3.5 Containment Isolation

1.0 Description

The Reactor Building (RB) consists of a Reactor Containment Building (RCB) and a Reactor Shield Building (RSB). The RCB provides the primary means of confining radioactivity that may be released following a postulated design basis accident. The RCB and RSB are penetrated by systems to provide various functions for systems housed inside containment. These penetrations are made for mechanical and electrical systems, and include facilities for the transport of personnel and equipment.

The function for containment isolation is to isolate fluid system piping that penetrates the RB to prevent the discharge of radioactivity from containment following a postulated design basis accident. Containment isolation barriers are components of the penetrating systems and are generally included with the system descriptions in Tier 1, Chapter 2. This section includes containment isolation barriers that are not included in Tier 1, Chapter 2.

2.0 Arrangement

2.1 The functional arrangement of the containment isolation equipment is as shown on Figure 3.5-1—Representative Containment Isolation Valve Arrangement and as listed in Table 3.5-1—Containment Isolation Equipment Mechanical Design.

2.2 The location of the containment isolation equipment is as listed in Table 3.5-1.

3.0 Mechanical Design Features

3.1 Valves listed in Table 3.5-1 will be functionally designed and qualified such that each valve is capable of performing its intended function for a full range of system differential pressure and flow, ambient temperatures, and available voltage (as applicable) under conditions ranging from normal operating to design-basis accident conditions.

3.2 Check valves listed in Table 3.5-1 will function as listed in Table 3.5-1.

3.3 Deleted.

3.4 Components identified as Seismic Category I in Table 3.5-1 can withstand seismic design basis loads without a loss of the function listed in Table 3.5-1..

3.5 Deleted.

3.6 Deleted.

3.7 Containment isolation piping shown as ASME Code Section III on Figure 3.5-1 is designed in accordance with ASME Code Section III requirements.

3.8 Containment isolation piping shown as ASME Code Section III on Figure 3.5-1 is installed in accordance with an ASME Code Section III Design Report.

3.9 Pressure boundary welds in containment isolation piping shown as ASME Code Section III on Figure 3.5-1 are in accordance with ASME Code Section III.

3.10 Containment isolation piping shown as ASME Code Section III on Figure 3.5-1 retains pressure boundary integrity at design pressure.

3.11 Containment isolation piping shown as ASME Code Section III on Figure 3.5-1 is installed and inspected in accordance with ASME Code Section III requirements.

3.12 Components listed in Table 3.5-1 as ASME Code Section III are designed in accordance with ASME Code Section III requirements.

3.13 Components listed in Table 3.5-1 as ASME Code Section III are fabricated in accordance with ASME Code Section III requirements.

3.14 Pressure boundary welds on components listed in Table 3.5-1 as ASME Code Section III are in accordance with ASME Code Section III requirements.

3.15 Components listed in Table 3.5-1 as ASME Code Section III retain pressure boundary integrity at design pressure.

3.16 Components listed in Table 3.5-1 as ASME Code Section III are installed in accordance with ASME Code Section III requirements.

3.17 Containment isolation valves are located close to the containment penetrations.

4.0 I&C Design Features, Displays and Controls

4.1 Displays listed in Table 3.5-2—Containment Isolation Equipment I&C and Electrical Design are retrievable in the main control room (MCR) as listed in Table 3.5-2.

4.2 The containment isolation equipment controls are provided in the MCR as listed in Table 3.5-2.

4.3 Equipment listed as being controlled by a priority and actuator control system (PACS) module in Table 3.5-2 responds to the state requested by a test signal.

5.0 Electrical Power Design Features

5.1 The components designated as Class 1E in Table 3.5-2 are powered from the Class 1E division as listed in Table 3.5-2 in a normal or alternate feed condition.

5.2 Valves listed in Table 3.5-2 fail as-is on loss of power.

5.3 Containment electrical penetrations routing Class 1E cables have only Class 1E cables or associated cables.

5.4 Separation exists between containment electrical penetration assemblies routing each division of Class 1E cables, and between assemblies containing Class 1E and non-Class 1E cables.

5.5 Containment electrical penetrations are protected from fault currents that are greater than continuous current rating.

6.0 Environmental Qualifications

6.1 Components in Table 3.5-2, that are designated as harsh environment, will perform the function listed in Table 3.5-1 in the environments that exist during and following design basis events.

6.2 Containment electrical penetrations assemblies are qualified for harsh environment and perform the required safety function following exposure to the operational and design basis environments.

7.0 Equipment and System Performance

7.1 Class 1E valves listed in Table 3.5-2 can perform the function listed in Table 3.5-1 under system operating conditions.

7.2 Containment isolation valves listed in Table 3.5-1 close within the containment isolation response time following initiation of a containment isolation signal.

7.3 Deleted.

8.0 Inspections, Tests, Analyses, and Acceptance Criteria

Table 3.5-3 lists the containment isolation ITAAC.

