2.2 Nuclear Island Systems

2.2.1 Reactor Coolant System

1.0 Description

The reactor coolant system (RCS) is a closed, four-loop system. The RCS contains one reactor pressure vessel (RPV), four steam generators (SG), four reactor coolant pumps (RCP), one pressurizer (PZR), a PZR relief system, and the piping that connects all components. The RCPs are fitted with an oil-collection system.

The RCS components (RPV, RCP, SG, and PZR) are supported by the RCS component supports. The supports are designed to account for the movement of the components due to thermal expansion.

The RCS provides the following safety-related functions:

- The RCS components provide reactor coolant pressure boundary (RCPB) integrity.
- The PZR relief system provides overpressure protection.
- The RCS transfers decay heat from the reactor core to the SGs or to the residual heat removal (RHR) system.
- The RCS provides depressurization down to the RHR system operating pressures.
- The water of the RCS is used as a neutron moderator, neutron reflector, and solvent for concentrated boric acid solutions. The RCS receives borated water from the chemical and volume control system (CVCS) and from the extra borating system (EBS).

The RCS provides the following non-safety-related functions:

- The RCS provides forced circulation of reactor coolant between the SGs and the reactor core.
- In case of a total loss of heat removal through the SGs, the RCS performs the bleed function in the feed and bleed mode of core cooling in concert with the medium head safety injection and RHR (MHSI/RHR) system.
- Primary depressurization system valves lower RCS pressure in the event of a severe accident.

2.0 Arrangement

2.1 The functional arrangement of the RCS is as shown on Figure 2.2.1-1—RCS Functional Arrangement.

2.2 The functional arrangement of the RPV and heavy reflector is as shown on Figure 2.2.1-2—RPV Functional Arrangement.

2.3 The location of the RCS equipment is as listed in Table 2.2.1-1—RCS Equipment Mechanical Design.

2.4 The RCS loops are physically separated from each other.

3.0 Mechanical Design Features

3.1 Pumps and valves listed in Table 2.2.1-1 will be functionally designed and qualified such that each pump and 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 2.2.1-1 will function as listed in Table 2.2.1-1.

3.3 Components identified as Seismic Category I in Table 2.2.1-1 can withstand seismic design basis loads without a loss of the function listed in Table 2.2.1-1.

3.4 Deleted.

3.5 The steam outlet nozzles on the SGs include flow-limiting devices.

3.6 Deleted.

3.7 The applicable piping and interconnected component nozzles listed in Table 2.2.1-1 are evaluated for LBB.

3.8 The RPV internals will withstand the effects of flow-induced vibration.

3.9 The RCS allows movement of the components for thermal expansion and contraction.

3.10 Deleted.

3.11 Deleted.

3.12 Deleted.

3.13 Deleted.

3.14 Deleted.

3.15 Deleted.

3.16 RPV internals listed in Table 2.2.1-1 are designed in accordance with ASME Code Section III, Subsection NG.

3.17 Core support structure welds meet ASME Code Section III, Subsection NG requirements.

3.18 The RPV internals are provided with irradiation specimen guide baskets to hold capsules containing RPV material surveillance specimens.

3.19 Each RCP contains an oil collection system.

3.20 RCS piping shown as ASME Code Section III on Figure 2.2.1-1 is designed in accordance with ASME Code Section III requirements.

3.21 RCS piping shown as ASME Code Section III on Figure 2.2.1-1 is installed in accordance with an ASME Code Section III Design Report.

3.22 Pressure boundary welds in RCS piping shown as ASME Code Section III on Figure 2.2.1-1 are in accordance with ASME Code Section III.

3.23 RCS piping shown as ASME Code Section III on Figure 2.2.1-1 retains pressure boundary integrity at design pressure.

3.24 RCS piping shown as ASME Code Section III on Figure 2.2.1-1 is installed and inspected in accordance with ASME Code Section III requirements.

3.25 Components listed in Table 2.2.1-1 as ASME Code Section III, other than RPV internals, are designed in accordance with ASME Code Section III requirements.

3.26 Components listed in Table 2.2.1-1 as ASME Code Section III, other than RPV internals, are fabricated in accordance with ASME Code Section III requirements.

3.27 Pressure boundary welds on components listed in Table 2.2.1-1 as ASME Code Section III, other than RPV internals, are in accordance with ASME Code Section III requirements.

3.28 Components listed in Table 2.2.1-1 as ASME Code Section III, other than RPV internals, retain pressure boundary integrity at design pressure.

3.29 The RCP flywheel maintains its structural integrity during an overspeed event.

3.30 Components listed in Table 2.2.1-1 as ASME Code Section III are installed in accordance with ASME Code Section III requirements.

4.0 Instrumentation and Controls (I&C) Design Features, Displays, and Controls

4.1 Displays listed in Tables 2.2.1-2—Equipment and Valve Actuator Power Supplies and Controls and 2.2.1-3—Instrumentation Power Supplies, Classification, and Displays are retrievable in the main control room (MCR) and remote shutdown station (RSS) as listed in Tables 2.2.1-2 and 2.2.1-3.

4.2 The RCS equipment controls are provided in the MCR and RSS as listed in Table 2.2.1-2.

4.3 Equipment listed as being controlled by a priority and actuator control system (PACS) module in Table 2.2.1-2 responds to the state requested by a test signal.

4.4 Instrumentation providing input to the uncertainty in power supports the power uncertainty assumed in the safety analysis.

5.0 Electrical Power Design Features

5.1 The components designated as Class 1E listed in Tables 2.2.1-2 and 2.2.1-3 are powered from the Class 1E divisions as listed in Tables 2.2.1-2 and 2.2.1-3 in a normal or alternate feed condition.

5.2 Deleted.

5.3 The power supply arrangement is such that only two emergency diesels are required to operate to supply power to the minimum required number of PZR heaters.

6.0 Environmental Qualifications

6.1 Components in Table 2.2.1-2, that are designated as harsh environment, will perform the function listed in Table 2.2.1-1 in the environments that exist during and following design basis events.

6.2 Instrumentation in Table 2.2.1-3, that are designated as harsh environment, will display as listed in Table 2.2.1-3 in the environments that exist during and following design basis events.

7.0 Equipment and System Performance

7.1 Class 1E valves listed in Table 2.2.1-2 can perform the function listed in Table 2.2.1-1 under system operating conditions.

