3I Equipment Qualification Environmental Design Criteria

3I.1 Introduction

This appendix specifies the minimum set of plant environmental conditions, which envelope the actual environments expected over the plant life, for which safety-related systems and equipment are to be designed and qualified. The plant conditions considered in defining the environmental conditions are normal operating including anticipated abnormal operating and test, and accident conditions including post accident operations. The accident condition considered is a hypothesized single event (not reasonably expected during the course of plant operation) that has the potential to cause severe environmental conditions for safety-related equipments.

The primary environmental parameters addressed are: pressure, temperature, relative humidity, radiation and chemical conditions. Safety-related systems and equipment are to be designed and qualified for the environmental conditions specified in this appendix. The parameters specified in this appendix do not include margins that may be required to satisfy applicable codes and standards for equipment qualification. The radiation data specified in this appendix is intended to provide a conservative basis for equipment qualification and is not intended to limit or justify personnel access.

Table 3I-1 is a cross reference of environmental data tables for normal and accident thermodynamic and radiation parameters and significant plant compartments and buildings.

3I.2 Plant Zones

3I.2.1 Inside Primary Containment

The primary containment vessel (PCV) is subdivided into three thermodynamic and four radiation zones to represent the enveloping levels of the environmental parameters as shown in Figure 3I-1. Accident conditions reduce the number of enveloping levels of the environmental parameters.

Equipment located in these zones is shown on the primary containment arrangement Figures 1.2-2 through 1.2-3c and 1.2-13a through 1.2-13k. Safety class equipment is identified on the system P&ID and IED drawings for inside and outside the primary containment as separated by the indicated containment penetrations.

3I.2.2 Outside Primary Containment

The area outside the PCV includes:

(1) Reactor Building (secondary containment)

(2) Reactor Building (clean zone outside secondary containment)

(3) Control Building

(4) Turbine Building

The R/B primary and secondary containment boundaries and major equipment zones in the secondary containment are shown on the arrangement Figures 1.2-4 through 1.2-12. The building arrangement figures in Chapter 21 are overlaid with fire areas separation and equipment (Subsection 9A.4) and radiation level areas and equipment (Subsection 12.3). The table of contents for Chapter 21 provides a means to cross reference the overlaid information using the figures with the same elevation as noted in the titles. Major equipment zones are shown on the Control Building (C/B) arrangements, Figures 1.2-14 through 1.2-22, and the Turbine Building (T/B) arrangement, Figures 1.2-24 through 1.2-31. The one zone in the T/B locates the equipment portions of the Reactor Protection System. The diesel generator fuel and oil supply systems (tanks and transfer pumps) are underground outside of the R/B and are not affected by accident conditions.

3I.3 Environmental Conditions Parameters

3I.3.1 Plant Normal Operating Conditions

3I.3.1.1 Pressure, Temperature and Relative Humidity

Tables 3I-2 through 3I-6 define the thermodynamic environment conditions (pressure, temperature, and relative humidity) for areas inside and outside primary containment vessel during plant normal operating conditions including anticipated test and abnormal occurrences. The areas outside the primary containment vessel include: (1) Reactor Building (secondary containment, and clean zones), (2) Control Building, and (3) Turbine Building. The drywell cooling system controls the thermal environment within the drywell, thoroughly mixes the inerting gas, and condenses steam from leaks of the primary coolant to support the Leak Detection and Isolation System.

3I.3.1.2 Radiation

Tables 3I-7 through 3I-11 define the radiation environment conditions for areas inside and outside the primary containment vessel during plant normal operating conditions including anticipated test and abnormal occurrences. The areas outside the primary containment vessel include: (1) Reactor Building (secondary containment and clean zones), (2) Control Building, and (3) Turbine Building.

The dose values denote the integrated (over 60 years.) radiation field to which equipment may be exposed.

The COL applicant should review and revise, as necessary, the radiation environment conditions given in Tables 3I-7 through 3I-11 based upon as designed and as procured equipment (see Subsection 3I.3.3.1 for COL license information).

