3. NON-SYSTEM BASED MATERIAL

3.1 DESIGN OF PIPING SYSTEMS AND COMPONENTS

Design Description

Piping systems and their components are designed and constructed in accordance with their applicable design code requirements identified in the individual system design specifications. The piping systems have a design life of 60 years. These requirements apply to systems that are ASME B&PV Code Class 1, 2, or 3, and are subject to ASME (B&PV) Code, Section III, pressure boundary requirements. The specific Tier 1 sections that contain these systems are as follows:

2.1.1 Reactor Pressure Vessel and Internals

2.1.2 Nuclear Boiler System

2.2.2 Control Rod Drive System

2.2.4 Standby Liquid Control System

2.4.1 Isolation Condenser System

2.4.2 Gravity-Driven Cooling System

2.6.1 Reactor Water Cleanup/Shutdown Cooling System

2.6.2 Fuel and Auxiliary Pools Cooling System

2.11.1 Turbine Main Steam System

2.15.1 Containment System

2.15.4 Passive Containment Cooling System

(1) (Deleted)

(2) (Deleted)

(3) Systems, structures, and components, that are required to be functional during and following an SSE, shall be protected against or qualified to withstand the dynamic and environmental effects associated with analyses of postulated failures in Seismic Category I and nonsafety-related piping systems.

(4) (Deleted)

(5) (Deleted)

(6) On an individual component or system basis, the as-built systems, structures, and components shall be reconciled with the analyses results of the postulated failures in Seismic Category I and nonsafety-related piping systems.

Inspections, Tests, Analyses, and Acceptance Criteria

Table 3.1-1 provides a definition of the inspections, test and analyses, together with associated acceptance criteria for the Piping Design.

Table 3.1-1 ITAAC For The Design of Piping Systems and Components

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. (Deleted)		
2. (Deleted)		
3. Systems, structures, and components, that are required to be functional during and following an SSE, shall be protected against or qualified to withstand the dynamic and environmental effects associated with analyses of postulated failures in Seismic Category I and nonsafety-related piping systems.	Inspections of the as designed pipe-break analysis results report will be conducted. Pipe break events involving high-energy fluid systems are analyzed for the effects of pipe whip, jet impingement, flooding, room pressurization, and temperature effects. Pipe break events involving moderate-energy fluid systems are analyzed for wetting from spray, flooding, and other environmental effects, as appropriate. {{Design Acceptance Criteria}}	The as-designed pipe-break analysis concludes that for each postulated piping failure, the reactor can be shut down safely. Reports document the results of the analyses to determine where protection features are necessary to mitigate the consequences of a pipe break. {{Design Acceptance Criteria}}
4. (Deleted)		
5. (Deleted)		
6. On an individual component or system basis, the as-built systems, structures, and components shall be reconciled with the analyses results of the postulated failures in Seismic Category I and nonsafety-related piping systems.	A reconciliation analysis using the as-designed pipe-break analysis report and as-built information will be performed. Inspect the as-built piping systems and equipment to identify that the features that protect against dynamic effects of pipe failures, such as whip restraints, equipment shields, drainage systems, and physical separation of piping, equipment, and instrumentation are installed as defined in the design analyses.	On an individual component or system basis, the protective features are installed in the as-built plant as described in the design and reconciliation analysis.

3.2 SOFTWARE DEVELOPMENT

Inspections, Tests, Analyses, and Acceptance Criteria Summary

Design Description

The safety-related Distributed Control and Information Systems (Q-DCIS) comprise the platforms that are defined in Table 2.2.10-1. A subset of the nonsafety-related Distributed Control and Information Systems (N-DCIS) comprise the network segments that are defined in Table 2.2.11-1. These platforms and network segments comprise systems of integrated software and hardware elements. Software projects are developed for the various platforms and network segments.

Each platform and network segment software projects follows a development process that comprises the following 3-stages:

(1) Develop the platform and network segment software plans and cyber security programs for each platform. {{Design Acceptance Criteria}}

- Software Management Program Manual (SMPM)
  - Software Management Plan (SMP)
  - Software Development Plan (SDP)
  - Software Integration Plan (SintP)
  - Software Installation Plan (SIP)
  - Software Operation and Maintenance Plan (SOMP)
  - Software Training Plan (STrngP)
- Software Quality Assurance Program Manual (SQAPM)
  - Software Quality Assurance Plan (SQAP)
  - Software Safety Plan (SSP)
  - Software Verification & Validation Plan (SVVP)
  - Software Configuration Management Plan (SCMP)
  - Software Test Plan (STP)
- Cyber Security Program Plan (CySPP)
  - Cyber Security Program (CySP)

(2) Implement the software projects for each platform and network segment in accordance with the approved platform and network segment software plans and cyber security programs to ensure the process produces adequate software products at the conclusion of each software life-cycle phase baseline as documented by the life-cycle phase Summary Baseline Review Records (BRR).

(3) Perform a multiple-phase test process as part of the installation phase to confirm that the as-built platform and network segment performs as designed.

In support of the above described software development process, the following 3-stage software design commitments are made:

1a1. The SMP is developed for the RTIF software projects.

1a2. The SMP is developed for the NMS software projects.

1a3. The SMP is developed for the SSLC/ESF software projects.

1a4. The SMP is developed for the ATWS/SLC software projects.

1a5. The SMP is developed for the VBIF software projects.

1a6. The SMP is developed for the GENE DPS software projects.

1a7. The SMP is developed for the PIP software projects.

1a8. The SMP is developed for the HP CRD Isolation Bypass Function software projects.

1a9. The SMP is developed for the ICS DPV Isolation Function software projects.

1b1. The SDP is developed for the RTIF software projects.

1b2. The SDP is developed for the NMS software projects.

1b3. The SDP is developed for the SSLC/ESF software projects.

1b4. The SDP is developed for the ATWS/SLC software projects.

1b5. The SDP is developed for the VBIF software projects.

1b6. The SDP is developed for the GENE DPS software projects.

1b7. The SDP is developed for the PIP software projects.

1b8. The SDP is developed for the HP CRD Isolation Bypass Function software projects.

1b9. The SDP is developed for the ICS DPV Isolation Function software projects.

1c1. The SIntP is developed for the RTIF software projects.

1c2. The SIntP is developed for the NMS software projects.

1c3. The SIntP is developed for the SSLC/ESF software projects.

1c4. The SIntP is developed for the ATWS/SLC software projects.

1c5. The SIntP is developed for the VBIF software projects.

1c6. The SIntP is developed for the GENE DPS software projects.

1c7. The SIntP is developed for the PIP software projects.

1c8. The SIntP is developed for the HP CRD Isolation Bypass Function software projects.

1c9. The SintP is developed for the ICS DPV Isolation Function software projects.

1d1. The SIP is developed for the RTIF software projects.

1d2. The SIP is developed for the NMS software projects.

1d3. The SIP is developed for the SSLC/ESF software projects.

1d4. The SIP is developed for the ATWS/SLC software projects.

1d5. The SIP is developed for the VBIF software projects.

1d6. The SIP is developed for the GENE DPS software projects.

1d7. The SIP is developed for the PIP software projects.

1d8. The SIP is developed for the HP CRD Isolation Bypass Function software projects.

1d9. The SIP is developed for the ICS DPV Isolation Function software projects.

1e1. The SOMP is developed for the RTIF software projects.

1e2. The SOMP is developed for the NMS software projects.

1e3. The SOMP is developed for the SSLC/ESF software projects.

1e4. The SOMP is developed for the ATWS/SLC software projects.

1e5. The SOMP is developed for the VBIF software projects.

1e6. The SOMP is developed for the GENE DPS software projects.

1e7. The SOMP is developed for the PIP software projects.

1e8. The SOMP is developed for the HP CRD Isolation Bypass Function software projects.

1e9. The SOMP is developed for the ICS DPV Isolation Function software projects.

1f1. The STrngP is developed for the RTIF software projects.

1f2. The STrngP is developed for the NMS software projects.

1f3. The STrngP is developed for the SSLC/ESF software projects.

1f4. The STrngP is developed for the ATWS/SLC software projects.

1f5. The STrngP is developed for the VBIF software projects.

1f6. The STrngP is developed for the GENE DPS software projects.

1f7. The STrngP is developed for the PIP software projects.

1f8. The STrngP is developed for the HP CRD Isolation Bypass Function software projects.

1f9. The STrngP is developed for the ICS DPV Isolation Function software projects.

1g1. The SQAP is developed for the RTIF software projects.

1g2. The SQAP is developed for the NMS software projects.

1g3. The SQAP is developed for the SSLC/ESF software projects.

1g4. The SQAP is developed for the ATWS/SLC software projects.

1g5. The SQAP is developed for the VBIF software projects.

1g6. The SQAP is developed for the GENE DPS software projects.

1g7. The SQAP is developed for the PIP software projects.

1g8. The SQAP is developed for the HP CRD Isolation Bypass Function software projects.

1g9. The SQAP is developed for the ICS DPV Isolation Function software projects.

1h1. The SSP is developed for the RTIF software projects.

1h2. The SSP is developed for the NMS software projects.

1h3. The SSP is developed for the SSLC/ESF software projects.

1h4. The SSP is developed for the ATWS/SLC software projects.

1h5. The SSP is developed for the VBIF software projects.

1h6. The SSP is developed for the GENE DPS software projects.

1h7. The SSP is developed for the PIP software projects.

1h8. The SSP is developed for the HP CRD Isolation Bypass Function software projects.

1h9. The SSP is developed for the ICS DPV Isolation Function software projects.

1i1. The SVVP is developed for the RTIF software projects.

1i2. The SVVP is developed for the NMS software projects.

1i3. The SVVP is developed for the SSLC/ESF software projects.

1i4. The SVVP is developed for the ATWS/SLC software projects.

1i5. The SVVP is developed for the VBIF software projects.

1i6. The SVVP is developed for the GENE DPS software projects.

1i7. The SVVP is developed for the PIP software projects.

1i8. The SVVP is developed for the HP CRD Isolation Bypass Function software projects.

1i9. The SVVP is developed for the ICS DPV Isolation Function software projects.

1j1. The SCMP is developed for the RTIF software projects.

1j2. The SCMP is developed for the NMS software projects.

1j3. The SCMP is developed for the SSLC/ESF software projects.

1j4. The SCMP is developed for the ATWS/SLC software projects.

1j5. The SCMP is developed for the VBIF software projects.

1j6. The SCMP is developed for the GENE DPS software projects.

1j7. The SCMP is developed for the PIP software projects.

1j8. The SCMP is developed for the HP CRD Isolation Bypass Function software projects.

1j9. The SCMP is developed for the ICS DPV Isolation Function software projects.

1k1. The STP is developed for the RTIF software projects.

1k2. The STP is developed for the NMS software projects.

1k3. The STP is developed for the SSLC/ESF software projects.

1k4. The STP is developed for the ATWS/SLC software projects.

1k5. The STP is developed for the VBIF software projects.

1k6. The STP is developed for the GENE DPS software projects.

1k7. The STP is developed for the PIP software projects.

1k8. The STP is developed for the HP CRD Isolation Bypass Function software projects.

1k9. The STP is developed for the ICS DPV Isolation Function software projects.

1l1. The CySP is developed for the RTIF software projects.

1l2. The CySP is developed for the NMS software projects.

1l3. The CySP is developed for the SSLC/ESF software projects.

1l4. The CySP is developed for the ATWS/SLC software projects.

1l5. The CySP is developed for the VBIF software projects.

1l6. The CySP is developed for the GENE DPS software projects.

1l7. The CySP is developed for the PIP software projects.

1l8. The CySP is developed for the HP CRD Isolation Bypass Function software projects.

1l9. The CySP is developed for the ICS DPV Isolation Function software projects.

2a1. The planning phase activities detailed in the RTIF software plans and CySP are completed for the RTIF software projects.

2a2. The planning phase activities detailed in the NMS software plans and CySP are completed for the NMS software projects.

2a3. The planning phase activities detailed in the SSLC/ESF software plans and CySP are completed for the SSLC/ESF software projects.

2a4. The planning phase activities detailed in the ATWS/SLC software plans and CySP are completed for the ATWS/SLC software projects.

2a5. The planning phase activities detailed in the VBIF software plans and CySP are completed for the VBIF software projects.

2a6. The planning phase activities detailed in the GENE DPS software plans and CySP are completed for the GENE DPS software projects.

2a7. The planning phase activities detailed in the PIP software plans and CySP are completed for the PIP software projects.

2a8. The planning phase activities detailed in the HP CRD Isolation Bypass Function software plans and CySP are completed for the HP CRD Isolation Bypass Function software projects.

2a9. The planning phase activities detailed in the ICS DPV Isolation Function software plans and CySP are completed for the ICS DPV Isolation Function software projects.

2b1. The requirements phase activities detailed in the RTIF software plans and the CySP are completed for the RTIF software projects.

2b2. The requirements phase activities detailed in the NMS software plans and the CySP are completed for the NMS software projects.

2b3. The requirements phase activities detailed in the SSLC/ESF software plans and the CySP are completed for the SSLC/ESF software projects.

2b4. The requirements phase activities detailed in the ATWS/SLC software plans and the CySP are completed for the ATWS/SLC software projects.

2b5. The requirements phase activities detailed in the VBIF software plans and the CySP are completed for the VBIF software projects.

2b6. The requirements phase activities detailed in the GENE DPS software plans and the CySP are completed for the GENE DPS software projects.

2b7. The requirements phase activities detailed in the PIP software plans and the CySP are completed for the PIP software projects.

2b8. The requirements phase activities detailed in the HP CRD Isolation Bypass Function software plans and the CySP are completed for the HP CRD Isolation Bypass Function software projects.

2b9. The requirements phase activities detailed in the ICS DPV Isolation Function software plans and the CySP are completed for the ICS DPV Isolation Function software projects.

2c1. The design phase activities detailed in the RTIF software plans and the CySP are completed for the RTIF software projects.

2c2. The design phase activities detailed in the NMS software plans and the CySP are completed for the NMS software projects.

2c3. The design phase activities detailed in the SSLC/ESF software plans and the CySP are completed for the SSLC/ESF software projects.

2c4. The design phase activities detailed in the ATWS/SLC software plans and the CySP are completed for the ATWS/SLC software projects.

2c5. The design phase activities detailed in the VBIF software plans and the CySP are completed for the VBIF software projects.

2c6. The design phase activities detailed in the GENE DPS software plans and the CySP are completed for the GENE DPS software projects.

2c7. The design phase activities detailed in the PIP software plans and the CySP are completed for the PIP software projects.

2c8. The design phase activities detailed in the HP CRD Isolation Bypass Function software plans and the CySP are completed for the HP CRD Isolation Bypass Function software projects.

2c9. The design phase activities detailed in the ICS DPV Isolation Function software plans and the CySP are completed for the ICS DPV Isolation Function software projects.

2d1. The implementation phase activities detailed in the RTIF software plans and CySP are completed for the RTIF software projects.

2d2. The implementation phase activities detailed in the NMS software plans and CySP are completed for the NMS software projects.

