2.14 Containment and Environmental Control Systems

2.14.1 Primary Containment System

Design Description

The Primary Containment System (PCS) encompasses:

(1) A reinforced concrete containment vessel (RCCV) with an internal steel liner. The structure includes various penetrations, equipment hatches and personnel access locks. This structure provides an essentially leaktight barrier against the uncontrolled release of radioactivity to the environment as long as postulated accident conditions require.

(2) Structures inside the primary containment which partition the containment into drywell and wetwell regions, provide equipment support, radiation protection, and components for operation of the ABWR pressure suppression containment.

Figure 2.14.1 shows the basic configuration and scope.

The steel-lined reinforced concrete containment structure supported by a reinforced concrete basemat provides the primary containment pressure barrier of the RCCV and is classified as ASME Code Section III. The reactor pressure vessel (RPV) support pedestal and a diaphragm floor partition the containment volume into drywell and wetwell regions. The RPV support pedestal is a double shell steel structure filled with concrete. The diaphragm floor is a reinforced concrete structure. Other major internal structures within the containment are the reactor shield wall, lower drywell personnel and equipment access tunnels and the drywell equipment and piping support structure (DEPSS). These internal structures are steel fabrications.

Penetrations through the containment pressure boundary include the drywell head closure, equipment hatches to both upper and lower drywell regions, personnel locks into upper and lower drywells, a combined personnel access and equipment hatch into the wetwell, and piping and electrical penetration sleeves. These pressure boundary appurtenances are steel structures classified as ASME Code Section III, Division 1, Class MC. Furthermore, the drywell head closure thickness is equal to or greater than 31.7 mm.

The containment design pressure is 309.9 kPaG. The design temperatures for the drywell and the wetwell are 171°C and 104°C, respectively. The maximum calculated pressures and temperatures for the design basis accident are less than these design conditions. The primary containment pressure boundary including penetrations and isolation valves, has a leak rate equal to or less than 0.5% per day (excluding MSIV leakage) of the containment gas mass at the maximum calculated containment pressure for the design basis accident.

The reinforced concrete diaphragm floor, separating the upper drywell and the wetwell gas spaces, has a steel liner plate on the underside. The design differential pressure of the diaphragm floor between drywell and wetwell is 172.6 kPa in the downward direction.

The RPV pedestal forms the lower drywell region and consists of a cylindrical double shell composite steel structure. It is anchored to the basemat and supports the RPV through a support ring girder. The pedestal also supports the reactor shield wall. The pedestal consists of two concentric steel cylinders joined together radially by vertical steel diaphragms and filled with concrete. The pressure suppression venting paths are an integral part of the pedestal structure, which includes (1) the ducts which interconnect the lower and upper drywell regions, (2) the vertical downcomers from the interconnecting ducts to the horizontal vents, and (3) the horizontal vents that direct steam into the suppression pool. The horizontal vents consist of 30 pipes uniformly spaced around the perimeter of the pedestal in ten stacks of three each. The total horizontal vent area is greater or equal to 11.55 m^2. The distance from the pedestal containing these horizontal vents to the outer suppression pool wall is greater than 7.4m. All HVAC ducts, cabling and piping between the upper and lower drywells are routed through the interconnecting ducts.

Vacuum relief between the drywell volumes and the wetwell gas space is provided by vacuum breaker valves on piping sleeves penetrating the pedestal wall. Eight normally closed swing check valves with a total flow area of at least 1.53 m^2 are provided. Each vacuum breaker has two position indication switches that provide position indication and an alarm in the main control room (MCR). The positon switches have adequate sensitivity to detect the allowable suppression pool (S/P) bypass capability of the containment.

The water volume in the suppression pool including the vents is equal to or greater than 3,580 cubic meters. The safety relief valve (SRV) discharge lines terminate in standard “X” type quenchers. The horizontal center line of the safety relief valve discharge line (SRVDL) quencher arms are located at or below the elevation of the center layer of horizontal vents in the suppression pool. The quenchers are placed in the suppression pool in two radial rings. Eighteen of twenty equally spaced locations have quenchers installed, with 10 quenchers in the outer ring and 8 quenchers in the inner ring.

Water return paths connect the region within the pedestal to the vertical downcomers and horizontal vent paths. The lower drywell floor is provided with corium protection fill of at least 1.5 meters thickness and a minimum 79 m^2 area clear of obstructions to debris spreading. The corium protection fill contains less than 4% of calcium carbonate material by weight. Sumps imbedded in the concrete are protected by corium shields. Thermally activated flooding valves are also located in this region.

The following PCS components are classified as Seismic Category I; the reinforced concrete containment structure, the drywell head, equipment hatches to both upper and lower drywell regions, personnel locks into upper and lower drywells, the combined personnel access and equipment hatch into the wetwell, the basemat, the reactor pedestal, the reactor shield wall, the DEPSS, and containment piping and electrical penetration sleeves.

The containment internal structures designated Seismic Category I, are designed and constructed to accommodate the dynamic and static load conditions and load combinations associated with the containment design basis accident. The loads to be applied to these structures are associated with:

(1) Live loads, dead loads, temperature effects and building vibration loads from normal plant operation.

(2) Earthquakes loads from safe shutdown earthquake.