7.2 The RCPs have rotational inertia to provide coastdown flow of reactor coolant on loss of power to the pump motors.

7.3 The RCPs provide flow.

7.4 RCP standstill seal system (SSSS) can be engaged when the RCP is stopped.

7.5 The PZR safety relief valves (PSRVs) open.

7.6 The PSRVs open below the maximum setpoint assumed in the safety analyses.

7.7 The PSRVs provide relief capacity.

7.8 Each RCP supply circuit breaker and switchgear feeder circuit breaker is tripped by a protection system signal.

8.0 Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.2.1-5 lists the RCS ITAAC.

Table 2.2.1-1—RCS Equipment Mechanical Design (9 Sheets)

Description	Tag Number[1]	Location	ASME Code Section III	LBB Eval	Function	Seismic Category
RPV	30JAA10BB001	Reactor Building	Yes	Yes [2]	RCPB	I
SG 1	30JEA10AC001	Reactor Building	Yes	Yes [2]	RCPB	I
SG 2	30JEA20AC001	Reactor Building	Yes	Yes [2]	RCPB	I
SG 3	30JEA30AC001	Reactor Building	Yes	Yes [2]	RCPB	I
SG 4	30JEA40AC001	Reactor Building	Yes	Yes [2]	RCPB	I
RCP 1 – RCP Pump Casing Only	30JEB10AP001	Reactor Building	Yes	Yes [2]	RCPB	I
RCS Hot Leg Piping Loop 1 to SG 1	30JEC10BR001	Reactor Building	Yes	Yes	RCPB	I
RCS Crossover Piping from SG 1 to RCP 1	30JEC10BR002	Reactor Building	Yes	Yes	RCPB	I
RCS Cold Leg Piping Loop 1 to RPV	30JEC10BR003	Reactor Building	Yes	Yes	RCPB	I
RCP 2 – RCP Pump Casing Only	30JEB20AP001	Reactor Building	Yes	Yes [2]	RCPB	I
RCS Hot Leg Piping Loop 2 to SG 2	30JEC20BR001	Reactor Building	Yes	Yes	RCPB	I
RCS Crossover Piping from SG 2 to RCP 2	30JEC20BR002	Reactor Building	Yes	Yes	RCPB	I
RCS Cold Leg Piping Loop 2 to RPV	30JEC20BR003	Reactor Building	Yes	Yes	RCPB	I

Table 2.2.1-1—RCS Equipment Mechanical Design (9 Sheets)

Description	Tag Number[1]	Location	ASME Code Section III	LBB Eval	Function	Seismic Category
RCP 3 – RCP Pump Casing Only	30JEB30AP001	Reactor Building	Yes	Yes [2]	RCPB	I
RCS Hot Leg Piping Loop 3 to SG 3	30JEC30BR001	Reactor Building	Yes	Yes	RCPB	I
RCS Crossover Piping from SG 3 to RCP 3	30JEC30BR002	Reactor Building	Yes	Yes	RCPB	I
RCS Cold Leg Piping Loop 3 to RPV	30JEC30BR003	Reactor Building	Yes	Yes	RCPB	I
RCP 4 – RCP Pump Casing Only	30JEB40AP001	Reactor Building	Yes	Yes [2]	RCPB	I
RCS Hot Leg Piping Loop 4 to SG 4	30JEC40BR001	Reactor Building	Yes	Yes	RCPB	I
RCS Crossover Piping from SG 4 to RCP 4	30JEC40BR002	Reactor Building	Yes	Yes	RCPB	I
RCS Cold Leg Piping Loop 4 to RPV	30JEC40BR003	Reactor Building	Yes	Yes	RCPB	I
PZR	30JEF10BB001	Reactor Building	Yes	Yes [2]	RCPB	I
PZR Surge Line	30JEC30BR004	Reactor Building	Yes	Yes [2]	RCPB	I
PRT	30JEG10BB001	Reactor Building	No	N/A	N/A	II
PZR Auxiliary Spray Check Valve	30JEF10AA008	Reactor Building	Yes	N/A	Close/ RCPB	I
PZR Safety Relief Valve Assembly 1	30JEF10AA191	Reactor Building	Yes	N/A	Open/Close	I

Table 2.2.1-1—RCS Equipment Mechanical Design (9 Sheets)

Description	Tag Number[(1)]	Location	ASME Code Section III	LBB Eval	Function	Seismic Category
PZR Safety Relief Valve Assembly 2	30JEF10AA192	Reactor Building	Yes	N/A	Open/Close	I
PZR Safety Relief Valve Assembly 3	30JEF10AA193	Reactor Building	Yes	N/A	Open/ RCPB	I
RPV High Point Vent Valve	30JAA10AA508	Reactor Building	Yes	N/A	Open/ RCPB	I
RPV High Point Vent Valve	30JAA10AA509	Reactor Building	Yes	N/A	Open/ RCPB	I
RPV High Point Vent Valve	30JAA10AA510	Reactor Building	Yes	N/A	Open/ RCPB	I
RPV High Point Vent Valve	30JAA10AA511	Reactor Building	Yes	N/A	Open/ RCPB	I
RPV Vent Isolation Valve	30JAA10AA501	Reactor Building	Yes	N/A	RCPB	I
RPV Vent Isolation Valve	30JAA10AA502	Reactor Building	Yes	N/A	RCPB	I
Primary Depressurization System (PDS) Isolation Valve	30JEF10AA004	Reactor Building	Yes	N/A	Open/ RCPB	I
PDS Valve	30JEF10AA005	Reactor Building	Yes	N/A	Open/ RCPB	I
PDS Isolation Valve	30JEF10AA006	Reactor Building	Yes	N/A	Open/ RCPB	I
PDS Valve	30JEF10AA007	Reactor Building	Yes	N/A	Open/ RCPB	I

Table 2.2.1-1—RCS Equipment Mechanical Design (9 Sheets)