2d3. The implementation phase activities detailed in the SSLC/ESF software plans and CySP are completed for the SSLC/ESF software projects.

2d4. The implementation phase activities detailed in the ATWS/SLC software plans and CySP are completed for the ATWS/SLC software projects.

2d5. The implementation phase activities detailed in the VBIF software plans and CySP are completed for the VBIF software projects.

2d6. The implementation phase activities detailed in the GENE DPS software plans and CySP are completed for the GENE DPS software projects.

2d7. The implementation phase activities detailed in the PIP software plans and CySP are completed for the PIP software projects.

2d8. The implementation phase activities detailed in the HP CRD Isolation Bypass Function software plans and CySP are completed for the HP CRD Isolation Bypass Function software projects.

2d9. The implementation phase activities detailed in the ICS DPV Isolation Function software plans and CySP are completed for the ICS DPV Isolation Function software projects.

2e1. The test phase activities detailed in the RTIF software plans and CySP are completed for the RTIF software projects.

2e2. The test phase activities detailed in the NMS software plans and CySP are completed for the NMS software projects.

2e3. The test phase activities detailed in the SSLC/ESF software plans and CySP are completed for the SSLC/ESF software projects.

2e4. The test phase activities detailed in the ATWS/SLC software plans and CySP are completed for the ATWS/SLC software projects.

2e5. The test phase activities detailed in the VBIF software plans and CySP are completed for the VBIF software projects.

2e6. The test phase activities detailed in the GENE DPS software plans and CySP are completed for the GENE DPS software projects.

2e7. The test phase activities detailed in the PIP software plans and CySP are completed for the PIP software projects.

2e8. The test phase activities detailed in the HP CRD software plans and CySP are completed for the HP CRD Isolation Bypass Function software projects.

2e9. The test phase activities detailed in the ICS DPV Isolation Function and CySP are completed for the ICS DPV Isolation Function software projects.

3a1. The installation phase activities detailed in the RTIF software plans and CySP are completed for the RTIF software projects.

3a2. The RTIF software projects performs as designed.

3a3. The RTIF software projects is cyber secure.

3b1. The installation phase activities detailed in the NMS software plans and CySP are completed for the NMS software projects.

3b2. The NMS software projects performs as designed.

3b3. The NMS software projects is cyber secure.

3c1. The installation phase activities detailed in the SSLC/ESF software plans and CySP are completed for the SSLC/ESF software projects

3c2. The SSLC/ESF software projects performs as designed.

3c3. The SSLC/ESF software projects is cyber secure.

3d1. The installation phase activities detailed in the ATWS/SLC software plans and CySP are completed for the ATWS/SLC software projects.

3d2. The ATWS/SLC software projects performs as designed.

3d3. The ATWS/SLC software projects is cyber secure.

3e1. The installation phase activities detailed in the VBIF software plans and CySP are completed for the VBIF software projects.

3e2. The VBIF software projects performs as designed.

3e3. The VBIF software projects is cyber secure.

3f1. The installation phase activities detailed in the GENE DPS software plans and CySP are completed for the GENE DPS software projects.

3f2. The GENE DPS software projects performs as designed.

3f3. The GENE DPS software projects is cyber secure.

3g1. The installation phase activities detailed in the PIP software plans and CySP are completed for the PIP software projects.

3g2. The PIP software projects performs as designed.

3g3. The PIP software projects is cyber secure.

3h1. The installation phase activities detailed in the HP CRD Isolation Bypass Function software plans and CySP are completed for the HP CRD Isolation Bypass Function software projects.

3h2. The HP CRD Isolation Bypass Function software projects performs as designed.

3h3. The HP CRD Isolation Bypass Function software projects is cyber secure.

3i. The complete ESBWR instrumentation and control systems with sensors and actuators is capable of operating as designed.

3j1. The RTIF software projects performs as designed.

3j2. The RTIF software projects is cyber secure.

3k1. The NMS software projects performs as designed.

3k2. The NMS software projects is cyber secure.

3l1. The SSLC/ESF software projects performs as designed.

3l2. The SSLC/ESF software projects is cyber secure.

3m1. The ATWS/SLC software projects performs as designed.

3m2. The ATWS/SLC software projects is cyber secure.

3n1. The VBIF software projects performs as designed.

3n2. The VBIF software projects is cyber secure.

3o1. The GENE DPS software projects performs as designed.

3o2. The GENE DPS software projects is cyber secure.

3p1. The PIP software projects performs as designed.

3p2. The PIP software projects is cyber secure.

3q1. The HP CRD Isolation Bypass Function software projects performs as designed.

3q2. The HP CRD Isolation Bypass Function software projects is cyber secure.

3r1. The installation phase activities detailed in the ICS DPV Isolation Function software plans and CySP are completed for the ICS DPV Isolation Function software projects.

3r2. The ICS DPV Isolation Function software projects performs as designed.

3r3. The ICS DPV Isolation Function software projects is cyber secure.

3s1. The ICS DPV Isolation Function software projects performs as designed.

3s2. The ICS DPV Isolation Function software projects is cyber secure.

Inspections, Tests, Analyses, and Acceptance Criteria

Table 3.2-1 defines the inspections, tests and analyses, together with associated acceptance criteria, which will be applied to the software and hardware platforms and network segments.