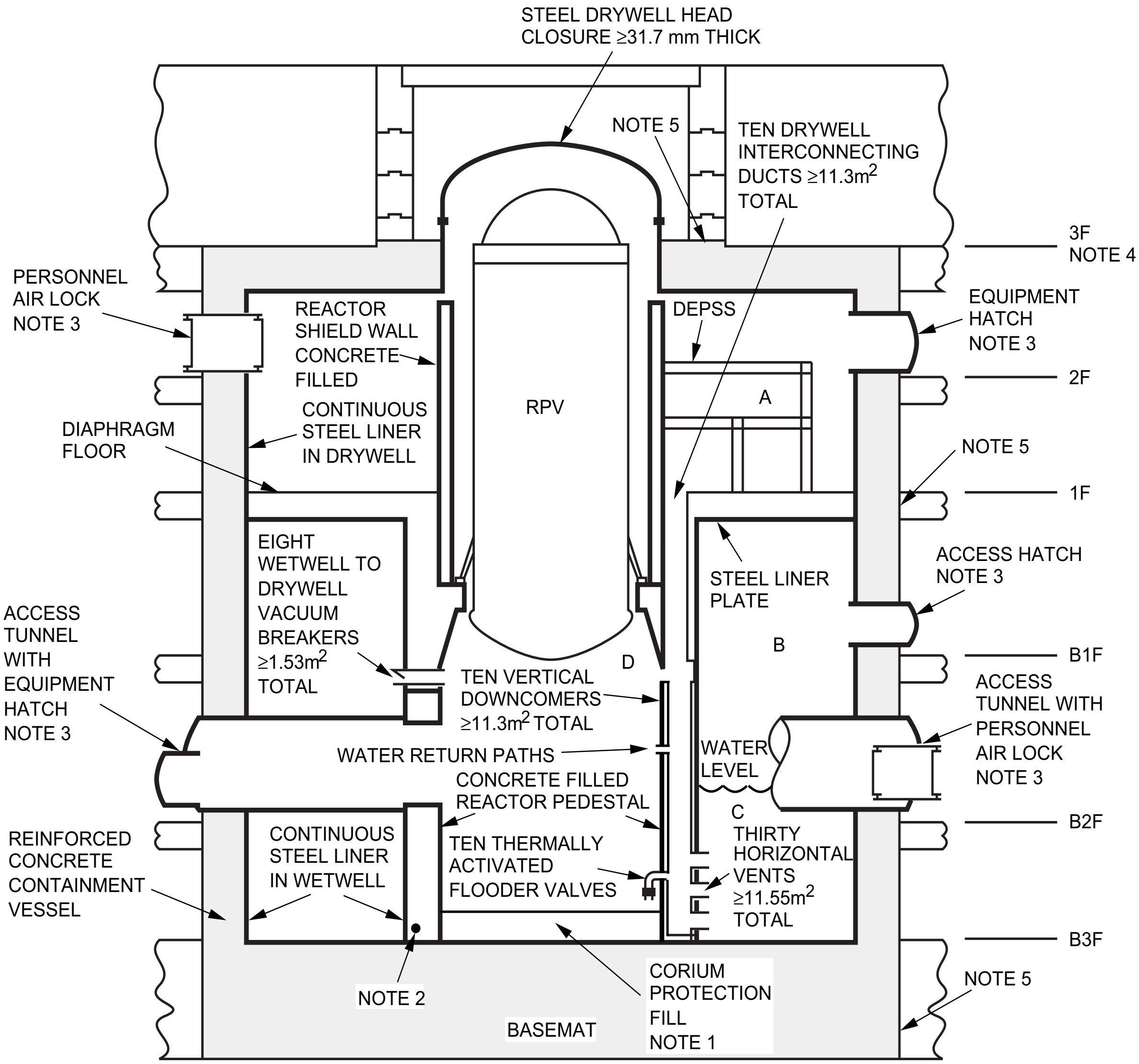
(3) Blowdown pressures and temperature from design basis loss-of-coolant accidents.

(4) Hydrodynamic loads and structural vibrations resulting from steam discharges into the suppression pool.

(5) Reaction forces on structures resulting from pipe break jets or fluid impacts.

Inspections, Tests, Analyses and Acceptance Criteria

Table 2.14.1 provides a definition of the inspections, tests, and/or analyses, together with associated acceptance criteria, which will be undertaken for the Primary Containment System.



AREAS:

A. UPPER DRYWELL

B. WETWELL GAS SPACE

C. SUPPRESSION POOL

D. LOWER DRYWELL

NOTES:

1. CORIUM PROTECTION FILL DEPTH IS ≥1.5m AND UNOBSTRUCTED SURFACE AREA IS ≥ 79m^2.
2. RPV PEDESTAL IN THE LOWER DRYWELL REGION HAS ≥1.64m CONCRETE THICKNESS (EXCEPT ADJACENT TO VERTICAL DOWNCOMERS).
3. PERSONNEL AND EQUIPMENT ACCESS POINTS ARE AT VARIOUS CIRCUMFERENTIAL LOCATIONS.
4. R/B FLOOR DESIGNATIONS, NOT PART OF PCS; SHOWN HERE FOR REFERENCE ONLY.
5. LINES BETWEEN (a) RCCV WALL AND R/B FLOOR SLABS, (b) RCCV TOP SLAB AND R/B POOL GATES AND (c) RCCV BASEMAT AND R/B BASEMAT SHOW CODE BOUNDARY OF RCCV (ASME CODE SECTION III DIVISION 2 STRUCTURE).

Figure 2.14.1 Primary Containment System

Table 2.14.1 Primary Containment System

Inspections, Tests, Analyses and Acceptance Criteria

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The basic configuration of the PCS is as shown on Figure 2.14.1.	1. Inspections of the as-built system will be conducted.	1. The as-built PCS conforms with the basic configuration shown on Figure 2.14.1.
2. The primary containment pressure boundary defined in Section 2.14.1 is designed to meet ASME Code, Section III requirements.	2. Inspections of ASME Code required documents will be conducted.	2. An ASME Code Certified Stress Report exists for the pressure boundary components.
3. The ASME Code pressure boundary components of the PCS retain their integrity under internal pressures that will be experienced during service.	3. A structural integrity test (SIT) will be conducted on the pressure boundary components of the PCS per ASME Code requirements.	3. The results of the SIT of the pressure boundary components conform with the requirements of the ASME Code.
4. The maximum calculated pressures and temperatures for the design basis accident are less than design conditions.	4. Analyses of the design basis accident will be performed using as-built PCS data.	4. The maximum calculated pressures and temperatures are less than design conditions.
5. The primary containment pressure boundary including penetrations and isolation valves has a leak rate equal to or less than 0.5% per day (excluding MSIV leakage) of containment gas mass at the maximum calculated containment pressure for the design basis accident.	5. An integrated leak rate test of the primary containment will be conducted.	5. The primary containment pressure boundary including penetrations and isolation valves has a leak rate equal to or less than 0.5% per day (excluding MSIV leakage) of containment gas mass at the maximum calculated containment pressure for the design basis accident.
6. The design differential pressure of the diaphragm floor between the drywell and wetwell is 172.6 kPa in the downward direction.	6. An SIT will be conducted of the diaphragm floor with the drywell pressure greater than wetwell pressures by 1.0 times the design differential pressure.	6. An SIT report exists concluding that the diaphragm floor is able to withstand the design differential pressure.
7. The horizontal vent system consists of 30 vents configured as described in Section 2.14.1.	7. Inspection of the installed horizontal vent system will be conducted.	7. Confirmation that horizontal vent system is configured as described in Section 2.14.1.
8. MCR displays and alarms provided for the PCS are as defined in Section 2.14.1.	8. Inspections will be performed on the MCR displays and alarms for the PCS.	8. Displays and alarms exist or can be retrieved in the MCR as defined in Section 2.14.1.

