3.2 Classification of Structures, Components, and Systems

ABWR Standard Plant structures, systems and components are categorized as nuclear safety-related or non-nuclear safety-related (see Table 3.2-1). The safety-related structures, systems and components, perform nuclear safety-related functions as defined here, and are classified in accordance with Subsection 3.2.3. In addition, specific design requirements are identified for the safety-related equipment commensurate with their safety classification (see Table 3.2-2 and 3.2-3).

A safety-related function is a direct or support function that is necessary to assure:

(1) The integrity of the reactor coolant pressure boundary.

(2) The capability to shut down the reactor and maintain it in a safe condition.

(3) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the guidelines exposures of 10CFR100.

3.2.1 Seismic Classification

ABWR Standard Plant safety-related structures, systems, and components, including their foundations and supports, that are required to perform nuclear safety-related functions during or after a safe shutdown earthquake (SSE) are designated as Seismic Category I.

All safety-related ABWR Standard Plant structures, components, and systems are classified as Seismic Category I, except those (e.g., pipe whip restraints), as noted on Table 3.2-1, which need not function during but shall remain functional after the event of an SSE. Also some non-safety-related structures, systems, and components are classified as Seismic Category I as noted on Table 3.2-1.

The Seismic Category I structures, systems and components are designed to withstand, without loss of function, the appropriate seismic loads (as discussed in Section 3.7) in combination with other appropriate loads.

The seismic classifications indicated in Table 3.2-1 meet the requirements of Regulatory Guide 1.29 except as otherwise noted in the table.

3.2.2 Quality Group Classifications

Quality group classifications as defined in NRC Regulatory Guide 1.26 are shown in Table 3.2-1 for all components under the heading, “Quality Group Classification”. Although not within the scope of Regulatory Guide 1.26 definitions, component supports, core support structures and primary containment boundary that are within the scope of ASME Code Section III, are assigned per Tables 3.2-2 and 3.2-3, a quality group classification as identified in Table 3.2-1.

Quality group classifications and design and fabrication requirements defined in Regulatory Guide 1.26 are indicated in Tables 3.2-1 and 3.2-3, respectively. Figure 6.2-38 depicts quality group classifications of the components in major systems.

3.2.3 Safety Classifications

Safety-related structures, systems, and components of the ABWR Standard Plant are classified for design requirements as Safety Class 1, Safety Class 2, or Safety Class 3 in accordance with their nuclear safety importance. These safety classifications are identified on Table 3.2-1 for principal structures, systems, and components. Components within a system are assigned different safety classes depending upon their differing safety importance; a system may thus have components in more than one safety class. Safety classification for supports within the scope of ASME Code Section III, depends upon that of the supported component.

The definitions of the safety classes in this section are based on Section 3.3 of ANS Standard 52.1, and examples of their broad application are given. Because of specific design considerations, these general definitions are subject to interpretation and exceptions. Table 3.2-1 identifies component classifications on a component-by-component basis.

Minimum design requirements for various safety-related classes are delineated in Tables 3.2-2 and 3.2-3. Where possible, reference is made to accepted industry codes and standards which define design requirements commensurate with the safety-related function(s) to be performed. In cases where industry codes and standards have no specific design requirements, the sections that summarize the requirements to be implemented in the design are indicated.

3.2.3.1 Safety Class 1

Safety Class 1 (SC-1) applies to all components of the reactor coolant pressure boundary (as defined in 10CFR50.2), and their supports, whose failure could cause a loss of reactor coolant at a rate in excess of the normal makeup system, and which are within the scope of the ASME Code Section III.

Safety Class 1 components are identified in Table 3.2-1.

3.2.3.2 Safety Class 2

Safety Class 2 (SC-2) applies to pressure-retaining portions, and their supports, of primary containment and to other mechanical equipment, requirements for which are within the scope of the ASME Code Section III, that are not included in SC-1 and are designed and relied upon to accomplish the following nuclear safety-related functions:

(1) Provide primary containment radioactive material holdup or isolation

(2) Provide emergency heat removal for the primary containment atmosphere to an intermediate heat sink, or emergency removal of radioactive material from the primary containment atmosphere

(3) Introduce emergency negative reactivity to make the reactor subcritical

(4) Ensure emergency core cooling where the equipment provides coolant directly to the core (e.g., emergency core cooling systems)

(5) Provide or maintain sufficient reactor coolant inventory for emergency core cooling (e.g., suppression pool)

Safety Class 2 includes the pressure-retaining portions of the following:

(1) Those components of the control rod system which are necessary for emergency negative reactivity insertion

(2) Emergency core cooling systems

(3) Primary containment vessel

(4) Post-accident containment heat removal systems

(5) Pipes having a nominal pipe size of 25A or smaller that are part of the reactor coolant pressure boundary

Safety Class 2 structures, systems, and components are identified in Table 3.2-1.

3.2.3.3 Safety Class 3

Safety Class 3, (SC-3) applies to those structures, systems, and components, not included in SC-1 or -2, that are designed and relied upon to accomplish the following nuclear safety-related functions:

(1) Provide for functions defined in SC-1 or -2 by means of equipment, or portions thereof, that is not within the scope of the ASME Code Section III.

(2) Provide secondary containment radioactive material holdup, isolation, or heat removal.

(3) Except for primary containment boundary extension functions, ensure hydrogen concentration control of the primary containment atmosphere to acceptable limits.

(4) Remove radioactive material from the atmosphere of confined spaces outside primary containment (e.g., control room or secondary containment) containing SC-1, -2, or -3 equipment.

(5) Maintain geometry within the reactor to ensure core reactivity control or core cooling capability.

(6) Structurally bear the load or protect SC-1, -2, or -3 equipment in accordance with the requirements.

(7) Provide radiation shielding for the control room or offsite personnel.

(8) Provide inventory of cooling water and shielding for stored spent fuel.

(9) Ensure nuclear safety-related functions provided by SC-1, -2, or -3 equipment (e.g., provide heat removal for SC-1, -2, or -3 heat exchangers, provide lubrication of SC-2 or -3 pumps, provide fuel oil to the emergency diesel engine).

(10) Provide actuation or motive power for SC-1, -2, or -3 equipment.

(11) Provide information or controls to ensure capability for manual or automatic actuation of nuclear safety-related functions required of SC-1, -2, or -3 equipment.

(12) Supply or process signals or supply power required for SC-1, -2, or -3 equipment to perform their required nuclear safety-related functions.

(13) Provide a manual or automatic interlock function to ensure or maintain proper performance of nuclear safety-related functions required of SC-1, -2, or -3 equipment.

(14) Provide acceptable environments for SC-1, -2, or -3 equipment and operating personnel.

(15) Monitor plant variables that are identified requiring Category 1 electrical instrumentation in Table 1 of Regulatory Guide 1.97.

Safety Class 3 includes the following:

(1) Reactor trip and isolation system

(2) Electrical and instrumentation auxiliaries necessary for operation of the safety-related systems and components

(3) Systems or components which restrict the rate of insertion of positive reactivity

(4) Secondary containment

(5) Service water systems required for the purpose of:

  (a) Removal of heat from SC-1, SC-2 or SC-3 equipment

  (b) Emergency core cooling

  (c) Post-accident heat removal from the suppression pool

(d) Providing cooling water needs for the functioning of emergency systems

(6) Initiating systems required to accomplish emergency core cooling, containment isolation and other safety-related functions

(7) Spent fuel pool

(8) Fuel supply for the onsite emergency electrical system

(9) Emergency equipment area cooling

(10) Compressed gas or hydraulic systems required to provide control or operation of safety-related systems

Safety Class 3 structures, systems and components of the ABWR design are identified in Table 3.2-1.