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1a1. The SMP is developed for the RTIF software projects.	Inspection of the SMP for the RTIF software projects will be performed. {{Design Acceptance Criteria}}	The SMP for the RTIF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1a2. The SMP is developed for the NMS software projects.	Inspection of the SMP for the NMS software projects will be performed. {{Design Acceptance Criteria}}	The SMP for NMS software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1a3. The SMP is developed for the SSLC/ESF software projects.	Inspection of the SMP for the SSLC/ESF software projects will be performed. {{Design Acceptance Criteria}}	The SMP for SSLC/ESF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1a4 The SMP is developed for the ATWS/SLC software projects.	Inspection of the SMP for the ATWS/SLC software projects will be performed. {{Design Acceptance Criteria}}	The SMP for ATWS/SLC software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1a5. The SMP is developed for the VBIF software projects.	Inspection of the SMP for the VBIF software projects will be performed. {{Design Acceptance Criteria}}	The SMP for VBIF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1a6. The SMP is developed for the GENE DPS software projects.	Inspection of the SMP for the GENE DPS software projects will be performed. {{Design Acceptance Criteria}}	The SMP for GENE DPS software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1a7. The SMP is developed for the PIP software projects.	Inspection of the SMP for the PIP software projects will be performed. {{Design Acceptance Criteria}}	The SMP for PIP software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1a8. The SMP is developed for the HP CRD Isolation Bypass Function software projects.	Inspection of the SMP for the HP CRD Isolation Bypass Function software projects will be performed. {{Design Acceptance Criteria}}	The SMP for HP CRD Isolation Bypass Function software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1a9. The SMP is developed for the ICS DPV Isolation Function software projects.	Inspection of the SMP for the ICS DPV Isolation Function software projects will be performed. {{Design Acceptance Criteria}}	The SMP for ICS DPV Isolation Function software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1b1. The SDP is developed for the RTIF software projects.	Inspection of the SDP for the RTIF software projects will be performed. {{Design Acceptance Criteria}}	The SDP for the RTIF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1b2. The SDP is developed for the NMS software projects.	Inspection of the SDP for the NMS software projects will be performed. {{Design Acceptance Criteria}}	The SDP for NMS software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1b3. The SDP is developed for the SSLC/ESF software projects.	Inspection of the SDP for the SSLC/ESF software projects will be performed. {{Design Acceptance Criteria}}	The SDP for SSLC/ESF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1b4 The SDP is developed for the ATWS/SLC software projects.	Inspection of the SDP for the ATWS/SLC software projects will be performed. {{Design Acceptance Criteria}}	The SDP for ATWS/SLC software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1b5. The SDP is developed for the VBIF software projects.	Inspection of the SDP for the VBIF software projects will be performed. {{Design Acceptance Criteria}}	The SDP for VBIF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1b6. The SDP is developed for the GENE DPS software projects.	Inspection of the SDP for the GENE DPS software projects will be performed. {{Design Acceptance Criteria}}	The SDP for GENE DPS software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1b7. The SDP is developed for the PIP software projects.	Inspection of the SDP for the PIP software projects will be performed. {{Design Acceptance Criteria}}	The SDP for PIP software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1b8. The SDP is developed for the HP CRD Isolation Bypass Function software projects.	Inspection of the SDP for the HP CRD Isolation Bypass Function software projects will be performed. {{Design Acceptance Criteria}}	The SDP for HP CRD Isolation Bypass Function software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1b9. The SDP is developed for the ICS DPV Isolation Function software projects.	Inspection of the SDP for the ICS DPV Isolation Function software projects will be performed. {{Design Acceptance Criteria}}	The SDP for ICS DPV Isolation Function software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1c1. The SIntP is developed for the RTIF software projects.	Inspection of the SIntP for the RTIF software projects will be performed. {{Design Acceptance Criteria}}	The SIntP for the RTIF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1c2. The SIntP is developed for the NMS software projects.	Inspection of the SIntP for the NMS software projects will be performed. {{Design Acceptance Criteria}}	The SIntP for NMS software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1c3. The SIntP is developed for the SSLC/ESF software projects.	Inspection of the SIntP for the SSLC/ESF software projects will be performed. {{Design Acceptance Criteria}}	The SIntP for SSLC/ESF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1c4. The SIntP is developed for the ATWS/SLC software projects.	Inspection of the SIntP for the ATWS/SLC software projects will be performed. {{Design Acceptance Criteria}}	The SIntP for ATWS/SLC software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1c5. The SIntP is developed for the VBIF software projects.	Inspection of the SIntP for the VBIF software projects will be performed. {{Design Acceptance Criteria}}	The SIntP for VBIF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1c6. The SIntP is developed for the GENE DPS software projects.	Inspection of the SIntP for the GENE DPS software projects will be performed. {{Design Acceptance Criteria}}	The SIntP for GENE DPS software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1c7. The SIntP is developed for the PIP software projects.	Inspection of the SIntP for the PIP software projects will be performed. {{Design Acceptance Criteria}}	The SIntP for PIP software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1c8. The SIntP is developed for the HP CRD Isolation Bypass Function software projects.	Inspection of the SIntP for the HP CRD Isolation Bypass Function software projects will be performed. {{Design Acceptance Criteria}}	The SIntP for HP CRD Isolation Bypass Function software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1c9. The SIntP is developed for the ICS DPV Isolation Function software projects.	Inspection of the SIntP for the ICS DPV Isolation Function software projects will be performed. {{Design Acceptance Criteria}}	The SIntP for ICS DPV Isolation Function software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1d1. The SIP is developed for the RTIF software projects.	Inspection of the SIP for the RTIF software projects will be performed. {{Design Acceptance Criteria}}	The SIP for the RTIF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1d2. The SIP is developed for the NMS software projects.	Inspection of the SIP for the NMS software projects will be performed. {{Design Acceptance Criteria}}	The SIP for NMS software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1d3. The SIP is developed for the SSLC/ESF software projects.	Inspection of the SIP for the SSLC/ESF software projects will be performed. {{Design Acceptance Criteria}}	The SIP for SSLC/ESF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1d4. The SIP is developed for the ATWS/SLC software projects.	Inspection of the SIP for the ATWS/SLC software projects will be performed. {{Design Acceptance Criteria}}	The SIP for ATWS/SLC software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1d5. The SIP is developed for the VBIF software projects.	Inspection of the SIP for the VBIF software projects will be performed. {{Design Acceptance Criteria}}	The SIP for VBIF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1d6. The SIP is developed for the GENE DPS software projects.	Inspection of the SIP for the GENE DPS software projects will be performed. {{Design Acceptance Criteria}}	The SIP for GENE DPS software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1d7. The SIP is developed for the PIP software projects.	Inspection of the SIP for the PIP software projects will be performed. {{Design Acceptance Criteria}}	The SIP for PIP software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1d8. The SIP is developed for the HP CRD Isolation Bypass Function software projects.	Inspection of the SIP for the HP CRD Isolation Bypass Function software projects will be performed. {{Design Acceptance Criteria}}	The SIP for HP CRD Isolation Bypass Function software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1d9. The SIP is developed for the ICS DPV Isolation Function software projects.	Inspection of the SIP for the ICS DPV Isolation Function software projects will be performed. {{Design Acceptance Criteria}}	The SIP for ICS DPV Isolation Function software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1e1. The SOMP is developed for the RTIF software projects.	Inspection of the SOMP for the RTIF software projects will be performed. {{Design Acceptance Criteria}}	The SOMP for the RTIF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1e2. The SOMP is developed for the NMS software projects.	Inspection of the SOMP for the NMS software projects will be performed. {{Design Acceptance Criteria}}	The SOMP for NMS software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1e3. The SOMP is developed for the SSLC/ESF software projects.	Inspection of the SOMP for the SSLC/ESF software projects will be performed. {{Design Acceptance Criteria}}	The SOMP for SSLC/ESF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1e4. The SOMP is developed for the ATWS/SLC software projects.	Inspection of the SOMP for the ATWS/SLC software projects will be performed. {{Design Acceptance Criteria}}	The SOMP for ATWS/SLC software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1e5. The SOMP is developed for the VBIF software projects.	Inspection of the SOMP for the VBIF software projects will be performed. {{Design Acceptance Criteria}}	The SOMP for VBIF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1e6. The SOMP is developed for the GENE DPS software projects.	Inspection of the SOMP for the GENE DPS software projects will be performed. {{Design Acceptance Criteria}}	The SOMP for GENE DPS software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1e7. The SOMP is developed for the PIP software projects.	Inspection of the SOMP for the PIP software projects will be performed. {{Design Acceptance Criteria}}	The SOMP for PIP software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1e8. The SOMP is developed for the HP CRD Isolation Bypass Function software projects.	Inspection of the SOMP for the HP CRD Isolation Bypass Function software projects will be performed. {{Design Acceptance Criteria}}	The SOMP for HP CRD Isolation Bypass Function software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1e9. The SOMP is developed for the ICS DPV Isolation Function software projects.	Inspection of the SOMP for the ICS DPV Isolation Function software projects will be performed. {{Design Acceptance Criteria}}	The SOMP for ICS DPV Isolation Function software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1f1. The STrngP is developed for the RTIF software projects.	Inspection of the STrngP for the RTIF software projects will be performed. {{Design Acceptance Criteria}}	The STrngP for the RTIF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1f2. The STrngP is developed for the NMS software projects.	Inspection of the STrngP for the NMS software projects will be performed. {{Design Acceptance Criteria}}	The STrngP for NMS software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1f3. The STrngP is developed for the SSLC/ESF software projects.	Inspection of the STrngP for the SSLC/ESF software projects will be performed. {{Design Acceptance Criteria}}	The STrngP for SSLC/ESF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1f4. The STrngP is developed for the ATWS/SLC software projects.	Inspection of the STrngP for the ATWS/SLC software projects will be performed. {{Design Acceptance Criteria}}	The STrngP for ATWS/SLC software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1f5. The STrngP is developed for the VBIF software projects.	Inspection of the STrngP for the VBIF software projects will be performed. {{Design Acceptance Criteria}}	The STrngP for VBIF software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1f6. The STrngP is developed for the GENE DPS software projects.	Inspection of the STrngP for the GENE DPS software projects will be performed. {{Design Acceptance Criteria}}	The STrngP for GENE DPS software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1f7. The STrngP is developed for the PIP software projects.	Inspection of the STrngP for the PIP software projects will be performed. {{Design Acceptance Criteria}}	The STrngP for PIP software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1f8. The STrngP is developed for the HP CRD Isolation Bypass Function software projects.	Inspection of the STrngP for the HP CRD Isolation Bypass Function software projects will be performed. {{Design Acceptance Criteria}}	The STrngP for HP CRD Isolation Bypass Function software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1f9. The STrngP is developed for the ICS DPV Isolation Function software projects.	Inspection of the STrngP for the ICS DPV Isolation Function software projects will be performed. {{Design Acceptance Criteria}}	The STrngP for ICS DPV Isolation Function software projects complies with the criteria contained in the SMPM. {{Design Acceptance Criteria}}
1g1. The SQAP is developed for the RTIF software projects.	Inspection of the SQAP for the RTIF software projects will be performed. {Design Acceptance Criteria}}	The SQAP for the RTIF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1g2. The SQAP is developed for the NMS software projects.	Inspection of the SQAP for the NMS software projects will be performed. {{Design Acceptance Criteria}}	The SQAP for NMS software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1g3. The SQAP is developed for the SSLC/ESF software projects.	Inspection of the SQAP for the SSLC/ESF software projects will be performed. {{Design Acceptance Criteria}}	The SQAP for SSLC/ESF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1g4. The SQAP is developed for the ATWS/SLC software projects.	Inspection of the SQAP for the ATWS/SLC software projects will be performed. {{Design Acceptance Criteria}}	The SQAP for ATWS/SLC software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1g5. The SQAP is developed for the VBIF software projects.	Inspection of the SQAP for the VBIF software projects will be performed. {{Design Acceptance Criteria}}	The SQAP for VBIF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1g6. The SQAP is developed for the GENE DPS software projects.	Inspection of the SQAP for the GENE DPS software projects will be performed. {{Design Acceptance Criteria}}	The SQAP for GENE DPS software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1g7. The SQAP is developed for the PIP software projects.	Inspection of the SQAP for the PIP software projects will be performed. {{Design Acceptance Criteria}}	The SQAP for PIP software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1g8. The SQAP is developed for the HP CRD Isolation Bypass Function software projects.	Inspection of the SQAP for the HP CRD Isolation Bypass Function software projects will be performed. {{Design Acceptance Criteria}}	The SQAP for HP CRD Isolation Bypass Function software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1g9. The SQAP is developed for the ICS DPV Isolation Function software projects.	Inspection of the SQAP for the ICS DPV Isolation Function software projects will be performed. {{Design Acceptance Criteria}}	The SQAP for ICS DPV Isolation Function software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1h1. The SSP is developed for the RTIF software projects.	Inspection of the SSP for the RTIF software projects will be performed. {{Design Acceptance Criteria}}	The SSP for the RTIF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1h2. The SSP is developed for the NMS software projects.	Inspection of the SSP for the NMS software projects will be performed. {{Design Acceptance Criteria}}	The SSP for NMS software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1h3. The SSP is developed for the SSLC/ESF software projects.	Inspection of the SSP for the SSLC/ESF software projects will be performed. {{Design Acceptance Criteria}}	The SSP for SSLC/ESF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1h4. The SSP is developed for the ATWS/SLC software projects.	Inspection of the SSP for the ATWS/SLC software projects will be performed. {{Design Acceptance Criteria}}	The SSP for ATWS/SLC software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1h5. The SSP is developed for the VBIF software projects.	Inspection of the SSP for the VBIF software projects will be performed. {{Design Acceptance Criteria}}	The SSP for VBIF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1h6. The SSP is developed for the GENE DPS software projects.	Inspection of the SSP for the GENE DPS software projects will be performed. {{Design Acceptance Criteria}}	The SSP for GENE DPS software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1h7. The SSP is developed for the PIP software projects.	Inspection of the SSP for the PIP software projects will be performed. {{Design Acceptance Criteria}}	The SSP for PIP software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1h8. The SSP is developed for the HP CRD Isolation Bypass Function software projects.	Inspection of the SSP for the HP CRD Isolation Bypass Function software projects will be performed. {{Design Acceptance Criteria}}	The SSP for HP CRD Isolation Bypass Function software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1h9. The SSP is developed for the ICS DPV Isolation Function software projects.	Inspection of the SSP for the ICS DPV Isolation Function software projects will be performed. {{Design Acceptance Criteria}}	The SSP for ICS DPV Isolation Function software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1i1. The SVVP is developed for the RTIF software projects.	Inspection of the SVVP for the RTIF software projects will be performed. {{Design Acceptance Criteria}}	The SVVP for the RTIF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1i2. The SVVP is developed for the NMS software projects.	Inspection of the SVVP for the NMS software projects will be performed. {{Design Acceptance Criteria}}	The SVVP for NMS software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1i3. The SVVP is developed for the SSLC/ESF software projects.	Inspection of the SVVP for the SSLC/ESF software projects will be performed. {{Design Acceptance Criteria}}	The SVVP for SSLC/ESF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1i4. The SVVP is developed for the ATWS/SLC software projects.	Inspection of the SVVP for the ATWS/SLC software projects will be performed. {{Design Acceptance Criteria}}	The SVVP for ATWS/SLC software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1i5. The SVVP is developed for the VBIF software projects.	Inspection of the SVVP for the VBIF software projects will be performed. {{Design Acceptance Criteria}}	The SVVP for VBIF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1i6. The SVVP is developed for the GENE DPS software projects.	Inspection of the SVVP for the GENE DPS software projects will be performed. {{Design Acceptance Criteria}}	The SVVP for GENE DPS software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1i7. The SVVP is developed for the PIP software projects.	Inspection of the SVVP for the PIP software projects will be performed. {{Design Acceptance Criteria}}	The SVVP for PIP software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1i8. The SVVP is developed for the HP CRD Isolation Bypass Function software projects.	Inspection of the SVVP for the HP CRD Isolation Bypass Function software projects will be performed. {{Design Acceptance Criteria}}	The SVVP for HP CRD Isolation Bypass Function software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1i9. The SVVP is developed for the ICS DPV Isolation Function software projects.	Inspection of the SVVP for the ICS DPV Isolation Function software projects will be performed. {{Design Acceptance Criteria}}	The SVVP for ICS DPV Isolation Function software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1j1. The SCMP is developed for the RTIF software projects.	Inspection of the SCMP for the RTIF software projects will be performed. {{Design Acceptance Criteria}}	The SCMP for the RTIF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1j2. The SCMP is developed for the NMS software projects.	Inspection of the SCMP for the NMS software projects will be performed. {{Design Acceptance Criteria}}	The SCMP for NMS software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1j3. The SCMP is developed for the SSLC/ESF software projects.	Inspection of the SCMP for the SSLC/ESF software projects will be performed. {{Design Acceptance Criteria}}	The SCMP for SSLC/ESF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1j4. The SCMP is developed for the ATWS/SLC software projects.	Inspection of the SCMP for the ATWS/SLC software projects will be performed. {{Design Acceptance Criteria}}	The SCMP for ATWS/SLC software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1j5. The SCMP is developed for the VBIF software projects.	Inspection of the SCMP for the VBIF software projects will be performed. {{Design Acceptance Criteria}}	The SCMP for VBIF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1j6. The SCMP is developed for the GENE DPS software projects.	Inspection of the SCMP for the GENE DPS software projects will be performed. {{Design Acceptance Criteria}}	The SCMP for GENE DPS software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1j7. The SCMP is developed for the PIP software projects.	Inspection of the SCMP for the PIP software projects will be performed. {{Design Acceptance Criteria}}	The SCMP for PIP software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1j8. The SCMP is developed for the HP CRD Isolation Bypass Function software projects.	Inspection of the SCMP for the HP CRD Isolation Bypass Function software projects will be performed. {{Design Acceptance Criteria}}	The SCMP for HP CRD Isolation Bypass Function software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1j9. The SCMP is developed for the ICS DPV Isolation Function software projects.	Inspection of the SCMP for the ICS DPV Isolation Function software projects will be performed. {{Design Acceptance Criteria}}	The SCMP for ICS DPV Isolation Function software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1k1. The STP is developed for the RTIF software projects.	Inspection of the STP for the RTIF software projects will be performed. {{Design Acceptance Criteria}}	The STP for the RTIF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1k2. The STP is developed for the NMS software projects.	Inspection of the STP for the NMS software projects will be performed. {{Design Acceptance Criteria}}	The STP for NMS software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1k3. The STP is developed for the SSLC/ESF software projects.	Inspection of the STP for the SSLC/ESF software projects will be performed. {{Design Acceptance Criteria}}	The STP for SSLC/ESF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1k4. The STP is developed for the ATWS/SLC software projects.	Inspection of the STP for the ATWS/SLC software projects will be performed. {{Design Acceptance Criteria}}	The STP for ATWS/SLC software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1k5. The STP is developed for the VBIF software projects.	Inspection of the STP for the VBIF software projects will be performed. {{Design Acceptance Criteria}}	The STP for VBIF software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1k6. The STP is developed for the GENE DPS software projects.	Inspection of the STP for the GENE DPS software projects will be performed. {{Design Acceptance Criteria}}	The STP for GENE DPS software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1k7. The STP is developed for the PIP hardware and software projects.	Inspection of the STP for the PIP software projects will be performed. {{Design Acceptance Criteria}}	The STP for PIP software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1k8. The STP is developed for the HP CRD Isolation Bypass Function hardware and software projects.	Inspection of the STP for the HP CRD Isolation Bypass Function software projects will be performed. {{Design Acceptance Criteria}}	The STP for HP CRD Isolation Bypass Function software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1k9. The STP is developed for the ICS DPV Isolation Function hardware and software projects.	Inspection of the STP for the ICS DPV Isolation Function software projects will be performed. {{Design Acceptance Criteria}}	The STP for ICS DPV Isolation Function software projects complies with the criteria contained in the SQAPM. {{Design Acceptance Criteria}}
1l1. The CySP is developed for the RTIF software projects.	Inspection of the CySP for the RTIF software projects will be performed. {{Design Acceptance Criteria}}	The CySP for the RTIF software projects complies with the criteria contained in the CySPP. {{Design Acceptance Criteria}}
1l2. The CySP is developed for the NMS software projects.	Inspection of the CySP for the NMS software projects will be performed. {{Design Acceptance Criteria}}	The CySP for NMS software projects complies with the criteria contained in the CySPP. {{Design Acceptance Criteria}}
1l3. The CySP is developed for the SSLC/ESF software projects.	Inspection of the CySP for the SSLC/ESF software projects will be performed. {{Design Acceptance Criteria}}	The CySP for SSLC/ESF software projects complies with the criteria contained in the CySPP. {{Design Acceptance Criteria}}
1l4. The CySP is developed for the ATWS/SLC software projects.	Inspection of the CySP for the ATWS/SLC software projects will be performed. {{Design Acceptance Criteria}}	The CySP for ATWS/SLC software projects complies with the criteria contained in the CySPP. {{Design Acceptance Criteria}}
1l5. The CySP is developed for the VBIF software projects.	Inspection of the CySP for the VBIF software projects will be performed. {{Design Acceptance Criteria}}	The CySP for VBIF software projects complies with the criteria contained in the CySPP. {{Design Acceptance Criteria}}
1l6. The CySP is developed for the GENE DPS software projects.	Inspection of the CySP for the GENE DPS software projects will be performed. {{Design Acceptance Criteria}}	The CySP for GENE DPS software projects complies with the criteria contained in the CySPP. {{Design Acceptance Criteria}}
1l7. The CySP is developed for the PIP software projects.	Inspection of the CySP for the PIP software projects will be performed. {{Design Acceptance Criteria}}	The CySP for PIP software projects complies with the criteria contained in the CySPP. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1I8. The CySP is developed for the HP CRD Isolation Bypass Function software projects.	Inspection of the CySP for the HP CRD Isolation Bypass Function software projects will be performed. {{Design Acceptance Criteria}}	The CySP for HP CRD Isolation Bypass Function software projects complies with the criteria contained in the CySPP. {{Design Acceptance Criteria}}
1I9. The CySP is developed for the ICS DPV Isolation Function software projects.	Inspection of the CySP for the ICS DPV Isolation Function software projects will be performed. {{Design Acceptance Criteria}}	The CySP for ICS DPV Isolation Function software projects complies with the criteria contained in the CySPP. {{Design Acceptance Criteria}}
2a1. The planning phase activities detailed in the RTIF software plans and CySP are completed for the RTIF software projects.	The planning phase outputs are inspected and analyzed for the RTIF software projects. {{Design Acceptance Criteria}}	Planning Phase Summary BRR(s) exist and conclude that the RTIF software projects planning phase activities were performed in compliance with the RTIF software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2a2. The planning phase activities detailed in the NMS software plans and CySP are completed for the NMS software projects.	The planning phase outputs are inspected and analyzed for the NMS software projects. {{Design Acceptance Criteria}}	Planning Phase Summary BRR(s) exist and conclude that the NMS software projects planning phase activities were performed in compliance with the NMS software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2a3. The planning phase activities detailed in the SSLC/ESF software plans and CySP are completed for the SSLC/ESF software projects.	The planning phase outputs are inspected and analyzed for the SSLC/ESF software projects. {{Design Acceptance Criteria}}	Planning Phase Summary BRR(s) exist and conclude that the SSLC/ESF software projects planning phase activities were performed in compliance with the SSLC/ESF software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2a4. The planning phase activities detailed in the ATWS/SLC software plans and CySP are completed for the ATWS/SLC software projects.	The planning phase outputs are inspected and analyzed for the ATWS/SLC software projects. {{Design Acceptance Criteria}}	Planning Phase Summary BRR(s) exist and conclude that the ATWS/SLC software projects planning phase activities were performed in compliance with the ATWS/SLC software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2a5. The planning phase activities detailed in the VBIF software plans and CySP are completed for the VBIF software projects.	The planning phase outputs are inspected and analyzed for the VBIF software projects. {{Design Acceptance Criteria}}	Planning Phase Summary BRR(s) exist and conclude that the VBIF software projects planning phase activities were performed in compliance with the VBIF software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2a6. The planning phase activities detailed in the GENE DPS software plans and CySP are completed for the GENE DPS software projects.	The planning phase outputs are inspected and analyzed for the GENE DPS software projects. {{Design Acceptance Criteria}}	Planning Phase Summary BRR(s) exist and conclude that the GENE DPS software projects planning phase activities were performed in compliance with the GENE DPS software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2a7. The planning phase activities detailed in the PIP software plans and CySP are completed for the PIP software projects.	The planning phase outputs are inspected and analyzed for the PIP software projects. {{Design Acceptance Criteria}}	Planning Phase Summary BRR(s) exist and conclude that the PIP software projects planning phase activities were performed in compliance with the PIP software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2a8. The planning phase activities detailed in the HP CRD Isolation Bypass Function software plans and CySP are completed for the HP CRD Isolation Bypass Function software projects.	The planning phase outputs are inspected and analyzed for the HP CRD Isolation Bypass Function software projects. {{Design Acceptance Criteria}}	Planning Phase Summary BRR(s) exist and conclude that the HP CRD Isolation Bypass Function software projects planning phase activities were performed in compliance with the HP CRD Isolation Bypass Function software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2a9. The planning phase activities detailed in the ICS DPV Isolation Function software plans and CySP are completed for the ICS DPV Isolation Function software projects.	The planning phase outputs are inspected and analyzed for the ICS DPV Isolation Function software projects. {{Design Acceptance Criteria}}	Planning Phase Summary BRR(s) exist and conclude that the ICS DPV Isolation Function software projects planning phase activities were performed in compliance with the ICS DPV Isolation Function software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2b1. The requirements phase activities detailed in the RTIF software plans and CySP are completed for the RTIF software projects.	The requirements phase outputs are inspected and analyzed for the RTIF software projects. {{Design Acceptance Criteria}}	Requirements Phase Summary BRR(s) exist and conclude that the RTIF software projects requirements phase activities were performed in compliance with the RTIF software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2b2. The requirements phase activities detailed in the NMS software plans and CySP are completed for the NMS software projects.	The requirements phase outputs are inspected and analyzed for the NMS software projects. {{Design Acceptance Criteria}}	Requirements Phase Summary BRR(s) exist and conclude that the NMS software projects requirements phase activities were performed in compliance with the NMS software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2b3. The requirements phase activities detailed in the SSLC/ESF software plans and CySP are completed for the SSLC/ESF software projects.	The requirements phase outputs are inspected and analyzed for the SSLC/ESF software projects. {{Design Acceptance Criteria}}	Requirements Phase Summary BRR(s) exist and conclude that the SSLC/ESF software projects requirements phase activities were performed in compliance with the SSLC/ESF software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2b4. The requirements phase activities detailed in the ATWS/SLC software plans and CySP are completed for the ATWS/SLC software projects.	The requirements phase outputs are inspected and analyzed for the ATWS/SLC software projects. {{Design Acceptance Criteria}}	Requirements Phase Summary BRR(s) exist and conclude that the ATWS/SLC software projects requirements phase activities were performed in compliance with the ATWS/SLC software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2b5. The requirements phase activities detailed in the VBIF software plans and CySP are completed for the VBIF software projects.	The requirements phase outputs are inspected and analyzed for the VBIF software projects. {{Design Acceptance Criteria}}	Requirements Phase Summary BRR(s) exist and conclude that the VBIF software projects requirements phase activities were performed in compliance with the VBIF software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2b6. The requirements phase activities detailed in the GENE DPS software plans and CySP are completed for the GENE DPS software projects.	The requirements phase outputs are inspected and analyzed for the GENE DPS software projects. {{Design Acceptance Criteria}}	Requirements Phase Summary BRR(s) exist and conclude that the GENE DPS software projects requirements phase activities were performed in compliance with the GENE DPS software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2b7. The requirements phase activities detailed in the PIP software plans and CySP are completed for the PIP software projects.	The requirements phase outputs are inspected and analyzed for the PIP software projects. {{Design Acceptance Criteria}}	Requirements Phase Summary BRR(s) exist and conclude that the PIP software projects requirements phase activities were performed in compliance with the PIP software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2b8. The requirements phase activities detailed in the HP CRD Isolation Bypass Function software plans and CySP are completed for the HP CRD Isolation Bypass Function software projects.	The requirements phase outputs are inspected and analyzed for the HP CRD Isolation Bypass Function software projects. {{Design Acceptance Criteria}}	Requirements Phase Summary BRR(s) exist and conclude that the HP CRD Isolation Bypass Function software projects requirements phase activities were performed in compliance with the HP CRD Isolation Bypass Function software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2b9. The requirements phase activities detailed in the ICS DPV Isolation Function software plans and CySP are completed for the ICS DPV Isolation Function software projects.	The requirements phase outputs are inspected and analyzed for the ICS DPV Isolation Function software projects. {{Design Acceptance Criteria}}	Requirements Phase Summary BRR(s) exist and conclude that the ICS DPV Isolation Function software projects requirements phase activities were performed in compliance with the ICS DPV Isolation Function software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2c1. The design phase activities detailed in the RTIF software plans and CySP are completed for the RTIF software projects.	The design phase outputs are inspected and analyzed for the RTIF software projects. {{Design Acceptance Criteria}}	Design Phase Summary BRR(s) exist and conclude that the RTIF software projects design phase activities were performed in compliance with the RTIF software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2c2. The design phase activities detailed in the NMS software plans and CySP are completed for the NMS software projects.	The design phase outputs are inspected and analyzed for the NMS software projects. {{Design Acceptance Criteria}}	Design Phase Summary BRR(s) exist and conclude that the NMS software projects design phase activities were performed in compliance with the NMS software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2c3. The design phase activities detailed in the SSLC/ESF software plans and CySP are completed for the SSLC/ESF software projects.	The design phase outputs are inspected and analyzed for the SSLC/ESF software projects. {{Design Acceptance Criteria}}	Design Phase Summary BRR(s) exist and conclude that the SSLC/ESF software projects design phase activities were performed in compliance with the SSLC/ESF software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2c4. The design phase activities detailed in the ATWS/SLC software plans and CySP are completed for the ATWS/SLC software projects.	The design phase outputs are inspected and analyzed for the ATWS/SLC software projects. {{Design Acceptance Criteria}}	Design Phase Summary BRR(s) exist and conclude that the ATWS/SLC software projects design phase activities were performed in compliance with the ATWS/SLC software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2c5. The design phase activities detailed in the VBIF software plans and CySP are completed for the VBIF software projects.	The design phase outputs are inspected and analyzed for the VBIF software projects. {{Design Acceptance Criteria}}	Design Phase Summary BRR(s) exist and conclude that the VBIF software projects design phase activities were performed in compliance with the VBIF software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2c6. The design phase activities detailed in the GENE DPS software plans and CySP are completed for the GENE DPS software projects.	The design phase outputs are inspected and analyzed for the GENE DPS software projects. {{Design Acceptance Criteria}}	Design Phase Summary BRR(s) exist and conclude that the GENE DPS software projects design phase activities were performed in compliance with the GENE DPS software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2c7. The design phase activities detailed in the PIP software plans and CySP are completed for the PIP software projects.	The design phase outputs are inspected and analyzed for the PIP software projects. {{Design Acceptance Criteria}}	Design Phase Summary BRR(s) exist and conclude that the PIP software projects design phase activities were performed in compliance with the PIP software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2c8. The design phase activities detailed in the HP CRD Isolation Bypass Function software plans and CySP are completed for the HP CRD Isolation Bypass Function software projects.	The design phase outputs are inspected and analyzed for the HP CRD Isolation Bypass Function software projects. {{Design Acceptance Criteria}}	Design Phase Summary BRR(s) exist and conclude that the HP CRD Isolation Bypass Function software projects design phase activities were performed in compliance with the HP CRD Isolation Bypass Function software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2c9. The design phase activities detailed in the ICS DPV Isolation Function software plans and CySP are completed for the ICS DPV Isolation Function software projects.	The design phase outputs are inspected and analyzed for the ICS DPV Isolation Function software projects. {{Design Acceptance Criteria}}	Design Phase Summary BRR(s) exist and conclude that the ICS DPV Isolation Function software projects design phase activities were performed in compliance with the ICS DPV Isolation Function software plans and CySP as derived from SMPM, SQAPM, and CySPP. {{Design Acceptance Criteria}}
2d1. The implementation phase activities detailed in the RTIF software plans and CySP are completed for the RTIF software projects.	The implementation phase outputs are inspected and analyzed for the RTIF software projects.	RTIF software projects implementation phase activities were performed in compliance with the RTIF software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2d2. The implementation phase activities detailed in the NMS software plans and CySP are completed for the NMS software projects.	The implementation phase outputs are inspected and analyzed for the NMS software projects.	NMS software projects implementation phase activities were performed in compliance with the NMS software plans and CySP as derived from SMPM, SQAPM, and CySPP.