Table 3.5-1—Containment Isolation Equipment Mechanical Design (8 Sheets)

Description	Tag Number [1]	Location	Figure 3.5-1 Configuration Type	ASME Code Section III	Function [2]	Seismic Category
Fuel Pool Purification System – CIV	FAL40AA002	Reactor Building	1B	Yes	Close	I
Fuel Pool Purification System – CIV	FAL40AA001	Fuel Building	1A	Yes	Close	I
Demineralized Water Distribution System - CIV	GHC74AA001	Fuel Building	5A	Yes	Close[a]	I
Demineralized Water Distribution System - CIV	GHC74AA002	Reactor Building	5B	Yes	Close[a]	I
Leak Off System - Inflating/Deflating Subsystem - CIV	JMM10AA006	Reactor Building	5B	Yes	Close[a]	I
Leak Off System - Inflating/Deflating Subsystem - CIV	JMM10AA007	Fuel Building	5A	Yes	Close[a]	I
Leak Off System - Leakage Exhaust Subsystem - CIV	JMM23AA001	Reactor Building	5B	Yes	Open/Close	I
Leak Off System - Leakage Exhaust Subsystem - CIV	JMM23AA002	Reactor Building Annulus	5A	Yes	Open/Close	I
Leak Off System - Leaktightness Test Subsystem - CIV	JMM30AA001	Reactor Building	1B	Yes	Close	I
Leak Off System - Leaktightness Test Subsystem - CIV	JMM30AA003	Safeguard Building	1A	Yes	Close	I
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA075	Reactor Building	5B	Yes	Open/ Close[a]	I
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA076	Safeguard Building	5A	Yes	Open/ Close[a]	I

Table 3.5-1—Containment Isolation Equipment Mechanical Design (8 Sheets)

Description	Tag Number [1]	Location	Figure 3.5-1 Configuration Type	ASME Code Section III	Function [2]	Seismic Category
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA077	Reactor Building	5B	Yes	Open/ Close[a]	I
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA078	Safeguard Building	5A	Yes	Open/ Close[a]	I
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA079	Reactor Building	5B	Yes	Open/ Close[a]	I
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA080	Safeguard Building	5A	Yes	Open/ Close[a]	I
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA081	Reactor Building	5B	Yes	Open/ Close[a]	I
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA082	Safeguard Building	5A	Yes	Open/ Close[a]	I
Hydrogen Monitoring System - Analyzer 1 Return to Containment - CIV	JMU50AA083	Safeguard Building	5A	Yes	Open/ Close[a]	I
Hydrogen Monitoring System - Analyzer 1 Return to Containment - CIV	JMU50AA084	Reactor Building	5B	Yes	Open/ Close[a]	I
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA085	Reactor Building	5B	Yes	Open/ Close[a]	I
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA086	Safeguard Building	5A	Yes	Open/ Close[a]	I
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA087	Reactor Building	5B	Yes	Open/ Close[a]	I
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA088	Safeguard Building	5A	Yes	Open/ Close[a]	I

Table 3.5-1—Containment Isolation Equipment Mechanical Design (8 Sheets)

Description	Tag Number (1)	Location	Figure 3.5-1 Configuration Type	ASME Code Section III	Function (2)	Seismic Category
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA089	Reactor Building	5B	Yes	Open/ Close(a)	I
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA090	Safeguard Building	5A	Yes	Open/ Close(a)	I
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA091	Reactor Building	5B	Yes	Open/ Close(a)	I
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA092	Safeguard Building	5A	Yes	Open/ Close(a)	I
Hydrogen Monitoring System - Analyzer 2 Return to containment - CIV	JMU51AA093	Safeguard Building	5A	Yes	Open/ Close(a)	I
Hydrogen Monitoring System - Analyzer 2 Return to Containment –CIV	JMU51AA094	Reactor Building	5B	Yes	Open/ Close(a)	I
Containment Equip Compartment pressure - CIV	KLA60AA701	Safeguard Building	1A	Yes	Open	I
Containment Equip Compartment pressure - CIV	KLA60AA702	Fuel Building	1A	Yes	Open	I
Containment Equip Compartment pressure - CIV	KLA60AA703	Safeguard Building	1A	Yes	Open	I
Containment Equip Compartment pressure - CIV	KLA60AA704	Fuel Building	1A	Yes	Open	I
Containment Service Compartment pressure – CIV	KLA70AA701	Safeguard Building	1A	Yes	Open	I
Containment Service Compartment pressure – CIV	KLA70AA702	Safeguard Building	1A	Yes	Open	I

Table 3.5-1—Containment Isolation Equipment Mechanical Design (8 Sheets)