3.2.4 Correlation of Safety Classes with Industry Codes

The design of plant safety-related equipment is commensurate with the safety importance of the equipment. Hence, the various safety classes have a gradation of design requirements. The correlation of safety classes with other design requirements is summarized in Tables 3.2-2 and 3.2-3.

3.2.5 Non-Safety-Related Structures, Systems, and Components

3.2.5.1 Definition of Non-Nuclear Safety (NNS) Category

Structures, systems, and components that are not SC-1, -2, or -3, are non-nuclear safety-related (NNS) and are identified with “N” in the Safety Class column of Table 3.2-1.

Some NNS structures, systems and components have one or more selected but limited, requirements that are specified to ensure acceptable performance of specific NNS functions. The selected requirements are established on a case-by-case basis commensurate with the specific NNS function performed (see Table 3.2-2). The functions performed by this subset of NNS structures, systems, and components are:

(1) Process, extract, encase, or store radioactive waste.

(2) Ensure required cooling for the stored fuel (e.g., spent fuel pool cooling system).

(3) Provide cleanup of radioactive material from the reactor coolant system or the fuel storage cooling system.

(4) Monitor radioactive effluents to ensure that release rates or total releases are within limits established for normal operations and transient events.

(5) Resist failure that could prevent any SC-1, -2, or -3 equipment from performing its nuclear safety-related function (see Table 3.2-2).

(6) Structurally bear the load or protect NNS equipment providing any of the functions listed in this Subsection 3.2.5.1.

(7) Provide permanent shielding for protection of SC-1, -2, or -3 equipment or of onsite personnel.

(8) Provide operational, maintenance or post-accident recovery functions involving radioactive materials without undue risk to the health and safety of the public.

(9) Following a control room evacuation, provide an acceptable environment for equipment required to achieve or maintain a safe shutdown condition.

(10) Handle spent fuel, the failure of which could result in fuel damage such that significant quantities of radioactive material could be released from the fuel.

(11) Ensure reactivity control of stored fuel.

(12) Protect safety-related equipment necessary to attain or maintain safe shutdown following a fire.

(13) Monitor variables to:

(a) Verify that plant operating conditions are within technical specification limits (e.g., emergency core cooling water storage tank level, safety-related cooling water temperature).

(b) Indicate the status of protection system bypasses that are not automatically removed as a part of the protection system operation.

(c) Indicate status of safety-related equipment.

(d) Aid in determining the cause or consequences of events for post-accident investigation.

3.2.5.2 Design Requirements for NNS Structures, Systems and Components

The design requirements for NNS equipment are specified by the designer with appropriate consideration of the intended service of the equipment and expected plant and environmental conditions under which it will operate.

Where appropriate, the Seismic Category I, ASME Code Section III, or IEEE Class 1E requirements are specified for NNS equipment in Table 3.2-1. Generally, design requirements are based on applicable industry codes and standards. Where these are not available, accepted industry or engineering practice is followed.

3.2.5.3 Main Steam Line Leakage Path

The ABWR main steam leakage path utilizes the large volume and surface area in the main steam piping, bypass line, and condenser to hold up and plate out the release of fission products following postulated core damage. In this manner, the main steam piping, bypass line, and condenser are used to mitigate the consequences of an accident and are required to remain functional during and after an SSE.

The main steamlines and all branch lines 65A nominal pipe size in diameter and larger, up to and including the first valve (including lines and valve supports) are designed by the use of an appropriate dynamic seismic system analysis to withstand the safe shutdown earthquake (SSE) design loads in combination with other appropriate loads, within the limits specified. The mathematical model for the dynamic seismic analyses of the main steamlines and branch line piping includes the turbine stop valves and piping to the turbine casing and the turbine bypass valves and piping to the condenser. The dynamic input loads for design of the main steamlines in the reactor building and the control building are derived from a time history model analysis or an equivalent method as described in Section 3.7.

Dynamic input loads for the design of the main steamlines in the turbine building are derived as follows: For locations on the basemat, the ARS shall be based upon Regulatory Guide 1.60 Response spectra normalized to 0.6g (i.e., 2 times ARS of the site envelope). For locations at the operating deck level (either operating deck or turbine deck), the ARS used shall be the same as used at the reactor building end of the main steam tunnel. Seismic Anchor motions shall be similarly calculated.

Figure 3.2-1 depicts the classification requirements for the main steamline leakage path as described below.

(1) Main steam piping from the reactor pressure vessel up to and including the outboard isolation valve is classified as QG A (SC-1) and Seismic Category I.

(2) Main steam piping beyond the outboard isolation valve up to the seismic interface restraint and connecting branch lines up to the first normally closed valve is classified as QG B (SC-2) and Seismic Category I.

(3) [*The main steamline from the seismic interface restraint up to but not including the turbine stop valve (including branch lines to the first normally closed valve) is classified as QG B and inspected in accordance with applicable portions of the American Society of Mechanical Engineers (ASME) Section XI. This portion of the steamline is classified as non-Seismic Category I and analyzed using a dynamic seismic analysis method to demonstrate its structural integrity under SSE loading conditions. However, all pertinent QA requirements of Appendix B, 10CFR Part 50*

are applicable to ensure that the quality of the piping material is commensurate with its importance to safety during normal operational, transient, and accident conditions.]*

The seismic interface restraint provides a structural barrier between the Seismic Category I portion of the main steamline in the reactor building and the non-Seismic Category I portions of the main steamline in the turbine building. The seismic interface restraint is located inside the Seismic Category I building. The classification of the main steamline in the turbine building as non-Seismic Category I is consistent with the classification of the turbine building.

At the interface between Seismic and non-Seismic Category I main steam piping system, the Seismic Category I dynamic analyses will be extended to either the first anchor point in the non-seismic system or to a sufficient distance in the non-seismic system so as to not degrade the validity of the Seismic Category I analysis.

(4) [*To ensure the integrity of the remainder of main steamline leakage path, the following requirements are met:*

(a) *The main steam piping between the turbine stop valve and the turbine inlet, the turbine bypass line from the bypass valve to the condenser, and the main steam drain line from the first valve to the condenser are not required to be classified as safety-related nor as Seismic Category I, but are analyzed using a dynamic seismic analysis to demonstrate their structural integrity under SSE loading conditions.*

(b) *The condenser anchorage is seismically analyzed to demonstrate that it is capable of sustaining the SSE loading conditions without failure.*]†

[*A plant-specific walkdown of non-seismically designed systems, structures, and components overhead, adjacent to, and attached to the main steamline leakage path (i.e., the main steam piping, the bypass line, and the main condenser) shall be conducted to confirm by inspection that the as-built main steam piping, bypass lines to the condenser, and the main condenser are not compromised by non-seismically designed systems, structures and components.*]*

3.2.6 Quality Assurance

Structures, systems, and components that perform nuclear safety-related functions conform to the quality assurance requirement of 10CFR50 Appendix B as shown in Table 3.2-1 under the heading, "Quality Assurance Requirements," and in Table 3.2-2. Some NNS structures, systems, and components meet the same requirements as noted on Table 3.2-1. The Quality Assurance Program is described in Chapter 17.

* See Subsection 3.9.1.7.

† See Subsection 3.9.1.7.