3I.3.2 Plant Accident Conditions

3I.3.2.1 Pressure, Temperature, and Relative Humidity

Tables 3I-12 through 3I-15 define the thermodynamic environment conditions for areas inside and outside the primary containment vessel during plant accident conditions including post accident periods. The areas outside the primary containment vessel include: (1) Reactor Building (secondary containment, clean zones, and main steam tunnel), and (2) Control Building. These environmental conditions are due to various postulated pipe ruptures outside the primary containment vessel in systems connected to the reactor coolant (steam or water) pressure boundary. The environmental conditions in the secondary containment are dominated by breaks in the CUW and RCIC systems. A discussion of the analyses of these breaks is provided in Subsection 6.2.3.3.1.4.

3I.3.2.2 Radiation

Tables 3I-16 through 3I-19 define the radiation environment conditions inside and outside the primary containment vessel during plant accident conditions, including post-accident periods. The areas outside the primary containment vessel include: (1) Reactor Building (secondary containment), and (2) Control Building. The dose values denote the integrated dose for six months to which equipment may be exposed.

The COL applicant should review and revise, as necessary, the radiation environment conditions given in Tables 3I-16 through 3I-19 based upon as designed and as procured equipment (see Subsection 3I.3.3.1 for COL license information).

3I.3.2.3 Water Quality and Submergence

Reactor water quality characteristics for the design basis LOCAs inside primary containment are as follows:

(1) pH = 5.3 to 8.9

(2) Conductivity $\leq$ 2.0 μ S/cm

(3) $\leq$ 8 ppm O_2, $\leq$ 1 ppm CO_2

(4) $\leq$ 1 ppm dissolved salts available to deposit as dry salts upon evaporation from hot surfaces.

(5) $\leq$ 150 ppb undissolved solids

(6) $\leq$ 60 ppb dissolved H_2 arising from $\leq$ 4.0% volume of H_2O in containment atmosphere.

A 1600 micrometer particle (maximum diameter) sized containment spray with a flow density of (approximately) 1.0 liter/s per square meter may be initiated at ten minutes following a loss-of-coolant accident (LOCA) signal and continuing for up to 100 days, for areas inside primary containment vessel (drywell and wetwell). The plant design includes provisions for drainage to prevent submergence of essential equipment in the upper drywell during spray operation. Essential equipment located in the lower drywell will be qualified for submergence.

Water quality characteristics for normal operations are listed in Table 5.2-5 for reactor water and Subsection 5.2.3.2.2 (Reference 5.2-9) for ECCS water systems.

3I.3.3 COL License Information

3I.3.3.1 Radiation Environment Conditions

The COL applicant should review and revise, as necessary, the radiation environment conditions given in Tables 3I-7 through 3I-11 and Tables 3I-16 through 3I-19 based upon as designed and as procured equipment (Subsections 3I.3.1.2 and 3I.3.2.2).

Table 3I-1 Plant Environment Location and Condition Cross Reference of Table Numbers

[1]Location / [2]Condition	Primary Containment	Secondary Containment	Clean Zone Outside Secondary Containment	Control Building	Turbine Building
Normal					
(a) Thermodynamic	3I-2	3I-3	3I-4	3I-5	3I-6
(b) Radiation	3I-7	3I-8	3I-9	3I-10	3I-11
Accidents					
(a) Thermodynamic	3I-12	3I-13	3I-14	3I-15	
(b) Radiation	3I-16	3I-17	3I-18	3I-19	

1. Specific zones are located on arrangement drawings, and typical equipment is identified on P&ID and IED design drawings referenced by Figure numbers on each page.
2. Test and abnormal environments are included with normal conditions.

Table 3I-2 Thermodynamic Environment Conditions Inside Primary Containment Vessel Plant Normal Operating Conditions[1]

No.	Plant Zone/Typical Equipment	Pressure[2] kPaG	Temperature °C	Relative Humidity
a-1	Upper drywell and lower area of lower drywell [Figs. 1.2-3, 1.2-3a/5.1-3]	–3.43 13.73	Max 65 Min 10 Ave 57	Max 90 Min 10
a-2	Upper area of lower drywell [Figs. 1.2-3b/11.2-1]	–3.43 13.73	Max 57[4] Min 10	Max 90 Min 10
a-3	Wetwell area (suppression pool and nitrogen space) [Figs. 1.2-3c/6.2-39/7.6-11]	–3.43 13.73	Max 35[3] Min 10	Nor 100

