The [XXX System] [equipment type] listed in [Table x.x.x-x] performs its safety function listed in the table when initiated by its associated [Protection System] signal. {*The following statement is used for components not listed in a table*} The [XXX System] [equipment type] [opens, closes, starts, stops, energizes, deenergizes] when initiated by its associated [Protection System] signal.
I13	**Preoperational Test** Protection System Manual Control – Reactor Trip Actuation	The [Protection System] manually actuates a reactor trip.	A test of the as-built [Protection System] will be performed.	The [Reactor Trip System] reactor trip breakers open when manually initiated from the main control room.
I14	**Preoperational Test** Protection System Manual Control – ESF Equipment Actuation	The [Protection System] manually actuates engineered safeguards features.	A test of the as-built [Protection System] will be performed.	{*The following statement is used for components listed in a table*} The [XXX System] [equipment type] listed in [Table x.x.x-x] performs its safety function listed in the table when manually initiated from the main control room. {*The following statement is used for components not listed in a table*} The [XXX System] [equipment type] [opens, closes, starts, stops, energizes, deenergizes] when manually initiated from the main control room.

GRP	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
I15	**Preoperational Test** Protection System Completion of Protective Actions	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.	A test will be performed of the as-built [Protection System] reactor trip and engineered safeguards signals.	i. Upon initiation of a real or simulated [Protection System] [reactor trip signal OR engineered safeguards feature signal] listed in [Table x.x.x-x] the [reactor trip circuit breakers open OR the engineered safeguards features equipment actuates to perform its safety function]. ii. The [reactor trip breakers do not automatically close OR the engineered safeguards features equipment is not repositioned] when the [Protection System] signal is removed. iii. The [reactor trip breakers cannot be manually closed or the engineered safeguards features equipment cannot be manually repositioned] by an operator in the main control room until [specified conditions are satisfied].
I16	**Preoperational Test** Response Time Testing of ESF Equipment Actuation and Reactor Trip	The [XXX system] response time from sensor output through equipment actuation for [the reactor trip functions or engineered safeguards feature functions] is less than the value required to satisfy the design basis safety analysis response time assumptions.	A test will be performed of the as-built [XXX system] [reactor trip or engineered safeguards function] response times.	The response times of the [XXX system] [reactor trip functions or the engineered safeguards functions] listed in [Table x.x.x-x] are less than the value required to satisfy the design basis safety analysis response time assumptions.
I17	**Preoperational Test** Protection System Bypass Indication	Each bypassed [Protection System] channel is indicated in the main control room.	A test will be performed of each as-built [Protection System] channel.	The bypassed [Protection System] channel is indicated in the main control room.
I18	**Preoperational Test** Protection System Operating Bypass	The [Protection System] automatically removes [blocks or operating bypasses] of reactor trip and engineered safety features actuation when permissive conditions are not met.	A test of the as-built [Protection System] [blocks or operating bypasses] will be performed.	The [Protection System] [blocks or operating bypasses] identified in [Table x.x.x-x] are automatically removed when a test signal simulates that a permissive conditions is not met.
I19	**Preoperational Test** Protection System Maintenance Bypass	The [Protection System] is capable of performing its safety functions when one of its channels is placed in bypass.	A test will be performed of each as-built [Protection System] channel.	The [Protection System] [two-out-of-four] coincidence logic reverts to a [two-out-of-three] coincidence logic when a [Protection System] channel is placed in bypass.

GRP	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
I20	**Preoperational Test** Minimum Inventory of Main Control Room and Remote Shutdown Workstation Displays and Alarms	The minimum inventory of displays and alarms is available to the operator in the main control room and in the [remote shutdown station].	A test will be performed of the i. main control room as-built displays, ii. main control room as-built alarms, iii. [remote shutdown station] as-built displays, iv. [remote shutdown station] as-built alarms.	Upon injection of a real or simulated signal the following results are observed: i. The main control displays identified in the [HFE Task Analysis Results Summary Report] are indicated in the main control room. ii. The main control alarms identified in the [HFE Task Analysis Results Summary Report] are indicated in the main control room. iii. The [remote shutdown station] displays identified in the [HFE Task Analysis Results Summary Report] are indicated in the [remote shutdown station]. iv. The [remote shutdown station] alarms identified in the [HFE Task Analysis Results Summary Report] are indicated in the [remote shutdown station].
I21	**Preoperational Test** Minimum Inventory of Main Control Room and Remote Shutdown Workstation Manual Controls	The minimum inventory of manual controls is available to the operator in the main control room and in the [remote shutdown station].	i. A test will be performed of the main control room as-built manual controls. ii. A test will be performed of the [remote shutdown station] as-built controls.	i. The main control manual controls identified in the [HFE Task Analysis Results Summary Report] are available in the main control room. ii. The main control alarms identified in the [HFE Task Analysis Results Summary Report] are available in the main control room.