Description	Tag Number (1)	Location	Figure 3.5-1 Configuration Type	ASME Code Section III	Function (2)	Seismic Category
Containment Service Compartment pressure – CIV	KLA70AA703	Fuel Building	1A	Yes	Open	I
Containment Service Compartment pressure – CIV	KLA70AA704	Fuel Building	1A	Yes	Open	I
Containment Service Compartment pressure – CIV	KLA70AA706	Safeguard Building	1A	Yes	Open	I
Containment Service Compartment pressure – CIV	KLA70AA707	Safeguard Building	1A	Yes	Open	I
Containment Service Compartment pressure – CIV	KLA70AA708	Fuel Building	1A	Yes	Open	I
Containment Service Compartment pressure – CIV	KLA70AA709	Fuel Building	1A	Yes	Open	I
Nuclear Island Drain & Vent System - CIV	KTA10AA017	Reactor Building	5B	Yes	Close(a)	I
Nuclear Island Drain & Vent System - CIV	KTA10AA018	Fuel Building	5A	Yes	Close(a)	I
Nuclear Island Drain & Vent System - CIV	KTC10AA005	Reactor Building	5B	Yes	Close(a)	I
Nuclear Island Drain & Vent System - CIV	KTC10AA006	Fuel Building	5A	Yes	Close(a)	I
Nuclear Island Drain & Vent System - re-injection – CIV	KTC10AA029	Fuel Building	6B	Yes	Close	I
Nuclear Island Drain & Vent System - re-injection – CIV	KTC10AA010	Reactor Building	6A	Yes	Close(a)	I

Table 3.5-1—Containment Isolation Equipment Mechanical Design (8 Sheets)

Description	Tag Number (1)	Location	Figure 3.5-1 Configuration Type	ASME Code Section III	Function (2)	Seismic Category
Nuclear Island Drain & Vent System - Annulus – CIV	KTD10AA008	Reactor Building Annulus	6B	Yes	Close	I
Nuclear Island Drain & Vent System - CIV	KTD10AA015	Fuel Building	5A	Yes	Close(a)	I
Nuclear Island Drain & Vent System - CIV	KTD10AA024	Reactor Building	5B	Yes	Close(a)	I
Nuclear Island Drain & Vent System - Annulus – CIV	KTD10AA025	Fuel Building	6A	Yes	Close(a)	I
Nuclear Sampling System – Active Liquid Samples – CIV	KUA10AA003	Reactor Building	5B	Yes	Close(a)	I
Nuclear Sampling System – Active Liquid Samples – CIV	KUA10AA004	Fuel Building	5A	Yes	Close(a)	I
Nuclear Sampling System – Active Liquid Samples – CIV	KUA20AA002	Reactor Building	5B	Yes	Close(a)	I
Nuclear Sampling System – Active Liquid Samples – CIV	KUA20AA003	Fuel Building	5A	Yes	Close(a)	I
Nuclear Sampling System – Active Liquid Samples – CIV	KUA30AA003	Reactor Building	5B	Yes	Close(a)	I
Nuclear Sampling System – Active Liquid Samples – CIV	KUA30AA004	Fuel Building	5A	Yes	Close(a)	I
Nuclear Sampling System – Slightly Active Liquid Samples – CIV	KUB10AA001	Reactor Building	5B	Yes	Close(a)	I
Nuclear Sampling System – Slightly Active Liquid Samples – CIV	KUB10AA002	Fuel Building	5A	Yes	Close(a)	I

Table 3.5-1—Containment Isolation Equipment Mechanical Design (8 Sheets)

Description	Tag Number (1)	Location	Figure 3.5-1 Configuration Type	ASME Code Section III	Function (2)	Seismic Category
Severe Accident Sampling System - CIV	KUL51AA002	Safeguard Building	5A	Yes	Close(a)	I
Severe Accident Sampling System - CIV	KUL51AA003	Safeguard Building	5A	Yes	Close(a)	I
Severe Accident Sampling System - CIV	KUL52AA002	Safeguard Building	5A	Yes	Close(a)	I
Severe Accident Sampling System - CIV	KUL52AA003	Safeguard Building	5A	Yes	Close(a)	I
Main Condensate Piping System - Condensate to Blowdown Clrs – CIV	LCA90AA003	Main Steam Valve Room	6A	Yes	Close(a)	I
Main Condensate Piping System - Condensate to Blowdown Clrs – CIV	LCA90AA004	Reactor Building	6B	Yes	Close	I
Main Condensate Piping System - Condensate to Blowdown Clrs – CIV	LCA90AA005	Reactor Building	5B	Yes	Close(a)	I
Main Condensate Piping System - Condensate to Blowdown Clrs – CIV	LCA90AA006	Main Steam Valve Room	5A	Yes	Close(a)	I
Nitrogen Gas Distribution System - CIV	QJB40AA001	Fuel Building	5A	Yes	Close(a)	I
Nitrogen Gas Distribution System - CIV	QJB40AA002	Reactor Building	5B	Yes	Close(a)	I
Nitrogen Gas Distribution System - CIV	QJB40AA003	Fuel Building	5A	Yes	Close(a)	I
Nitrogen Gas Distribution System - CIV	QJB40AA004	Reactor Building	5B	Yes	Close(a)	I
Operational Chilled Water Supply to Containment cooling coils - CIV	QNJ41AA002	Fuel Building	6A	Yes	Close(a)	I