Table 3.2-1 Classification Summary

The classification information is presented by System* in the following order:

Item No.	MPL Number†	Title
B Nuclear Boiler Supply System		
B1	B11	Reactor Pressure Vessel System‡
B2	B21	Nuclear Boiler System‡
B3	B31	Reactor Recirculation System
C Control and Instrument Systems		
C1	C11	Rod Control and Information System
C2	C12	Control Rod Drive System
C3	C31	Feedwater Control System
C4	C41	Standby Liquid Control System
C5	C51	Neutron Monitoring System‡
C6	C61	Remote Shutdown System
C7	C71	Reactor Trip and Isolation System‡
C8	C81	Recirculation Flow Control System
C9	C82	Automatic Power Regulator System
C10	C85	Steam Bypass and Pressure Control System
C11	C91	Plant Information and Control System
C12	C93	Refueling Platform Control Computer
C13	C94	CRD Removal Machine Control Computer
C14	C74	ESF Logic and Control System
D Radiation Monitoring Systems		
D1	D11	Process Radiation Monitoring System‡
D2	D21	Area Radiation Monitoring System
D3	D23	Containment Atmospheric Monitoring System‡

* Systems that are in and out of the ABWR Standard Plant scope are included in this table. See Subsection 1.1.2 for the identification of the site-specific elements outside the scope of the ABWR Standard Plant.

† Master Parts List Number designated for the system.

‡ These systems or subsystems thereof, have a primary function that is safety-related. As shown in the balance of this Table, some of these systems contain non-safety-related components and, conversely, some systems whose primary functions are non-safety-related contain components that have been designated safety-related.

Table 3.2-1 Classification Summary (Continued)

The classification information is presented by System* in the following order:

Item No.	MPL Number†	Title
E Core Cooling Systems		
E1	E11	Residual Heat Removal System‡
E2	E22	High Pressure Core Flooder System‡
E3	E31	Leak Detection and Isolation System‡
E4	E51	Reactor Core Isolation Cooling System‡
F Reactor Servicing Equipment		
F1	F11	Fuel Servicing Equipment
F2	F12	Miscellaneous Servicing Equipment
F3	F13	RPV Servicing Equipment
F4	F14	RPV Internal Servicing Equipment
F5	F15	Refueling Equipment
F6	F16	Fuel Storage Facility
F7	F17	Under-Vessel Servicing Equipment
F8	F21	CRD Maintenance Facility
F9	F22	Internal Pump Maintenance Facility
F10	F32	Fuel Cask Cleaning Facility
F11	F41	Plant Start-up Test Facility
F12	F51	Inservice Inspection Equipment
G Reactor Auxiliary Systems		
G1	G31	Reactor Water Cleanup System
G2	G41	Fuel Pool Cooling and Cleanup System
G3	G51	Suppression Pool Cleanup System

* Systems that are in and out of the ABWR Standard Plant scope are included in this table. See Subsection 1.1.2 for the identification of the site-specific elements outside the scope of the ABWR Standard Plant.

† Master Parts List Number designated for the system.

‡ These systems or subsystems thereof, have a primary function that is safety-related. As shown in the balance of this Table, some of these systems contain non-safety-related components and, conversely, some systems whose primary functions are non-safety-related contain components that have been designated safety-related.

Table 3.2-1 Classification Summary (Continued)

The classification information is presented by System* in the following order:		
Item No.	**MPL Number†**	**Title**
H Control Panels		
H1	H11	Main Control Room Panels‡
H2	H12	Control Room Back Panels‡
H3	H14	Radioactive Waste Control Panels
H4	H21	Local Control Panels‡
H5	H22	Instrument Racks
H7	H25	Local Control Boxes
J Nuclear Fuel		
J1	J11	Fuel Assembly
J2	J12	Fuel Channel
K Radioactive Waste System		
K1	K17	Radwaste System
N Power Cycle Systems		
N1	N11	Turbine Main Steam System
N2	N21	Condensate, Feedwater and Condensate Air Extraction System
N3	N22	Heater, Drain and Vent System
N4	N25	Condensate Purification System
N5	N26	Condensate Filter Facility
N6	N27	Condensate Demineralizer
N7	N31	Main Turbine
N8	N32	Turbine Control System

* Systems that are in and out of the ABWR Standard Plant scope are included in this table. See Subsection 1.1.2 for the identification of the site-specific elements outside the scope of the ABWR Standard Plant.

† Master Parts List Number designated for the system.

‡ These systems or subsystems thereof, have a primary function that is safety-related. As shown in the balance of this Table, some of these systems contain non-safety-related components and, conversely, some systems whose primary functions are non-safety-related contain components that have been designated safety-related.

Table 3.2-1 Classification Summary (Continued)

The classification information is presented by System* in the following order:

Item No.	MPL Number†	Title
N9	N33	Turbine Gland Steam System
N10	N34	Turbine Lubricating Oil System
N11	N35	Moisture Separator Heater
N12	N36	Extraction System
N13	N37	Turbine Bypass System
N14	N38	Reactor Feedwater Pump Driver
N15	N39	Turbine Auxiliary Steam System
N16	N41	Generator
N17	N42	Hydrogen Gas Cooling System
N18	N43	Generator Cooling System
N19	N44	Generator Sealing Oil System
N20	N51	Exciter
N21	N61	Main Condenser
N22	N62	Offgas System
N23	N71	Circulating Water System
N24	N72	Condenser Cleanup System
P Station Auxiliary Systems		
P0	P10	Makeup Water System (Preparation)
P1	P11	Makeup Water System (Purified)
P2	P13	Makeup Water System (Condensate)
P3	P21	Reactor Building Cooling Water System‡
P4	P22	Turbine Building Cooling Water System
P5	P24	HVAC Normal Cooling Water System
P6	P25	HVAC Emergency Cooling Water System
P7	P32	Oxygen Injection System

* Systems that are in and out of the ABWR Standard Plant scope are included in this table. See Subsection 1.1.2 for the identification of the site-specific elements outside the scope of the ABWR Standard Plant.

† Master Parts List Number designated for the system.

‡ These systems or subsystems thereof, have a primary function that is safety-related. As shown in the balance of this Table, some of these systems contain non-safety-related components and, conversely, some systems whose primary functions are non-safety-related contain components that have been designated safety-related.

Table 3.2-1 Classification Summary (Continued)

The classification information is presented by System* in the following order:

Item No.	MPL Number†	Title
P8	P40	Ultimate Heat Sink
P9	P41	Reactor Service Water System
P10	P42	Turbine Service Water System
P11	P51	Station Instrument Air System
P12	P52	Instrument Air System
P13	P54	High Pressure Nitrogen Gas Supply System
P14	P61	Heating Steam and Condensate Water Return System
P15	P62	House Boiler
P16	P63	Hot Water Heating System
P17	P73	Hydrogen Water Chemistry System
P18	P74	Zinc Injection System
P19	P81	Breathing Air System
P20	P91	Sampling System (Includes PASS)
P21	P92	Freeze Protection System
P22	P95	Iron Injection System
R Station Electrical Systems		
R1	R10	Electrical Power Distribution System
R2	R11	Unit Auxiliary Transformer
R3	R13	Isolated Phase Bus
R4	R21	Non-Segregated Phase Bus
R5	R22	Metalclad Switchgear
R6	R23	Power Center
R7	R24	Motor Control Center
R8	R31	Raceway System
R9	R34	Grounding Wire

* Systems that are in and out of the ABWR Standard Plant scope are included in this table. See Subsection 1.1.2 for the identification of the site-specific elements outside the scope of the ABWR Standard Plant.