1. The primary containment atmosphere is nitrogen
2. Primary containment atmosphere will be pressurized to 279.49 kPaG during integrated leak rate test, for less than 3 days. (Test)
3. The temperature of suppression pool water may reach 49°C during reactor isolation. (Abnormal)
4. CRD housing area

Table 3I-3 Thermodynamic Environment Conditions Inside Reactor Building (Secondary Containment) Plant Normal Operating Conditions

Plant Zone/Typical Equipment	Pressure[1] kPaG	Temperature °C	Relative Humidity
General floor area (not otherwise noted) /Similar Equipment	0	Max 40 Min 10	Max 90 Min 10
RHR pump rooms [Figs. 1.2-4/5.4-10]	0	Max 40[2] Min 10	Max 90 Min 10
RCIC pump room [Figs. 1.2-4/5.4-8]			
HPCF pump rooms [Figs. 1.2-4/6.3-7]			
FPC pump room [Figs. 1.2-9/9.1-1]			
SGTS rooms [Figs. 1.2-10/6.5-1]			
MS tunnel room [Figs. 1.2-8/5.1-3]	0	Max 60 Min 10	Max 90 Min 10
Divisional valve rooms [Figs. 1.2-8/ ECCS]	0	Max 60 Min 10	Max 90 Min 10
Instrument rack rooms [Figs. 1.2-6/ ECCS]	0	Max 40 Min 10	Max 90 Min 10
CUW heat exchanger rooms (Figs. 1.2-4 and 5.4-12)	0	Max 50 Min 10	Max 90 Min 10

1. The indicated (positive or negative) pressure will be maintained. Pressure difference will not be controlled.
2. During pump operation (test running, etc.) this temperature will be a Max. 66°C. The frequency of this maximum temperature occurrence is assumed 2 hours/month (test) or 90 days/year in RHR room (abnormal) and 2 hours/month in the other rooms.

Table 3I-4 Thermodynamic Environment Conditions Inside Reactor Building (Outside Secondary Containment) Plant Normal Operating Conditions

Plant Zone/Typical Equipment	Pressure[1] kPaG	Temperature °C	Relative Humidity
Clean zone outside secondary containment area (not otherwise noted) [Figs. 6.2-26/6.7-1]	0	Max 40 Min 10	Max 90 Min. 10
Diesel generator rooms [Figs. 1.2-8/9.5-6]	0	Max 60 Min 10	Max 90 Min 10
SGTS Monitor room [Figs. 1.2-8/6.5-1]	0	Max 40 Min 10	Max 90 Min 10

1. The indicated (positive or negative) pressure will be maintained. Pressure difference will not be controlled.

Table 3I-5 Thermodynamic Environment Conditions Inside Control Building Plant Normal Operating Conditions

Plant Zone/Typical Equipment	Pressure[1] kPaG	Temperature °C	Relative Humidity
Control Building rooms (unless otherwise noted) [Figs. 1.2-15/9.2-1a]	0	Max 40 Min 10	Max 90 Min 10
Main control and computer rooms [Figs. 1.2-15/18C7-1]	0	Max 30 Min 10	Max 60 Min 10
Control Building HVAC equipment rooms [Figs. 1.2-15/9.2-1a}	0	Max 40 Min 5	Max 90 Min 10

1. The indicated (positive or negative) pressure will be maintained. Pressure difference will not be controlled.

Table 3I-6 Thermodynamic Environment Conditions Inside Turbine Building Plant Normal Operating Conditions

Plant Zone/Typical Equipment	Pressure[1] kPaG	Temperature °C	Relative Humidity
Main steam stop valve area [Figs. 1.2-25/7.2-9	0	Max 60 Min 10	Max 90 Min 10

1. The indicated (positive or negative) pressure will be maintained. Pressure difference will not be controlled.

Table 3I-7 Radiation Environment Conditions Inside Primary Containment Vessel Plant Normal Operating Conditions