Table 3.5-1—Containment Isolation Equipment Mechanical Design (8 Sheets)

Description	Tag Number (1)	Location	Figure 3.5-1 Configuration Type	ASME Code Section III	Function (2)	Seismic Category
Operational Chilled Water Supply to Containment cooling coils – CIV	QNJ41AA003	Reactor Building	6B	Yes	Close	I
Operational Chilled Water Return from Containment cooling coils - CIV	QNJ41AA027	Reactor Building	5B	Yes	Close(a)	I
Operational Chilled Water Return from Containment cooling coils - CIV	QNJ41AA028	Fuel Building	5A	Yes	Close(a)	I
Sampling System for Steam Generator Blowdown System – CIV	QUC11AA001	Fuel Building	5A	Yes	Close(a)	I
Sampling System for Steam Generator Blowdown System – CIV	QUC11AA011	Reactor Building	5B	Yes	Close(a)	I
Sampling System for Steam Generator Blowdown System – CIV	QUC12AA001	Fuel Building	5A	Yes	Close(a)	I
Sampling System for Steam Generator Blowdown System – CIV	QUC12AA011	Reactor Building	5B	Yes	Close(a)	I
Sampling System for Steam Generator Blowdown System – CIV	QUC13AA001	Fuel Building	5A	Yes	Close(a)	I
Sampling System for Steam Generator Blowdown System – CIV	QUC13AA011	Reactor Building	5B	Yes	Close(a)	I
Sampling System for Steam Generator Blowdown System – CIV	QUC14AA001	Fuel Building	5A	Yes	Close(a)	I
Sampling System for Steam Generator Blowdown System – CIV	QUC14AA011	Reactor Building	5B	Yes	Close(a)	I
Compressed Air Distribution System - Instrument Air - CIV	SCB01AA001	Fuel Building	5A	Yes	Close(a)	I

Table 3.5-1—Containment Isolation Equipment Mechanical Design (8 Sheets)

Description	Tag Number (1)	Location	Figure 3.5-1 Configuration Type	ASME Code Section III	Function (2)	Seismic Category
Compressed Air Distribution System - Instrument Air - CIV	SCB01AA002	Reactor Building	5B	Yes	Close(a)	I
Compressed Air Distribution System - Service Air - CIV	SCB02AA001	Fuel Building	1A	Yes	Close	I
Compressed Air Distribution System - Service Air - CIV	SCB02AA002	Reactor Building	1B	Yes	Close	I

1) Equipment tag numbers are provided for information only and are not part of the certified design.

2) Closes on Stage 1 (a) or Stage 2 (b) containment isolation signal.

Table 3.5-2—Containment Isolation Equipment I&C and Electrical Design (5 Sheets)

Description	Tag Number (1)	IEEE Class 1E (2)	EQ - Harsh Environment	PACS	MCR Displays	MCR Controls
Demineralized Water Distribution System - CIV	GHC74AA001	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Demineralized Water Distribution System - CIV	GHC74AA002	$4^{(N)}$ $3^{(A)}$	Yes	Yes	Position	Open / Close
Leak Off System - Inflating/Deflating Subsystem – CIV	JMM10AA006	$4^{(N)}$ $3^{(A)}$	Yes	Yes	Position	Open / Close
Leak Off System - Inflating/Deflating Subsystem – CIV	JMM10AA007	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Leak Off System - Leakage Exhaust Subsystem – CIV	JMM23AA001	$1^{(N)}$ $2^{(A)}$	Yes	Yes	Position	Open / Close
Leak Off System - Leakage Exhaust Subsystem – CIV	JMM23AA002	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA075	$3^{(N)}$ $4^{(A)}$	Yes	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA076	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA077	$3^{(N)}$ $4^{(A)}$	Yes	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA078	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA079	$3^{(N)}$ $4^{(A)}$	Yes	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA080	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA081	$3^{(N)}$ $4^{(A)}$	Yes	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 1 - CIV	JMU50AA082	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 1 Return to containment - CIV	JMU50AA083	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 1 return to containment - CIV	JMU50AA084	$3^{(N)}$ $4^{(A)}$	Yes	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA085	$2^{(N)}$ $1^{(A)}$	Yes	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA086	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close

Table 3.5-2—Containment Isolation Equipment I&C and Electrical Design (5 Sheets)

