ATTACHMENT 2

Proposed Improvements to Tier 1 and the Inspections, Test, Analyses and Acceptance Criteria for Small Modular Reactors

Appendix B – Table of Standardized ITAAC Types

ITAAC Requirement

ITAAC shall be developed to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a facility that incorporates the design certification has been constructed and will be operated in conformity with the design certification, the provisions of the Act, and the Commission's rules and regulations.

The following top-level design areas will be addressed by ITAAC.

Reactor Coolant Pressure Boundary (RCBP) (Fission Product Barrier)

Containment Pressure Boundary (Fission Product Barrier)

Post-Accident Core Cooling

Control Room Habitability

Protection of Safety-Related Structures Against Natural Phenomena and Environmental Hazards

Power Sources Necessary to Support Safety-Related SSCs

I&C Systems Necessary to Provide Reactor Protection and Engineered Safeguards Equipment Actuation

Radiation Protection (Radiation Shielding, Confinement, Ventilation, Isolation, Monitoring)

Fire Protection

New and Spent Fuel Protection

Physical Security

ATTACHMENT 2

Reactor Coolant Pressure Boundary (RCBP)
(Fission Product Barrier)
(sheet 1 of 2)

NRC Top-Level RCBP Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Reactor Coolant Pressure Boundary *Piping* System Design and Installation (Adherence to ASME Section III Requirements)	SRP 14.3.2 SRP 14.3.3	• ASME Section III Piping System Design Report (DAC) • Pipe Break Hazards Analysis Report (DAC)	No ITAAC Necessary	No ITAAC Necessary	• ASME Section III Piping System Design Report (as-built design reconciliation) • Pipe Break Hazard Analysis Report (as-built design reconciliation) • Leak Before Break Report (as-built design reconciliation)	No ITAAC Necessary
Reactor Coolant Pressure Boundary *Component* Design and Installation (Adherence to ASME Section III Requirements)	SRP 14.3.2	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• ASME Section III Data Report	No ITAAC Necessary
Reactor Pressure Vessel Design and Manufacture (Adherence to ASME Section III Requirements)	SRP 14.3.2	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• ASME Section III Data Report	• Reactor Pressure Vessel Internals Flow Induced Vibration Test
Seismic Category I *Component* Seismic Qualification	SRP 14.3.2 SRP 14.3.3 SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	• Seismic Category I Equipment Qualification	• Seismic Category I Equipment Installation Verification	No ITAAC Necessary
Safety-Related Valve Qualification	SRP 14.3 SRP 14.3.3 SRP 14.3.6 SRP 14.3.7	No ITAAC Necessary	No ITAAC Necessary	• Safety-Related Valve Harsh Environment Equipment Qualification • Valve Functional Qualification	• Safety-Related Valve Harsh Environment Equipment Installation Verification	• Safety-Related Remotely Operated Valve Functional Test during System Normal Alignment • Safety-Related Check Valve Functional Test during Normal System Alignment • Safety-Related Remotely Operated Valve Fail Position on Loss of Motive Power
Internal Hazard Protection (fires and floods)	SRP 14.3.2	No ITAAC Necessary	• Internal Hazard Protection Barrier Analysis (internal fires) • Internal Hazard Protection Barrier Analysis (internal floods)	No ITAAC Necessary	• Internal Hazard Protection Barrier (internal fires) • Internal Hazard Protection Barrier Analysis (internal floods)	No ITAAC Necessary

ATTACHMENT 2

Reactor Coolant Pressure Boundary (RCBP)
(Fission Product Barrier)
(sheet 2 of 2)

NRC Top-Level RCBP Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Reactor Coolant Pressure Boundary Leakage Detection	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• RCS Leakage Detection
Reactor Coolant Pressure Boundary Surveillance Capability	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Reactor Pressure Vessel Surveillance Specimen Guide Baskets	No ITAAC Necessary
Reactor Coolant Pressure Boundary Overpressure Protection	SRP 14.3.3	No ITAAC Necessary	No ITAAC Necessary	• ASME Section III Main Steam Safety Relief Valve Capacity Equipment Qualification • ASME Section III Pressurizer Safety Relief Valve Capacity Equipment Qualification • ASME Section III RHR Pump Suction Relief Valve Capacity Equipment Qualification	No ITAAC Necessary	No ITAAC Necessary