		Operating Dose Rate			Integrated Dose[1] and Neutron Fluence		
No.	Plant Zone/Typical Equipment	Gamma (Gy/h)[2]	Beta (Gy/h)[3]	Neutron/cm^2-s	Gamma(Gy)	Beta (Gy)	Neutron /cm^2
b-1	Upper drywell area [Figs. 1.2-3/ 5.1-3]	0.2	Neg	$6x10^4$	1E+5	Neg	$1x10^{14}$
b-2	Upper area of lower drywell [Figs. 1.2-3a/ 5.1-3]	0.2 (See Note 4)	Neg	$2x10^4$	1E+5	Neg	$4x10^{13}$
b-3	Lower area of lower drywell [Figs.1.2-3b/ 11.2-1]	0.15	Neg	$1x10^4$	8E+4	Neg	$2x10^{13}$
b-4	Wetwell area (suppression pool and airspace) [Figs. 1.2-3c/ 6.2-39, 7.6-11]	<0.01	Neg	$2x10^2$	5E+3	Neg	$4x10^{11}$

1. Integration time based upon 1.5 year cycles at 18 months operations at 95% availability over 60 years.
2. Operating dose rate at 100% rated power and 30 cm away from the radiation source.
3. Beta dose rates negligible (neg.), primarily due to Ar-41 and typically only in area between vessel and shield wall.
4. Gamma dose rate directly under vessel. Dose rate will increase to 90 Gy/h inside shield directly opposite core mid-plane.

Table 3I-8 Radiation Environment Conditions Inside Reactor Building (Secondary Containment) Plant Normal Operating Conditions

	Operating Dose Rate		Integrated Dose[1]	
Plant Zone/Typical Equipment	**Gamma (Gy/h)[2]**	**Beta (Gy/h)[3]**	**Gamma (Gy)**	**Beta (Gy)**
General floor area (not otherwise noted)/Similar equipment	5E-5	Neg	3E+1	Neg
RHR rooms [Figs. 1.2-4/5.4-10]	3E-4	Neg	2E+2	Neg
RCIC room [Figs. 1.2-4/5.4-8]	5E-5/2E-2 (See Note 4)	Neg	3E+1	Neg
HPCF rooms [Figs. 1.2-4/6.3-7]	5E-5	Neg	3E+1	Neg
SGTS rooms [Figs. 1.2-10/6.5-1]	5E-5	Neg	3E+1	Neg
CUW room				
Heat exchanger [Fig. 1.2-4]	2E-1	Neg	1E+5	Neg
Pump room [Fig. 1.2-4]	6E-3	Neg	3E+3	Neg
Filter demin/tank room [Fig. 1.2-6]	2	Neg	1E+6	Neg
MS tunnel [Figs. 1.2-8/5.1-3]	4E-2	Neg	2E+4	Neg
Divisional valve rooms [Figs. 1.2-8/ECCS]	5E-4	Neg	3E+2	Neg
Instrument rack rooms [Figs. 1.2-6/ECCS]	<1E-5	Neg	5E+0	Neg

1. Integration time based upon 1.5 year cycles at 18 months operations at 95% availability over 60 years.
2. Operating dose rate at 100% rated power and 30 cm away from the radiation source.
3. Beta dose rates negligible (neg.), generally less than 0.001 m Gy/h.
4. During system check out dose rate will increase to larger number.

Table 3I-9 Radiation Environment Conditions Inside Reactor Building (Outside Secondary Containment) Plant Normal Operating Conditions

	Operating Dose Rate		Integrated Dose[1]	
Plant Zone/Typical Equipment	Gamma[2] (Gy/h)	Beta [3](Gy/h)	Gamma (Gy)	Beta (Gy)
Clean zone outside secondary containment area (not otherwise noted) [Figs 6.2-26/ 6.7-1]	6E-6	Neg	3	Neg
Monitor room [Figs. 1.2-8/ 6.5-1]	5E-5	Neg	30	Neg

1. Integration time based upon 1.5 year cycles at 18 months operations at 95% availability over 60 years.
2. Operating dose rate at 100% rated power and 30 cm away from the radiation source.
3. Beta dose rates negligible (neg.), generally less than 0.001 m Gy/h.

Table 3I-10 Radiation Environment Conditions Inside Control Building Plant Normal Operating Conditions

	Operating Dose Rate		Integrated Dose[1]	
Plant Zone/Typical Equipment	Gamma[2] (Gy/h)	Beta[3](Gy/h)	Gamma (Gy)	Beta (Gy)
Main control room, battery and HVAC rooms [Fig 1.2-15]	6E-6	Neg	3	Neg
RCW pump and heat exchanger room [Fig 1.2-15]	5E-5	Neg	27	Neg

1. Integration time based upon 60 years.
2. Operating dose rate at 100% rated power and 30 cm away from the radiation source.
3. Beta dose rates negligible (neg.), generally less than 0.001 m Gy/h.