† Master Parts List Number designated for the system.

‡ These systems or subsystems thereof, have a primary function that is safety-related. As shown in the balance of this Table, some of these systems contain non-safety-related components and, conversely, some systems whose primary functions are non-safety-related contain components that have been designated safety-related.

Table 3.2-1 Classification Summary (Continued)

The classification information is presented by System* in the following order:

Item No.	MPL Number†	Title
R10	R35	Electrical Wiring Penetration
R11	R40	Combustion Turbine Generator
R12	R42	Direct Current Power Supply‡
R13	R43	Emergency Diesel Generator System‡
R14	R46	Vital AC Power Supply
R15	R47	Instrument and Control Power Supply
R16	R51	Communication System
R17	R52	Lighting and Servicing Power Supply
S Power Transmission Systems		
S1	S12	Reserve Auxiliary Transformer
T Containment and Environmental Control Systems		
T0	T10	Primary Containment System
T1	T11	Primary Containment Vessel
T2	T12	Containment Internal Structures
T3	T13	Reactor Pressure Vessel Pedestal
T4	T22	Standby Gas Treatment System‡
T5	T25	PCV Pressure and Leak Testing Facility
T6	T31	Atmospheric Control System
T7	T41	Drywell Cooling System
T9	T53	Suppression Pool Temperature Monitoring System‡
U Structures and Servicing Systems		
U1	U21	Foundation Work

* Systems that are in and out of the ABWR Standard Plant scope are included in this table. See Subsection 1.1.2 for the identification of the site-specific elements outside the scope of the ABWR Standard Plant.

† Master Parts List Number designated for the system.

‡ These systems or subsystems thereof, have a primary function that is safety-related. As shown in the balance of this Table, some of these systems contain non-safety-related components and, conversely, some systems whose primary functions are non-safety-related contain components that have been designated safety-related.

Table 3.2-1 Classification Summary (Continued)

The classification information is presented by System* in the following order:

Item No.	MPL Number†	Title
U2	U24	Turbine Pedestal
U3	U31	Cranes and Hoists
U4	U32	Elevator
U5	U41	Heating, Ventilating and Air Conditioning‡
U5.1	U42	Potable and Sanitary Water System
U6	U43	Fire Protection System
U7	U46	Floor Leakage Detection System
U8	U47	Vacuum Sweep System
U9	U48	Decontamination System
U10	U71	Reactor Building‡
U11	U72	Turbine Building‡
U12	U73/U82	Control Building‡/Control Building Annex
U13	U74	Radwaste Building
U14	U75	Service Building
U19	U95	Hot Machine Shop
Y Yard Structures and Equipment		
Y1	Y31	Stack
Y2	Y52	Oil Storage and Transfer System
Y3	Y86	Site Security

* Systems that are in and out of the ABWR Standard Plant scope are included in this table. See Subsection 1.1.2 for the identification of the site-specific elements outside the scope of the ABWR Standard Plant.

† Master Parts List Number designated for the system.

‡ These systems or subsystems thereof, have a primary function that is safety-related. As shown in the balance of this Table, some of these systems contain non-safety-related components and, conversely, some systems whose primary functions are non-safety-related contain components that have been designated safety-related.

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
B1 Reactor Pressure Vessel System							
1.	Reactor pressure vessel (RPV)	1	C	A	B	I	
2.	Reactor vessel support skirt and stabilizer	1	C	A	B	I	
3.	RPV appurtenances—reactor coolant pressure boundary portions (RCPB)	1	C	A	B	I	
4.	Lateral supports for CRD housing and in-core housing	1	C	A	B	I	
5.	Reactor internal structures, spargers, for feedwater, RHR shutdown cooling low pressure flooder, and high pressure core flooder systems (see Subsection 3.9.5)	2	C	—	B	I	
6.	Reactor internal structures—safety-related components (except spargers) including core support structures (See Subsection 3.9.5)	3	C	—	B	I	
7.	Reactor internal structures—non-safety-related components (See Subsection 3.9.5)	N	C	—	E	—	
8.	Not Used						
9.	Not Used						
10.	Not Used						
11.	Reactor Internal Pump Motor Casing (a part of RPV boundary)	1	C	A	B	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-58

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
B2 Nuclear Boiler System						
1. Vessels—level instrumentation condensing chambers	1	C	A	B	I	
2. Vessel-nitrogen accumulators (for ADS and SRVs)	3/N	C	C	B	I	
3. Piping including supports—safety/relief valve discharge and quencher	3	C	C	B	I	(h)
4. Piping including supports main steamline (MSL) and feedwater (FW) line up to and including the outermost isolation valve	1	C,M	A	B	I	
5. Piping including supports						
a. MSL (including branch lines to first valve) from outermost isolation valve up to and including seismic interface restraint	2	M	B	B	I	(r)
b. FW (including branch lines to first valve) from outermost isolation valve to and including the shutoff valve	2	M	B	B	I	(r)

Notes and footnotes are listed on pages 3.2-53 through 3.2-58

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
6. Piping including supports—MSL (including branch lines to first valve) from the seismic interface restraint up to but not including the turbine stop valve and turbine bypass valve	N	M,T	B	E	—	(r)
7. Piping from FW shutoff valve to seismic interface restraint	N	M	D	E	I	(ee)
8. Not Used						
9. Not Used						
10. Pipe whip restraint—MSL/FW	3	M,C	—	B	—	
11. Piping including supports—other within outermost isolation valves						
a. RPV head vent	1	C	A	B	I	(g)
b. Main steam drains	1	C,M	A	B	I	(g)
12. Piping including supports—other beyond outermost isolation or shutoff valves						
a. RPV head vent beyond shutoff valves	N	C	C	E	—	
b. Main steam drains to first valve	2/N	M,T	B	B	I/—	(r)
c. Main steam drains beyond first valve	N	M, T	D	E	—	(r)
Notes and footnotes are listed on pages 3.2-53 through 3.2-58						

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
13.	Piping including supports—instrumentation up to and beyond outermost isolation valves	2/N	C,SC	B/D	B/E	I/—	(g)
14.	Safety/relief valves	1	C	A	B	I	
15.	Valves—MSL and FW isolation valves, and other FW valves within containment	1	C,M	A	B	I	
16.	Valves—FW, other beyond outermost isolation valves up to and including shutoff valves	2	M	B	B	I	(ee)
17.	Valves—within outermost isolation valves						
	a. RPV head vent	1	C	A	B	I	(g)
	b. Main steam drains	1	C,M	A	B	I	(g)
18.	Valves, other						
	a. RPV head vent	3	C	C	B	I	
	b. First main steam drain valves	2/N	M	B	B	I/—	(r)
	c. Other main steam drain valves	N	M,T	D	E	—	(r)
19.	Not Used						
20.	Mechanical modules—instrumentation with safety-related function	3	C,M,SC	—	B	I	
21.	Electrical modules with safety-related function	3	C,SC,X, RZ, M	—	B	I	(i)