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2d3. The implementation phase activities detailed in the SSLC/ESF software plans and CySP are completed for the SSLC/ESF software projects.	The implementation phase outputs are inspected and analyzed for the SSLC/ESF software projects.	SSLC/ESF software projects implementation phase activities were performed in compliance with the SSLC/ESF software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2d4. The implementation phase activities detailed in the ATWS/SLC software plans and CySP are completed for the ATWS/SLC software projects.	The implementation phase outputs are inspected and analyzed for the ATWS/SLC software projects.	ATWS/SLC software projects implementation phase activities were performed in compliance with the ATWS/SLC software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2d5. The implementation phase activities detailed in the VBIF software plans and CySP are completed for the VBIF software projects.	The implementation phase outputs are inspected and analyzed for the VBIF software projects.	VBIF software projects implementation phase activities were performed in compliance with the VBIF software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2d6. The implementation phase activities detailed in the GENE DPS software plans and CySP are completed for the GENE DPS software projects.	The implementation phase outputs are inspected and analyzed for the GENE DPS software projects.	GENE DPS software projects implementation phase activities were performed in compliance with the GENE DPS software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2d7. The implementation phase activities detailed in the PIP software plans and CySP are completed for the PIP software projects.	The implementation phase outputs are inspected and analyzed for the PIP software projects.	PIP software projects implementation phase activities were performed in compliance with the PIP software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2d8. The implementation phase activities detailed in the HP CRD Isolation Bypass Function software plans and CySP are completed for the HP CRD Isolation Bypass Function software projects.	The implementation phase outputs are inspected and analyzed for the HP CRD Isolation Bypass Function software projects.	HP CRD Isolation Bypass Function software projects implementation phase activities were performed in compliance with the HP CRD Isolation Bypass Function software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2d9. The implementation phase activities detailed in the ICS DPV Isolation Function software plans and CySP are completed for the ICS DPV Isolation Function software projects.	The implementation phase outputs are inspected and analyzed for the ICS DPV Isolation Function software projects.	ICS DPV Isolation Function software projects implementation phase activities were performed in compliance with the ICS DPV Isolation Function software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2e1. The test phase activities detailed in the RTIF software plans and CySP are completed for the RTIF software projects.	The test phase outputs are inspected and analyzed for the RTIF software projects.	RTIF software projects test phase activities were performed in compliance with the RTIF software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2e2. The test phase activities detailed in the NMS software plans and CySP are completed for the NMS software projects.	The test phase outputs are inspected and analyzed for the NMS software projects.	NMS software projects test phase activities were performed in compliance with the NMS software plans and CySP as derived from SMPM, SQAPM, and CySPP.

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2e3. The test phase activities detailed in the SSLC/ESF software plans and CySP are completed for the SSLC/ESF software projects.	The test phase outputs are inspected and analyzed for the SSLC/ESF software projects.	SSLC/ESF software projects test phase activities were performed in compliance with the SSLC/ESF software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2e4. The test phase activities detailed in the ATWS/SLC software plans and CySP are completed for the ATWS/SLC software projects.	The test phase outputs are inspected and analyzed for the ATWS/SLC software projects.	ATWS/SLC software projects test phase activities were performed in compliance with the ATWS/SLC software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2e5. The test phase activities detailed in the VBIF software plans and CySP are completed for the VBIF software projects.	The test phase outputs are inspected and analyzed for the VBIF software projects.	VBIF software projects test phase activities were performed in compliance with the VBIF software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2e6. The test phase activities detailed in the GENE DPS software plans and CySP are completed for the GENE DPS software projects.	The test phase outputs are inspected and analyzed for the GENE DPS software projects.	GENE DPS software projects test phase activities were performed in compliance with the GENE DPS software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2e7. The test phase activities detailed in the PIP software plans and CySP are completed for the PIP software projects.	The test phase outputs are inspected and analyzed for the PIP software projects.	PIP software projects test phase activities were performed in compliance with the PIP software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2e8. The test phase activities detailed in the HP CRD Isolation Bypass Function software plans and CySP are completed for the HP CRD Isolation Bypass Function software projects.	The test phase outputs are inspected and analyzed for the HP CRD Isolation Bypass Function software projects.	HP CRD Isolation Bypass Function software projects test phase activities were performed in compliance with the HP CRD Isolation Bypass Function software plans and CySP as derived from SMPM, SQAPM, and CySPP.
2e9. The test phase activities detailed in the ICS DPV Isolation Function software plans and CySP are completed for the ICS DPV Isolation Function software projects.	The test phase outputs are inspected and analyzed for the ICS DPV Isolation Function software projects.	ICS DPV Isolation Function software projects test phase activities were performed in compliance with the ICS DPV Isolation Function software plans and CySP as derived from SMPM, SQAPM, and CySPP.
3a1. The installation phase activities detailed in the RTIF software plans and CySP are completed for the RTIF software projects.	The installation phase outputs for the RTIF software projects, including RTIF FAT and RTIF Cyber Security FAT, are inspected and analyzed.	RTIF software projects installation phase activities were performed in compliance with the RTIF software plans and CySP as derived from SMPM, SQAPM, and CySPP.
3a2. The RTIF software projects performs as designed.	FAT is performed on the RTIF software projects.	RTIF software projects is in compliance with the RTIF software plans as derived from the SMPM, SQAPM, and CySPP.

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3a3. The RTIF software projects is cyber secure.	A cyber security FAT will be performed for the RTIF software projects.	RTIF software projects is in compliance with the RTIF cyber security program requirements as derived from the SMPM, SQAPM, and CySPP.
3b1. The installation phase activities detailed in the NMS software plans and CySP are completed for the NMS software projects.	The installation phase outputs for the NMS software projects, including NMS FAT and NMS Cyber Security FAT, are inspected and analyzed.	NMS software projects installation phase activities were performed in compliance with the NMS software plans and CySP as derived from SMPM, SQAPM, and CySPP.
3b2. The NMS software projects performs as designed.	FAT is performed on the NMS software projects.	NMS software projects is in compliance with the NMS software plans as derived from the SMPM, SQAPM, and CySPP.
3b3. The NMS software projects is cyber secure.	A cyber security FAT will be performed for the NMS software projects.	NMS software projects is in compliance with the NMS cyber security program requirements as derived from the SMPM, SQAPM, and CySPP.
3c1. The installation phase activities detailed in the SSLC/ESF software plans and CySP are completed for the SSLC/ESF software projects.	The installation phase outputs for the SSLC/ESF software projects, including SSLC/ESF FAT and SSLC/ESF Cyber Security FAT, are inspected and analyzed.	SSLC/ESF software projects installation phase activities were performed in compliance with the SSLC/ESF software plans and CySP as derived from SMPM, SQAPM, and CySPP.
3c2. The SSLC/ESF software projects performs as designed.	FAT is performed on the SSLC/ESF software projects.	SSLC/ESF software projects is in compliance with the SSLC/ESF software plans as derived from the SMPM, SQAPM, and CySPP.
3c3. The SSLC/ESF software projects is cyber secure.	A cyber security FAT will be performed for the SSLC/ESF software projects.	SSLC/ESF software projects is in compliance with the SSLC/ESF CySP as derived from the SMPM, SQAPM, and CySPP.
3d1. The installation phase activities detailed in the ATWS/SLC software plans and CySP are completed for the ATWS/SLC software projects.	The installation phase outputs for the ATWS/SLC software projects, including ATWS/SLC FAT and ATWS/SLC Cyber Security FAT, are inspected and analyzed.	ATWS/SLC software projects installation phase activities were performed in compliance with the ATWS/SLC software plans and CySP as derived from SMPM, SQAPM, and CySPP.
3d2. The ATWS/SLC software projects performs as designed.	FAT is performed on the ATWS/SLC software projects.	ATWS/SLC software projects is in compliance with the ATWS/SLC software plans as derived from the SMPM, SQAPM, and CySPP.
3d3. The ATWS/SLC software projects is cyber secure.	A cyber security FAT will be performed for the ATWS/SLC software projects.	ATWS/SLC software projects is in compliance with the ATWS/SLC CySP as derived from the SMPM, SQAPM, and CySPP.