Table 3I-11 Radiation Environment Conditions Inside Turbine Building Plant Normal Operating Conditions

Plant Zone/Typical Equipment	Operating Dose Rate Gamma[2] (Gy/h)	Operating Dose Rate Beta[3](Gy/h)	Integrated Dose[1] Gamma (Gy)	Integrated Dose[1] Beta (Gy)
Main steam stop valve area [Figs 1.2-25/7.2-9]	0.1	Neg	5E+4	Neg

1. Integration time based upon 1.5 year cycles at 18 months operations at 95% availability over 60 years.
2. Operating dose rate at 100% rated power and 30 cm away from the radiation source.
3. Beta dose rates negligible (neg.), generally less than 0.001 m Gy/h.

Table 3I-12 Thermodynamic Environment Conditions Inside Primary Containment Vessel Plant Accident Conditions

No.	Plant Zone/Typical Equipment		Time[1] 3(h)	6(h)	1 (day)	100 (day)
a-1 & a-2	Drywell area [Figs. 1.2-3, 1.2-3a, 1.2-3b/5.1-3, 11.2-1]	Temperature(°C)	171	160	121	93
			–13.73	–13.73	0	0
		Pressure (kPaG)	~309.89	~309.89	~172.60	~138.27
		Humidity(%)	Steam	Steam	100	100
a-3	Wetwell area [Figs. 1.2-3c/6.2-39, 7.6-11]	Temperature(°C)	122	122	122	100
			–13.73	–13.73	0	0
		Pressure (kPaG)	~309.89	~309.89	~172.60	~138.27
		Humidity(%)	100	100	100	100

1. Time" defines the period after LOCA. For example, "3(h)" means 3 hours after the occurrence of LOCA, and "1(day)" means time period between 6 hours after LOCA and 24 hours after LOCA.

Table 3I-13 Thermodynamic Environment Conditions Inside Reactor Building (Secondary Containment) Plant Accident Conditions[1]

Plant Zone/Typical Equipment		Time[2]			
		1 (h)	6 (h)	12 (h)	100 (day)
Control rod drive hydraulic system (scram etc. of hydraulic control unit) [Figs. 1.2-4/4.6-8]	Temperature (°C) Pressure (kPaG) Humidity (%)	120 102.97 Steam	120 102.97[3] Steam	66 3.43 100	66 0 90 Max
Control rod hydraulic pumps (scram system of hydraulic control unit) [Figs. 1.2-4/4.6-8]	Temperature (°C) Pressure (kPaG) Humidity (%)	120 102.97[3] Steam	120 102.97[3] Steam	66 3.43 100	66 0 90 Max
RCIC (valves except isolation valves, assemblies, cable, turbine, pipe spaces, corridor) [Figs. 1.2-4/5.4-8]	Temperature (°C) Pressure (kPaG) Humidity (%)	142 102.97[3] Steam	142 102.97[3] Steam	66 3.43 100	66 0 90 Max
RCIC turbine electric control system[3,6] [Figs. 1.2-5/5.4-8]	Temperature (°C) Pressure (kPaG) Humidity (%)	142 102.97[3] Steam	142 102.97[3] Steam	66 3.43 100	66 0 90 Max
RHR (LPFL, cooling system at S/D, containment cooling, service water system) valve, pump (motor, seal cooler) instrument control electric equipment (including cable and sources of electricity) [Figs. 1.2-4/5.4-10]	Temperature (°C) Pressure (kPaG) Humidity (%)	120 102.97[3] Steam	120 102.97[3] Steam	66 3.43 100	66 0 90 Max
HPCF pump, motor (seal cooler) instrument, control electric equipment (including cable and sources of electricity) [Figs. 1.2-4/6.3-7]	Temperature (°C) Pressure (kPaG) Humidity (%)	120 102.97[3] Steam	120 102.97[3] Steam	66 3.43 100	66 0 90 Max
Neutron monitor system[6], (cable of IRM, preamplifier, drive relay panel, cable of LPRM) [Figs. 1.2-3b/7.6-1]	Temperature (°C) Pressure (kPaG) Humidity (%)	120 102.97[3] Steam	120 102.97[3] Steam	66 3.43 100	66 0 90Max
Leak detection installation (steam water)[4,6] (instrument, sources of electricity) instrument and sources of electricity for surveillance after accident [Figs. 1.2-6/5.2-8]	Temperature (°C) Pressure (kPaG) Humidity (%)	120 102.97[3] Steam	120 102.97[3] Steam	66 3.43 100	66 0 90 Max