Table 2.14.1 Primary Containment System (Continued)

Inspections, Tests, Analyses and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
9. The vacuum breaker position switches have adequate sensitivity to detect the allowable S/P bypass capability of the containment.	9. Analysis of the as-built vacuum breakers will be performed. These analyses will determine the maximum vacuum breaker flow area (drywell-to-wetwell) which could exist undetected by the as-installed position switches. The loss coefficients associated with the flow area will be evaluated on the basis of the drywell-to-wetwell flow path geometric details. The flow area and loss coefficients will be combined into an overall drywell- to- wetwell $A\sqrt{K}$ factor which will be compared to the allowable value.	9. The vacuum breaker position switches have adequate sensitivity to detect the allowable S/P bypass capability of the containment.
10. The water volume in the suppression pool including the vents is equal to or greater than 3580 m^3.	10. Analyses of the as-built PCS will be performed.	10. The water volume in the suppression pool including the vents is equal to or greater than 3580 m^3.
11. The SRVDL quencher arms are located at or below the elevation of the center layer of horizontal vents in the suppression pool. The quenchers are placed in the suppression pool in two radial rings. Eighteen of twenty equally spaced locations have quenchers installed, with 10 quenchers in the outer ring and 8 quenchers in the inner ring.	11. Inspection of the installed SRVDL quenchers will be conducted.	11. The SRVDL quenchers are located within the suppression pool as described in Section 2.14.1.
12. The corium protection fill contains less than 4% of calcium carbonate material by weight.	12. Tests will be performed on corium protection fill materials to determine the calcium carbonate content in a test facility	12. Corium protection fill contains less than 4% of calcium carbonate material by weight.
13. Lower drywell imbedded sumps are protected by corium shields.	13. Inspections of the lower drywell sump corium protection shields will be performed.	13. Lower drywell imbedded sumps are protected by corium shields.

Table 2.14.1 Primary Containment System (Continued)

Inspections, Tests, Analyses and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
14. The containment internal structures are able to withstand the structural design basis loads as defined in Section 2.14.1.	14. A structural analysis will be performed which reconciles the as-built data with structural design as defined in Section 2.14.1.	14. A structural analysis report exists which concludes that the as-built internal structures are able to withstand the design basis loads as defined in Section 2.14.1.

2.14.2 Containment Internal Structures

No entry. Covered in Section 2.14.1.

2.14.3 Reactor Pressure Vessel Pedestal

No entry. Covered in Section 2.14.1.

2.14.4 Standby Gas Treatment System

Design Description

The Standby Gas Treatment System (SGTS) is used to filter the gaseous effluent from either the primary or secondary containment. The purpose of the SGTS is to limit the discharge of radioactivity to the environment on receipt of a signal from the Leak Detection System (LDS). SGTS consists of two redundant divisions. Figure 2.14.4 shows the basic system configuration and scope.

The SGTS is classified as safety-related.

Each division of the SGTS (except cooling fan and associated damper) is automatically initiated by signals from the LDS. Each SGTS division can be manually initiated from Main Control Room (MCR).

The SGTS maintains a negative pressure of 6.4 mm water gauge or greater in the secondary containment relative to the outdoor atmosphere within 20 minutes when the secondary containment is isolated. Each SGTS process fan capacity is at least 6800 m^3/h (21°C and 1 atmosphere abs.) with the secondary containment not isolated. The absorber efficiency for removal of all forms of iodine (elemental, organic, particulate, and hydrogen iodide) from the influent stream is at least 99%.

After SGTS initiation, each cooling fan starts automatically when a signal indicates that the process fan in that division is not operating.

The SGTS has four safety-related differential pressure sensors for monitoring secondary containment pressure with respect to ambient pressure outside. One sensor is located on each of the four sides of the Reactor Building.

The SGTS is classified as Seismic Category I.

The SGTS is located in the Reactor Building.

The SGTS Division B is powered from Class 1E Division II, except for the cooling fan and associated damper, which is powered by Class 1E Division III. The SGTS Division C is powered from Class 1E Division III, except for the cooling fan and associated damper, which is powered by Class 1E Division II. Each of the four differential pressure sensors is powered from its respective Class 1E division. In the SGTS, independence is provided between Class 1E divisions and also between the Class 1E divisions and non-Class 1E equipment.

Except for the common connection to the plant stack, each mechanical division of the SGTS (Divisions B and C) is physically separated from the other division.

The SGTS has the following displays and controls in the main control room:

(1) Parameter displays for the instruments shown on Figure 2.14.4.

(2) Controls and status indication for the active safety-related components shown on Figure 2.14.4.

(3) Manual system level initiation capability.

The safety-related electrical equipment is shown on Figure 2.14.4 and located in the Reactor Building is qualified for a harsh environment.

Inspections, Tests, Analyses and Acceptance Criteria

Table 2.14.4 provides a definition of the inspections, tests, and/or analyses, together with associated acceptance criteria, that will be undertaken for the SGTS.