Notes and footnotes are listed on pages 3.2-53 through 3.2-58

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
22.	Cable with safety-related function	3	C,SC,X RZ, M	—	B	I	
B3 Reactor Recirculation System							
1.	Piping, Valves and all their supports—Purge System, heat exchanger and primary side of recirculation motor cooling system (RMCS)	2	C	B	B	I	(s)(g)
2.	Pump motor cover, bolts and nuts	1	C	A	B	I	
3.	Pump non-pressure retaining parts including motor, instruments, electrical cables, and seals	N	C, RZ	—	E	—	
C1 Rod Control and Information System							
1.	Electrical Modules	N	RZ,X	D	E	—	
2.	Cable	N	SC,RZ,X	D	E	—	
C2 CRD System							
1.	Valves with no safety-related function (not part of HCU)	N	SC	D	E	—	
2.	Piping including supports-insert line	2	C,SC	B	B	I	(j)
3.	Piping-other (pump suction, pump discharge, drive header)	N	SC	D	E	—	(g)
4.	Hydraulic control unit	2	SC	—	B	I	(k)

Notes and footnotes are listed on pages 3.2-53 through 3.2-58

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location [c]	Quality Group Classi-fication[d]	Quality Assur-ance Require-ment[e]	Seismic Category[f]	Notes
5.	Fine motion drive motor	N	C	—	E	—	
6.	CRD water pumps	N	SC	D	E	—	
7.	Control Rod Drive	1/3	C	A/—	B	I	
8.	Electrical modules with safety-related function	3	C,SC	—	B	I	
9.	Cable with safety-related function	3	C,SC,X	—	B	I	
10.	ATWS Equipment associated with the Alternate Rod Insert (ARI) functions	N	SC	—	E	—	(cc)
C3 Feedwater Control System		N	C,T, X	—	E	—	
C4 Standby Liquid Control System							
1.	Standby liquid control tank including supports	2	SC	B	B	I	
2.	Pump including supports	2	SC	B	B	I	
3.	Pump motor	2	SC	—	B	I	
4.	Valves—injection	1	SC	A	B	I	
5.	Valves within injection valves	1	C,SC	A	B	I	
6.	Valves beyond injection valves	2	SC	B	B	I	
7.	Piping including supports within injection valves	1	C,SC	A	B	I	(g)
8.	Piping including supports beyond injection valves	2	SC	B	B	I	(g)

Notes and footnotes are listed on pages 3.2-53 through 3.2-58

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
9.	Electrical equipment and devices	3/N	SC,X, RZ	—	B/E	I/—	
10.	Cable	3/N	SC,X, RZ	—	B/E	I/ —	
C5 Neutron Monitoring System							
1.	Electrical modules—SRNM, LPRM and APRM	3	SC,X	—	B	I	
2.	Cable—SRNM and LPRM	3	C,SC,X, RZ	—	B	I	
3.	Detector and tube assembly	2/3	C	B/C	B	I	
C6 Remote Shutdown System							
	This system utilizes components included under B2, E1, E4, G3, H4, and P2.						
1.	Electrical modules with safety-related functions	3	RZ	—	B	I	
2.	Cable with safety-related functions	3	RZ	—	B	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-58

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
C7 Reactor Trip and Isolation System						
1. Electrical modules with safety-related functions	3	SC,X,T, RZ	—	B	I	
2. Cable with safety-related functions	3	SC,X,T, RZ,	—	B	I	
3. Not Used						
4. Not Used						
C8 Recirculation Flow Control System	N	X, RZ	—	E	—	
C9 Automatic Power Regulator System	N	X	—	E	—	
C10 Steam Bypass and Pressure Control System	N	X	—	E	—	
C11 Plant Information and Control System	N	X	—	E	—	
C12 Refueling Platform Control Computer	N	RZ	—	E	—	
C13 CRD Removal Machine Control Computer	N	SC	—	E	—	
C14 ESF Logic and Control System	3	SC, X, T, RZ	—	B	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-58

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
D1 Process Radiation Monitoring System (includes gaseous and liquid effluent monitoring)							
1.	Electrical modules— with safety-related functions (including monitors)	3	SC,X,RZ	—	B	I	
2.	Cable with safety-related functions	3	SC,X,RZ	—	B	I	
3.	Electrical Modules, other	N	T,SC,RZ, X,W	—	E	—	(u)
4.	Cables, other	N	T,SC,RZ, X,W	—	E	—	(u)
D2	**Area Radiation Monitoring System**	N	X,T,W, SC,RZ,H	—	E	—	
D3 Containment Atmospheric Monitoring System							
1.	Component with safety-related function	3	C,SC,X RZ	—	B	I	
2.	Components with nonsafety-related funtion (hydrogen and oxygen monitors)	N	C,SC,X,R ,Z	—	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-58

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
E1 RHR System							
1.	Heat exchangers—primary side	2	SC	B	B	I	
2.	Deleted						
3.	Piping including supports within outermost isolation valves*	1	C,SC	A	B	I	(g)
4.	Containment spray piping including supports and spargers, within and including the outer most isolation valves 2	2	C,SC	B	B	1	
4a.	Piping including supports beyond outermost isolation valves	2	SC	B	B	I	(g)
5.	Main Pumps including supports	2	SC	B	B	I	
6.	Main Pump motors	2	SC	B	B	I	
7.	Valves—isolation, (LPFL line) including shutdown suction line isolation valves	1	C,SC	A	B	I	(g)
8.	Valves—isolation, other (pool suction valves and pool test return valves)	2	SC	B	B	I	(g)
9.	Valves beyond isolation valves	2	SC	B	B	I	(g)
10.	Jockey pumps and motors including supports	2	SC	B	B	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
11.	Valves to fire protection, Subsystem C (F100C, F103C and F104C)	N	SC	—	E	—	
E2 High Pressure Core Flooder System							
1.	Reactor pressure vessel injection line and connected piping including supports within outermost isolation valve†	1/2	C,SC	A/B	B	I	(g)
2.	All other piping including supports‡	2	SC,O	B	B	I	(g)
3.	Main Pump	2	SC	B	B	I	
4.	Main Pump Motor	3	SC	—	B	I	
5.	Valves—other isolation and within the reactor pressure vessel injection line and connected lines	1	C,SC	A	B	I	(g)
6.	All other valves	2/3	SC	B/C	B	I	(g)
7.	Electrical modules with safety-related functions	3	C,SC,X RZ	—	B	I	
8.	Cable with safety-related functions	3	C,SC,X RZ	—	B	I	
E3 Leak Detection and Isolation System							
1.	Temperature sensors	3/N	C,SC,T,M	—	B/E	I/—	(z)
2.	Pressure transmitters	3	C,SC	—	B	I/—	(z)
3.	Differential pressure transmitters (flow)	3	C,SC	—	B	I/—	(z)
4.	Fission Product Monitor	N	SC	—	E	I	
5.	Isolation Valves	2/N	SC	B/C	B/E	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
6.	Instrument lines	3	C,SC	B	B	I	
7.	Sample lines[f]	2/N	C,SC	C/D/—	B/E	I/—	
8.	Flow transmitters	N	SC	—	E	—	
9.	Electrical modules	3/N	SC,RZ,X	—	B/E	I/—	
10.	Cables	3/N	SC,RZ,X	—	B/E	I/—	
E4 RCIC System							
1.	Piping including supports within outermost isolation valves	1	C,SC	A	B	I	
2.	Not Used						
3.	Piping including supports beyond outermost isolation valves up to the turbine exhaust line to the suppression pool, including turbine inlet and outlet drain lines	2/3	C,SC	B/C	B	I	(g)
4.	RCIC Pump and piping including support, CST suction line from the first RCIC motorized valve, S/P suction line to the pump, discharge line up to the FW line “B” thermal sleeve	2	SC, M	B	B	I	(g) (m)