ATTACHMENT 2

Containment Pressure Boundary (Fission Product Barrier) (sheet 1 of 1)

NRC Top-Level Containment Pressure Boundary Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Containment Structural Integrity (Adherence to ASME Section III Requirements)	SRP 14.3.2	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• ASME Section III Containment Design Report (as-built design reconciliation) • Key Structural Dimensions Verification	• ASME Section III Containment Structural Pressure Test • ASME Section III Containment Integrated Leak Rate Test (10 CFR 50 Appendix J, Type A Test) • Preoperational Test - ASME Section III Local Leak Rate Test (10 CFR 50, Appendix J, Type B) • Preoperational Test - ASME Section III Local Leak Rate Test (10 CFR 50, Appendix J, Type C)
Containment System Piping Design and Installation (Adherence to ASME Section III Requirements)	SRP 14.3.2 SRP 14.3.3	• ASME Section III Piping Design Report (DAC) • Pipe Break Hazards Analysis Report (DAC)	No ITAAC Necessary	No ITAAC Necessary	• ASME Section III Piping Design Report (as-built design reconciliation) • Pipe Break Hazard Analysis Report (as-built design reconciliation)	No ITAAC Necessary
Containment Isolation Valves (Adherence to ASME Section III Requirements)	SRP 14.3.2	• Containment Isolation Valve Proximity to Containment	No ITAAC Necessary	No ITAAC Necessary	• ASME Section III Component Data Reports	No ITAAC Necessary
Containment Isolation Valve Qualification	SRP 14.3 SRP 14.3.3 SRP 14.3.6 SRP 14.3.7 SRP 14.3.11	No ITAAC Necessary	No ITAAC Necessary	• Harsh Environment Equipment Qualification • Valve Functional Qualification	• Harsh Environment Equipment Installation Verification	• Containment Isolation Valve Closure Time • Containment Isolation Valve Fail Position on Loss of Motive Power
Containment Isolation Valves Seismic Qualification	SRP 14.3.2 SRP 14.3.3 SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	• Seismic Category I Equipment Qualification	• Seismic Category I Equipment Installation Verification	No ITAAC Necessary
Containment Post-Accident Hydrogen Control	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Containment Hydrogen Control Equipment	No ITAAC Necessary

ATTACHMENT 2

Post-Accident Core Cooling (sheet 1 of 2)

NRC Top-Level Post-Accident Core Cooling Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Cooling System Capacity	SRP 14.3.7	No ITAAC Necessary	No ITAAC Necessary	• Safety -Related Heat Exchanger Capability Qualification	No ITAAC Necessary	• HVAC Design Temperature Control While Operating in Design Basis Accident Alignment (no external ambient conditions specified)
Pressure Boundary *Piping* System Design and Installation (Adherence to ASME Section III Requirements)	SRP 14.3.2 SRP 14.3.3	• ASME Section III Piping Design Report (DAC) • Pipe Break Hazards Analysis Report (DAC)	No ITAAC Necessary	No ITAAC Necessary	• ASME Section III Piping Design (as-built design reconciliation) • Pipe Break Hazard Analysis Report (as-built design reconciliation)	No ITAAC Necessary
Component Design and Adherence to ASME Section III Requirements (components contained in cooling system boundary)	SRP 14.3.2	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• ASME Code Section III Component Data Reports • Containment Isolation Valve Proximity to Containment	No ITAAC Necessary
Seismic Category I Component Seismic Qualification	SRP 14.3.2 SRP 14.3.3 SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	• Seismic Category I Equipment Qualification	• Seismic Category I Equipment Installation Verification	No ITAAC Necessary
Reactor Coolant Pump Cooling (Loss of Power)	SRP 14.3.7	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Reactor Coolant Pump Flow Coastdown
Safety-Related Pump Functional Qualification	SRP 14.3.7	No ITAAC Necessary	No ITAAC Necessary	• Pump Functional Qualification	No ITAAC Necessary	• Safety-Related Pump Flow Test • Safety-Related Pump NPSH Test
Surveillance Capability – Pumps	SRP 14.3	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Pump Test Line Flow Test

ATTACHMENT 2

Post-Accident Core Cooling (sheet 2 of 2)