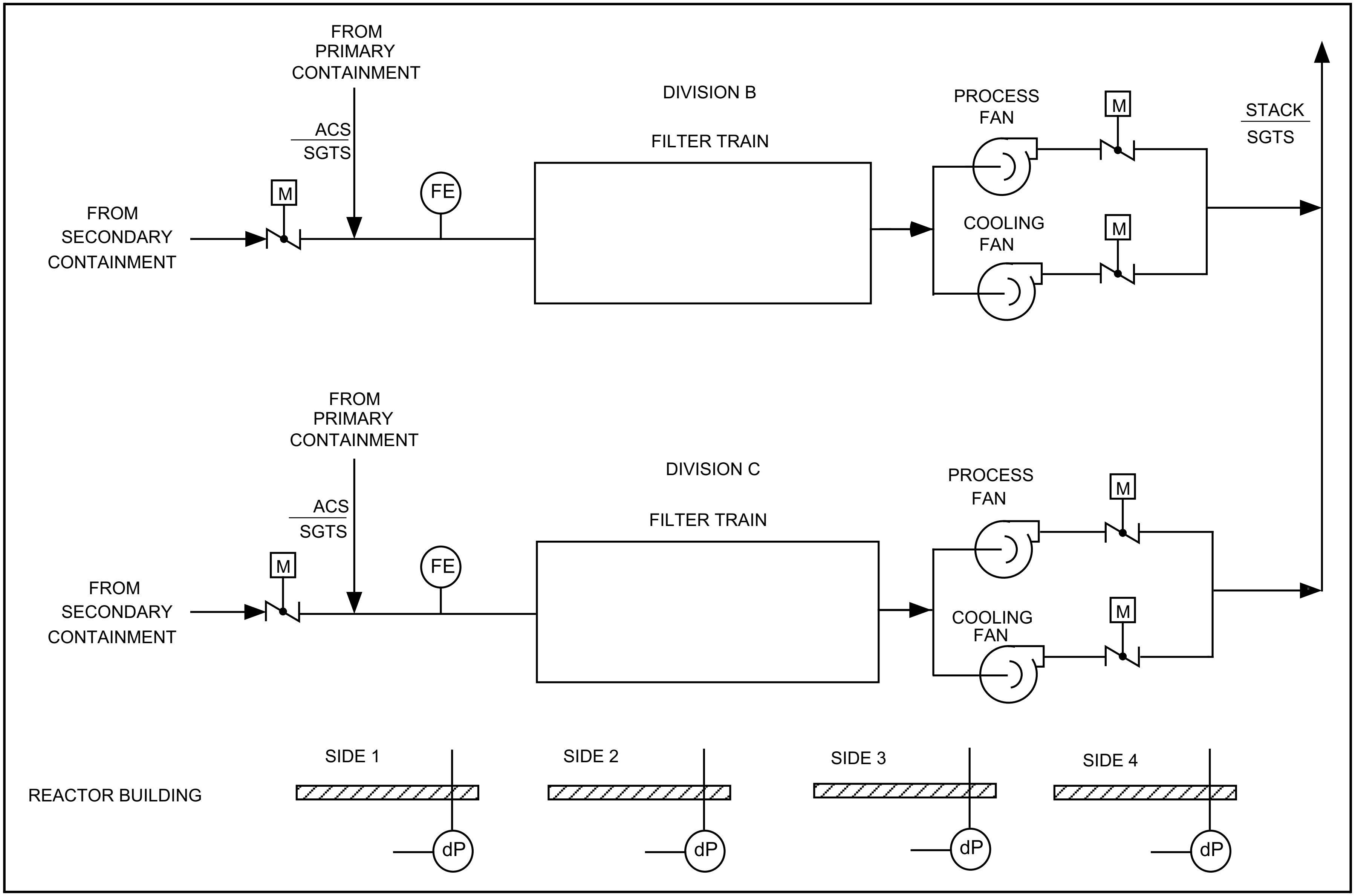


Figure 2.14.4 Standby Gas Treatment System

Table 2.14.4 Standby Gas Treatment System

Inspections, Tests, Analyses and Acceptance Criteria

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The basic configuration of the SGTS is as shown on Figure 2.14.4.	1. Inspections of the as-built system will be conducted.	1. The as-built SGTS conforms with the basic configuration shown on Figure 2.14.4.
2. Each division of the SGTS (except cooling fan and associated damper) is automatically initiated by signals from the LDS.	2. Tests will be conducted on each as-built SGTS division using simulated initiation signals.	2. The process fan starts and dampers open to allow process flow.
3. Each SGTS division can be manually initiated from the MCR.	3. Tests will be conducted by initiating each division manually.	3. Each division of the SGTS receives an initiation signal.
4.	4.	4.
a. The SGTS maintains a negative pressure of 6.35 mm water gauge or greater in the secondary containment relative to the outdoor atmosphere within 20 minutes when the secondary containment is isolated.	a. Tests will be conducted on each as-built SGTS division.	a. The SGTS maintains a negative pressure of 6.35 mm water gauge or greater in the secondary containment relative to the outdoor atmosphere within 20 minutes when the secondary containment is isolated.
b. Each SGTS process fan capacity is at least 6800 m^3/h (at 21°C, 1 atmosphere abs.) with the secondary containment not isolated.	b. Tests will be conducted on each as-built SGTS division.	b. Each SGTS process fan capacity is at least 6800 m^3/h (at 21°C, 1 atmosphere abs.) with the secondary containment not isolated.
5. After SGTS initiation, each cooling fan starts automatically when a signal indicates that the process fan in that division is not operating.	5. Tests will be conducted on each division using signals indicating that the process fan is not operating.	5. The cooling fan starts automatically when a signal indicates that the process fan is not operating.
6. Each filter train will have at least 99% removal efficiency for all forms of iodine (elemental, organic, particulate and hydrogen iodide).	6. a. Tests will be conducted on each as-built filter train. b. Tests in test facility will be conducted the iodine absorbing material.	6. Each filter train will have at least 99% removal efficiency for all forms of iodine (elemental, organic, particulate and hydrogen iodide).