Table 3I-13 Thermodynamic Environment Conditions Inside Reactor Building (Secondary Containment) Plant Accident Conditions[1] (Continued)

Plant Zone/Typical Equipment		Time[2]			
		1 (h)	6 (h)	12 (h)	100 (day)
FPC (cooling system, SPCU [makeup water system] valve, pump motor, heat exchanger, instrument, control electric equipment) cable sources of electricity, pipe spaces [Figs. 1.2-9/9.1-1]	Temperature (°C) Pressure (kPaG) Humidity (%)	120 102.97[3] Steam	120 102.97[3] Steam	66 3.43 100	66 0 90 Max
CUW (Pump, valve, non-regen. and regen. heat exchangers, pipe spaces, filter demin filter demin. valve rooms) corridor [Figs. 1.2-4/5.4-12]	Temperature (°C) Pressure (kPaG) Humidity (%)	120 102.97[3] Steam	120 102.97[3] Steam	66 3.43 100	66 0 90 Max
Mainsteam Tunnel (Outside secondary containment)					
MS isolation valve[5] MS drain isolation valve Nitrogen line isolation valve[5,6] Process water line isolation valve[5,6] [Figs 1.2-2, 1.2-3, 1.2-3a, 5.1-3]	Temperature (°C) Pressure (kPaG) Humidity (5)	171 102.97[3] Steam	120 102.97[3] Steam	66 3.43 100	66 0 90 Max
Feedwater isolation valve [5] [Figs 1.2-2, 1.2-3, 1.2-3a/5.1-3]	Temperature (°C) Pressure (kPaG) Humidity (%)	171 102.97[3] Steam	120 102.97[3] Steam	66 3.43 100	66 0 90 Max
RCIC, check valve (inside MS tunnel) [Figs. 1.2-2, 1.2-3, 1.2-3a/5.4-8]	Temperature (°C) Pressure (kPaG) Humidity (%)	171 102.97[3] Steam	120 102.97[3] Steam	66 3.43 100	66 0 90 Max

1. Systems or components located in the Reactor Building outside the secondary containment or in other buildings and required to support the equipment listed in this table during accident condition will be qualified to the conditions specified in the equipment qualification design criteria table for the respective area or building.
2. Time means the time from the occurrence of LOCA.
3. The 102.97 kPaG equipment qualification pressure specified is the structural design basis for the respective rooms (see Subsection 6.2.3.3) in which this equipment is located and not the saturation pressure associated with the equipment qualification temperature.
4. Safety-related motor control centers, power centers, metal clad switchgear, and remote digital logic controllers in the reactor building are located outside the secondary containment in the emergency electrical equipment rooms.
5. Valve assemblies and cables required for valve operation are included.
6. 100°C may be applied in the case that adequate separation in the arrangement is ensured and there is no possibility of exposure to steam environment.

Table 3I-14 Thermodynamic Environment Conditions Inside Reactor Building (Outside Secondary Containment) Plant Accident Conditions

Plant Zone/Typical Equipment	Pressure[1] kPaG	Temperature °C	Relative Humidity
Clean zone outside secondary containment (not otherwise noted) [Figs. 6.2-26/ 6.7-1]	0	Max 50 Min 10	Max 90 Min 10
Diesel generator room [Figs. 1.2-8/9.5-6]	0	Max 60 Min 10	Max 90 Min 10
Monitor room [Figs. 1.2-8/6.5-1]	0	Max 50 Min 10	Max 90 Min 10

1. The indicated (positive or negative) pressure will be maintained. Pressure difference will not be controlled.

Table 3I-15 Thermodynamic Environment Conditions Inside Control Building Plant Accident Conditions