Description	Tag Number[(1)]	Location	ASME Code Section III	LBB Eval	Function	Seismic Category
PZR Vent Isolation Valve	30JEF10AA501	Reactor Building	Yes	N/A	RCPB	I
PZR Vent Isolation Valve	30JEF10AA502	Reactor Building	Yes	N/A	RCPB	I
PZR Degassing Isolation Valve	30JEF10AA503	Reactor Building	Yes	N/A	RCPB	I
PZR Degassing Isolation Valve	30JEF10AA504	Reactor Building	Yes	N/A	RCPB	I
RCP 1 Thermal Barrier Cooling Component Cooling Water (CCW) Supply Check Valve	30JEB10AA001	Reactor Building	Yes	N/A	Close	I
RCP 1 Thermal Barrier Cooling CCW Return SOV	30JEB10AA003	Reactor Building	Yes	N/A	Close	I
RCP 1 Seal 1 Injection 1st Check Valve	30JEB10AA004	Reactor Building	Yes	N/A	Close/ RCPB	I
RCP 1 Seal 1 Injection 2nd Check Valve	30JEB10AA005	Reactor Building	Yes	N/A	Close/ RCPB	I
RCP 1 Seal 1 Outlet Isolation Valve	30JEB10AA009	Reactor Building	Yes	N/A	Close	I
RCP 1 SSSS N2 Supply	30JEB10AA018	Reactor Building	N/A	N/A	Open	II
RCP 1 SSSS Check Valve	30JEB10AA019	Reactor Building	N/A	N/A	Open	II
RCP 1 SSSS N2 Discharge	30JEB10AA020	Reactor Building	N/A	N/A	Close	II

Table 2.2.1-1—RCS Equipment Mechanical Design (9 Sheets)

Description	Tag Number[(1)]	Location	ASME Code Section III	LBB Eval	Function	Seismic Category
RCP 1 SSSS N2 Check Valve	30JEB10AA026	Reactor Building	N/A	N/A	Close	II
RCP 1 SSSS N2 Accumulator	30JEB10BB003	Reactor Building	N/A	N/A	Storage volume	II
RCP 1 Thermal Barrier Cooling CCW Supply Isolation Valve	30JEB10AA021	Reactor Building	Yes	N/A	Close	I
RCP 1 Thermal Barrier Cooling Safety Valve (CCW)	30JEB10AA191	Reactor Building	Yes	N/A	Open/Close	I
RCP 2 Thermal Barrier Cooling CCW Supply Check Valve	30JEB20AA001	Reactor Building	Yes	N/A	Close	I
RCP 2 Thermal Barrier Cooling CCW Return SOV	30JEB20AA003	Reactor Building	Yes	N/A	Close	I
RCP 2 Seal 1 Injection 1st Check Valve	30JEB20AA004	Reactor Building	Yes	N/A	Close/ RCPB	I
RCP 2 Seal 1 Injection 2nd Check Valve	30JEB20AA005	Reactor Building	Yes	N/A	Close/ RCPB	I
RCP 2 Seal 1 Outlet Isolation Valve	30JEB20AA009	Reactor Building	Yes	N/A	Close	I
RCP 2 SSSS N2 Supply	30JEB20AA018	Reactor Building	N/A	N/A	Open	II
RCP 2 SSSS Check Valve	30JEB20AA019	Reactor Building	N/A	N/A	Open	II
RCP 2 SSSS N2 Discharge	30JEB20AA020	Reactor Building	N/A	N/A	Close	II

Table 2.2.1-1—RCS Equipment Mechanical Design (9 Sheets)

Description	Tag Number[(1)]	Location	ASME Code Section III	LBB Eval	Function	Seismic Category
RCP 2 SSSS N2 Check Valve	30JEB20AA026	Reactor Building	N/A	N/A	Close	II
RCP 2 SSSS N2 Accumulator	30JEB20BB003	Reactor Building	N/A	N/A	Storage volume	II
RCP 2 Thermal Barrier Cooling CCW Supply Isolation Valve	30JEB20AA021	Reactor Building	Yes	N/A	Close	I
RCP 2 Thermal Barrier Cooling Safety Valve (CCW)	30JEB20AA191	Reactor Building	Yes	N/A	Open/Close	I
RCP 3 Thermal Barrier Cooling CCW Supply Check Valve	30JEB30AA001	Reactor Building	Yes	N/A	Close	I
RCP 3 Thermal Barrier Cooling CCW Return SOV	30JEB30AA003	Reactor Building	Yes	N/A	Close	I
RCP 3 Seal 1 Injection 1st Check Valve	30JEB30AA004	Reactor Building	Yes	N/A	Close/ RCPB	I
RCP 3 Seal 1 Injection 2nd Check Valve	30JEB30AA005	Reactor Building	Yes	N/A	Close/ RCPB	I
RCP 3 Seal 1 Outlet Isolation Valve	30JEB30AA009	Reactor Building	Yes	N/A	Close	I
RCP 3 SSSS N2 Supply	30JEB30AA018	Reactor Building	N/A	N/A	Open	II
RCP 3 SSSS Check Valve	30JEB30AA019	Reactor Building	N/A	N/A	Open	II
RCP 3 SSSS N2 Discharge	30JEB30AA020	Reactor Building	N/A	N/A	Close	II

Table 2.2.1-1—RCS Equipment Mechanical Design (9 Sheets)

Description	Tag Number[(1)]	Location	ASME Code Section III	LBB Eval	Function	Seismic Category
RCP 3 SSSS N2 Check Valve	30JEB30AA026	Reactor Building	N/A	N/A	Close	II
RCP 3 SSSS N2 Accumulator	30JEB30BB003	Reactor Building	N/A	N/A	Storage volume	II
RCP 3 Thermal Barrier Cooling CCW Supply Isolation Valve	30JEB30AA021	Reactor Building	Yes	N/A	Close	I
RCP 3 Thermal Barrier Cooling Safety Valve (CCW)	30JEB30AA191	Reactor Building	Yes	N/A	Open/Close	I
RCP 4 Thermal Barrier Cooling CCW Supply Check Valve	30JEB40AA001	Reactor Building	Yes	N/A	Close	I
RCP 4 Thermal Barrier Cooling CCW Return SOV	30JEB40AA003	Reactor Building	Yes	N/A	Close	I
RCP 4 Seal 1 Injection 1st Check Valve	30JEB40AA004	Reactor Building	Yes	N/A	Close/ RCPB	I
RCP 4 Seal 1 Injection 2nd Check Valve	30JEB40AA005	Reactor Building	Yes	N/A	Close/ RCPB	I
RCP 4 Seal 1 Outlet Isolation Valve	30JEB40AA009	Reactor Building	Yes	N/A	Close	I
RCP 4 SSSS N2 Supply	30JEB40AA018	Reactor Building	N/A	N/A	Open	II
RCP 4 SSSS Check Valve	30JEB40AA019	Reactor Building	N/A	N/A	Open	II
RCP 4 SSSS N2 Discharge	30JEB40AA020	Reactor Building	N/A	N/A	Close	II

Table 2.2.1-1—RCS Equipment Mechanical Design (9 Sheets)