Description	Tag Number (1)	IEEE Class 1E (2)	EQ - Harsh Environment	PACS	MCR Displays	MCR Controls
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA087	$2^{(N)}$ $1^{(A)}$	Yes	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA088	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA089	$2^{(N)}$ $1^{(A)}$	Yes	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA090	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA091	$2^{(N)}$ $1^{(A)}$	Yes	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 - CIV	JMU51AA092	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 Return to containment - CIV	JMU51AA093	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Hydrogen Monitoring System - Analyzer 2 Return to containment - CIV	JMU51AA094	$2^{(N)}$ $1^{(A)}$	Yes	Yes	Position	Open / Close
IRWST - Sump Suction SAHRS - CIV	JMQ40AA001	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Nuclear Island Drain & Vent System – CIV	KTC10AA010	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - CIV	KTA10AA017	$4^{(N)}$ $3^{(A)}$	Yes	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - CIV	KTA10AA018	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - CIV	KTC10AA005	$1^{(N)}$ $2^{(A)}$	Yes	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - CIV	KTC10AA006	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - CIV	KTD10AA015	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - CIV	KTD10AA024	$1^{(N)}$ $2^{(A)}$	Yes	Yes	Position	Open / Close
Nuclear Island Drain & Vent System - Annulus - CIV	KTD10AA025	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Nuclear Sampling System – Active Liquid Samples - CIV	KUA10AA003	$1^{(N)}$ $2^{(A)}$	Yes	Yes	Position	Open / Close

Table 3.5-2—Containment Isolation Equipment I&C and Electrical Design (5 Sheets)

Description	Tag Number (1)	IEEE Class 1E (2)	EQ - Harsh Environment	PACS	MCR Displays	MCR Controls
Nuclear Sampling System – Active Liquid Samples - CIV	KUA10AA004	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Nuclear Sampling System – Active Liquid Samples - CIV	KUA20AA002	$1^{(N)}$ $2^{(A)}$	Yes	Yes	Position	Open / Close
Nuclear Sampling System – Active Liquid Samples - CIV	KUA20AA003	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Nuclear Sampling System – Active Liquid Samples - CIV	KUA30AA003	$4^{(N)}$ $3^{(A)}$	Yes	Yes	Position	Open / Close
Nuclear Sampling System – Active Liquid Samples - CIV	KUA30AA004	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Nuclear Sampling System – Slightly Active Liquid Samples - CIV	KUB10AA001	$1^{(N)}$ $2^{(A)}$	Yes	Yes	Position	Open / Close
Nuclear Sampling System – Slightly Active Liquid Samples - CIV	KUB10AA002	$4^{(N)}$ $3^{(A\ B)}$	No	Yes	Position	Open / Close
Severe Accident Sampling System - CIV	KUL51AA002	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Severe Accident Sampling System - CIV	KUL51AA003	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Severe Accident Sampling System - CIV	KUL52AA002	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Severe Accident Sampling System - CIV	KUL52AA003	$4^{(N)}$ $3^{(A\ )}$	No	Yes	Position	Open / Close
Main Condensate Piping System - Condensate to Blowdown Clrs - CIV	LCA90AA003	$2^{(N)}$ $1^{(A)}$	No	Yes	Position	Open / Close
Main Condensate Piping System - Condensate to Blowdown Clrs - CIV	LCA90AA005	$3^{(N)}$ $4^{(A)}$	Yes	Yes	Position	Open / Close
Main Condensate Piping System - Condensate to Blowdown Clrs - CIV	LCA90AA006	$2^{(N)}$ $1^{(A\ )}$	No	Yes	Position	Open / Close

Table 3.5-2—Containment Isolation Equipment I&C and Electrical Design (5 Sheets)

Description	Tag Number (1)	IEEE Class 1E (2)	EQ - Harsh Environment	PACS	MCR Displays	MCR Controls
Nitrogen Gas Distribution System - CIV	QJB40AA001	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Nitrogen Gas Distribution System - CIV	QJB40AA002	$4^{(N)}$ $3^{(A)}$	Yes	Yes	Position	Open / Close
Nitrogen Gas Distribution System - CIV	QJB40AA003	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Nitrogen Gas Distribution System - CIV	QJB40AA004	$4^{(N)}$ $3^{(A)}$	Yes	Yes	Position	Open / Close
Operational Chilled Water Supply to Containment cooling coils - CIV	QNJ41AA002	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Operational Chilled Water Return to Containment cooling coils - CIV	QNJ41AA027	$1^{(N)}$ $2^{(A)}$	Yes	Yes	Position	Open / Close
Operational Chilled Water Return to Containment cooling coils - CIV	QNJ41AA028	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Sampling System for Steam Generator Blowdown System - CIV	QUC11AA001	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Sampling System for Steam Generator Blowdown System - CIV	QUC11AA011	$4^{(N)}$ $3^{(A)}$	Yes	Yes	Position	Open / Close
Sampling System for Steam Generator Blowdown System - CIV	QUC12AA001	$1^{(N)}$ $2^{(A)}$	No	Yes	Position	Open / Close
Sampling System for Steam Generator Blowdown System - CIV	QUC12AA011	$4^{(N)}$ $3^{(A)}$	Yes	Yes	Position	Open / Close
Sampling System for Steam Generator Blowdown System - CIV	QUC13AA001	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Sampling System for Steam Generator Blowdown System - CIV	QUC13AA011	$1^{(N)}$ $2^{(A)}$	Yes	Yes	Position	Open / Close
Sampling System for Steam Generator Blowdown System - CIV	QUC14AA001	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close