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3e1. The installation phase activities detailed in the VBIF software plans and CySP are completed for the VBIF software projects.	The installation phase outputs for the VBIF software projects, including VBIF FAT and VBIF Cyber Security FAT, are inspected and analyzed.	VBIF software projects installation phase activities were performed in compliance with the VBIF software plans and CySP as derived from SMPM, SQAPM, and CySPP.
3e2. The VBIF software projects performs as designed.	FAT is performed on the VBIF software projects.	VBIF software projects is in compliance with the VBIF software plans as derived from the SMPM, SQAPM, and CySPP.
3e3. The VBIF software projects is cyber secure.	A cyber security FAT will be performed for the VBIF software projects.	VBIF software projects is in compliance with the VBIF CySP as derived from the SMPM, SQAPM, and CySPP.
3f1. The installation phase activities detailed in the GENE DPS software plans and CySP are completed for the GENE DPS software projects.	The installation phase outputs for the GENE DPS software projects, including GENE DPS FAT and GENE DPS Cyber Security FAT, are inspected and analyzed.	GENE DPS software projects installation phase activities were performed in compliance with the GENE DPS software plans and CySP as derived from SMPM, SQAPM, and CySPP.
3f2. The GENE DPS software projects performs as designed.	FAT is performed on the GENE DPS software projects.	GENE DPS software projects is in compliance with the GENE DPS software plans as derived from the SMPM, SQAPM, and CySPP.
3f3. The GENE DPS software projects is cyber secure.	A cyber security FAT will be performed for the GENE DPS software projects.	GENE DPS software projects is in compliance with the GENE DPS CySP as derived from the SMPM, SQAPM, and CySPP.
3g1. The installation phase activities detailed in the PIP software plans and CySP are completed for the PIP software projects.	The installation phase outputs for the PIP software projects, including PIP FAT and PIP Cyber Security FAT, are inspected and analyzed.	PIP software projects installation phase activities were performed in compliance with the PIP software plans and CySP as derived from SMPM, SQAPM, and CySPP.
3g2. The PIP software projects performs as designed.	FAT is performed on the PIP software projects.	PIP software projects is in compliance with the PIP software plans as derived from the SMPM, SQAPM, and CySPP.
3g3. The PIP software projects is cyber secure.	A cyber security FAT will be performed for the PIP software projects.	PIP software projects is in compliance with the PIP CySP as derived from the SMPM, SQAPM, and CySPP.
3h1. The installation phase activities detailed in the HP CRD Isolation Bypass Function software plans and CySP are completed for the HP CRD Isolation Bypass Function software projects.	The installation phase outputs for the HP CRD Isolation Bypass Function software projects, including HP CRD Isolation Bypass Function FAT and HP CRD Isolation Bypass Function Cyber Security FAT, are inspected and analyzed.	HP CRD Isolation Bypass Function software projects installation phase activities were performed in compliance with the HP CRD Isolation Bypass Function software plans and CySP as derived from SMPM, SQAPM, and CySPP.

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3h2. The HP CRD Isolation Bypass Function software projects performs as designed.	FAT is performed on the HP CRD Isolation Bypass Function software projects.	HP CRD Isolation Bypass Function software projects is in compliance with the HP CRD Isolation Bypass Function software plans as derived from the SMPM, SQAPM, and CySPP.
3h3. The HP CRD Isolation Bypass Function software projects is cyber secure.	A cyber security FAT will be performed for the HP CRD Isolation Bypass Function software projects.	HP CRD Isolation Bypass Function software projects is in compliance with the HP CRD Isolation Bypass Function CySP as derived from the SMPM, SQAPM, and CySPP.
3i. The complete ESBWR instrumentation and control systems with sensors and actuators is capable of operating as designed.	An overlapping and encompassing SAT is performed on the as-built platforms and network segments.	The complete ESBWR instrumentation and control system with sensors and actuators is capable of operating as designed and is in compliance with the software projects plans and CySP as derived from the SMPM, SQAPM and CySPP.
3j1. The RTIF software projects performs as designed.	A RTIF software projects SAT is performed.	The RTIF software projects is in compliance with the RTIF CySP as derived from the SMPM, SQAPM, and CySPP.
3j2. The RTIF software projects is cyber secure.	A RTIF software projects cyber security SAT is performed.	RTIF software projects is in compliance with the RTIF CySP as derived from the SMPM, SQAPM, and CySPP.
3k1. The NMS software projects performs as designed.	A NMS software projects SAT is performed.	NMS software projects is in compliance with the NMS software plans as derived from the SMPM, SQAPM, and CySPP.
3k2. The NMS software projects is cyber secure.	A NMS software projects cyber security SAT is performed.	NMS software projects is in compliance with the NMS CySP as derived from the SMPM, SQAPM, and CySPP.
3l1. The SSLC/ESF software projects performs as designed.	A SSLC/ESF software projects SAT is performed.	SSLC/ESF software projects is in compliance with the SSLC/ESF software plans as derived from the SMPM, SQAPM, and CySPP.
3l2. The SSLC/ESF software projects is cyber secure.	A SSLC/ESF software projects cyber security SAT is performed.	SSLC/ESF software projects is in compliance with the SSLC/ESF CySP as derived from the SMPM, SQAPM, and CySPP.
3m1. The ATWS/SLC software projects performs as designed.	An ATWS/SLC software projects SAT is performed.	ATWS/SLC software projects is in compliance with the ATWS/SLC software plans as derived from the SMPM, SQAPM, and CySPP.
3m2. The ATWS/SLC software projects is cyber secure.	An ATWS/SLC software projects cyber security SAT is performed.	ATWS/SLC software projects is in compliance with the ATWS/SLC CySP as derived from the SMPM, SQAPM, and CySPP.

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3n1. The VBIF software projects performs as designed.	A VBIF software projects SAT is performed.	VBIF software projects is in compliance with the VBIF software plans as derived from the SMPM, SQAPM, and CySPP.
3n2. The VBIF software projects is cyber secure.	A VBIF software projects cyber security SAT is performed.	VBIF software projects is in compliance with the VBIF CySP as derived from the SMPM, SQAPM, and CySPP.
3o1. The GENE DPS software projects performs as designed.	A GENE DPS software projects SAT is performed.	GENE DPS software projects is in compliance with the GENE DPS software plans as derived from the SMPM, SQAPM, and CySPP.
3o2. The GENE DPS software projects is cyber secure.	A GENE DPS software projects cyber security SAT is performed.	GENE DPS software projects is in compliance with the GENE DPS CySP as derived from the SMPM, SQAPM, and CySPP.
3p1. The PIP software projects performs as designed.	A PIP software projects SAT is performed.	PIP software projects is in compliance with the PIP software plans as derived from the SMPM, SQAPM, and CySPP.
3p2. The PIP software projects is cyber secure.	A PIP software projects cyber security SAT is performed.	PIP software projects is in compliance with the PIP CySP as derived from the SMPM, SQAPM, and CySPP.
3q1. The HP CRD Isolation Bypass Function software projects performs as designed.	A HP CRD Isolation Bypass Function software projects SAT is performed.	HP CRD Isolation Bypass Function software projects is in compliance with the HP CRD Isolation Bypass Function software plans as derived from the SMPM, SQAPM, and CySPP.
3q2. The HP CRD Isolation Bypass Function software projects is cyber secure.	A HP CRD Isolation Bypass Function software projects cyber security SAT is performed.	HP CRD Isolation Bypass Function software projects is in compliance with the HP CRD Isolation Bypass Function CySP as derived from the SMPM, SQAPM, and CySPP.
3r1. The installation phase activities detailed in the ICS DPV Isolation Function software plans and CySP are completed for the ICS DPV Isolation Function software projects.	The installation phase outputs for the ICS DPV Isolation Function software projects, including ICS DPV Isolation Function FAT and ICS DPV Isolation Function Cyber Security FAT, are inspected and analyzed.	ICS DPV Isolation Function software projects installation phase activities were performed in compliance with the ICS DPV Isolation Function software plans and CySP as derived from SMPM, SQAPM, and CySPP.
3r2. The ICS DPV Isolation Function software projects performs as designed.	FAT is performed on the ICS DPV Isolation Function software projects.	ICS DPV Isolation Function software projects is in compliance with the ICS DPV Isolation Function software plans as derived from the SMPM, SQAPM, and CySPP.

Table 3.2-1 ITAAC For Software Development

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3r3. The ICS DPV Isolation Function software projects is cyber secure.	A cyber security FAT will be performed for the ICS DPV Isolation Function software projects.	ICS DPV Isolation Function software projects is in compliance with the ICS DPV Isolation Function CySP as derived from the SMPM, SQAPM, and CySPP.
3s1. The ICS DPV Isolation Function software projects performs as designed.	A ICS DPV Isolation Function software projects SAT is performed.	ICS DPV Isolation Function software projects is in compliance with the ICS DPV Isolation Function software plans as derived from the SMPM, SQAPM, and CySPP.
3s2. The ICS DPV Isolation Function software projects is cyber secure.	A ICS DPV Isolation Function software projects cyber security SAT is performed.	ICS DPV Isolation Function software projects is in compliance with the ICS DPV Isolation Function CySP as derived from the SMPM, SQAPM, and CySPP.

3.3 HUMAN FACTORS ENGINEERING

Design Description

The Human Factors Engineering (HFE) design process represents a comprehensive, synergistic, iterative design approach for the development of human-centered control and information infrastructure for the ESBWR.

The general objectives of the program can be stated in "human-centered" terms, which, as the HFE program develops, is refined and used as a basis for HFE planning, test and evaluation activities. HFE design goals include ensuring that:

- Personnel tasks can be accomplished within time and performance criteria;
- Human-System Interfaces (HSIs), procedures, staffing/qualifications, training and management and organizational variables support a high degree of operating crew situation awareness;
- Allocation of functions accommodates human capabilities and limitations;
- Operator vigilance is maintained;
- Acceptable operator workload is met;
- Operator interfaces contribute to an error-free environment; and
- Error detection and recovery capabilities are provided.

The elements of the ESBWR HFE Program Management are provided in the plan entitled "Man-Machine Interface System and Human Factors Engineering Implementation Plan" (MMIS and HFE Implementation Plan). In the plan the following are described:

- HFE goals/objectives;
- A technical program to accomplish the objectives;
- The system to track HFE issues;
- The HFE design team; and
- Management and organizational structure for the technical program.

The proposed methodologies for the conducts of the HFE activities are described in separate implementation plans. The results and outcomes of the activities are summarized in individual results summary reports.

The MMIS and HFE Implementation Plan and supporting HFE activity implementation plans are submitted for NRC staff review in the pre-design project phase. The results summary reports are available for the NRC staff review, and are included in the list of items for Inspections, Tests, Analyses, and Acceptance Criteria.

The following are the HFE elements and their associated implementation plans:

(1) Operating Experience Review (OER) is performed in accordance with the ESBWR HFE Operating Experience Review Implementation Plan.

(2) Functional Requirements Analysis (FRA) is performed in accordance with the ESBWR HFE Functional Requirements Analysis Implementation Plan and Allocation of Functions (AOF) is performed in accordance with the ESBWR HFE Allocation of Functions Implementation Plan.

(3) Task Analysis is performed in accordance with the ESBWR HFE Task Analysis Implementation Plan.

(4) Staffing and Qualifications (S&Q) is performed in accordance with the ESBWR HFE Staffing and Qualifications Implementation Plan.

(5) Human Reliability Analysis (HRA) is performed in accordance with the ESBWR HFE Human Reliability Analysis Implementation Plan.

(6) Human-System Interface (HSI) Design is performed in accordance with the ESBWR HFE Human-System Interface Design Implementation Plan.

(7) (Deleted)

(8) (Deleted)

(9) Human Factors Verification and Validation (HF V&V) is performed in accordance with the ESBWR HFE Verification and Validation Implementation Plan.

(10) Design Implementation is performed in accordance with the ESBWR HFE Design Implementation Plan.

(11) The strategy for the Human Performance Monitoring (HPM) process is developed in accordance with the ESBWR HFE Human Performance Monitoring Implementation Plan.

(12) Integrated system validation scenarios are developed that incorporate detailed information related to sampling dimensions, scenario identification, scenario definition, simulation of remote actions, performance measurement characteristics, performance measurement selection, performance measurement criteria, test design, and data analysis.

A minimum inventory of human system interfaces (alarms, displays, and controls) needed to implement the plant's emergency operating procedures, carry out those human actions shown to be important from the probabilistic risk assessment, and to bring the plant to a safe condition were developed using a detailed and comprehensive task analysis process.

To identify tasks that support implementing the emergency operating procedures, the strategies and actions of the BWROG EPG/SAG, Revision 2 are compared with the ESBWR design. This comparison is a functional analysis; linking the strategy and task guidance contained in the BWROG document with the design specifics and system capabilities of the ESBWR.

Tasks that support the completion of risk-important human actions were identified through Probabilistic Risk Assessment (PRA) analysis of design basis accidents and the resulting event strategies, sequences, and actions. Any human action included in these sequences is analyzed in the context of the ESBWR plant and systems design and operating strategies to determine error probabilities and consequences. Using ranking methodologies, risk-important human actions and tasks were identified.

Analysis of plant manipulations necessary for achieving and maintaining safe, stable shutdown following design basis MCR evacuation identified tasks that must be completed at the Remote Shutdown System (RSS).

These groups of tasks are then analyzed through task analysis to identify the alarms, displays, and controls that are needed to ensure their successful completion by ESBWR operators. The resulting list of HSIs is the ESBWR minimum inventory of alarms, displays, and controls.

The results for the MCR HSIs are contained in Table 3.3-1a and the RSS HSIs are contained in Table 3.3-1b.

Inspections, Tests, Analyses, and Acceptance Criteria

Table 3.3-2 provides a definition of the inspections, test and analyses, together with associated acceptance criteria for Human Factors Engineering.