NRC Top-Level Post-Accident Cooling Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Safety-Related Valve Qualification	SRP 14.3.3 SRP 14.3.6 SRP 14.3.7	No ITAAC Necessary	No ITAAC Necessary	• Safety-Related Valve Harsh Environment Equipment Qualification • Valve Functional Qualification	• Harsh Environment Equipment Installation Verification	• Safety-Related Remotely Operated Valve Functional Test during System Normal Alignment • Safety-Related Check Valve Functional Test during Normal System Alignment • Safety-Related Remotely Operated Valve Fail Position on Loss of Motive Power
Safety-Related Mechanical Equipment Environmental Qualification	SRP 14.3.6 SRP 14.3.7	No ITAAC Necessary	No ITAAC Necessary	• Safety-Related Mechanical Equipment Harsh Environment Qualification	• Harsh Environment Equipment Installation Verification	No ITAAC Necessary
Prevention of Loss of Core Cooling due to Accumulation of Non-Condensable Gases	No SRP ITAAC Guidance Provided	No ITAAC Necessary	• Identification of [SIS/RHR] System High Point Vent Locations	No ITAAC Necessary	• [SIS/RHR] System High Point Vent Location Verification	No ITAAC Necessary
Mitigation of High Energy Line Breaks Inside and Outside Containment	SRP 14.3	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Blowdown Limitation Device/Steam Generator Outlet Nozzle (PWR)	No ITAAC Necessary

ATTACHMENT 2

Control Room Habitability (sheet 1 of 1)

NRC Top-Level Control Room Habitability Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Control Room Envelope Post-Accident Temperature Control	SRP 14.3.7	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Control Room Envelope Temperature Control While Operating in Design Basis Accident Alignment (no external ambient conditions specified)
Control Room Envelope Post-Accident Air Quality	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Control Room Envelope HVAC or Ventilation System Fabrication Conforms to ASME AG-1 • Control Room Envelope HVAC or Ventilation System Installation Conforms to ASME AG-1	• Control Room Envelope HVAC or Ventilation System Component Testing Conforms to ASME AG-1 • Unfiltered Air In-leakage • Control Room Envelope Ventilation Flow Rate Verification
Control Room Envelope Automatic Alignment	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Control Room Envelope HVAC or Ventilation System Automatic Alignment
Control Room Envelope Illumination	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• MCR Workstation Illumination

ATTACHMENT 2

Protection of Safety-Related Structures Against Natural Phenomena and Environmental Hazards (sheet 1 of 1)

NRC Top-Level Civil Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Structure Normal Load Design Structure Seismic Load Design Loads from External Events Loads from Internal Events	SRP 14.3.2	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Seismic Category I Structural Design Basis Loads (Design Reconciliation) • Key Structural Dimensions Verification	No ITAAC Necessary
External Flood Protection	SRP 14.3.2	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• External Flood Protection/Site Grade Level • External Flood Protection/Penetration Seals	No ITAAC Necessary
Protection from Non-Seismic Category I SSC Impairment of Seismic Category I Structures	SRP 14.3.2	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Non-seismic Category I SSC Failure - Impairment of Safety-Related SSCs	No ITAAC Necessary
Internal Hazard Protection (fires and floods)	SRP 14.3.2	No ITAAC Necessary	• Internal Hazard Protection Barrier Analysis Report (internal fires) • Internal Hazard Protection Barrier Analysis Report (internal floods)	No ITAAC Necessary	• Internal Hazard Protection Barriers (internal fires) • Internal Hazard Protection Barriers (internal floods)	No ITAAC Necessary
Missile Protection (Turbine and RCP)	SRP 14.3.2	No ITAAC Necessary	• Turbine Missile Probability Analysis • Turbine Material and Overspeed Failures Probability Analysis	• RCP Flywheel Overspeed Integrity Equipment Qualification	• Turbine Missile Hazard Zone • Turbine Overspeed Trip Diversity	• Turbine Overspeed and Backup Overspeed Test

ATTACHMENT 2

Power Sources Necessary to Support Safety-Related SSCs (sheet 1 of 2)