Table 3.5-2—Containment Isolation Equipment I&C and Electrical Design (5 Sheets)

Description	Tag Number (1)	IEEE Class 1E (2)	EQ - Harsh Environment	PACS	MCR Displays	MCR Controls
Sampling System for Steam Generator Blowdown System - CIV	QUC14AA011	$1^{(N)}$ $2^{(A)}$	Yes	Yes	Position	Open / Close
Compressed Air Distribution System - Instrument Air - CIV	SCB01AA001	$4^{(N)}$ $3^{(A)}$	No	Yes	Position	Open / Close
Compressed Air Distribution System - Instrument Air - CIV	SCB01AA002	$1^{(N)}$ $2^{(A)}$	Yes	Yes	Position	Open / Close

1) Equipment tag numbers are provided for information only and are not part of the certified design.

2) N denotes the division the component is normally powered from; A denotes the division the component is powered from when alternate feed is implemented.

Table 3.5-3—Containment Isolation ITAAC (8 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
2.1	The functional arrangement of the containment isolation equipment is as shown on Figure 3.5-1 and as listed in Table 3.5-1.	Inspections of the as-built equipment will be conducted	The functional arrangement of the containment isolation equipment is as shown on Figure 3.5-1 and as listed in Table 3.5-1.
2.2	The location of the containment isolation equipment is as listed in Table 3.5-1.	An inspection will be performed.	The equipment listed in Table 3.5-1 is located as listed in Table 3.5-1.
3.1`	Valves listed in Table 3.5-1 will be functionally designed and qualified such that each valve is capable of performing its intended function for a full range of system differential pressure and flow, ambient temperatures, and available voltage (as applicable) under conditions ranging from normal operating to design-basis accident conditions.	Tests or type tests of the valves listed in Table 3.5-1 will be conducted to demonstrate that the pumps and valves function under conditions ranging from normal operating to design-basis accident conditions.	A test report exists and concludes that the valves listed in Table 3.5-1 function under conditions ranging from normal operating to design-basis accident conditions.
3.2	Check valves listed in Table 3.5-1 will function as listed in Table 3.5-1.	Tests will be performed for the operation of the check valves listed in Table 3.5-1.	The check valves listed in Table 3.5-1 perform the functions listed in Table 3.5-1.
3.3	Deleted.	Deleted.	Deleted.
3.4	Components identified as Seismic Category I in Table 3.5-1 can withstand seismic design basis loads without a loss of the function listed in Table 3.5-1.	a. Type tests, analyses, or a combination of type tests and analyses will be performed on the components identified as Seismic Category I in Table 3.5-1 using analytical assumptions, or under conditions, which bound the Seismic Category I design requirements.	a. Seismic qualification reports (SQDP, EQDP, or analyses) exist and conclude that the Seismic Category I components identified in Table 3.5-1 can withstand seismic design basis loads without a loss of the function listed in Table 3.5-1 including the time required to perform the listed function.

Table 3.5-3—Containment Isolation ITAAC (8 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
		b. Inspections will be performed of the Seismic Category I components identified in Table 3.5-1 to verify that the components, including anchorage, are installed as specified on the construction drawings and deviations have been reconciled to the seismic qualification reports (SQDP, EQDP, or analyses).	b. Inspection reports exist and conclude that the Seismic Category I components identified in Table 3.5-1, including anchorage, are installed as specified on the construction drawings and deviations have been reconciled to the seismic qualification reports (SQDP, EQDP, or analyses).
3.5	Deleted.	Deleted.	Deleted.
3.6	Deleted.	Deleted.	Deleted.
3.7	Containment isolation piping shown as ASME Code Section III on Figure 3.5-1 is designed in accordance with ASME Code Section III requirements.	Inspections of the ASME Code Section III Design Reports (NCA-3350) and associated reference documents will be performed. **{{DAC}}**	ASME Code Section III Design Reports (NCA-3350) exist and conclude that containment isolation piping shown as ASME Code Section III on Figure 3.5-1 complies with ASME Code Section III requirements. **{{DAC}}**
3.8	Containment isolation piping shown as ASME Code Section III on Figure 3.5-1 is installed in accordance with an ASME Code Section III Design Report.	Analyses to reconcile as-built deviations to the ASME Code Design Reports (NCA-3350) will be performed.	For containment isolation piping shown as ASME Code Section III on Figure 3.5-1, ASME Code Data Reports (N-5) exist and conclude that design reconciliation (NCA-3554) has been completed in accordance with the ASME Code Section III for the as-built system. The report(s) document the as-built condition.