Table 3.3-1a Minimum Inventory of MCR Alarms, Displays, and Controls (Sheet 1 of 2)

Description	Alarm	Display	Control
Reactor Power	X	X	
Reactor Pressure	X	X	
Reactor Water Level	X	X	
Containment Water Level		X	
Suppression Pool Level	X	X	
Average Drywell Temperature	X	X	
Suppression Pool Bulk Average Temperature	X	X	
Drywell Pressure	X	X	
Wetwell Pressure		X	
Containment Isolation Valves		X	X
Containment Radiation		X	
Drywell Hydrogen Concentration	X	X	
Wetwell Hydrogen Concentration	X	X	
Drywell Oxygen Concentration	X	X	
Wetwell Oxygen Concentration	X	X	
Isolation Condenser Valves		X	X
Isolation Condenser Pool Level	X	X	
Shutdown Cooling Initiation			X
Passive Containment Cooling Pool Level	X	X	
Gravity Driven Cooling Pool Level		X	
Gravity Driven Cooling Injection Valves		X	X
Gravity Driven Cooling Equalization Valves		X	X
Reactor Scram	X	X	X
Main Steam Isolation	X	X	X
Main Steam Relief Valves		X	X
Standby Liquid Control Accumulator Level		X	
Standby Liquid Control Initiation			X
Standby Liquid Control Accumulator Isolation Valves	X	X	X
Automatic Depressurization System Inhibit	X		X
Depressurization Valves		X	X
Containment High Pressure Nitrogen Status	X		
Reactor Building Area Temperature High	X		

Table 3.3-1a Minimum Inventory of MCR Alarms, Displays, and Controls (Sheet 2 of 2)

Description	Alarm	Display	Control
Reactor Building Ventilation Exhaust Radiation High	X	X	
Reactor Building Area Radiation High	X		
Reactor Building Area Water Level High	X		
Reactor Building Ventilation Isolation		X	X

Table 3.3-1b Minimum Inventory of RSS Alarms, Displays, and Controls

Description	Alarm	Display	Control
Reactor Pressure	X	X	
Reactor Water Level	X	X	
Isolation Condenser System	X	X	X
Isolation Condenser Pool Level	X	X	
Main Steam Isolation	X	X	X

Table 3.3-2 ITAAC For Human Factors Engineering

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. Operating Experience Review (OER) is performed in accordance with the ESBWR HFE Operating Experience Review Implementation Plan.	An inspection is performed on the OER results summary report(s). {{Design Acceptance Criteria}}	A results summary report(s) exists that concludes that the OER activity was conducted in accordance with the implementation plan and contains: • The scope of the OER; • The list of sources of operating experience reviewed and summary of documented results; • List of risk-important human actions and their resolutions from predecessor plants; and • A description of the process for issue analysis, tracking, and review. {{Design Acceptance Criteria}}
2. Functional Requirements Analysis (FRA) is performed in accordance with the ESBWR HFE Functional Requirements Analysis Implementation Plan and Allocation of Functions (AOF) is performed in accordance with the ESBWR HFE Allocation of Functions Implementation Plan.	An inspection is performed on the FRA and AOF results summary report(s). {{Design Acceptance Criteria}}	A results summary report(s) exists that concludes that the FRA and AOF activities were conducted in accordance with the implementation plans and contains:

Table 3.3-2 ITAAC For Human Factors Engineering

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
(continued)		• Scope of the FRA; • Functional hierarchy for plant safety functions including the identification of Critical Safety Functions; • Plant systems and configurations that support safety functions; • Definition of high-level plant functions, their support needs, and monitoring parameters; • Scope of AOF; • Safety function allocations. A summary of AOF results; and • A description of the process for refining and updating functional allocations. {{Design Acceptance Criteria}}
3. Task Analysis is performed in accordance with the ESBWR HFE Task Analysis Implementation Plan.	An inspection is performed on the Task Analysis results summary report(s). {{Design Acceptance Criteria}}	A results summary report(s) exists that concludes that the Task Analysis activity was conducted in accordance with the implementation plan and contains: • The scope of the Task Analysis. • A list of Task descriptions. • A description of the process for documenting and retaining task analysis results. • Examples of detailed task analysis results. {{Design Acceptance Criteria}}

Table 3.3-2 ITAAC For Human Factors Engineering

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
4. Staffing and Qualifications (S&Q) is performed in accordance with the ESBWR HFE Staffing and Qualifications Implementation Plan.	i. An inspection is performed on the S&Q results summary report(s). {{Design Acceptance Criteria}}	i. A results summary report(s) exists that concludes that the S&Q design activity was conducted in accordance with the implementation plan and contains: • The scope of the S&Q activity. • A summary of design requirements and inputs to the S&Q. {{Design Acceptance Criteria}}
	ii. An inspection is performed on the final S&Q results summary report(s).	ii. A final results summary report(s) exists that concludes that the S&Q process was conducted in accordance with the implementation plan and contains: • Final staffing levels and qualifications. • The basis for the S&Q concluding that issues and concerns raised in other HFE activities are addressed.
5. Human Reliability Analysis (HRA) is performed in accordance with the ESBWR HFE Human Reliability Analysis Implementation Plan.	i. An inspection is performed on the HRA results summary report(s). {{Design Acceptance Criteria}}	i. A results summary report(s) exists that concludes that the HRA design was conducted in accordance with the implementation plan and contains: • The scope of the HRA. • A list of risk-important human actions input to Human Factors activities. {{Design Acceptance Criteria}}

Table 3.3-2 ITAAC For Human Factors Engineering

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
	ii. An inspection is performed on the final HRA results summary report(s).	ii. A final results summary report(s) exists that concludes that the HRA process was conducted in accordance with the implementation plan and contains: • A list of potentially risk-important human actions, human interactions, and operational failure events and a summary of how these basic events and their associated tasks, and scenarios are addressed during the various phases of the design process. • A summary that demonstrates how risk management actions taken in the design keep the potentially risk-important human interactions as low as practical. • A discussion of the validation of HRA assumptions.

Table 3.3-2 ITAAC For Human Factors Engineering

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
6. Human System Interface (HSI) Design is performed in accordance with the ESBWR HFE Human System Interface Design Implementation Plan.	i. An inspection is performed on the HSI Design results summary report(s). {{Design Acceptance Criteria}}	i. A results summary report(s) exists that concludes that the HSI Design specification was conducted in accordance with the implementation plan and contains: • The scope of the HSI Design. • A description of the concept of operations for HSI Design. • A list of HFE standards and guideline documents used in the activity. • Descriptions of the Style Guide and design specifications for HSI design. • A list of accident monitoring instruments that comply with RG 1.97 and supporting analysis. • A description of the functional requirement specification for HSIs. {{Design Acceptance Criteria}}

Table 3.3-2 ITAAC For Human Factors Engineering

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
	ii. An inspection is performed on the final HSI Design results summary report(s).	ii. A final results summary report(s) exists that concludes that the HSI Design process was conducted in accordance with the implementation plan and contains: • A summary of the methods used for the evaluation and verification of the HSI. • A description of the final inventory of HSI including alarms, information displays, and controls. • The results of the verification concluding that all MCR and RSS minimum inventory HSIs described in Tables 3.3-1a and 3.3-1b are incorporated into the final inventory of HSIs.
7. (Deleted)		
8. (Deleted)		

Table 3.3-2 ITAAC For Human Factors Engineering

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
9. Human Factors Verification and Validation (HF V&V) is performed in accordance with the ESBWR HFE Human Factors Verification and Validation Implementation Plan.	An inspection is performed on the HF V&V results summary report(s).	A results summary report(s) exists that concludes that the HF V&V activity was conducted in accordance with the implementation plan and contains: • The scope of the HF V&V. • Major conclusions and their basis. • A description of the process for documenting and retaining the detailed HF V&V results. • A summary of the following activities: - Operational conditions used for the HF V&V. - HSI inventory and characterization. - HSI task support verification. - HFE design verification. - Integrated system validation. - Human Engineering Discrepancy resolution.

Table 3.3-2 ITAAC For Human Factors Engineering

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
10. Design Implementation is performed in accordance with the ESBWR HFE Design Implementation Plan.	An inspection is performed on the Design Implementation results summary report(s).	A results summary report(s) exist that concludes that the Design Implementation activity was conducted in accordance with the implementation plan and contains: • The results of the final (as-built) HSI Verification concluding that the “As-Built” HSIs and their design characteristics correspond to the HSI Requirements and that Human Engineering Discrepancies (if any) resulting from non-conformance are resolved. • The results of the confirmation of the “As-Built” procedures and training design implementation concluding that Human Engineering Discrepancies resulting from adapted sections (if any) are resolved. • The results of the verification of HFE design not performed in the HF V&V concluding that items in the verification list meet verification criteria and Human Engineering Discrepancies (if any) resulting from non-conformance are resolved. • A description of the resolution to Human Engineering Discrepancies and Open issues in the issue tracking system (HFEITS). • A summary of turnover of remaining Human Engineering Discrepancies/HFEITS issues.

Table 3.3-2 ITAAC For Human Factors Engineering

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
11. The strategy for the Human Performance Monitoring (HPM) process is developed in accordance with the ESBWR HFE Human Performance Monitoring Implementation Plan.	An inspection is performed on the HPM results summary report(s).	A results summary report(s) exists that concludes that the HPM strategy was developed in accordance with the implementation plan and contains: • A description of the HPM strategy including the scope, structure, and provisions for specific cause determination, trending of performance degradation and failures, and corrective actions. • A description of the database to track activities and corrective actions.
12. Integrated system validation scenarios are developed that incorporate detailed information related to sampling dimensions, scenario identification, scenario definition, simulation of remote actions, performance measurement characteristics, performance measurement selection, performance measurement criteria, test design, and data analysis.	An inspection is performed on the integrated system validation scenarios. {{Design Acceptance Criteria}}	The integrated system validation scenarios were developed in accordance with the HF V&V implementation plan and meet the review criteria in following sections of NUREG-0711, Rev. 2: • 11.4.1.2.1, Sampling Dimensions • 11.4.3.2.2, Validation Test Beds • 11.4.3.2.4, Scenario Definition • 11.4.3.2.5, Performance Measurement • 11.4.3.2.6, Test Design • 11.4.3.2.7, Data Analysis and Interpretation {{Design Acceptance Criteria}}

3.4 RADIATION PROTECTION

Design Description

The ESBWR Standard Plant is designed to maintain radiation exposures to plant personnel As Low As Reasonably Achievable (ALARA). Radiation protection is provided by application of the design and radiation control principles:

(1) Plant design provides for containment of airborne radioactive materials, and the ventilation system ensures that concentrations of airborne radionuclides are maintained at levels consistent with personnel access needs.

(2) (Deleted)

(3) The plant design provides radiation shielding for rooms, corridors and operating areas commensurate with their occupancy requirements.

(4) a. (Deleted)

b. (Deleted)

Inspections, Tests, Analyses, and Acceptance Criteria

Table 3.4-1 provides definitions of the inspections, tests and analyses, together with associated acceptance criteria for ventilation and airborne containment and shielding.

Table 3.4-1 ITAAC For Radiation Protection

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. Plant design provides for containment of airborne radioactive materials, and the ventilation system ensures that concentrations of airborne radionuclides are maintained at levels consistent with personnel access needs.	Expected concentrations of airborne radioactive material will be analyzed by radionuclide for normal plant operations, anticipated operational occurrences for each equipment cubicle, corridor, and operating area requiring personnel access. Calculations will consider: • Design ventilation flow rates for each area; • Typical leakage characteristics for equipment located in each area • A radiation source term in each fluid system will be determined based upon an assumed off gas rate of 3,700 MBq/second (30 minute decay) appropriately adjusted for radiological decay and buildup of activated corrosion and wear products • Testing of safety-related isolation dampers will be performed in accordance with IEEE-338 requirements.	Analyses results for radioactive airborne concentration demonstrates that: • For normally occupied rooms and areas of the plant (i.e., those areas requiring routine access to operate and maintain the plant), equilibrium concentrations of airborne radionuclides will be a small fraction (10% or less) of the occupational concentration limits listed in 10 CFR 20 Appendix B. • For rooms that require infrequent access (such as for non-routine equipment maintenance), the ventilation system is capable of reducing radioactive airborne concentrations to and maintaining them at or below the occupational concentration limits listed in 10 CFR 20 Appendix B during the periods that occupancy is required. • For rooms that seldom require access, plant design provides containment and ventilation to reduce airborne contamination spread to other areas of lower contamination. • A test report documents that isolation dampers close within the designed time frame and limit leakage to a rate below the design assumed leakage rate.
2. (Deleted)		

Table 3.4-1 ITAAC For Radiation Protection

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3. The plant design provides radiation shielding for rooms, corridors and operating areas commensurate with their occupancy requirements.	Analyses (with inspections) of the expected radiation levels in each plant area will verify the adequacy of the shielding designs.	Analysis/inspection report(s) demonstrate that the maximum expected radiation dose rates in each plant area (deep dose equivalent measured at 30 cm from the source of the radiation, not contact dose rates) are no greater than the dose rates specified for the following zones, based on the access requirements of that area for plant operation and maintenance.

Zone	Max Dose Rate (mSv/hr)[1]	Access Requirements
A	0.006	Uncontrolled, unlimited access
B	0.01	Controlled and unlimited access
C	0.05	Controlled and limited access (20 hr/week)

Table 3.4-1 ITAAC For Radiation Protection

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria		
		Zone	Max Dose Rate (mSv/hr)[1]	Access Requirements
		D	0.25	Controlled and limited access (4 hr/week)
		E	1	Controlled and limited access (1 hr/week)
		F	10	Limited and controlled access with special authorization permit required
		G	100	Same as Zone F
		H	1000	Same as Zone F
		I	5000	Same as Zone F
		J	> 5000	Inaccessible during power and shutdown operations
		[1] 1 Sv = 100 rem		
4a. Deleted				
4b. Deleted				

3.5 INITIAL TEST PROGRAM

Design Description

The ESBWR Initial Test Program (ITP) is a program that will be conducted following completion of construction and construction-related inspections and tests and extends to commercial operation. The test program will be composed of preoperational and startup test phases. The general objective of the ITP is to confirm that performance of the as-built facility is in compliance with the design characteristics used for safety evaluations.

The preoperational test phase of the ITP will consist of those test activities conducted prior to fuel loading. Preoperational testing will be conducted to demonstrate proper performance of structures, systems, or components, and design features in the assembled plant. Tests will include, as appropriate, logic and interlocks tests, control and instrumentation functional tests, equipment functional tests, system operational tests, and system vibration and expansion measurements.

The startup test phase of the ITP will begin with fuel loading and extends to commercial operation. The primary objective of the startup phase testing will be to confirm integrated plant performance with the nuclear fuel in the reactor pressure vessel and the plant at various power levels. Startup phase testing will be conducted at five test conditions during power ascension: open vessel, heatup, low power, mid-power, and high power. The following tests will be conducted during power operation testing:

(1) Core performance analysis,

(2) Steady-state testing,

(3) Control system tuning and demonstration,

(4) System transient tests; and

(5) Major plant transients (including trips).