Table 2.14.4 Standby Gas Treatment System (Continued)

Inspections, Tests, Analyses and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
7. The SGTS Division B is powered from Class 1E Division II, except for the cooling fan and associated damper, which is powered by Class 1E Division III. The SGTS Division C is powered from Class 1E Division III, except for the cooling fan and associated damper, which is powered by Class 1E Division II. Each of the four differential pressure sensors is powered from its respective Class 1E division. In the SGTS, independence is provided between Class 1E divisions and also between the Class 1E divisions and non-Class 1E equipment.	7. a. Tests will be performed on the SGTS by providing a test signal in only one Class 1E division at a time. b. Inspections of the as-built Class 1E divisions in the SGTS will be performed.	7. a. The test signal exists only in the Class 1E division under test in the SGTS. b. In the SGTS, physical separation or electrical isolation exists between Class 1E divisions. Physical separation or electrical isolation exists between Class 1E divisions and non-Class 1E equipment.
8. Except for the common connection to the plant stack, each mechanical division of the SGTS (Divisions B and C) is physically separated from the other division.	8. Inspections of the as-built the SGTS will be performed.	8. Each mechanical division of the SGTS is physically separated from other mechanical division of the SGTS by structure and/or fire barriers.
9. MCR displays and controls provided for the SGTS are as defined in Section 2.14.4.	9. Inspections will be performed on the MCR displays and controls for the SGTS.	9. Displays and controls exist or can be retrieved in the MCR as defined in Section 2.14.4.

2.14.5 PCV Pressure and Leak Testing Facility

No entry for this system.

2.14.6 Atmospheric Control System

Design Description

The Atmospheric Control (AC) System consists of a nitrogen supply, injection lines, exhaust lines, bleed line, valves, controls, and instrumentation. The AC System also has the containment overpressure protection system (COPS). Figure 2.14.6 shows the basic system configuration and scope.

The AC System is capable of providing an inert atmosphere within the primary containment.

Except for the primary containment penetrations, isolation valves, and suppression pool level sensors, the AC System is classified as non-safety-related.

The outer rupture disk of the COPS has a rupture differential pressure of less than 0.03 MPa. The inner rupture disk of the COPS is selected such that the COPS has an actuation pressure of 0.72 MPa (absolute) ±5%. The COPS has the capacity to allow at least 28 kg/s steam flow when the containment is at the actuation pressure of the system.

The AC System primary containment penetrations, isolation valves, and suppression pool level sensors are classified as Seismic Category I. Figure 2.14.6 shows the ASME Code class for the AC System piping and components.

AC System components are located in the Reactor Building, except for the nitrogen supply.

Figure 2.14.6 shows the Class 1E divisional power assignments for the AC System components. In the AC System, independence is provided between the Class 1E divisions, and also between the Class 1E divisions and non-Class 1E equipment.

The main control room has control and open/close status indication for the containment isolation valves.

AC System components with display interfaces with the Remote Shutdown System (RSS) are shown on the Figure 2.14.6.

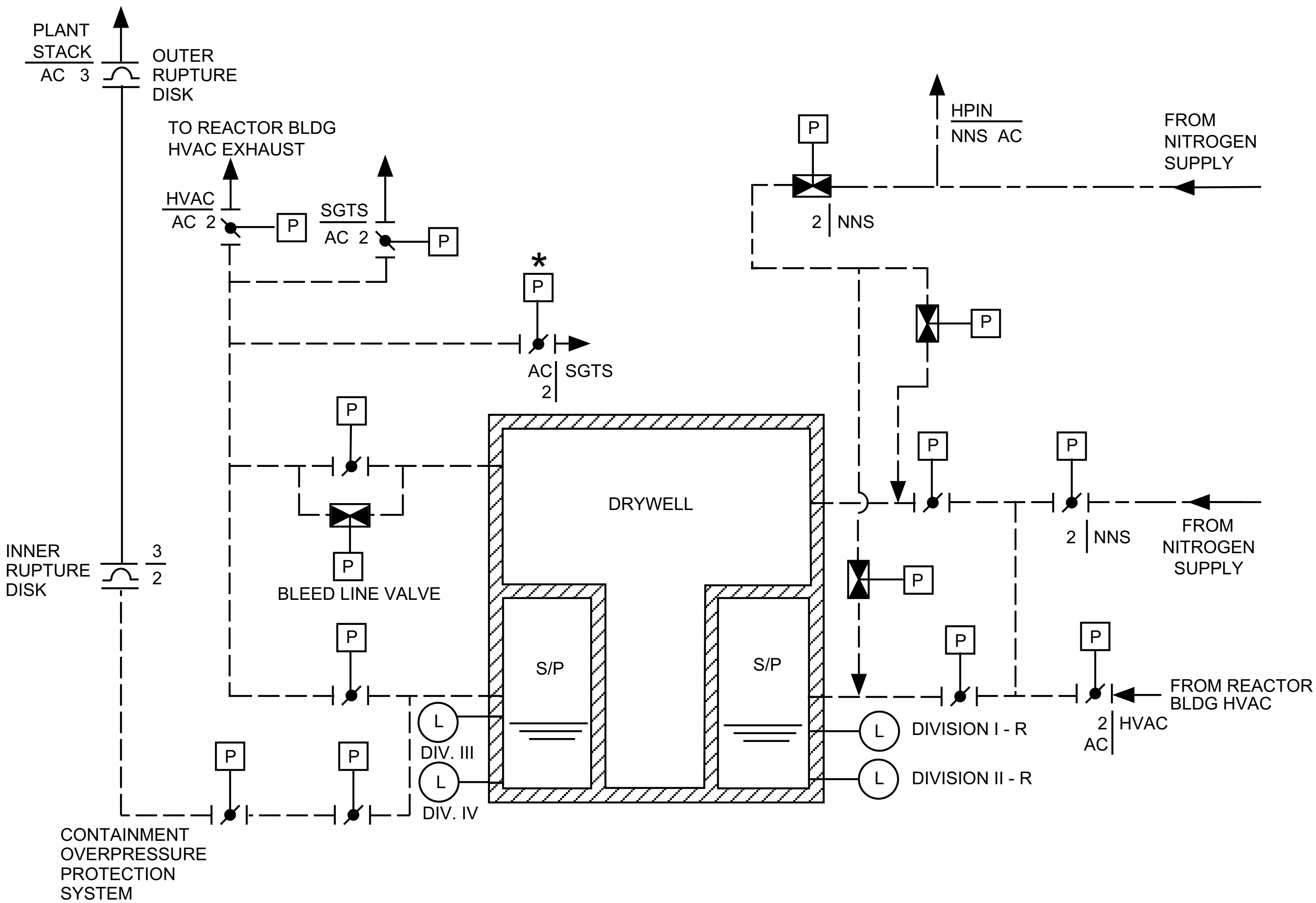
The safety-related electrical equipment located in the Reactor Building is qualified for a harsh environment.