Description	Tag Number[(1)]	Location	ASME Code Section III	LBB Eval	Function	Seismic Category
RCP 4 SSSS N2 Check Valve	30JEB40AA026	Reactor Building	N/A	N/A	Close	II
RCP 4 SSSS N2 Accumulator	30JEB40BB003	Reactor Building	N/A	N/A	Storage volume	II
RCP 4 Thermal Barrier Cooling CCW Supply Isolation Valve	30JEB40AA021	Reactor Building	Yes	N/A	Close	I
RCP 4 Thermal Barrier Cooling Safety Valve (CCW)	30JEB40AA191	Reactor Building	Yes	N/A	Open/Close	I
PZR Heater – Mechanical Pressure Boundary	30JEF10 AH111 to 114A/B/C, AH121 to 123A/B/C, AH131 to 132A/B/C, AH211 to 215A/B/C, AH233 to 222A/B/C, AH231 to 234A/B/C, AH311 to 315A/B/C, AH321 to 322A/B/C, AH331 to 332A/B/C, AH411 to 414A/B/C, AH421 to 423A/B/C, AH433 to 434A/B/C	Reactor Building	Yes	N/A	RCPB	I
Control Rod Drive Mechanism (CRDM) Pressure Housing	30JDA01 to 30JDA22, 30JDA26 to 30JDA47, 30JDA51 to 30JDA72, 30JDA76 to 30JDA97, and 30JDA99	Reactor Building	Yes	N/A	RCPB	I
RPV Internals – Core Barrel	N/A	Reactor Building	Yes	N/A	Support	I
RPV Internals – Lower Support Plate	N/A	Reactor Building	Yes	N/A	Support	I
RPV Internals – Heavy Reflector Slabs	N/A	Reactor Building	Yes	N/A	Support	I

Table 2.2.1-1—RCS Equipment Mechanical Design (9 Sheets)

Description	Tag Number(1)	Location	ASME Code Section III	LBB Eval	Function	Seismic Category
RPV Internals – Heavy Reflector Tie Rods	N/A	Reactor Building	Yes	N/A	Support	I
RPV Internals – Upper Support Plate	N/A	Reactor Building	Yes	N/A	Support	I
RPV Internals – Upper Core Plate	N/A	Reactor Building	Yes	N/A	Support	I
RPV Internals – Normal Support Columns	N/A	Reactor Building	Yes	N/A	Support	I
RPV Internals – Control Rod Guide Assembly Columns	N/A	Reactor Building	Yes	N/A	Support	I
RPV Refueling Cavity Ring	30JAB	Reactor Building	Yes	N/A	Leak Tightness	I

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

2) Leak-before-break (LBB) analysis is applicable to piping and interconnected component nozzles.

Table 2.2.1-2—Equipment and Valve Actuator Power Supplies and Controls (5 Sheets)

Description	Tag Number[1]	Location	IEEE Class 1E[2]	EQ – Harsh Env.	PACS	MCR/RSS Displays	MCR/RSS Controls	Fail Position
RCP 1	30JEB10AP001	Reactor Building	N/A	Yes	N/A	On-Off/On-Off	Start-Stop/ Start-Stop	N/A
RCP 2	30JEB20AP001	Reactor Building	N/A	Yes	N/A	On-Off/On-Off	Start-Stop/ Start-Stop	N/A
RCP 3	30JEB30AP001	Reactor Building	N/A	Yes	N/A	On-Off/On-Off	Start-Stop/ Start-Stop	N/A
RCP 4	30JEB40AP001	Reactor Building	N/A	Yes	N/A	On-Off/On-Off	Start-Stop/ Start-Stop	N/A
RPV High Point Vent Valve	30JAA10AA508	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Closed
RPV High Point Vent Valve	30JAA10AA509	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Closed
RPV High Point Vent Valve	30JAA10AA510	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Closed
RPV High Point Vent Valve	30JAA10AA511	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Closed
PSRV Assembly 1 (LTOP - 2 SOVs)	30JEF10AA191 (30JEF10AA717) (30JEF10AA718)	Reactor Building	(1^N 2^A) (2^N 1^A)	Yes	Yes	Position/Position	Open/Closed/ Open/Closed	Closed
PSRV Assembly 2 (LTOP - 2 SOVs)	30JEF10AA192 (30JEF10AA727) (30JEF10AA728)	Reactor Building	(3^N 4^A) (4^N 3^A)	Yes	Yes	Position/Position	Open/Closed/ Open/Closed	Closed
PSRV Assembly 3 (LTOP - 2 SOVs)	30JEF10AA193 (30JEF10AA737) (30JEF10AA738)	Reactor Building	(2^N 1^A) (3^N 4^A)	Yes	Yes	Position/Position	Open/Closed/ Open/Closed	Closed

Table 2.2.1-2—Equipment and Valve Actuator Power Supplies and Controls (5 Sheets)

Description	Tag Number[1]	Location	IEEE Class 1E[2]	EQ – Harsh Env.	PACS	MCR/RSS Displays	MCR/RSS Controls	Fail Position
PDS Isolation Valve	30JEF10AA004	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
PDS Valve	30JEF10AA005	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
PDS Isolation Valve	30JEF10AA006	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
PDS Valve	30JEF10AA007	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
PZR Vent Isolation Valve	30JEF10AA501	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
PZR Vent Isolation Valve	30JEF10AA502	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
PZR Degassing Isolation Valve	30JEF10AA503	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
PZR Degassing Isolation Valve	30JEF10AA504	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
RCP 1 Thermal Barrier Cooling CCW Return (SOV)	30JEB10AA003	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Open
RCP 1 Seal 1 Outlet Isolation Valve (SOV)	30JEB10AA009	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Open
RCP 1 SSSS N2 Supply	30JEB10AA018	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Closed
RCP 1 SSSS N2 Discharge	30JEB10AA020	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A

Table 2.2.1-2—Equipment and Valve Actuator Power Supplies and Controls (5 Sheets)