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
	5. Other Pump motors (Support Systems)	N	SC	—	E	I	
	6. Valves—outer isolation and within	1	C,SC	A	B	I	(g)
	7. Valves—outside the PCV (except item 8)	2	SC	B	B	I	(g)
	8. Valves—beyond turbine inlet drain line second shutoff	N	SC	C	E	I	(g)
	9. Not Used						
	10. Electrical modules with safety-related functions	3	SC,X,RZ	—	B	I	
	11. Cable with safety-related functions	3	C,SC,X, RZ	—	B	I	
	12. Other mechanical and electrical modules	N	SC,X	—	E	—	
F1	**Fuel Servicing Equipment**	N	SC	—	E	—	(x)
F2	**Miscellaneous Servicing Equipment**	N	SC,RZ	—	E	—	
F3	**RPV Servicing Equipment**	N/2	SC	—/B	E/B	—/I	(gg)
F4	**RPV Internal Servicing Equipment**	N	SC	—	E	—	
F5	**Refueling Equipment**						
	1. Refueling equipment machine assembly	N	SC	—	E	I	(bb)

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location [c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
F6 Fuel Storage Equipment						
1. Fuel and equipment storage racks—new and spent	N	SC	—	E	I	(bb)
2. Defective fuel container	N	SC	—	E	—	(bb)
3. Spent fuel pool liner	N	SC	—	E	I	
F7 Under-Vessel Servicing Equipment	N	SC	—	E	—	(bb)
F8 CRD Maintenance Facility	N	SC	—	E	—	
F9 Internal Pump Maintenance Facility	N	SC	—	E	—	
F10 Fuel Cask Cleaning Facility	N	SC	—	E	—	
F11 Plant Start-up Test Equipment	N	C,SC,M, RZ,X,T	—	E	—	
F12 Inservice Inspection Equipment	N	C,SC,M, RZ,X,T,U	—	E	—	
G1 Reactor Water Cleanup System						
1. Vessels including supports (filter/ demineralizer)	N	SC	C	E	—	
2. Regenerative heat exchangers including supports carrying reactor water	N	SC	C	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classi-fication[d]	Quality Assur-ance Require-ment[e]	Seismic Category[f]	Notes
3.	Cleanup recirculation pump, motors	N	SC	C	E	—	
4.	Piping including supports and valves within and including outermost containment isolation valves	1	C,SC	A	B	I	(g)
5.	Pump suction and discharge piping including supports and valves from containment isolation valves back to and including shut-off valve at feedwater line connection	N	SC,M	C	E	—	
6.	Piping including supports and valves leading to radwaste and main condenser	N	SC	C	E	—	
7.	Non-regenerative heat exchanger tube inside and piping including supports and valves carrying process water	N	SC	C	E	—	
8.	Non-regenerative heat exchanger shell and piping including supports carrying closed cooling water	N	SC	D	E	—	
9.	Filter/demineralizer precoat subsystem	N	SC	D	E	—	
10.	Filter demin holding pumps including supports—valves and piping including supports	N	SC	C	E	—	
11.	Sample station	N	SC	D	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
12. Electrical modules and cable with no safety-related functions	N	SC,X	—	E	—	
13. Electrical modules and cable for isolation valves	3	C,SC,RZ, X	—	B	I	
G2 Fuel Pool Cooling and Cleanup System						
1. Vessels including supports—filter/demineralizers	N	SC	D	E	—	
2. Piping and valves including supports upstream of F/D outlet isolation valve	N	SC	D	E	—	
3. Piping and valves including supports downstream of F/D inlet isolation valve	N	SC	D	E	—	
4. Heat exchangers including supports	N	SC	C	E	I	
5. Pumps including supports	N	SC	C	E	I	
6. Pump motors	N	SC	—	E	—	
7. Piping including supports and valves—cooling portion	N	SC	C	E	I	
8. Makeup Water System (MUWC) connection including valves and supports	N	SC	C	E	I	
9. RHR piping connections and valves including supports for safety-related makeup and supplemental cooling	3	SC	C	B	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
10.	SPCU piping connections and valves including supports	3	SC	C	B	I	
11.	Electrical modules and cables with no safety-related function	N	SC, X	—	E	—	
G3 Suppression Pool Cleanup System							
1.	Isolation valves and piping including supports within outermost isolation valves	2	SC	B	B	I	
2.	Pump including supports	N	SC	C	E	I	
3.	Pump motor	N	SC	—	E	—	
4.	Piping and components beyond outermost-containment isolation valve including supports	N	SC	C	E	I	
5.	Not Used						
6.	Not Used						
7.	Electrical modules and Cables with no safety-related function	N	SC,X	—	E	—	
8.	Electrical modules and cables for isolation valves	3	SC,X,RZ	—	B	I	
H1 Main Control Room Panels							
1.	Panels	3/N	X	—	B/E	I/—	(aa)

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
2.	Electrical Modules with safety-related functions	3	X	—	B	I	
3.	Cable with safety-related functions	3	X	—	B	I	
4.	Other mechanical and electrical modules	N	X	—	E	—	
H2	**Control Room Back Panels**						
1.	Panels	3/N	X	—	B/E	I/—	(aa)
2.	Electrical modules with safety-related function	3	X	—	B	I	
3.	Cable with safety-related function	3	X	—	B	I	
4.	Other mechanical and electrical modules	N	X	—	E	—	
H3	**Radioactive Waste Control Panels**	N	W	—	E	—	(p)
H4	**Local Control Panels**						
1.	Panels and Racks	3/N	RZ,SC,X	—	B/E	I/—	(aa)
2.	Electrical modules with safety-related functions	3	RZ,SC,X	—	B	I	
3.	Cable with safety-related functions	3	RZ,SC,X	—	B	I	
4.	Other mechanical and electrical modules	N	RZ,SC,X	—	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
H5 Instrument Racks						
1. Mechanical and electrical with safety-related functions	3	SC,RZ, X,W,M	—	B	—	
2. Other mechanical and selected modules	N	SC,RZ,X, T	—	E	—	
H7 Local Control Boxes						
1. Electrical modules with safety-related functions	3	SC,RZ,X, H,T,W,M	—	B	I	
2. Other electrical modules	N	SC,RZ,X, H,T,W,M,	—	E	—	
J1 Fuel Assembly						
1. Fuel assemblies	3	C,SC	—	B	I	
2. Control Rods	3	C,SC	—	B	I	
3. Loose Parts Monitoring System	N	C,SC	—	E	—	
J2 Fuel Channel	3	C,SC	—	B	I	

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Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classi-fication[d]	Quality Assur-ance Require-ment[e]	Seismic Category[f]	Notes
K1 Radwaste System							
1.	Drain piping including supports and valves—radioactive	N	C,H,SC,T, W,X	D	E	—	(p)
2.	Not Used						
3.	Not Used						
4.	Piping including supports and valves forming part of containment boundary	2	C,SC	B	B	I	
5.	Pressure vessels including supports	N	W	—	E	—	(p)
6.	Atmospheric tanks including supports	N	C,SC,H,T, W	—	E	—	(p)
7.	0-103.42 kPaG Tanks and supports	N	W	—	E	—	(p)
8.	Heat exchangers and supports	N	C,SC,W	—	E	—	(p)
9.	Piping including supports and valves	N	C,SC,H, T,W	—	E	—	(p)
10.	Other mechanical and electrical modules	N	ALL	D	E	—	(p)
11.	ECCS equipment room sump backflow protection check valves	N	SC	C	B	I	
12.	Control Building high water level sensors	3	X	—	B	I	
13.	Electrical modules and cables with safety-related functions	3	C, SC, X, RZ	—	B	I	
N1 Turbine Main Steam System							
1.	Not Used (see B2.5)						
2.	Not Used (see B2.6)						