NRC Top-Level Electrical Power Sources Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Station's Offsite Power Supplied by Two Physically Independent Circuits	SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Off-site Power Physical Independence	• Off-site Power Phase Monitoring
Emergency Diesel Generator Power Capacity for Accident Loads	SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Emergency Diesel Generator Fuel Oil Storage Tank Capacity	• Emergency Diesel Generator Load Test • Emergency Diesel Generator Automatic Start • Emergency Diesel Generator Load Shed and Sequencer Test
Alternate AC Power Source is Capable of Providing Station Power in the Event of Station Blackout	SRP 14.3.6 SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Station Blackout Diesel Generator Fuel Oil Storage Tank Capacity • Alternate AC Power Source Independent of Emergency AC Power Source	• Station Blackout Diesel Generator Load Test • Non1E Backup Diesel Generator Automatic Start Test
Non1E Backup Diesel Generator Capabilities	SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Non 1E Backup Diesel Generator Fuel Oil Storage Tank Storage Capacity	• Non1E Backup Diesel Generator Load Test • Non1E Backup Diesel Generator Automatic Start Test
Class 1E AC Electrical Equipment Capacity	SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Class 1E Electrical Equipment Capacity (Equipment Rating Verification)	No ITAAC Necessary
Class 1E DC Electrical Equipment Capacity	SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Class 1E Electrical Equipment Capacity (Equipment Rating Verification)	• Class 1E Battery Performance • Class 1E Battery Charger Performance • Class 1E Inverter Performance
Class 1E AC and DC Electrical Equipment Qualification (Compliance with IEEE Std. Criterion 5.4, Equipment Qualification)	SRP 14.3 SRP 14.3.6 SRP 14.3.7	No ITAAC Necessary	No ITAAC Necessary	• Class 1E AC and DC Harsh Environment Equipment Qualification	• Class 1E AC and DC Harsh Environment Equipment Installation Verification	No ITAAC Necessary

ATTACHMENT 2

Power Sources Necessary to Support Safety-Related SSCs (sheet 2 of 2)

NRC Top-Level Electrical Power Sources Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Class 1E AC and DC Electrical Power Supply Independence Between Redundant Divisional Power Supplies (Compliance with IEEE Std. Criterion 5.6, Independence)	SRP 14.3 SRP 14.3.6 SRP 14.3.7	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Physical Independence Features Between Redundant Class 1E Electrical Divisions	• Class 1E Electrical Divisional Power Verification
Class 1E AC and DC Electrical Power Supply Physical Independence Between Class 1E and non-Class 1E Equipment (Compliance with IEEE Std. Criterion 5.6, Independence)	SRP 14.3 SRP 14.3.6 SRP 14.3.7	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Physical Independence Features Between Class 1E Electrical Equipment and non-Class 1E Equipment	No ITAAC Necessary
Class 1E AC and DC Electrical Power Supply Physical Independence (Electrical Isolation) (Compliance with IEEE Std. Criterion 5.6, Independence)	SRP 14.3.6 SRP 14.3.7	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Electrical Isolation Between Class 1E Electrical Equipment Connected to non-Class 1E Equipment	No ITAAC Necessary
Class 1E AC and DC Electrical Equipment Fault Protection	SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Class 1E AC and DC Circuit Interrupting Devices Coordination • AC Distribution System Fault Current Rating • DC Distribution System Fault Current Rating	No ITAAC Necessary
Seismic Category I Component Seismic Qualification	SRP 14.3.2 ASRP 14.3.3 SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	• Seismic Category I Equipment Qualification	• Seismic Category I Equipment Installation Verification	No ITAAC Necessary
Class 1E Electrical Equipment Qualification	SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	• Class 1E Harsh Environment Equipment Qualification	• Class 1E Harsh Environment Equipment Installation Verification	No ITAAC Necessary

ATTACHMENT 2

I&C Systems Necessary to Provide Reactor Protection and Engineered Safeguards Actuation Equipment Actuation (sheet 1 of 3)