Description	Tag Number(1)	Location	IEEE Class 1E(2)	EQ – Harsh Env.	PACS	MCR/RSS Displays	MCR/RSS Controls	Fail Position
RCP 1 Thermal Barrier Cooling CCW Supply Isolation Valve	30JEB10AA021	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
RCP 2 Thermal Barrier Cooling CCW Return (SOV)	30JEB20AA003	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Open
RCP 2 Seal 1 Outlet Isolation Valve SOV)	30JEB20AA009	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Open
RCP 2 SSSS N2 Supply	30JEB20AA018	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Closed
RCP 2 SSSS N2 Discharge	30JEB20AA020	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
RCP 2 Thermal Barrier Cooling CCW Supply Isolation Valve	30JEB20AA021	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
RCP 3 Thermal Barrier Cooling CCW Return (SOV)	30JEB30AA003	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Open
RCP 3 Seal 1 Outlet Isolation Valve (SOV)	30JEB30AA009	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Open
RCP 3 SSSS N2 Supply	30JEB30AA018	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Closed
RCP 3 SSSS N2 Discharge	30JEB30AA020	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A

Table 2.2.1-2—Equipment and Valve Actuator Power Supplies and Controls (5 Sheets)

Description	Tag Number[1]	Location	IEEE Class 1E[2]	EQ – Harsh Env.	PACS	MCR/RSS Displays	MCR/RSS Controls	Fail Position
RCP 3 Thermal Barrier Cooling CCW Supply Isolation Valve	30JEB30AA021	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
RCP 4 Thermal Barrier Cooling CCW Return (SOV)	30JEB40AA003	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Open
RCP 4 Seal 1 Outlet Isolation Valve (SOV)	30JEB40AA009	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Open
RCP 4 SSSS N2 Supply	30JEB40AA018	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	Closed
RCP 4 SSSS N2 Discharge	30JEB40AA020	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
RCP 4 Thermal Barrier Cooling CCW Supply Isolation Valve	30JEB40AA021	Reactor Building	N/A	Yes	N/A	Position/Position	Open/Closed/ Open/Closed	N/A
On-Off PZR Heater (144 KW) Emergency Supplied	30JEF10 AH131A/B/C, AH132A/B/C	Reactor Building	(Note 3) 1 1	Yes	Yes	Energize/Energize	On-Off/On-Off	N/A
On-Off PZR Heater (144KW) Emergency Supplied	30JEF10 AH233A/B/C, AH234A/B/C	Reactor Building	(Note 3) 2 2	Yes	Yes	Energize/Energize	On-Off/On-Off	N/A

Table 2.2.1-2—Equipment and Valve Actuator Power Supplies and Controls (5 Sheets)

Description	Tag Number(1)	Location	IEEE Class 1E(2)	EQ – Harsh Env.	PACS	MCR/RSS Displays	MCR/RSS Controls	Fail Position
On-Off PZR Heater (144KW) Emergency Supplied	30JEF10 AH331A/B/C, AH332A/B/C	Reactor Building	(Note 3) 3 3	Yes	Yes	Energize/Energize	On-Off/On-Off	N/A
On-Off PZR Heater (144KW) Emergency Supplied	30JEF10 AH433A/B/C, AH434A/B/C	Reactor Building	(Note 3) 4 4	Yes	Yes	Energize/Energize	On-Off/On-Off	N/A

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.

3) The operation of the component is non-safety-related and not Class 1E; however it is powered from a Class 1E source.

Table 2.2.1-3—Instrumentation Power Supplies, Classification, and Displays (6 Sheets)

Equipment Description	Equipment Tag Number(1)	Equipment Location	IEEE Class 1E	EQ – Harsh Environment	MCR/RSS Displays
CRDM Position Sensor	30JDA01CG801 to 30JDA22CG801	Reactor Building	Yes	Yes	Position/Position
CRDM Position Sensor	30JDA26CG801 to 30JDA47CG801	Reactor Building	Yes	Yes	Position/Position
CRDM Position Sensor	30JDA51CG801 to 30JDA72CG801	Reactor Building	Yes	Yes	Position/Position
CRDM Position Sensor	30JDA76CG801 to 30JDA97CG801	Reactor Building	Yes	Yes	Position/Position
CRDM Position Sensor	30JDA99CG801	Reactor Building	Yes	Yes	Position/Position
CRDM Bottom Position Limit Sensor	30JDA01CG803 to 30JDA22CG803	Reactor Building	Yes	Yes	Position/Position
CRDM Bottom Position Limit Sensor	30JDA26CG803 to 30JDA47CG803	Reactor Building	Yes	Yes	Position/Position
CRDM Bottom Position Limit Sensor	30JDA51CG803 to 30JDA72CG803	Reactor Building	Yes	Yes	Position/Position
CRDM Bottom Position Limit Sensor	30JDA76CG803 to 30JDA97CG803	Reactor Building	Yes	Yes	Position/Position
CRDM Bottom Position Limit Sensor	30JDA99CG803	Reactor Building	Yes	Yes	Position/Position
CRDM Temperature Sensor	30JDA01CT801 to 30JDA22CT801	Reactor Building	Yes	Yes	Temperature/Temperature
CRDM Temperature Sensor	30JDA26CT801 to 30JDA47CT801	Reactor Building	Yes	Yes	Temperature/Temperature
CRDM Temperature Sensor	30JDA51CT801 to 30JDA72CT801	Reactor Building	Yes	Yes	Temperature/Temperature

Table 2.2.1-3—Instrumentation Power Supplies, Classification, and Displays (6 Sheets)

Equipment Description	Equipment Tag Number[(1)]	Equipment Location	IEEE Class 1E	EQ – Harsh Environment	MCR/RSS Displays
CRDM Temperature Sensor	30JDA76CT801 to 30JDA97CT801	Reactor Building	Yes	Yes	Temperature/Temperature
CRDM Temperature Sensor	30JDA99CT801	Reactor Building	Yes	Yes	Temperature/Temperature
RCS Hot Leg (HL) Wide Range (WR) Temperature	30JEC10CT805 30JEC20CT805 30JEC30CT805 30JEC40CT805	Reactor Building	1 2 3 4	Yes	Temperature/Temperature
CRDM Bottom Position Sensor	30JDA01CG803 to 30JDA22CG803 30JDA26CG803 to 30JDA47CG803 30JDA51CG803 to 30JDA72CG803 30JDA76CG803 to 30JDA97CG803	Reactor Building	Yes	Yes	Position/Position
RCS Cold Leg (CL) WR Temperature	30JEC10CT811 30JEC20CT811 30JEC30CT811 30JEC40CT811	Reactor Building	1 2 3 4	Yes	Temperature/Temperature

Table 2.2.1-3—Instrumentation Power Supplies, Classification, and Displays (6 Sheets)