Plant Zone/Typical Equipment	Pressure[1] kPaG	Temperature °C	Relative Humidity
Control Building (not otherwise noted) [Figs. 1.2-15/9.2-1a]	0	Max 50	Max 90 Min 10
Main control, computer, and battery rooms [Figs. 1.2-15/18C-1]	0	Max 30 Min 21	Max 60
Control Building HVAC equipment rooms Figs. 1.2-15/9.2-1a]	0	Max 50	Max 90 Min 10

1. The indicated (positive or negative) pressure will be maintained. Pressure difference will not be controlled.

Table 3I-16 Radiation Environment Conditions Inside Primary Containment Design Basis Accident Conditions

Plant Zone/Typical Equipment	Accident	LOCA Dose Rate		Integrated Dose[1]	
		Gamma (Gy/h)	Beta (Gy/h)	Gamma (Gy)	Beta (Gy)
Drywell [Figs. 1.2-3, 1.2-3a/5.1-3]	15.6.5	2E+5	2E+6	2E+6	2E+7
Wetwell [Figs. 1.2-3c/6.2-39, 7.6-11]	15.6.5	3E+5	4E+6	3E+6	5E+7

1. Integrated dose is summed over a six month period for Accident Case 15.6.5.

Table 3I-17 Radiation Environment Conditions Inside Reactor Building Design Basis Accident (Secondary Containment)

Plant Zone/Typical Equipment	Accident	LOCA Dose Rate		Integrated Dose[1]	
		Gamma (Gy/h)	Beta (Gy/h)	Gamma (Gy)	Beta (Gy)
General floor area [Fig. 1.2-4]	15.6.5	8E-2	2E+0	2E+1	3E+2
RHR room [Figs. 1.2-4/5.4-10]	15.6.5	2E+3	1E+5	6E+5	8E+7
RCIC room [Figs. 1.2-4/5.4-8]	15.6.2	7E-2	1E+0	9E-1	3E+1
HPCF room [Figs. 1.2-4/6.3-7]	15.6.5	1E+3	6E+4	4E+5	5E+7
SGTS room [Figs. 1.2-10/6.5-1]	15.6.5	2E+4	2E+0	3E+7	3E+2
MS tunnel [Figs. 1.2-8/5.1-3]	15.6.4	9E-1	7E+0	4E+1	9E+0
Divisional valve room [Figs 1.2-5/ECCS]	15.6.5	2E+3	2E+5	8E+5	2E+8
Instrument rack room [Figs. 1.2-6/ECCS]	15.6.5	3E-2	2E+0	5E+0	5E+2

1. Integrated dose is summed over a six month period for Accident Case 15.6.5, 6 hours for 15.6.2, and 2 hours for 15.6.4.

Table 3I-18 Radiation Environment Conditions Inside Reactor Building Design Basis Accident Conditions (Outside Secondary Containment)

		LOCA Dose Rate		Integrated Dose[1]	
Plant Zone/Typical Equipment	Accident	Gamma (Gy/h)	Beta (Gy/h)	Gamma (Gy)	Beta (Gy)
Clean zone outside secondary containment area (not otherwise noted) [Figs. 6.2-26/6.7-1]	15.6.5	8E-5	2E-3	2E-2	3E-1
Monitor room [Figs. 1.2-8/6.5-1]	15.6.5	8E-5	2E-3	2E-2	3E-1

1. Integrated dose is summed over a six month period for Accident Case 15.6.5.

Table 3I-19 Radiation Environment Conditions Inside Control Building Design Basis Accident Conditions

		LOCA Dose Rate		Integrated Dose[1]	
Plant Zone/Typical Equipment	Accident	Gamma (Gy/h)	Beta (Gy/h)	Gamma (Gy)	Beta (Gy)
Main Control Room and Process computer room[4]	15.6.5	1.0E-3	1.0E-2	8.0E-2	2.0E+0
HVAC Rooms, Level 17150mm[4]	15.6.5	5.0E-3 to 1.0E-1[2]	5.0E-2	3.0E+1 to 1.0E+2[2]	3.0E+2
All other areas[4]	15.6.5	5.0E-3 to 5.0E-2[3]	5.0E-2	3.0E+1 to 3.0E+2[3]	3.0E+2

1. Integration dose is summed over a six month period for Accident Case 15.6.5.
2. Highest dose rates closer to CR-HVAC Filter Units.
3. Highest dose rates closer to the RBCW Units and HVAC intake units.
4. Refer to Figure 1.2-15.