The COPS pneumatic actuated valves shown on Figure 2.14.6 have active safety-related functions to both open and close, and perform these functions against a pressure of 0.72 MPa (absolute) ±5% and under fluid flow and temperature conditions.

The two valves in the containment overpressure protection system fail open on loss of pneumatic pressure or loss of electrical power to the valve actuating solenoid. The other pneumatic valves shown on Figure 2.14.6 fail closed on loss of pneumatic pressure or loss of electrical power to the valve actuating solenoids.

Inspections, Tests, Analyses and Acceptance Criteria

Table 2.14.6 provides a definition of the inspections, tests and/or analyses, together with associated criteria, which will be undertaken for the AC System.



NOTES:

1. INBOARD CONTAINMENT ISOLATION VALVES ARE POWERED FROM CLASS 1E DIVISION II OUTBOARD CONTAINMENT ISOLATION VALVES ARE POWERED FROM CLASS 1E DIVISION I EXCEPT AS NOTED WITH "*", WHICH IS POWERED FROM CLASS 1E DIVISION III.
2. THE COPS FLOW PATH FROM THE PRIMARY CONTAINMENT TO THE PLANT STACK HAS NO VALVES OTHER THAN THOSE SHOWN ON THE FIGURE.
3. THE ACS HAS PROVISIONS FOR SUPPLYING NITROGEN TO THE COPS PIPING BETWEEN THE INNER AND OUTER RUPTURE DISKS.

Figure 2.14.6 Atmospheric Control System

Table 2.14.6 Atmospheric Control System

Inspections, Tests, Analyses and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
1. The basic configuration of the AC System is as shown on Figure 2.14.6.	1. Inspections of the as-built AC System will be conducted.	1. The as-built AC System conforms with the basic configuration shown on Figure 2.14.6.
2. The ASME Code components of the AC System retain their pressure boundary integrity under internal pressures that will be experienced during service.	2. A pressure test will be conducted on those Code components of the AC System required to be pressure tested by the ASME Code.	2. The results of the pressure test of the ASME Code components of the AC System conform with the requirements in ASME Code Section III.
3. The outer rupture disk of the COPS has a rupture differential pressure of less than 0.03 MPa. The inner rupture disk of the COPS is selected such that the COPS has an actuation pressure of 0.72 MPa (absolute) ±5%.	3. Tests will be conducted in a test facility to determine rupture disk bursts conditions.	3. The outer rupture disk of the COPS has a rupture differential pressure of less than 0.03 MPa. The inner rupture disk of the COPS is selected such that the COPS has an actuation pressure of 0.72 MPa (absolute) ±5%.
4. The COPS has the capacity to allow at least 28 kg/s steam flow when the containment is at the actuation pressure of the system.	4. Analyses of the steam flow rate will be conducted for as-built system. These analyses will consider compressible steam flow and the as-built system loss coefficients.	4. The COPS has the capacity to allow at least 28 kg/s steam flow when the containment is at the actuation pressure of the system.
5. Figure 2.14.6 shows the Class 1E divisional power assignments for the AC System components. In the AC System, independence is provided between Class 1E divisions, and between Class 1E divisions and non-Class 1E equipment.	5. a. Tests will be performed in the AC System by providing a test signal in only one Class 1E division at a time. b. Inspections of the as-installed Class 1E divisions in the AC System will be performed.	5. a. The test signal exists only in the Class 1E division under test in the AC System. b. In the AC System physical separation or electrical isolation exists between Class 1E divisions. Physical separation or electrical isolation exists between these Class 1E divisions and non-Class 1E equipment.
6. Main control room displays and controls provided for the AC System are as defined in Section 2.14.6.	6. Inspections will be performed on the main control room displays and controls for the AC System.	6. Displays and controls exist or can be retrieved in the main control room as defined in Section 2.14.6.
7. RSS displays provided for the AC System are as defined in Section 2.14.6.	7. Inspections will be performed on the RSS displays for the AC System.	7. Displays exist on the RSS as defined in Section 2.14.6.

Table 2.14.6 Atmospheric Control System (Continued)

Inspections, Tests, Analyses and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
8. The COPS pneumatic actuated valves shown on Figure 2.14.6 have active safety-related functions to both open and close, and perform these functions against a pressure of 0.72 MPa (absolute) ±5% and under fluid flow and temperature conditions.	8. Tests will be conducted in a test facility for both opening and closing under differential pressure, fluid flow and temperature conditions.	8. Upon receipt of an actuating signal, each valve both opens and closes.
9. The two valves in the containment overpressure protection system fail open on loss of pneumatic pressure or loss of electrical power to the valve actuating solenoid. The other pneumatic valves shown on Figure 2.14.6 fail closed on loss of pneumatic pressure or loss of electrical power to the valve actuating solenoids.	9. Tests will be conducted on the as-built AC System pneumatic valves.	9. The two valves in the containment overpressure protection system fail open on loss of pneumatic pressure or loss of electrical power to the valve actuating solenoid. The other pneumatic valves shown on Figure 2.14.6 fail closed on loss of pneumatic pressure or loss of electrical power to the valve actuating solenoids.

2.14.7 Drywell Cooling System

Design Description

The Drywell Cooling (DWC) System circulates the drywell atmosphere through coolers, thus maintaining its temperature during plant operation. Figure 2.14.7 shows the basic system configuration and scope.

The DWC System consists of three fan coil units and two chilled water units. Each fan coil unit consists of a cooling coil and a fan. These units are cooled by the Reactor Building Cooling Water (RCW) System. Each chilled water unit consists of a cooling coil only. These units are cooled by the Heating Ventilating and Air Conditioning Normal Cooling (HNCW) System.