Equipment Description	Equipment Tag Number[(1)]	Equipment Location	IEEE Class 1E	EQ – Harsh Environment	MCR/RSS Displays
RCS HL Narrow Range (NR) Temperature	30JEC10CT801 30JEC10CT802 30JEC10CT803 30JEC10CT804 30JEC20CT801 30JEC20CT802 30JEC20CT803 30JEC20CT804 30JEC30CT801 30JEC30CT802 30JEC30CT803 30JEC30CT804 30JEC40CT801 30JEC40CT802 30JEC40CT803 30JEC40CT804	Reactor Building	1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4	Yes	Temperature/Temperature
CL NR Temperature	30JEC10CT807 30JEC10CT808 30JEC20CT807 30JEC20CT808 30JEC30CT807 30JEC30CT808 30JEC40CT807 30JEC40CT808	Reactor Building	1 1 2 2 3 3 4 4	Yes	Temperature/Temperature
RCS Loop Level	30JEC10CL823 30JEC20CL823 30JEC30CL823 30JEC40CL823	Reactor Building	1 2 3 4	Yes	Level/Level

Table 2.2.1-3—Instrumentation Power Supplies, Classification, and Displays (6 Sheets)

Equipment Description	Equipment Tag Number(1)	Equipment Location	IEEE Class 1E	EQ – Harsh Environment	MCR/RSS Displays
RCS Flowrate (Elbow Delta P)	30JEC10CF815 30JEC10CF817 30JEC10CF819 30JEC10CF821 30JEC20CF815 30JEC20CF817 30JEC20CF819 30JEC20CF821 30JEC30CF815 30JEC30CF817 30JEC30CF819 30JEC30CF821 30JEC40CF815 30JEC40CF817 30JEC40CF819 30JEC40CF821	Reactor Building	1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4	Yes	Flow/Flow
RCS Flowrate (Delta P across RCP)	30JEC10CP801 30JEC10CP802 30JEC20CP801 30JEC20CP802 30JEC30CP801 30JEC30CP802 30JEC40CP801 30JEC40CP802	Reactor Building	1 1 2 2 3 3 4 4	Yes	Flow/Flow
PZR Pressure	30JEF10CP801 30JEF10CP803 30JEF10CP805 30JEF10CP807	Reactor Building	1 2 3 4	Yes	Pressure/Pressure

Table 2.2.1-3—Instrumentation Power Supplies, Classification, and Displays (6 Sheets)

Equipment Description	Equipment Tag Number(1)	Equipment Location	IEEE Class 1E	EQ – Harsh Environment	MCR/RSS Displays
PZR Level	30JEF10CL802 30JEF10CL804 30JEF10CL806 30JEF10CL808	Reactor Building	1 2 3 4	Yes	Level/Level
SG WR Level	30JEA10CL809 30JEA10CL810 30JEA10CL811 30JEA10CL812 30JEA20CL809 30JEA20CL810 30JEA20CL811 30JEA20CL812 30JEA30CL809 30JEA30CL810 30JEA30CL811 30JEA30CL812 30JEA40CL809 30JEA40CL810 30JEA40CL811 30JEA40CL812	Reactor Building	1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4	Yes	Level/Level

Table 2.2.1-3—Instrumentation Power Supplies, Classification, and Displays (6 Sheets)

Equipment Description	Equipment Tag Number(1)	Equipment Location	IEEE Class 1E	EQ – Harsh Environment	MCR/RSS Displays
SG NR Level	30JEA10CL801	Reactor Building	1	Yes	Level/Level
	30JEA10CL802		2		
	30JEA10CL803		3		
	30JEA10CL804		4		
	30JEA20CL801		1		
	30JEA20CL802		2		
	30JEA20CL803		3		
	30JEA20CL804		4		
	30JEA30CL801		1		
	30JEA30CL802		2		
	30JEA30CL803		3		
	30JEA30CL804		4		
	30JEA40CL801		1		
	30JEA40CL802		2		
	30JEA40CL803		3		
	30JEA40CL804		4		
RCP Speed Sensor	30JEB10CS896	Reactor Building	1	Yes	Speed/Speed
	30JEB20CS896		2		
	30JEB30CS896		3		
	30JEB40CS896		4		
	30JEB10CS897		1		
	30JEB20CS897		2		
	30JEB30CS897		3		
	30JEB40CS897		4		

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

Table 2.2.1-4—Minimum Flow (% of Initial Flow) During Four Pump Coastdown

Time (s)	Flow (%)
0	100
1	94.03
2	87.59
4	77.01
6	68.66
8	61.81
10	56.1
20	38

Table 2.2.1-5—Reactor Coolant System ITAAC (11 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
2.1	The functional arrangement of the RCS is as shown on Figure 2.2.1-1.	Inspections of the as-built system as shown on Figure 2.2.1-1 will be conducted.	The as-built RCS conforms to the functional arrangement as shown on Figure 2.2.1-1.
2.2	The functional arrangement of the RPV and heavy reflector is as shown on Figure 2.2.1-2.	Inspections of the as-built system will be conducted.	The as-built RPV and heavy reflector conforms to the functional arrangement as shown on Figure 2.2.1-2 and Table 2.2.1-6.
2.3	The location of the RCS equipment is as listed in Table 2.2.1-1.	An inspection will be performed.	The equipment listed in Table 2.2.1-1 is located as listed in Table 2.2.1-1.
2.4	The RCS loops are physically separated from each other.	Inspections will be performed to verify physical separation of the RCS equipment.	The as-built RCS loops are physically separated from each other by a wall as shown on Figure 2.1.1-6.
3.1	Pumps and valves listed in Table 2.2.1-1 will be functionally designed and qualified such that each pump and 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 pumps and valves listed in Table 2.2.1-1 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 pumps and valves listed in Table 2.2.1-1 function under conditions ranging from normal operating to design-basis accident conditions.
3.2	Check valves listed in Table 2.2.1-1 will function as listed in Table 2.2.1-1.	Tests will be performed for the operation of the check valves listed in Table 2.2.1-1.	The check valves listed in Table 2.2.1-1 perform the functions listed in Table 2.2.1-1.