Testing during all phases of the ITP will be conducted using step-by-step written procedures to control the conduct of each test. Such test procedures will delineate established test methods and applicable acceptance criteria. The test procedures will be developed from preoperational and startup test specifications. Approved test procedures will be made available to the NRC approximately 60 days prior to their intended use for preoperational tests and 60 days prior to scheduled fuel loading for startup phase tests. The preoperational and startup test specifications will also be made available to the NRC. Administratively, the ITP will be controlled in accordance with a startup administrative manual. This manual will contain the administrative requirements that govern the conduct of test program, review, evaluation and approval of test results, and test records retention.

Inspections, Tests, Analyses, and Acceptance Criteria

This section represents a commitment that combined operating license applicants referencing the certified design will implement an ITP that meets the objectives presented above. ITAAC, aimed at verification of ITP implementation, are neither necessary nor required.

3.6 DESIGN RELIABILITY ASSURANCE PROGRAM

Design Description

The GEH ESBWR Design Reliability Assurance Program (D-RAP) is used during detailed design and specific equipment selection phases to assure that the important ESBWR reliability assumptions of the probabilistic risk assessment (PRA) will be considered throughout the plant life. The PRA is used to evaluate plant responses to abnormal event initiations and the corresponding plant mitigation functions, to ensure potential plant damage scenarios pose a very low probability of risk to the public.

The objectives of the D-RAP are to provide reasonable assurance that SSCs in the scope of the D-RAP are designed such that: (1) Assumptions from the risk analysis are utilized; (2) SSCs when challenged, function in accordance with the assumed reliability; (3) SSCs whose failure results in a reactor trip, function in accordance with the assumed reliability; and (4) Maintenance actions to achieve the assumed reliability are identified.

The scope of the ESBWR D-RAP includes risk-significant SSCs, both safety-related and nonsafety-related, that provide defense-in-depth or result in significant improvement in the PRA evaluations, and all SSCs designated as RTNSS.

(1) Ensure that the design of systems, structures, and components within the scope of the reliability assurance program (RAP SSCs) is consistent with the risk insights and key assumptions (e.g., SSC design, reliability, and availability).

Inspections, Tests, Analyses, and Acceptance Criteria

Table 3.6-1 specifies the inspections, tests, analyses, and associated acceptance criteria for the D-RAP.

Table 3.6-1 ITAAC For The Design Reliability Assurance Program

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. Ensure that the design of systems, structures, and components within the scope of the reliability assurance program (RAP SSCs) is consistent with the risk insights and key assumptions (e.g., SSC design, reliability, and availability).	An analysis will confirm that the design of all RAP SSCs has been completed in accordance with applicable D-RAP activities.	All RAP SSCs have been designed in accordance with the applicable reliability assurance activities for the D-RAP.

3.7 POST ACCIDENT MONITORING INSTRUMENTATION

Design Description

The Post Accident Monitoring (PAM) instrumentation provides information required to monitor variables and systems over their anticipated ranges for post-accident conditions as appropriate to ensure adequate safety. This information may be safety-related or nonsafety-related.

The ESBWR Distributed Control and Information System (DCIS) provides the required signal paths to process this information. The ESBWR DCIS is subdivided into the safety-related DCIS (Q-DCIS) and the nonsafety-related DCIS (N-DCIS). For PAM instrumentation associated with critical safety functions and powered from safety-related sources the safety related Q-DCIS provides the required signal path to process this data. This information then is shown on Q-DCIS divisional safety-related displays. The safety-related information is also available to the N-DCIS through the qualified safety-related isolation devices for input to nonsafety-related displays, Plant Computer Functions (PCF), and the Alarm Management System (AMS). Type A, Type B, and Type C variables are powered from safety-related sources, and Type D and Type E variables will have their power source determined as part of the design process, (Regulatory Guide 1.97 addresses the types of variables).

For variables that are powered from nonsafety-related sources the N-DCIS provides the required signal paths to process this information. This information is used for input to nonsafety-related displays, plant computer functions, and the Alarm Management System.

There is a Human Factors Engineering defined process to determine the appropriate variables and types (A, B, C, D, or E). That is, the determination of the scope of instrumentation relied upon to fulfill the post-accident monitoring function is determined through the Human Factors Engineering process (see Section 3.3).

For each variable and type the process determines additional characteristics appropriate to that variable as outlined below:

Performance criteria

- Range
- Accuracy
- Response time
- Required instrument functional duration
- Reliability
- Performance assessment documentation

Design criteria

- Single failure

- Common cause failure
- Independence and separation
- Isolation
- Information ambiguity
- Power supply
- Calibration
- Testability
- Direct measurement
- Control of access
- Maintenance and repair
- Auxiliary supporting features
- Portable instruments
- Documentation of Design Criteria

Qualification criteria

- Type A variables
- Type B variables
- Type C variables
- Type D variables
- Type E variables
- Portable instruments
- Post Event operating time
- Documentation of qualification criteria

Display criteria

- Information characteristics
- Human factors
- Anomalous indications
- Continuous vs. on-demand display
- Trend or rate information
- Display identification
- Type of monitoring channel display
- Display location

- Information ambiguity
- Recording
- Digital display signal validation
- Display criteria documentation

PAM Instrumentation software is developed in accordance with the software development program described in Section 3.2.

Inspections, Tests, Analyses, and Acceptance Criteria

Table 3.7-1 specifies the inspections, tests, analyses, and associated acceptance criteria for post accident monitoring instrumentation.

Table 3.7-1 ITAAC For Post Accident Monitoring Instrumentation

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The installed post-accident monitoring instrumentation (scope as determined by the Human Factors Engineering process in Section 3.3) conforms with the requirements (variables, types, performance criteria, design criteria, qualification criteria, display criteria, and quality assurance) as described in Section 3.7.	Inspections, tests or analysis will be performed to verify that the installed post-accident monitoring instrumentation conforms with the requirements as described in Section 3.7.	The installed post accident monitoring instrumentation conforms with the requirements as described in Section 3.7.
2. (Deleted)		

3.8 ENVIRONMENTAL AND SEISMIC QUALIFICATION OF MECHANICAL AND ELECTRICAL EQUIPMENT

Equipment qualification applies to safety-related electrical and mechanical equipment located in harsh environments and digital instrumentation and controls (I&C) equipment in mild environments. The electrical equipment identified in 10 CFR 50.49 as electric equipment important to safety covered by (b)(1), (b)(2), and (b)(3) are subject to equipment qualification.

Certain equipment that supports Regulatory Treatment of Non-Safety Systems (RTNSS) functions and that is located in harsh environments is also subject to equipment qualification.

Table 3.8-1 lists equipment subject to environmental qualification requirements, except that the specific digital I&C equipment subject to environmental qualification requirements are defined through the Design Acceptance Criteria process.

Dynamic and seismic qualification for digital I&C is addressed in this section. The specific digital I&C equipment subject to dynamic and seismic qualification are defined through the Design Acceptance Criteria process.

Design Description

(1) The electrical equipment listed in Table 3.8-1 as located in a harsh environment can perform its safety-related or RTNSS function under normal, abnormal and design bases accident environmental conditions.

(2) The mechanical equipment listed in Table 3.8-1 as located in a harsh environment can perform its safety-related or RTNSS function under normal, abnormal and design bases accident environmental conditions.

(3) The safety-related digital I&C equipment in systems listed in Table 2.2.15-1 (including digital components in the safety-related electrical distribution system) located in a mild environment can perform its safety-related function under normal and AOO environmental conditions.

(4) The Seismic Category I digital I&C equipment in systems listed in Table 2.2.15-1 (including digital components in the safety-related electrical distribution system) can perform its safety-related function before, during and after dynamic and seismic design bases event conditions.

Inspections, Tests, Analyses, and Acceptance Criteria

Table 3.8-2 specifies the equipment qualification inspections, tests, analyses, and associated acceptance criteria for equipment qualification program mechanical and electrical equipment.

Table 3.8-1 Electrical and Mechanical Equipment for Environmental Qualification

Components (note 5)	Quantity	Location (note 1)	Function (note 2)	Required Operation Time (note 3)	Qualification Program (note 4)
Nuclear Boiler System					
Depressurization Valves	8	CV	ESF	72 hr	MH
Safety Relief Valves	10	CV	ESF	72 hr	MH
Temperature element in DPV/SRV Discharge	18	CV	ESF	72 hr	EH
MSIV - Inboard	4	CV	PB	100 Days	MH
MSIV - Outboard	4	ST	PB	100 Days	MH
MSIV Drain Bypass Valve	2	ST	ESF	72 hr	MH
Steam Line Lowpoint Drain Bypass Valve	1	TB	ESF	72 hr	MH
Feedwater isolation valve	8	ST, CV	PB	100 Days	MH
RPV Level Transmitters	All	RB	ESF	100 Days	EH
RPV Temperature Elements	All	CV	ESF	100 Days	EH
RPV Pressure Transmitter	All	RB	ESF	100 Days	EH
Feed Piping Diff Pressure Transmitter	All	RB	ISOL	100 Days	EH
Steam Line Flow Transmitter	All	RB	ISOL	100 Days	EH
Electrical Modules and Cable	All	CV, RB, ST, TB	ESF	100 Days	EH
Isolation Condenser System					
Isolation Valves	16	CV	PB	100 Days	MH
Isolation Valves Operator	16	CV	ESF	100 Days	MH
Condensate Return Valves	4	CV	ESF	100 Days	MH
Condensate Return Valves Operator	4	CV	ESF	100 Days	MH
Condensate Return Bypass Valve	4	CV	ESF	100 Days	MH
Condensate Return Bypass Valve Operator	4	CV	ESF	100 Days	MH
Upper Header Vent Valve	8	CV	ESF	100 Days	MH
Upper Header Vent Valve Actuator	8	CV	ESF	100 Days	MH
Lower Header Vent Valve	16	CV	ESF	100 Days	MH
Lower Header Vent Valve Actuator	12	CV	ESF	100 Days	MH
Pool Cross-Connect Valves	4	RB	ESF	100 Days	MH
Vent Line Temperature Element	8	CV	ESF	100 Days	EH

Table 3.8-1 Electrical and Mechanical Equipment for Environmental Qualification

Components (note 5)	Quantity	Location (note 1)	Function (note 2)	Required Operation Time (note 3)	Qualification Program (note 4)
Condensate Drain Temperature Element	4	CV	ESF	100 Days	EH
Steam Piping Diff Pressure Transmitter	8	CV	ESF	100 Days	EH
Condensate Drain Diff Pressure Transmitter	8	CV	ESF	100 Days	EH
Electrical Modules and Cable	All	CV, RB	ESF	100 Days	EH
Rod Control and Information System					
Electrical Modules and Cable	All	CB, RB	ESF	72 hr	EH
Control Rod Drive System					
HCU Scram Solenoid Pilot Valve	135	RB	ESF	72 hr	MH
FMCRD Passive Holding Brake	269	CV	ESF	72 hr	MH
FMCRD Separation Switch	538	CV	ESF	72 hr	EH
Charging Water Header Pressure Transmitter	4	RB	ESF	72 hr	EH
Electrical Modules and Cable	All	CV, RB	ESF	72 hr	EH
High Pressure CRD Makeup Line Isolation Valves	2	RB	ESF	72 hr	MH
Backup Scram Valve Solenoids	2	RB	ESF	72 hr	EH
Leak Detection and Isolation System					
Pressure Transmitters	All	CV, RB, CB	ESF	100 Days	EH
Temperature Sensors	All	CV, RB, CB	ESF	100 Days	EH
Electrical Modules and Cable	All	CV, RB, CB	ESF	100 Days	EH
Feedwater Control System					
Electric Modules and Cable	All	CB, RB	ESF	72 hr	EH
Neutron Monitoring System					
Detector and Tube Assembly	All	CV	ESF	72 hr	MH
Electrical Modules and Cable	All	CV, RB, CB	ESF	100 Days	EH
Remote Shutdown System					
Electrical Panels, Modules and Cable	All	RB	ESF	100 Days	C
Safety-Related Distributed Control and Information System (DCIS)					
Electrical Modules and Cable	All	RB, CB	ESF	100 Days	C

Table 3.8-1 Electrical and Mechanical Equipment for Environmental Qualification

Components (note 5)	Quantity	Location (note 1)	Function (note 2)	Required Operation Time (note 3)	Qualification Program (note 4)
Reactor Protection System					
Electrical Modules and Cable	All	CB, RB	ESF	100 Days	EH
Diverse Protection System					
Electrical Modules and Cable	All	CB, RB, TB	ESF, ISOL	100 Days	EH
Safety System Logic and Control					
Electrical Modules and Cable	All	CB, RB	ESF	100 Days	EH
Standby Liquid Control System					
Isolation Check Valves	4	CB, RB	PB	100 days	MH
Squib Injection Valves	4	RB	ESF	72 hr	MH
Injection Shut-Off Valves Actuator	4	RB	ESF	100 Days	EH
Nitrogen Charging Globe Valve	2	RB	ESF	100 Days	MH
Nitrogen Charging Globe Valve Actuator	2	RB	ESF	100 Days	EH
Nitrogen Charging Check Valve	2	RB	ESF	72 hr	MH
Accumulator Depressurization Valves	4	RB	ESF	100 Days	MH
Accumulator Depressurization Valves Actuator	4	RB	ESF	100 Days	EH
Accumulator Relief Valve	2	RB	ESF	72 hr	MH
Injection Shut Off Valves	4	RB	ESF	100 Days	MH
Accumulator Level Instrumentation	8	RB	ESF	100 Days	EH
Accumulator Pressure Instrumentation	8	RB	ESF	100 Days	EH
Electrical Modules and Cable	All	CV, RB	ESF	100 Days	EH
Process Radiation Monitoring System					
Isolation Valves	4	CV, RB, CB	ESF	100 Days	MH
Radiation Monitors, Sensors, Electrical Modules and Cable	All	CV, RB, CB	ESF	100 Days	EH
Gravity-Driven Cooling System (GDCS)					
GDCS Pool Level Instrumentation	12	CV	ESF	100 Days	EH
GDCS Squib Valve to GDCS Pool	8	CV	ESF	72 hr	MH
GDCS Check Valve to GDCS Pool	8	CV	ESF	72 hr	MH
GDCS Squib Valve to Suppression Pool	4	CV	ESF	72 hr	MH
GDCS Check Valve to Suppression Pool	4	CV	ESF	72 hr	MH