NRC Top-Level I&C Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Single Failure Criterion (FMEA) (IEEE Std. 603 Criterion 5.1)	SRP 14.3	No ITAAC Necessary	• Software Compliance with Single Failure Criterion 5.1	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary
Completion of Protective Actions (IEEE Std. 603 Criterion 5.2 and 7.3)	SRP 14.3	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Protection System Completion of Protective Actions
Class 1E I&C Equipment Qualification (IEEE Std. 603 Criterion 5.4)	SRP 14.3 SRP 14.3.3	No ITAAC Necessary	No ITAAC Necessary	• Class 1E I&C Equipment Harsh Environment Qualification • Class 1E I&C Digital Equipment Mild Environment Equipment Qualification • Class 1E I&C Digital Equipment SWC, EMI, RFI and ESD Qualification	• Class 1E I&C Harsh Environment Equipment Installation Verification • Class 1E I&C Mild Environment Equipment Installation Verification	No ITAAC Necessary
Class 1E I&C Equipment Independence (Physical Separation) (IEEE Std. 603 Criterion 5.6)	SRP 14.3 SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Physical Independence Features Between Redundant Class 1E I&C Electrical Divisions • Physical Independence Features Between Class 1E I&C Equipment and non-Class 1E Equipment	• Communication Independence Between Redundant Divisions
Class 1E I&C Equipment Independence (Electrical Isolation) (IEEE Std. 603 Criterion 5.6)	SRP 14.3 SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Electrical Isolation Between Class 1E I&C Equipment and non-Class 1E Equipment	• Communication Independence Between Class 1E System and non-Class 1E Systems
Capability for Test and Calibration (IEEE Std. 603 Criterion 5.7 and Criterion 6.5)	SRP 14.3	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Protection System Maintenance Bypass

ATTACHMENT 2

I&C Systems Necessary to Provide Reactor Protection and Engineered Safeguards Actuation Equipment Actuation (sheet 2 of 3)

NRC Top-Level I&C Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
MCR Display/Alarm Retrievability (IEEE Std. 603 Criterion 5.8.1 Displays for Manually Controlled Actions and 5.8.2 System Status Indication)	SRP 14.3 SRP 14.3.6 SRP 14.3.7 SRP 14.3.9 SRP 14.3.11	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Verification of Minimum Inventory of MCR and RSW Displays and Alarms
Protective Action Bypass Indication (IEEE Std. 603 Criterion 5.8.3 Indication of Bypasses)	SRP 14.3	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Protection System Bypass Indication
Class 1E I&C Equipment Human Factors Engineering (IEEE Std. 603 Criterion 5.14)	SRP 14.3	• Human Factors Engineering Results Summary Reports (DAC)	No ITAAC Necessary	No ITAAC Necessary	• Human Factors Engineering Results Summary Reports	No ITAAC Necessary
Automatic Control (IEEE Std. 603 Criterion 6.1 and Criterion 7.1)	SRP 14.3 SRP 14.3.6 SRP 14.3.9	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Testing of Minimum Inventory of Main Control Room and Remote Shutdown Automatic Controls • Protection System Automatic Actuation of ESF Equipment • Protection System Automatic Reactor Trip
Manual Control (IEEE Std. 603 Criterion 6.2 and Criterion 7.2)	SRP 14.3 SRP 14.3.6 SRP 14.3.9	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Testing of Minimum Inventory of Main Control Room and Remote Shutdown Manual Controls • Protection System Manual Actuation of ESF Equipment • Protection System Manual Reactor Trip
Operating Bypasses (IEEE Std. 603 Criterion 6.6 and 7.4)	SRP 14.3	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Protection System Operating Bypass

ATTACHMENT 2

I&C Systems Necessary to Provide Reactor Protection and Engineered Safeguards Actuation Equipment Actuation (sheet 3 of 3)

NRC High-Top I&C Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Maintenance Bypasses (IEEE Std. 603 Criterion 6.7 and Criterion 7.5)	SRP 14.3	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Protection System Maintenance Bypass
Setpoints (IEEE Std. 603 Criterion 6.8)	SRP 14.3	• Protection System Software Compliance with EEE Std. 603 Setpoint Criterion 6.8 (DAC)	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary
Reactor Trip and ESF Response Time	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Response Time Testing of ESF Equipment Actuation and Reactor Trip
Seismic Category I Component Seismic Qualification	SRP 14.3 SRP 14.3.2 SRP 14.3.3 SRP 14.3.6	No ITAAC Necessary	No ITAAC Necessary	• Seismic Category I Equipment Qualification	• Seismic Category I Equipment Installation Verification	No ITAAC Necessary
Diverse Actuation System	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• DAS Hardware Diverse from Protection System	• DAS Response Time

ATTACHMENT 2

Radiation Protection
(Radiation Shielding, Confinement, Ventilation, Isolation, Monitoring) (Sheet 1 of 1)