Table 2.2.1-5—Reactor Coolant System ITAAC (11 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.3	Components identified as Seismic Category I in Table 2.2.1-1 can withstand seismic design basis loads without a loss of the function listed in Table 2.2.1-1.	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 2.2.1-1 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 2.2.1-1 can withstand seismic design basis loads without a loss of the function listed in Table 2.2.1-1 including the time required to perform the listed function.
		b. Inspections will be performed of the Seismic Category I components identified in Table 2.2.1-1, other than RPV internals, 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 2.2.1-1, other than RPV internals, including anchorage, are installed as specified on the construction drawings and deviations have been reconciled to the seismic qualification reports (SQDP, EQDP, or analyses).
3.4	Deleted.	Deleted.	Deleted.
3.5	The steam outlet nozzles on the SGs include flow-limiting devices.	An inspection will be performed.	The flow area through each SG outlet nozzle flow-limiting device is a maximum of 1.39 ft^2.
3.6	Deleted.	Deleted.	Deleted.
3.7	The piping and interconnected component nozzles listed in Table 2.2.1-1 have been evaluated for LBB.	An analysis will be performed. **{{DAC}}**	An analysis exists and concludes that the piping and interconnected component nozzles listed in Table 2.2.1-1 meets the LBB acceptance criteria. **{{DAC}}**

Table 2.2.1-5—Reactor Coolant System ITAAC (11 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.8	The RPV internals will withstand the effects of flow-induced vibration.	a. Tests and analyses of test results will be performed on a plant containing RPV internals representative of the U.S. EPR.	a. A comprehensive vibration assessment program report exists and concludes that RPV internals have no observable damage, no loose parts, and stress is within ASME Code limits.
		b. An inspection will be performed after hot functional testing.	b. Inspections show that the RPV internals have no observable damage or loose parts.
		c. An analysis will be performed on the effects of the RCP acoustic frequencies on RPV internals.	c. An analysis of the effects of RCP acoustic frequencies on RPV internals exists and concludes that RPV internals stress is within ASME code limits.
3.9	The RCS allows movement of the components for thermal expansion and contraction.	A test of the RCS will be performed.	The measured RCS gaps meet the specification requirements for the necessary component supports.
3.10	Deleted.	Deleted.	Deleted.
3.11	Deleted.	Deleted.	Deleted.
3.12	Deleted.	Deleted.	Deleted.
3.13	Deleted.	Deleted.	Deleted.
3.14	Deleted.	Deleted.	Deleted.
3.15	Deleted.	Deleted.	Deleted.
3.16	RPV internals listed in Table 2.2.1-1 are designed in accordance with ASME Code Section III, Subsection NG.	An analysis will be performed.	An ASME Code Section III, Subsection NG stress report exists for each RPV internal component listed in Table 2.2.1-1.

Table 2.2.1-5—Reactor Coolant System ITAAC (11 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.17	Core support structure welds meet ASME Code Section III, Subsection NG requirements.	Inspections of core support structure welds will be performed.	Inspection reports show that core support structure welds for the following RPV welded components listed in Table 2.2.1-1 meet ASME Code Section III, Subsection NG requirements: core barrel, lower support plate, upper support plate, normal support columns, and control rod guide assembly columns.
3.18	The RPV internals are provided with irradiation specimen guide baskets to hold capsules containing RPV material surveillance specimens.	An inspection will be performed.	Two guide baskets are provided, located on opposite sides of the RPV, and each guide basket includes provisions to hold two material surveillance capsules.
3.19	Each RCP contains an oil collection system.	a. Analyses will be performed. b. An inspection will be performed on each RCP.	a. Analyses demonstrate that the oil collection system is designed 1) to withstand a safe-shutdown earthquake, 2) to collect lube oil from leakage sites in the RCP lube oil system, and 3) so that the drain line and collection tank are large enough to accommodate the largest potential oil leak. b. An inspection of each RCP verifies an oil collection system is installed on each RCP.

Table 2.2.1-5—Reactor Coolant System ITAAC (11 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.20	RCS piping shown as ASME Code Section III on Figure 2.2.1-1 is designed in accordance with ASME Code Section III requirements.	Inspections of the ASME Code Section III Design Reports (NCA-3550) and associated reference documents will be performed. **{{DAC}}**	ASME Code Section III Design Reports (NCA-3550) exist and conclude that RCS piping shown as ASME Code Section III on Figure 2.2.1-1 comply with ASME Code Section III requirements. **{{DAC}}**
3.21	RCS piping shown as ASME Code Section III on Figure 2.2.1-1 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-3550) will be performed.	For RCS piping shown as ASME Code Section III on Figure 2.2.1-1, 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.
3.22	Pressure boundary welds in RCS piping shown as ASME Code Section III on Figure 2.2.1-1 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 RCS piping shown as ASME Code Section III on Figure 2.2.1-1 has been performed in accordance with ASME Code Section III.
3.23	RCS piping shown as ASME Code Section III on Figure 2.2.1-1 retains pressure boundary integrity at design pressure.	Hydrostatic tests will be performed on the as-built system.	For RCS piping shown as ASME Code Section III on Figure 2.2.1-1, ASME Code Section III Data Reports exist and conclude that hydrostatic test results comply with ASME Code Section III requirements.

Table 2.2.1-5—Reactor Coolant System ITAAC (11 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.24	RCS piping shown as ASME Code Section III on Figure 2.2.1-1 is installed and inspected in accordance with ASME Code Section III requirements.	An inspection of the as-built piping will be performed.	For RCS piping shown as ASME Code Section III on Figure 2.2.1-1, N–5 Data Reports exist and conclude that installation and inspection are in accordance with ASME Code Section III requirements.
3.25	Components listed in Table 2.2.1-1 as ASME Code Section III, other than RPV internals, 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 2.2.1-1 comply with ASME Code Section III requirements.
3.26	Components listed in Table 2.2.1-1 as ASME Code Section III, other than RPV internals, 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 2.2.1-1 comply with ASME Code Section III requirements and any deviations to the design report have been reconciled.
3.27	Pressure boundary welds on components listed in Table 2.2.1-1 as ASME Code Section III, other than RPV internals, 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 2.2.1-1, other than RPV internals, 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.