Table 3.5-3—Containment Isolation ITAAC (8 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.9	Pressure boundary welds in containment isolation piping shown as ASME Code Section III on Figure 3.5-1 are in accordance with ASME Code Section III.	Inspections of pressure boundary welds verify that welding is performed in accordance with ASME Code Section III requirements.	ASME Code Section III Data Reports exist and conclude that pressure boundary welding for containment isolation piping shown as ASME Code Section III on Figure 3.5-1 has been performed in accordance with ASME Code Section III.
3.10	Containment isolation piping shown as ASME Code Section III on Figure 3.5-1 retains pressure boundary integrity at design pressure.	Hydrostatic tests will be performed on the as-built system.	For containment isolation piping shown as ASME Code Section III on Figure 3.5-1, ASME Code Section III Data Reports exist and conclude that hydrostatic test results comply with ASME Code Section III requirements.
3.11	Containment isolation piping shown as ASME Code Section III on Figure 3.5-1 is installed and inspected in accordance with ASME Code Section III requirements.	An inspection of the as-built piping will be performed.	For containment isolation piping shown as ASME Code Section III on Figure 3.5-1, N–5 Data Reports exist and conclude that installation and inspection are in accordance with ASME Code Section III requirements.
3.12	Components listed in Table 3.5-1 as ASME Code Section III are designed in accordance with ASME Code Section III requirements.	Inspections of ASME Code Section III Design Reports and associated reference documents will be performed.	ASME Code Section III Design Reports (NCA-3550) exist and conclude that components listed as ASME Code Section III in Table 3.5-1 comply with ASME Code Section III requirements.
3.13	Components listed in Table 3.5-1 as ASME Code Section III are fabricated in accordance with ASME Code Section III requirements.	An analysis will be performed to verify that deviations to the component design reports (NCA-3550) have been reconciled.	ASME Code Section III Design Reports (NCA-3550) exist and conclude that components listed as ASME Code Section III in Table 3.5-1 comply with ASME Code Section III requirements and any deviations to the design report have been reconciled.

Table 3.5-3—Containment Isolation ITAAC (8 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.14	Pressure boundary welds on components listed in Table 3.5-1 as ASME Code Section III are in accordance with ASME Code Section III requirements.	Inspections of pressure boundary welds will be performed to verify that welding is performed in accordance with ASME Code Section III requirements.	For components listed as ASME Code Section III in Table 3.5-1, ASME Code Section III Data Reports (NCA-8000) exist and conclude that pressure boundary welding has been performed in accordance with ASME Code Section III.
3.15	Components listed in Table 3.5-1 as ASME Code Section III retain pressure boundary integrity at design pressure.	Hydrostatic tests will be performed on the components.	For components listed as ASME Code Section III in Table 3.5-1, ASME Code Section III Data Reports exist and conclude that hydrostatic test results comply with ASME Code Section III requirements.
3.16	Components listed in Table 3.5-1 as ASME Code Section III are installed in accordance with ASME Code Section III requirements.	An inspection of ASME Code Data Reports will be performed.	ASME Code Section III N-5 Data Reports exist and conclude that components listed as ASME Code Section III in Table 3.5-1 have been installed in accordance with ASME Code Section III requirements.
3.17	Containment isolation valves are located close to containment penetrations.	a. The design location of containment isolation valves will be close to the containment penetrations.	a. A design report concludes that the containment isolation valves listed in Table 3.5-1 are located close to the containment penetrations with consideration of the following: • Access for inspection of welds. • Containment leak testing. • Replacement. • Valve maintenance.