Equipment Qualification ITAAC (Q#) (Standard Review Plan 14.3.x)

GRP	ITAAC Category/Type	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
Q01	**Equipment Qualification** Seismic Category I Equipment Qualification/Equipment Installation Verification	[XXX system] Seismic Category I equipment can performs their [safety-related or RTNSS] function(s) under seismic design basis loads.	i. A type test, analysis, or a combination of type test and analysis will be performed of the [XXX system] Seismic Category I equipment. ii. An inspection will be performed of the [XXX system as-built Seismic Category I equipment.	i. An [seismic qualification report(s)] verifies that [XXX system] Seismic Category I equipment listed in [Table x.x.x-x] can perform its [safety-related or RTNSS] function(s) under the seismic load conditions specified in the [seismic qualification report(s)]. ii. The [XXX system] Seismic Category I equipment listed in [Table x.x.x-x] are installed in their design locations whose design basis loads are bounded by the [seismic qualification report].
Q02	**Equipment Qualification** Safety-Related Equipment Harsh Environment Qualification/Equipment Installation Verification	[XXX system] equipment located in a harsh environment can performs their [safety-related or RTNSS] function(s) in environmental conditions experienced during normal operations, anticipated operational occurrences and design bases accidents.	i. A type test, analysis, or a combination of type test and analysis will be performed of the [XXX system] equipment designated for harsh environments. ii. An inspection will be performed of the [XXX system] as-built equipment designated for harsh environments.	i.An [equipment qualification data report(s)] verifies that [XXX system] equipment listed in [Table x.x.x-x] designated for harsh environments can perform their [safety-related or RTNSS] function(s) under the environmental conditions specified in the [equipment qualification data report]. The [equipment qualification data report] also contains the required post-accident operability time for the equipment. ii. The [XXX system] equipment listed in [Table x.x.x-x] designated for harsh environment are installed in their design locations whose environmental conditions are bounded by the [equipment qualification data report].
Q03	**Equipment Qualification** Class 1E Digital Equipment Mild Environment Qualification	[XXX system] digital equipment located in a mild environment can performs their [safety-related or RTNSS] function(s) in environmental conditions experienced during normal operations and anticipated operational occurrences.	i. A type test, analysis, or a combination of type test and analysis will be performed of the [XXX system] digital equipment designated for mild environments. ii. An inspection will be performed of the [XXX system] as-built digital equipment designated for mild environments.	i. An [equipment qualification data report(s)] verifies that [XXX system] digital equipment listed in [Table x.x.x-x] designated for mild environments can perform their [safety-related or RTNSS] function(s) under the environmental conditions specified in the [equipment qualification data report(s)]. ii. The [XXX system] digital equipment listed in [Table x.x.x-x] designated for mild environments are installed in their design locations whose environmental conditions are bounded by the [equipment qualification data report].

Q04	**Equipment Qualification** Class 1E Digital Equipment Interference Qualification	[XXX system] Class 1E digital equipment can perform its safety-related function when subjected to electro-magnetic interference, radio-frequency interference, electro-static discharge, and surge-withstand-capability.	Type tests or type tests and analyses will be performed on the [XXX system] Class 1E digital equipment.	An [equipment qualification data report(s)] verifies that [XXX system] digital Class 1E equipment listed in [Table x.x.x-x] can withstand electro-magnetic interference, radio-frequency interference, electro-static discharge, and surge-withstand-capability that would exist before, during and following a design basis accident without loss of safety function.
Q05	**Equipment Qualification** Safety-Related Valve Functional Qualification	[XXX system][valve type(s)] valves can perform their active [safety-related or RTNSS] function(s) to change position under design conditions.	A type test, analysis, or a combination of type test and analysis will be performed of the [XXX system][valve type] valves	An [equipment qualification data report(s)] verifies that [XXX system] [valve type] valves listed in [Table x.x.x-x] can change position as specified in [Table x.x.x-x] under the design conditions specified in the [equipment qualification data report].
Q06	**Equipment Qualification** ASME Section III Relief Valve Capacity Qualification	The [Relief Valve Names] provide overpressure protection of the [XXX system].	i. A test will be performed of each [XXX system] [Relief Valve Name]. ii An inspection will be performed of each [XXX system] as-built [Relief Valve Name].	i. Each[XXX system] [Relief Valve Name] has a valve set pressure of [###] psig + ([### psi or ### per cent]). ii. Each[XXX system] [Relief Valve Name] contains an ASME Code Certificate Holder marking that includes the valve set pressure of [###] psig + ([### psig or ### per cent]) and capacity of [###] lbm/hr.
Q07	**Equipment Qualification** Safety Related Pump Functional Qualification	The [XXX system] safety-related pump can [perform its safety-related function].	A test will be performed of the [XXX system] safety-related pump.	Each [XXX system] safety-related pump provides [criteria].
Q08	**Equipment Qualification** Safety-Related Heat Exchanger Capability Qualification	The [XXX system] safety-related heat exchangers have the capacity to transfer the design heat load.	A test, analysis, or a combination of test and analysis will be performed of the [XXX system] as-built safety-related heat exchangers.	Each [XXX system] safety-related heat exchanger listed in [Table x.x.x-x] has a product of the overall heat transfer coefficient and the effective heat transfer area, UA, that is greater than or equal to [###] Btu/hr-°F.
Q09	**Equipment Qualification** RCP Flywheel Overspeed Integrity Qualification	The Reactor Coolant Pump flywheel maintains its structural integrity during an overspeed event	A type test, analysis, or a combination of type test and analysis will be performed of the Reactor Coolant Pump flywheel.	The RCP flywheel maintains structural integrity while operating at no less than 125 percent of the motor synchronous speed of [###] rpm.