Table 2.2.1-5—Reactor Coolant System ITAAC (11 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
3.28	Components listed in Table 2.2.1-1 as ASME Code Section III, other than RPV internals, 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 2.2.1-1, other than RPV internals, ASME Code Section III Data Reports exist and conclude that hydrostatic test results comply with ASME Code Section III requirements.
3.29	The RCP flywheel maintains its structural integrity during an overspeed event.	An overspeed test will be performed.	Test results verify that there is no loss of structural integrity at 125 percent of the maximum synchronous speed of the motor.
3.30	Components listed in Table 2.2.1-1 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 2.2.1-1 have been installed in accordance with ASME Code Section III requirements.
4.1	Displays listed in Tables 2.2.1-2 and 2.2.1-3 are retrievable in the MCR and RSS as listed in Tables 2.2.1-2 and 2.2.1-3.	Tests will be performed for the retrievability of the displays in the MCR or the RSS as listed in Tables 2.2.1-2 and 2.2.1-3.	a. The displays listed in Tables 2.2.1-2 and 2.2.1-3 as being retrievable in the MCR can be retrieved in the MCR. b. The displays listed in Tables 2.2.1-2 and 2.2.1-3 as being retrievable in the RSS can be retrieved in the RSS.
4.2	The RCS equipment controls are provided in the MCR and RSS as identified in Table 2.2.1-2.	Tests will be performed for the existence of control signals from the MCR and the RSS to the equipment listed in Table 2.2.1-2.	a. The controls listed in Table 2.2.1-2 as being in the MCR exist in the MCR. b. The controls listed in Table 2.2.1-2 as being in the RSS exist in the RSS.

Table 2.2.1-5—Reactor Coolant System ITAAC (11 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
4.3	Equipment listed as being controlled by a PACS module in Table 2.2.1-2 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 2.2.1-2 responds to the state requested by the test signal.
4.4	Instrumentation providing input to the uncertainty in power supports the power uncertainty assumed in the safety analysis.	A power uncertainty analysis using vendor certified instrument accuracies will be performed.	Power uncertainty analyses using vendor certified instrument accuracies is equal to or less than the power uncertainty assumed in the safety analysis.
5.1	The components designated as Class 1E in Tables 2.2.1-2 and 2.2.1-3 are powered from the Class 1E Division as listed in Tables 2.2.1-2 and 2.2.1-3 in a normal or alternate feed condition.	a. Testing will be performed for components designated as Class 1E in Tables 2.2.1-2 and 2.2.1-3 by providing a test signal in each normally aligned division. b. Testing will be performed for components designated as Class 1E in Tables 2.2.1-2 and 2.2.1-3 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 components identified in Tables 2.2.1-2 and 2.2.1-3. b. The test signal provided in each division with the alternate feed aligned to the divisional pair is present at the respective Class 1E components identified in Tables 2.2.1-2 and 2.2.1-3.
5.2	Deleted.	Deleted.	Deleted.
5.3	The power supply arrangement is such that only two emergency diesels are required to operate to supply power to the minimum number of PZR heaters.	An analysis will be performed.	An analysis exists and concludes that only two emergency diesel generators are required to operate to supply power to the minimum number of emergency PZR heaters, which are rated at 144 kW per heater.

Table 2.2.1-5—Reactor Coolant System ITAAC (11 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
6.1	Components in Table 2.2.1-2, that are designated as harsh environment, will perform the function listed in Table 2.2.1-1 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 2.2.1-2 to perform the function listed in Table 2.2.1-1 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 2.2.1-2 can perform the function listed in Table 2.2.1-1 during and following design basis events including the time required to perform the listed function.
		b. Components listed as harsh environment in Table 2.2.1-2 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 2.2.1-2 as harsh environment has been installed per the construction drawings and any deviations have been reconciled to the EQDP.

Table 2.2.1-5—Reactor Coolant System ITAAC (11 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
6.2	Instrumentation in Table 2.2.1-3, that are designated as harsh environment, will display as listed in Table 2.2.1-3 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 instrumentation listed as harsh environment in Table 2.2.1-3 to display as listed in Table 2.2.1-3 for the environmental conditions that could occur during and following design basis events. b. Instrumentation listed as harsh environment in Table 2.2.1-3 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. Environmental Qualification Data Packages (EQDP) exist and conclude that the instrumentation listed as harsh environment in Table 2.2.1-3 can display as listed in Table 2.2.1-3 during and following design basis events including the time required to perform the listed function. b. Inspection reports exists and conclude that the instrumentation listed in Table 2.2.1-3 as harsh environment has been installed per the construction drawings and any deviations have been reconciled to the EQDP.
7.1	Class 1E valves listed in Table 2.2.1-2 perform the function listed in Table 2.2.1-1 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 2.2.1-2 to change position as listed in Table 2.2.1-1 under system operating conditions.	The valve changes position as listed in Table 2.2.1-1 under system operating conditions.
7.2	The RCPs have rotational inertia to provide coast down flow of reactor coolant on loss of power to the pump motors.	Tests will be performed.	The RCPs provide the minimum coastdown flow as listed on Table 2.2.1-4.
7.3	The RCPs provide flow.	a. Testing and analysis will be performed.	a. The RCP provides greater than the minimum required flow rate of 119,692 gpm/loop.

Table 2.2.1-5—Reactor Coolant System ITAAC (11 Sheets)

Commitment Wording		Inspections, Tests, Analyses	Acceptance Criteria
		b. Testing and analysis will be performed.	b. The RCP provides less than the maximum required flow rate of 134,662 gpm/loop.
7.4	RCP standstill seal system (SSSS) can be engaged when the RCP is stopped.	Testing will be performed.	The SSSS can be engaged when the RCP is stopped.
7.5	PSRVs open.	Testing will be performed.	PSRVs open within 0.70 seconds (including pilot valve opening time).
7.6	PSRVs open below the maximum setpoint assumed in the safety analyses.	Testing will be performed.	Each PSRV will lift below its maximum lift setting of 2600.4 psia.
7.7	PSRVs provide relief capacity.	Testing and analysis will be performed.	Each PSRV provides relief capacity ≥ 661,400 lbm/hr at 2535 psig.
7.8	Each RCP supply circuit breaker and switchgear feeder circuit breaker is tripped by a protection system signal.	A test will be performed.	Each RCP supply circuit breaker and switchgear feeder circuit breaker is tripped by a protection system signal.

Table 2.2.1-6—RPV Key Dimensions and Acceptable Variations

Description	Dimension/ Elevation	Nominal Value (inches)	Acceptable Variation (inches)
Vessel Inside Diameter at Beltline (to cladding)	A	191.73	+1.0 / -1.0
Vessel Beltline Shell Thickness (without cladding)	B	9.84	+0.88 / -0.12
Vessel Lower Head Thickness (without cladding)	C	5.71	+1.0 / -0.12
Vessel Inlet / Outlet Nozzle Inside Diameter (at safe end)	D	30.71	+0.37 / -0.12
Elevation from Mating Surface to Centerline of Inlet/ Outlet Nozzle	E	70.87	+0.25 / -0.25
Elevation from Mating Surface to Inside of Bottom Head (to cladding)	F	408.66	+1.0 / -0.5

Next File