Table 3.8-1 Electrical and Mechanical Equipment for Environmental Qualification

Components (note 5)	Quantity	Location (note 1)	Function (note 2)	Required Operation Time (note 3)	Qualification Program (note 4)
GDCS Squib Valve to Lower Drywell (DW)	12	CV	ESF	72 hr	MH
Electrical Modules and Cable	All	CV, RB, CB	ESF	100 Days	EH
Fuel and Auxiliary Pools Cooling System					
Containment Isolation Valve (CIV) - Drywell Spray - Outboard	1	RB	PB	100 Days	MH
CIV - Drywell Spray - Inboard	1	CV	PB	100 Days	MH
CIV – Suppression Pool Cooling (SPC) Suction - Outboard	4	RB	PB	100 Days	MH
CIV - SPC Return - Outboard	2	RB	PB	100 Days	MH
CIV - SPC Return - Inboard	2	CV	PB	100 Days	MH
CIV - GDCS Suction - Outboard	1	RB	PB	100 Days	MH
CIV - GDCS Suction - Inboard	1	CV	PB	100 Days	MH
CIV - GDCS Return - Outboard	1	RB	PB	100 Days	MH
CIV - GDCS Return - Inboard	1	CV	PB	100 Days	MH
LPCI Isolation	4	FB, RB	PB	100 Days	MH
IC/PCCS Pool Level Instrumentation	All	RB	ESF	100 Days	EH
Fuel Pool Level Instruments	2	FB	ESF	100 Days	EH
Electrical Modules and Cable	All	CV, FB, RB, CB	ESF	100 Days	EH
Reactor Water Cleanup/Shutdown Cooling System					
CIV - Mid Vessel - Inboard	2	CV	PB, ISOL	100 Days	MH
CIV - Mid Vessel - Outboard	2	RB	PB, ISOL	100 Days	MH
CIV - Mid Vessel - Inboard Operator	2	CV	ISOL	72 hr	EH
CIV - Mid Vessel - Outboard Operator	2	RB	ISOL	72 hr	EH
CIV - Bottom Drain Inboard	2	CV	PB, ISOL	100 Days	MH
CIV - Bottom Drain Outboard	2	RB	PB, ISOL	100 Days	MH
CIV - Bottom Drain Inboard Operator	2	CV	ISOL	72 hr	EH
CIV - Bottom Drain Outboard Operator	2	RB	ISOL	72 hr	EH
CIV - Process Sampling Line -Inboard	2	CV	PB, PAMS	100 Days	MH

Table 3.8-1 Electrical and Mechanical Equipment for Environmental Qualification

Components (note 5)	Quantity	Location (note 1)	Function (note 2)	Required Operation Time (note 3)	Qualification Program (note 4)
CIV - Process Sampling Line -Outboard	2	RB	PB, PAMS	100 Days	MH
CIV - Process Sampling Line -Inboard Operator	2	CV	ISOL, PAMS	100 Days	EH
CIV - Process Sampling Line -Outboard Operator	2	RB	ISOL, PAMS	100 Days	EH
Return Line Shutoff Valve	2	RB	ISOL	100 Days	MH
Check Valve to Feedwater	4	RB	ISOL	100 Days	MH
Mid-vessel Flow Instrumentation	All	CV	ISOL	100 Days	EH
Mid-vessel Temperature Instrumentation	All	CV	ISOL	100 Days	EH
Bottom Drain Flow Instrumentation	All	CV	ISOL	100 Days	EH
Bottom Drain Temperature Instrumentation	All	CV	ISOL	100 Days	EH
Return Line Flow Instrumentation	All	RB	ISOL	100 Days	EH
Return Line Temperature Instrumentation	All	RB	ISOL	100 Days	EH
Overboard Flow Instrumentation	All	RB	ISOL	100 Days	EH
Overboard Temperature Instrumentation	All	RB	ISOL	100 Days	EH
Electrical Modules and Cables	All	CV, RB	ESF	100 Days	EH
Main Control Room (MCR) Panels					
Panels, Modules and Cables	All	CB	ESF	100 Days	C
MCR Back Room Panels					
Panels, Modules and Cable	All	CB	ESF	100 Days	C
Local Panels and Racks					
Panels, Modules and Cable	All	ALL	ESF	100 Days	EH
Condensate and Feedwater System					
Feed Line Temperature Element	All	ST	ESF	100 Days	EH
Feed Piping Diff Pressure Transmitter	All	ST	ISOL	100 Days	EH
Electrical Modules and Cable	All	ST, CB	ESF	100 Days	EH
Makeup Water System					
Isolation Valves	All	CV, RB	ISOL	100 Days	MH

Table 3.8-1 Electrical and Mechanical Equipment for Environmental Qualification

Components (note 5)	Quantity	Location (note 1)	Function (note 2)	Required Operation Time (note 3)	Qualification Program (note 4)
Chilled Water System					
Isolation Valves	All	CV, RB	ISOL	100 Days	MH
Service Air System					
Isolation Valves	All	CV, RB	ISOL	100 Days	MH
High Pressure Nitrogen Supply System					
Isolation Valves	4	CV, RB	ISOL	100 Days	MH
Electrical Power Distribution System (EPDS)					
Cable and Supports	All	CB, FB, RB	ESF	100 Days	EH
Uninterruptible AC Power Supply					
Electrical Modules and Cable	All	CV, CB, RB	ESF	100 Days	EH
Direct Current Power Supply					
Divisional 250 VDC Battery	8	RB	ESF	100 Days	E
Divisional 250 VDC Normal/Standby Battery Charger	12	RB	ESF	100 Days	E
Divisional 250 VDC Power Center	8	RB	ESF	100 Days	E
Divisional 250 VDC Transfer Switch Box	8	RB	ESF	100 Days	E
Isolation Power Center Normal Main Circuit Breaker	4	RB	ISOL	100 Days	E
Isolation Power Center Alternate Main Circuit Breaker	4	RB	ISOL	100 Days	E
Isolation Power Center Supply Breaker to Division 250 VDC Normal Battery Charger	12	RB	ISOL	100 Days	E
Electrical Modules and Cable	All	CV, CB, RB, TB	ESF	100 Days	E
Raceway System					
Electrical Penetrations	All	CV	PB	100 Days	EH
Conduit, Cable Trays and Supports	All	CV, CB, RB, TB, FB	ESF	100 Days	EH
Containment System					
Vacuum Breakers	3	CV	ESF	100 Days	MH
Vacuum Breaker Isolation Valves	3	CV	ESF	72 hr	MH
Instrumentation and Cables	All	CV	ESF	100 Days	EH

Table 3.8-1 Electrical and Mechanical Equipment for Environmental Qualification

Components (note 5)	Quantity	Location (note 1)	Function (note 2)	Required Operation Time (note 3)	Qualification Program (note 4)
Basemat Internal Melt Arrest Coolability (BiMAC) Temperature Element	ALL	CV	ESF	100 Days	EH
BiMAC Temperature Switch	ALL	CV	ESF	100 Days	EH
Passive Containment Cooling System					
Vent Fan Isolation Valves	6	CV	ESF	100 Days	MH
Passive Containment Cooling System Vent Fan	6	CV	ESF	100 Days	EH
Vent Line Catalyst Module	12	CV	ESF	100 Days	MH
Containment Inerting System					
Isolation Valve	0	CV, RB	ISOL	100 Days	MH
Electrical Modules and Cable	All	CB, RB	ESF	100 Days	EH
Passive Autocatalytic Recombiner System					
Passive Autocatalytic Recombiners	All	CV	ESF	100 Days	MH
Containment Monitoring System					
Containment Isolation Valves	All	CV, RB	ISOL	100 Days	MH
Electrical Modules and Cable	All	CB, CV, RB	ESF	100 Days	EH
Drywell Pressure Transmitters	All	RB	ESF	100 days	EH
Differential Pressure Transmitters	All	RB	ESF	100 days	EH
Suppression Pool Temperature Element	All	CV	ESF	100 days	EH
Lower DW Level Transmitter	All	RB	ESF, PAMS	100 days	EH
Suppression Pool Level Transmitters	All	RB	PAMS	100 days	EH
Suppression Pool Pressure Transmitters	All	RB	PAMS	100 days	EH
Hydrogen Analyzers	All	RB	ESF, PAMS	100 days	EH
Oxygen Analyzers	All	RB	ESF, PAMS	100 days	EH
Reactor Building HVAC					
Building Isolation Dampers	All	RB	ESF	100 Days	EH
Electrical	All	RB	ESF	100 Days	EH
Control Building HVAC					
Control Room Habitability Area (CRHA) Supply Air Isolation Dampers	All	CB	ESF	100 Days	E
Emergency Filter Unit (EFU) Downstream Isolation Dampers	All	CB	ESF	100 Days	E

Table 3.8-1 Electrical and Mechanical Equipment for Environmental Qualification

Components (note 5)	Quantity	Location (note 1)	Function (note 2)	Required Operation Time (note 3)	Qualification Program (note 4)
CRHA Restroom Exhaust Isolation Dampers	All	CB	ESF	100 Days	E
CRHA Smoke Purge Intake Isolation Dampers	All	CB	ESF	100 Days	E
CRHA Smoke Purge Exhaust Isolation Dampers	All	CB	ESF	100 Days	E
Emergency Filter Unit (EFU)	All	CB	ESF	100 Days	E
Electrical Modules and Cable	All	CB	ESF	100 Days	E
Fuel Building HVAC					
Fuel Building General Area HVAC Subsystem (FBGAVS) Building Supply Air Isolation Dampers	All	FB	ESF	100 Days	EH
FBGAVS Building Exhaust Air Isolation Dampers	All	FB	ESF	100 Days	EH
Fuel Building Fuel Pool Area HVAC Subsystem (FBFPVS) Building Supply Air Isolation Dampers	All	FB	ESF	100 Days	EH
FBFPVS Building Exhaust Air Isolation Dampers	All	FB	ESF	100 Days	EH
Electrical Modules and Cable	All	FB	ESF	100 Days	EH

Note 1: CV – Containment Vessel
ST – Steam Tunnel
RB – Reactor Building
FB – Fuel Building
CB – Control Building
TB – Turbine Building
OO – Outdoors Onsite
When multiple locations are listed, information in this table applies to equipment in all locations listed that also meets the other criteria shown.

Note 2: ESF – Engineered Safety Feature
PAMS – Post Accident Monitoring
ISOL – Containment Isolation
PB – Primary Pressure Boundary
When multiple functions are listed, information in this table applies to equipment associated with either function that also meets the other criteria shown.

Table 3.8-1 Electrical and Mechanical Equipment for Environmental Qualification

Note 3: Required operation time refers to the period of time which the equipment must remain available or operational. Required operation times apply to equipment when all criteria shown in the first four columns of the table are met.

Note 4: E – Electrical Equipment Program
M – Mechanical Equipment Program
C – Computer Based I&C System Program
H – Harsh Environment (omission of H indicates Mild Environment)
Qualification program classifications apply to equipment when all criteria shown in the first four columns of the table are met.

Note 5: Valve operators/actuators are considered to be part of the valve assembly and are generally not listed separately in this table.

Table 3.8-2 ITAAC For Environmental and Seismic Qualification of Mechanical and Electrical Equipment

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The electrical equipment listed in Table 3.8-1 as located in a harsh environment can perform its safety-related or RTNSS function under normal, abnormal and design bases accident environmental conditions.	i. (Deleted)	
	ii. Type tests, or a combination of type tests and analyses, will be performed.	ii. The electrical equipment listed in Table 3.8-1 as located in a harsh environment is qualified to perform its safety-related or RTNSS function during the applicable normal and abnormal environmental conditions that would exist before, during, and following a design basis accident without loss of safety-related or RTNSS function for the time required to perform the safety function.
	iii. Inspection will be performed of the EQD for the as-built electrical equipment and the associated wiring, cables, and terminations located in a harsh environment.	iii. The EQD exists and concludes that the as-built electrical equipment listed in Table 3.8-1 and the associated wiring, cables, and terminations located in a harsh environment are qualified for a harsh environment and are bounded by type tests, or a combination of type tests and analyses.

Table 3.8-2 ITAAC For Environmental and Seismic Qualification of Mechanical and Electrical Equipment

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2. The mechanical equipment listed in Table 3.8-1 as located in a harsh environment can perform its safety-related or RTNSS function under normal, abnormal and design bases accident environmental conditions.	i. (Deleted) ii. Type tests, or a combination of type tests and analyses, will be performed. iii. Inspection will be performed of the EQD for the as-built mechanical equipment located in a harsh environment.	ii. The mechanical equipment listed in Table 3.8-1 as located in a harsh environment is qualified to perform its safety-related or RTNSS function during the applicable normal and abnormal environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function. iii. The EQD exists and concludes that the as-built mechanical equipment located in a harsh environment are qualified for a harsh environment and are bounded by type tests, or a combination of type tests and analyses.

Table 3.8-2 ITAAC For Environmental and Seismic Qualification of Mechanical and Electrical Equipment

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3. The safety-related digital I&C equipment in systems listed in Table 2.2.15-1 (including digital components in the safety-related electrical distribution system) located in a mild environment can perform its safety-related function under normal and AOO environmental conditions.	i. Analysis will be performed to identify the environmental design bases of digital I&C equipment in systems listed in Table 2.2.15-1 (including digital components in the safety-related electrical distribution system) to identify the equipment to be environmentally qualified. {{Design Acceptance Criteria}} ii. Type tests, or a combination of type tests and analyses, will be performed. iii. Inspection will be performed of the EQD for the as-built digital I&C equipment located in a mild environment	i. The analyses results identify the environmental design bases for the Seismic Category I digital I&C equipment in systems listed in Table 2.2.15-1 (including digital components in the safety-related electrical distribution system) to identify the equipment to be environmentally qualified. {{Design Acceptance Criteria}} ii. The safety-related digital I&C equipment (including digital components in the safety-related electrical distribution system) located in a mild environment is qualified to perform its safety function during the applicable normal and abnormal environmental conditions that would exist before, during, and following a design basis accident without loss of safety function for the time required to perform the safety function. iii. The EQD exists and concludes that the as-built safety-related digital I&C equipment (including digital components in the safety-related electrical distribution system) and the associated wiring, cables, and terminations located in a mild environment are qualified for a mild environment and are bounded by type tests, analyses, or a combination of type tests and analyses.

Table 3.8-2 ITAAC For Environmental and Seismic Qualification of Mechanical and Electrical Equipment

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
4. The Seismic Category I digital I&C equipment in systems listed in Table 2.2.15-1 (including digital components in the safety-related electrical distribution system) can perform its safety-related function before, during and after dynamic and seismic design bases event conditions.	i. Analysis will be performed to identify the dynamic and seismic design bases of digital I&C equipment in systems listed in Table 2.2.15-1 (including digital components in the safety-related electrical distribution system) to identify the equipment to be seismically qualified. {{Design Acceptance Criteria}}	i. The analyses results identify the dynamic and seismic design bases for the Seismic Category I digital I&C equipment in systems listed in Table 2.2.15-1 (including digital components in the safety-related electrical distribution system) to identify the equipment to be seismically qualified. {{Design Acceptance Criteria}}
	ii. Dynamic and seismic type tests, or a combination of type tests and analyses, will be performed.	ii. The Seismic Category I digital I&C equipment in systems listed in Table 2.2.15-1 (including digital components in the safety-related electrical distribution system) and subject to seismic qualification can withstand the dynamic and seismic conditions that would exist before, during, and following a design basis event without loss of safety function.
	iii. Inspection will be performed of the DQD for the as-built equipment.	iii. The DQD exists and concludes that the as-built Seismic Category I digital I&C equipment in systems listed in Table 2.2.15-1 (including digital components in the safety-related electrical distribution system) and subject to seismic qualification is bounded by dynamic and seismic type tests, or a combination of type tests and analyses.