Table 3.5-3—Containment Isolation ITAAC (8 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
		b. Inspection of the as-built location of containment isolation valves will be performed. Deviations to the design location of containment isolation valves will be reconciled to the design report.	b. An as-built inspection report concludes that deviations to the design location of containment isolation valves have been reconciled.
4.1	Displays exist or can be retrieved in the MCR as identified in Table 3.5-2.	Inspections will be performed for the existence or retrievability of the displays in the MCR as listed in Table 3.5-2.	The displays listed in Table 3.5-2 as being retrieved in the MCR can be retrieved in the MCR.
4.2	The containment isolation equipment controls are provided in the MCR as listed in Table 3.5-2.	Tests will be performed for the existence of control signals from the MCR to the equipment listed in Table 3.5-2.	The containment isolation equipment controls are provided in the MCR as listed in Table 3.5-2.
4.3	Equipment listed as being controlled by a PACS module in Table 3.5-2 responds to the state requested by a test signal.	A test will be performed using test signals.	Equipment listed as being controlled by a PACS module in Table 3.5-2 responds to the state requested by the test signal.
5.1	The components designated as Class 1E in Table 3.5-2 are powered from the Class 1E division as listed in Table 3.5-2 in a normal or alternate feed condition.	a. Testing will be performed for components designated as Class 1E in Table 3.5-2 by providing a test signal in each normally aligned division. b. Testing will be performed for components designated as Class 1E in Table 3.5-2 by providing a test signal in each division with the alternate feed aligned to the divisional pair.	a. The test signal provided in the normally aligned division is present at the respective Class 1E component identified in Table 3.5-2. b. The test signal provided in each division with the alternate feed aligned to the divisional pair is present at the respective Class 1E component identified in Table 3.5-2.
5.2	Valves listed in Table 3.5-2 fail as-is on loss of power.	Testing will be performed for the valves listed in Table 3.5-2 to fail as-is on loss of power.	Following loss of power, the valves listed in Table 3.5-2 fail as-is.
5.3	Containment electrical penetrations routing Class 1E cables have only Class 1E cables or associated cables.	Inspections will be performed	Containment electrical penetrations routing Class 1E cables have only Class 1E cables or associated cables.

Table 3.5-3—Containment Isolation ITAAC (8 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
5.4	Separation exists between containment electrical penetration assemblies routing each division of Class 1E cables, and between assemblies containing Class 1E and non-Class 1E cables.	Inspections will be performed	Separation exists between containment electrical penetration assemblies routing each division of Class 1E cables, and between assemblies containing Class 1E and non-Class 1E cables.
5.5	Containment electrical penetrations are protected from fault currents that are greater than continuous current rating.	An analysis will be performed	Analysis concludes for the as-built electrical penetration assemblies that either maximum current through the penetration assembly does not exceed continuous current rating or the penetration assembly circuits have redundant in series protection devices which are coordinated with the protected penetration assembly's rated short-circuit thermal capacity, preventing the analyzed current from exceeding the continuous current rating of the associated electrical penetration.
6.1	Components in Table 3.5-2, that are designated as harsh environment, will perform the function listed in Table 3.5-1 in the environments that exist during and following design basis events.	a. Type tests or type tests and analysis will be performed to demonstrate the ability of the components listed as harsh environment in Table 3.5-2 to perform the function listed in Table 3.5-1 for the environmental conditions that could occur during and following design basis events.	a. Environmental Qualification Data Packages (EQDP) exist and conclude that the components listed as harsh environment in Table 3.5-2 can perform the function listed in Table 3.5-1 during and following design basis events including the time required to perform the listed function.

Table 3.5-3—Containment Isolation ITAAC (8 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
		b. Components listed as harsh environment in Table 3.5-2 will be inspected to verify installation in accordance with the construction drawings including the associated wiring, cables and terminations. Deviations to the construction drawings will be reconciled to the EQDP.	b. Inspection reports exists and conclude that the components listed in Table 3.5-2 as harsh environment has been installed per the construction drawings and any deviations have been reconciled to the EQDP.
6.2	Containment electrical penetrations assemblies are qualified for harsh environment and perform the required safety function following exposure to the operational and design basis environments.	a. Type tests or type tests and analysis of tests and analyses will be performed to demonstrate the ability of the equipment for harsh environment to perform the function for the environmental conditions that could occur before and during and following design basis events. b. Equipment listed for harsh environment will be inspected to verify installation in accordance with the construction drawings including the associated wiring, cables and terminations. Deviations to the construction drawings will be reconciled to the EQDP.	a. Containment electrical penetrations assemblies are qualified for harsh environment and perform the required safety function during and following exposure to the operational and design basis environments. b. Inspection reports exists and conclude that the containment electrical penetrations assemblies have been installed per the construction drawings and any deviations have been reconciled to the EQDP.
7.1	Class 1E valves listed in Table 3.5-2 perform the function listed in Table 3.5-1 under system operating conditions.	Tests and analyses or a combination of tests and analyses will be performed to demonstrate the ability of the valves listed in Table 3.5-2 to change position as listed in Table 3.5-1 under system operating conditions.	The valves change position as listed in Table 3.5-1 under system operating conditions.

Table 3.5-3—Containment Isolation ITAAC (8 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
7.2	Containment isolation valves listed in Table 3.5-1 close within the containment isolation response time following initiation of a containment isolation signal.	Tests will be performed to demonstrate the ability of the containment isolation valves listed in Table 3.5-1 to close within the containment isolation response time following initiation of a containment isolation signal.	A report exists and concludes that the containment isolation valves listed in Table 3.5-1 close within 60 seconds following initiation of a containment isolation signal.
7.3	Deleted.	Deleted.	Deleted.

Next File