The DWC System is classified as non-safety-related.

The DWC System is located inside the drywell.

Inspections, Tests, Analyses and Acceptance Criteria

Table 2.14.7 provides a definition of the inspections, tests and/or analyses, together with associated acceptance criteria, which will be undertaken for the DWC System.

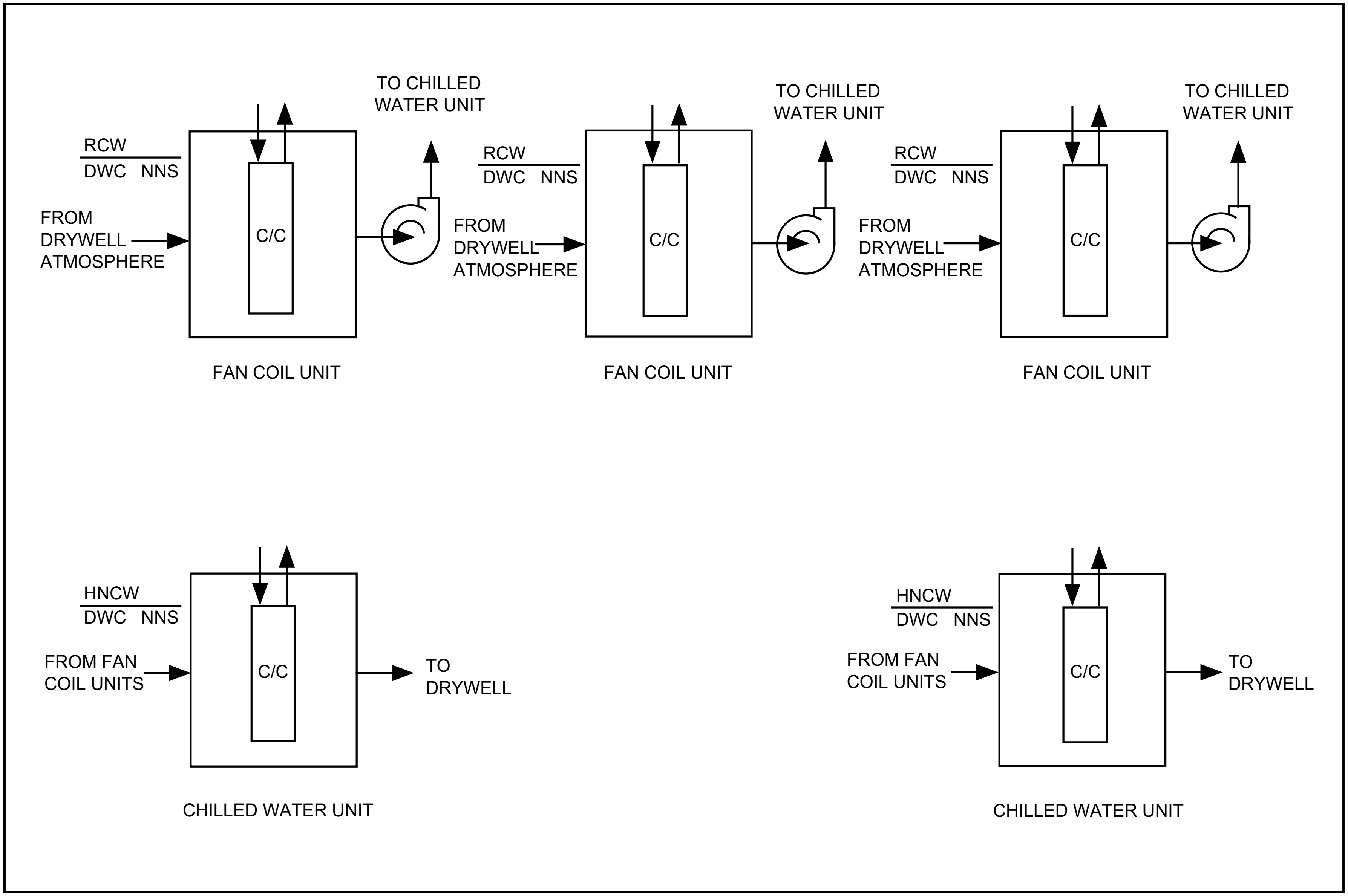


Figure 2.14.7 Drywell Cooling System

Table 2.14.7 Drywell Cooling System

Inspections, Tests, Analyses and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
1. The basic configuration of the DWC System is as shown on Figure 2.14.7.	1. Inspections of the as-built system configuration will be conducted.	1. The as-built DWC System conforms with the basic configuration shown in Figure 2.14.7.

2.14.8 NOT USED

2.14.9 Suppression Pool Temperature Monitoring System

Design Description

The Suppression Pool Temperature Monitoring (SPTM) System monitors the suppression pool water temperature and provides signals for initiation of automatic scram on high suppression pool temperature. Figure 2.14.9 shows the SPTM System control interfaces.

The SPTM System is classified as a Class 1E safety-related system and consists of four Class 1E divisions (Division I, II, III, and IV) of temperature sensors and their respective logic processors.

The SPTM System temperature sensors are located in the suppression pool. There are four divisions of temperature sensors in each quadrant of the suppression pool.

In each SPTM System division, the suppression pool average temperature is calculated by corresponding divisional logic processors of Safety System Logic and Control (SSLC) using output signals from SPTM temperature sensors. In each SSLC SPTM division, a suppression pool average temperature trip signal is generated by the logic processor and sent to the Reactor Protection System (RPS) when the calculated divisional average temperature exceeds the high suppression pool average temperature setpoint.

Each of the four SPTM System divisional logic is powered from its respective divisional Class 1E power supply. Independence is provided between Class 1E divisions, and also between Class 1E divisions and non-Class 1E equipment.