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location [c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
N2 Condensate, Feedwater and Condensate Air Extraction System						
1. Feedwater system components beyond seismic interface restraint	N	M,T	D	E	—	(ee)
N3 Heater, Drain and Vent System	N	T	—	E	—	
N4 Condensate Purification System	N	T	—	E	—	
N5 Condensate Filter Facility	N	T	—	E	—	
N6 Condensate Demineralizer	N	T	—	E	—	
N7 Main Turbine	N	T	—	E	—	
N8 Turbine Control System						
1. Turbine stop valve, turbine bypass valves, and the main steam leads from the turbine stop valve to the turbine casing	N	T	D	E	—	(l)(n)(o)(r)
N9 Turbine Gland Steam System	N	T	D	E	—	
N10 Turbine Lubricating Oil System	N	T	—	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
N11 Moisture Separator Heater	N	T	—	E	—	
N12 Extraction System	N	T	—	E	—	
N13 Turbine Bypass System						
1. Turbine bypass piping including supports up to the condenser	N	T	D	E	—	(r)
N14 Reactor Feedwater Pump Driver	N	T	—	E	—	
N15 Turbine Auxiliary Steam System	N	T	—	E	—	
N16 Generator	N	T	—	E	—	
N17 Hydrogen Gas Cooling System	N	T	—	E	—	
N18 Generator Cooling System	N	T	—	E	—	
N19 Generator Sealing Oil System	N	T	—	E	—	
N20 Exciter	N	T	—	E	—	
N21 Main Condenser	N	T	—	E	—	
N22 Offgas System	N	T	—	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]			Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
N23	**Circulating Water System**		N	T	D	E	—	
N24	**Condenser Cleanup Facility**		N	T	—	E	—	
P0	**Makeup Water System (Preparation)**							
	1.	Demineralizer water storage tank including supports	N	O	D	E	—	
P1	**Makeup Water System (Purified)**							
	1.	Piping including supports and valves forming part of the containment boundary	2	C, SC	B	B	I	
	2.	Piping including supports and valves	N	SC,RZ,T, H,W,X	D	E	—	
	3.	Other components	N	O	D	E	—	
P2	**Makeup Water System (Condensate)**							
	1.	Condensate storage tank including supports	N	O	D	E	—	(w)
	2.	Condensate header—piping including supports, level instrumentation and valves	2	SC	B	B	I	
	3.	Piping including supports and valves and other components	N	O	D	E	—	
P3	**Reactor Building Cooling Water System**							
	1.	Piping and valves forming part of primary containment boundary	2	SC,C	B	B	I	(g)