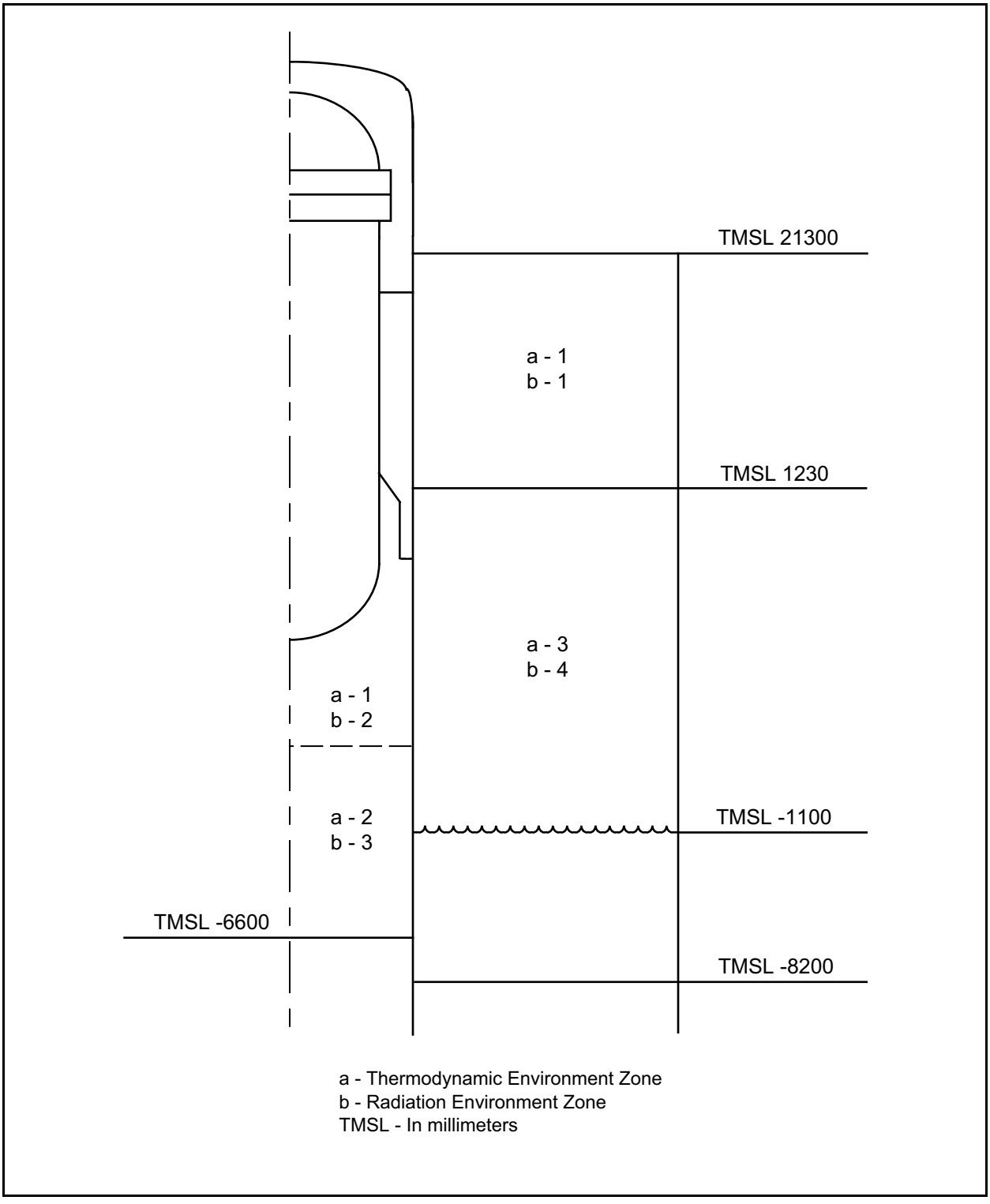

Figure 3I-1 Zones in Primary Containment Vessel