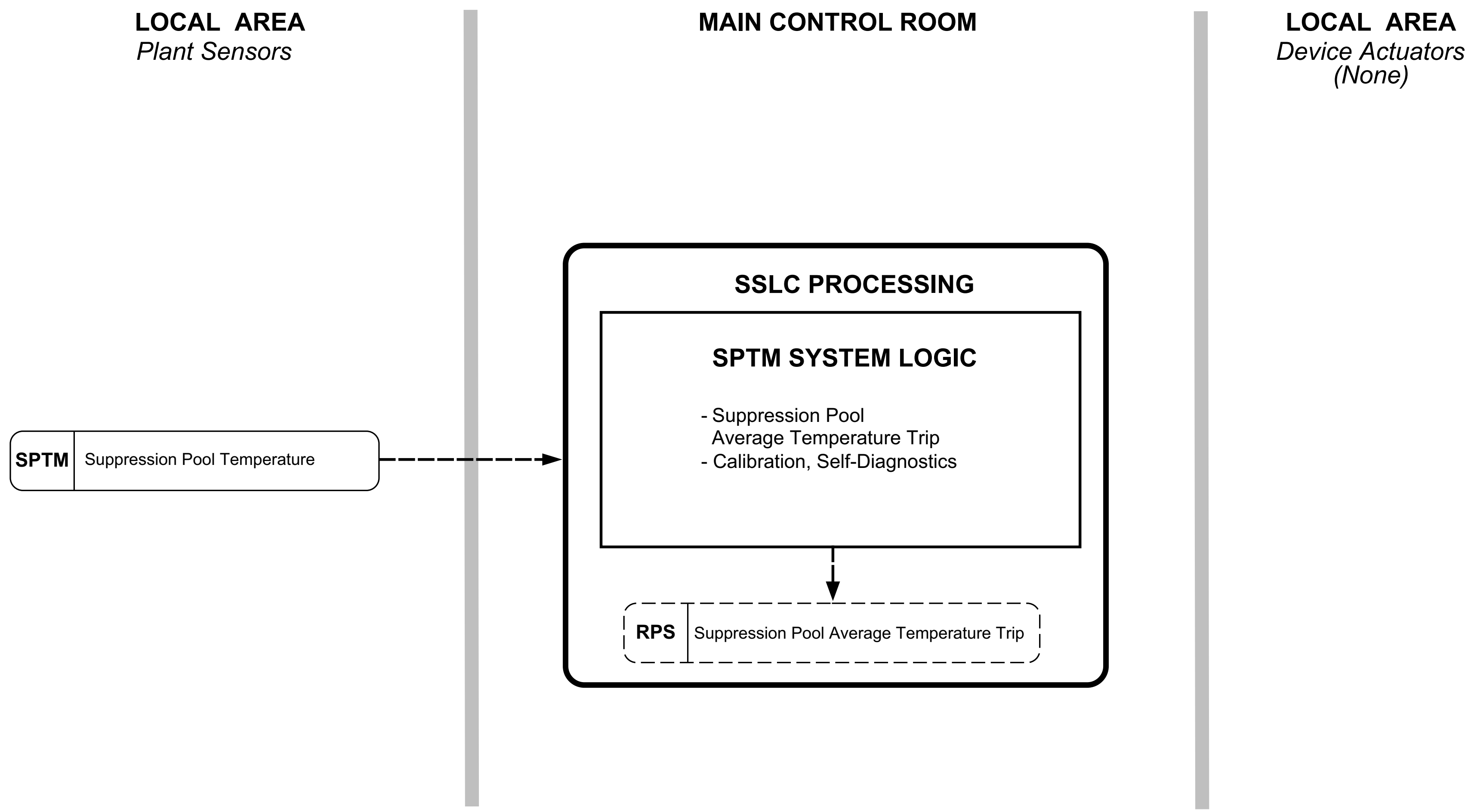
The SPTM System temperature sensors are located in the suppression pool; the SPTM System logic processors are located in the Control Building.

The SPTM System has parameter displays for suppression pool temperatures in the main control room (MCR).

The SPTM System provides Division I and II suppression pool temperature displays to the Remote Shutdown System (RSS).

Inspections, Tests, Analyses and Acceptance Criteria

Table 2.14.9 provides a definition of the inspections, tests, and/or analyses, together with associated acceptance criteria, which will be undertaken for the SPTM System.



NOTES:
1. Diagram represents one of four divisions.
2. See Section 3.4, Figure 3.4b for SSLC processing.

Figure 2.14.9 Suppression Pool Temperature Monitoring System Control Interface Diagram

Table 2.14.9 Suppression Pool Temperature Monitoring System

Inspections, Tests, Analyses and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
1. The equipment comprising the SPTM System is defined in Section 2.14.9.	1. Inspection of the as-built system will be conducted.	1. The as-built SPTM System conforms with the description in Section 2.14.9.
2. In each SPTM System division, the suppression pool average temperature is calculated by the divisional SSLC logic processors using output signals from the temperature sensors. In each SPTM System division, a high suppression pool average temperature trip signal is generated by the SSLC logic processor and sent to the RPS when the respective calculated divisional average temperature exceeds the high suppression pool average temperature setpoint.	2. Tests will be conducted in each division of the SPTM System using simulated temperature sensor signals.	2. In each SPTM System division, a high suppression pool average temperature trip signal is generated by the SSLC logic processor and sent to the RPS when the calculated divisional average temperature exceeds the high suppression pool average temperature setpoint.
3. Each of the four SPTM System divisional logics is powered from its respective divisional Class 1E power supply. In the SPTM System, independence is provided between Class 1E divisions, and between Class 1E divisions and non-Class 1E equipment.	3. a. Tests will be performed on the SPTM System by providing a test signal in only one Class 1E division at a time. b. Inspections of the as-built Class 1E divisions in the SPTM System will be performed.	3. a. A test signal exists only in the Class 1E division under test in the SPTM System. b. In the SPTM System, physical separation or electrical separation exists between Class 1E divisions. Physical separation or electrical isolation exists between these Class 1E divisions and non-Class 1E equipment.
4. MCR displays provided for the SPTM System are as defined in Section 2.14.9.	4. Inspections will be conducted on the MCR displays for the SPTM System.	4. Displays exist or can be retrieved in the MCR as defined in Section 2.14.9.
5. RSS displays provided for the SPTM System are as defined in Section 2.14.9.	5. Inspections will be conducted on the RSS displays for the SPTM System.	5. Displays exist on the RSS as defined in Section 2.14.9.