NRC Top-Level Radiation Protection Design Requirements	NRC Regulations/ NRC Guidance	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Radiation Shielding	14.3	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Radiation Barriers/ Wall and Floor Thickness • Radiation Barriers/ Door Radiation Attenuation • Spent Fuel Pool Penetration Elevation	• Fuel Handling Equipment Lift Height Interlock
Radiation Confinement	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Building or Area Differential Pressure Test
Radiation Ventilation	No SRP ITAAC Guidance Provided	No ITAAC Necessary	• HVAC or Ventilation System Fabrication Conforms to ASME AG-1	No ITAAC Necessary	• HVAC or Ventilation System Installation Conforms to ASME AG-1	• HVAC or Ventilation System Component Testing Conforms to ASME AG-1 • Automatic Radiation Ventilation System Alignment on High Radiation Signal • Ventilation Flow Rate Verification
Radiation Isolation	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Ventilation Flow Isolation on High Radiation Signal • Liquid Radwaste Flow Isolation on High Radiation Signal • Radioactive Gaseous Waste Isolation on High Radiation Signal • Radiation Sump Isolation
Radiation Monitoring	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Radiation Monitoring Display Test

Fire Protection (sheet 1 of 1)

NRC Top-Level Fire Protection Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
Fire Protection (10CFR 50 Appendix R)	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Fire Protection System Water Storage Tank Capacity	• Fire Protection System Pump Flow Test • Fire Protection System Standpipe and Fire Hose Station Performance (Areas Containing Safety-Related Equipment) • Battery Room Ventilation Flow Rate Verification (Hydrogen Control)
Transfer of Control from Main Control Room to Remote Shutdown Workstation Due to Fire	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Fire Area Containing MCR to RSW Transfer Different than Main Control Area Fire Area	• Main Control Room to Remote Shutdown Workstation Control Transfer • RSW Workstation Illumination

New and Spent Fuel Damage Prevention (sheet 1 of 1)

NRC Top-Level Fire Protection Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC	Preoperational Test ITAAC
New and Spent Fuel Storage Criticality Prevention	No SRP ITAAC Guidance Provided	No ITAAC Necessary	• New Fuel Storage Racks Conform to Criticality Analysis • Spent Fuel Storage Racks Conform to Criticality Analysis	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary
New and Spent Fuel Mechanical Damage Prevention	No SRP ITAAC Guidance Provided	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Crane Hoist NDE • Crane Hoist Single Failure Proof Configuration	• Crane Hoist Load Test

ATTACHMENT 2

Physical Security (sheet 1 of 2)

NRC Top-Level Control Room Habitability Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC (Items marked with * are inspections, tests, or combination)	Preoperational Test ITAAC
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Protected Area Barrier Requirements	No ITAAC Necessary
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Protected Area Barrier Requirements	No ITAAC Necessary
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Isolation Zone Requirements	No ITAAC Necessary
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Protected Area Perimeter Intrusion Detection and Assessment Systems Requirements	No ITAAC Necessary
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Illumination Requirements*	No ITAAC Necessary
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	• Bullet-Resisting Barriers Requirements	No ITAAC Necessary	No ITAAC Necessary
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	• Vehicle Control Measures Requirements	No ITAAC Necessary	No ITAAC Necessary
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Personnel, Vehicle, and Material Access Control Portals and Search Equipment Requirements*	No ITAAC Necessary

Physical Security (sheet 2 of 2)

NRC Top-Level Control Room Habitability Design Requirements	NRC Guidance for Each Row	Design Acceptance Criteria ITAAC	Design Analysis ITAAC	Equipment Qualification ITAAC	As-Built Inspection ITAAC (Items marked with * are inspections, tests, or combination)	Preoperational Test ITAAC
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Picture Badge Identification System Requirements
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Vital Areas Access Control Requirements*	No ITAAC Necessary
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Alarm Station Requirements*	No ITAAC Necessary
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Secondary Power Supplies for Alarm Annunciation and Communication Equipment Requirements	No ITAAC Necessary
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Intrusion Detection Systems Console Display Requirements
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Intrusion Detection Systems Recording Requirements
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Vital Area Emergency Exits Requirements*	No ITAAC Necessary
Physical Security	SRP 14.3.12	No ITAAC Necessary	No ITAAC Necessary	No ITAAC Necessary	• Communication Requirements	No ITAAC Necessary