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]			Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
	2.	Other safety-related piping including supports, pumps and valves	3	SC,RZ,X	C	B	I	
	3.	Electrical modules with safety-related functions	3	SC,RZ,X	—	B	I	
	4.	Cable with safety-related functions	3	SC,X,C, RZ	—	B	I	
	5.	Other mechanical and electrical modules	N	SC,C,X,T W,RZ	D	E	—	
P4	**Turbine Building Cooling Water System**		N	T	D	E	—	
P5	**HVAC Normal Cooling Water System**							
	1.	Piping including supports and valves forming part of containment boundary	2	C,SC	B	B	I	
	2.	Other mechanical and electrical modules	N	C,SC,RZ T,X,	—	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
P6 HVAC Emergency Cooling Water System						
1. Chillers, pumps, valves, and piping, including supports	3	SC,X,RZ	C	B	I	
2. Electrical modules and cable with safety-related functions	3	RZ,X	—	B	I	
P7 Oxygen Injection System	N	T	—	E	—	
P8 Ultimate Heat Sink	3	O	C	B	I	
P9 Reactor Service Water System						
1. Safety-related piping including supports, piping and valves	3	U,O,X	C	B	I	
2. Electrical modules and cables with safety-related functions	3	RZ,U,O,X	—	B	I	
P10 Turbine Service Water System						
1. Non-safety-related piping including supports, piping and valves	N	P, O, T	—	E	—	
2. Electrical modules and cables with non-safety-related functions	N	P,O,T	—	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
P11 Station Service Air System						
1. Containment isolation including supports, valves and piping	2	C,SC	B	B	I	
2. Other non-safety-related mechanical and electrical components	N	SC,RZ, X,T,H, W,C	—	E	—	
P12 Instrument Air Service						
1. Containment isolation including supports, valves and piping	2	C,SC	B	B	I	
2. Other non-safety-related mechanical components	N	C,RZ,T,H, W,SC,X	—	E	—	
3. Other non-safety-related electrical components	N	SC,RZ,X, T,H, W,C	—	E	—	
P13 High Pressure Nitrogen Gas Supply Systems						
1. Containment isolation including supports, valves and piping	2	C,SC	B	B	I	
2. Gas bottles, piping and valves including supports with safety-related functions	3	SC,C	C	B	I	
3. Electric modules with safety-related functions	3	SC,RZ,X	—	B	I	
4. Cable with safety-related functions	3	SC,RZ,X	—	B	I	
5. Other non-safety-related mechanical components	N	SC,RZ,X	C	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]			Safety Class[b]	Location [c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
	6.	Other non-safety-related electrical components	N	SC,RZ,X	—	E	—	
P14	**Heating Steam and Condensate Water Return System**		N	T,SC,W	—	E	—	
P15	**House Boiler**		N	T	—	E	—	
P16	**Hot Water Heating System**		N	T	—	E	—	
P17	**Hydrogen Water Chemistry System**		N	T	—	E	—	
P18	**Zinc Injection System**		N	T	—	E	—	
P19	**Breathing Air System**		N	C,SC,T	—	E	—	
P20	**Sampling System (Includes PASS)**		N	SC,RZ,T	—	E	—	
P21	**Freeze Protection System**		N	O	—	E	—	
P22	**Iron Injection System**		N	T	—	E	—	
R1	**Electrical Power Distribution System**							
	1.	120 VAC safety-related distribution equipment including inverters	3	SC,X, RZ,U	—	B	I	
	2.	Safety-related Motors	3	SC,C,X, RZ,U	—	B	I	
	3.	Safety-related Protective relays and control panels	3	SC,X,RZ, U	—	B	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
4.	Safety-related Valve operators	3	SC,C, X, RZ,U	—	B	I	
R2 Unit Auxiliary Transformers							
1.	Unit Auxiliary Transformers	N	O	—	E	—	
2.	Safety-related Transformers	3	RZ	—	B	I	
R3	**Isolated Phase Bus**	N	O,T	—	E	—	
R4	**Non-Segregated Phase Bus**	N	O,T	—	E	—	
R5	**Metalclad Switchgear**						
1.	Safety-related 4160 Volt switchgear	3	RZ	—	B	I	
R6 Power Center							
1.	Safety-related 480 Volt power centers	3	RZ,U	—	B	I	
R7 Motor Control Center							
1.	Safety-related 480 Volt motor control centers	3	X,RZ,U	—	B	I	
R8 Raceway System							
1.	Safety-related control and power cables (including underground cable systems, cable splices, connectors and terminal blocks	3	SC, C, X, M,RZ,O,U	—	B	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
	2. Safety-related conduit and cable trays and their supports	3	SC,C,X M,RZ,O,U	—	B	I	
R9	**Grounding Wire**	N	ALL	—	—	—	
R10	**Safety-related Electrical Wiring Penetrations**	3	SC,C	—	B	I	
R11	**Combustion Turbine Generator**	N	T	—	E	—	
R12	**Safety-related Direct Current Power Supply**						
	1. 125 Volt batteries, battery racks, battery chargers, and distribution equipment	3	SC,X, RZ,U	—	B	I	
	2. Protective relays and control panels	3	SC,X,RZ, U	—	B	I	
	3. Motors	3	SC,X, RZ	—	B	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
R13 Emergency Diesel Generator System						
1. Starting air receiver tanks piping including supports from and including check valve and downstream piping including supports, valves, and compressors.	3	RZ	C	B	I	(y)
2. Starting air compressor motors	3	RZ	—	B	I	
3. Combustion air intake and exhaust system	3	RZ,O	C	B	I	
4. Safety-related piping including supports, valves—fuel oil system, diesel cooling water system, and lube oil system	3	RZ,O	C	B	I	
5. Pump motors—fuel oil system, diesel cooling water system and lube oil system	3	RZ,O	—	B	I	
6. Diesel generators	3	RZ	—	B	I	(y)
7. Mechanical and electrical modules with safety-related functions	3	RZ,X	—	B	I	
8. Cable with safety-related functions	3	RZ,O,X	—	B	I	
9. Other mechanical and electrical modules	N	RZ,O	—	E	—	
R14 Safety-related Vital AC Power Supply	3	X	—	B	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]			Safety Class[b]	Location [c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
R15	**Safety-related Instrument and Control Power Supply**		3	X	—	B	I	
R16	**Communication System**		N	SC,C,RZ, X	—	B	I	
R17	**Lighting and Servicing Power Supply**							
	1.	Normal Lighting	N	ALL	—	E	—	
	2.	Standby Lighting	3/N	ALL	C/—	B/E	I/—	(hh)
	3.	DC Emergency Lighting	3/N	X,W,RZ,T	C/—	B/E	I/—	(hh)
	4.	Guide Lamp Lighting	3/N	ALL (except C)	C/—	B/E	I/—	
S1	**Reserve Auxiliary Transformer**		N	O	—	E	—	
T0	**Primary Containment System**							
	1.	Suppression chamber/drywell vacuum breakers	2	C	B	B	I	
T1	**Primary Containment Vessel**							
	1.	Primary containment vessel (PCV)—reinforced concrete containment vessel (RCCV)	2	C	B	B	I	
	2.	Vent system (vertical flow channels and horizontal discharges	2	C	B	B	I	
	3.	PCV penetrations and drywell steel head	2	C	B	B	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
4.	Upper and lower drywell airlocks	2	C,SC	—	B	I	
5.	Upper and lower drywell equipment hatches	2	C,SC	—	B	I	
6.	Lower drywell access tunnels	2	C	—	B	I	
7.	Suppression chamber access hatch	2	C,SC	—	B	I	
8.	Safety-related instrumentation	3	C,SC	—	B	I	
T2 Containment Internal Structures							
1.	RPV stabilizer truss (see B1.2)						
2.	Support structures and equipment for safety-related piping	3	C	—	B	I	
3.	Diaphragm Floor	3	C	—	B	I	
4.	L/D equipment and personnel tunnels	3	C	—	B	I	
5.	Miscellaneous Platforms	3	C	—	B	I	
T3 RPV Pedestal							
1.	RPV pedestal and shield wall	3	C	—	B	I	
T4 Standby Gas Treatment System							
1.	All equipment except deluge piping and valves	3	SC,RZ	C	B	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
T5	**PCV Pressure and Leak Testing Facility**	N	SC	—	E	—	
T6	**Atmospheric Control System**						
	1. Nitrogen Storage Tanks	N	O	—	E	—	
	2. Vaporizers and controls	N	O	—	E	—	
	3. Piping including supports and valves forming part of containment boundary	2	SC	B	B	I	
	4. Piping including supports and valves beyond the first rupture disk up to and including the second rupture disk	3	SC	C	B	I	
	5. Electrical modules with safety-related functions	3	SC,X,RZ	—	B	I	
	6. Cables with safety-related function	3	SC,X,RZ	—	B	I	
	7. Other non-safety-related mechanical and electrical components	N	SC,O,X	—	E	—	
T7	**Drywell Cooling System**						
	1. Motors	N	C	—	E	—	
	2. Fans	N	C	—	E	—	
	3. Coils, cooling	N	C	—	E	—	
	4. Other mechanical and electrical modules	N	C,X,RZ	—	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
T9 Suppression Pool Temperature Monitoring System						
1. Electrical modules with safety-related functions	3	C,X,SC, RZ	—	B	I	
2. Cable with safety-related functions	3	C,X,SC, RZ	—	B	I	
U1 Foundation Work	2/3	C,SC,RZ	—	B	I	
U2 Turbine Pedestal	N	T	—	E	—	
U3 Cranes and Hoists						
1. Reactor Building crane	N	SC	—	E	—	(x)
2. Refueling Platform	N	SC	—	E	—	(x)
3. Upper Drywell Servicing	N	C	—	E	I	
4. Lower Drywell Servicing	N	C	—	E	I	
5. Main Steam Tunnel Servicing	N	M	—	E	—	
6. Special Service Rooms	N	SC,RZ,T, W,X	—	E	—	
U4 Elevator	N	SC,RZ,X	—	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
U5 Heating, Ventilation and Air Conditioning**						
1. Safety-related equipment††						
a. Fan-coil cooling units	3	SC,RZ,X	—	B	I	
b. Heating units—electrical or water	3	SC,RZ,X	—	B	I	
c. Blowers—Air supply or	3	SC,RZ,X	—	B	I	
d. Ductwork	3	SC,RZ,X	—	B	I	
e. Filters—Equipment areas	3	SC,RZ,X	—	B	I	
f. HEPA Filters, Charcoal Adsorbers—Control Rooms and Secondary Containment	3	SC,X	—	B	I	
g. Valves and Dampers—secondary containment isolation	3	SC,RZ	—	B	I	
h. Other safety-related valves and dampers	3	RZ,X	—	B	I	
i. Electrical modules with safety-related functions	3	SC,RZ,X	—	B	I	
j. Cable with safety-related functions	3	SC,RZ, X	—	B	I	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]	Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
2. Non-safety-related equipment‡‡						
a. HVAC mechanical or electrical components with non-safety-related functions	N	SC,RZ,H X,W,T, C,M	—	E	—	
b. Non-safety-related fire protection valves and dampers	N	SC,RZ,H, X,W,T	—	E	—	(t)(u)
U5.1 Potable and Sanitary Water System						
1. Potable and sanitary water equipment	N	All (except SC,C, M)	—	E	—	
2. Drain piping including supports and valves—nonradioactive	N	All (except SC,C, M)	D	E	—	
U6 Fire Protection System						
1. Other piping including supports and valves	N	SC,X, RZ,H,T, W,O	D	E	—	(t) (u)
2. Water storage tank	N	O	D	E	—	(t) (u)
3. Pumps	N	F	D	E	—	(t) (u)
a. Motor Driven	N	F	D	E	—	(t) (u)
b. Engine Driven	N	F	D	E	—	(t) (u)
4. Pump motors	N	F	—	E	—	(t) (u)
5. Electrical Modules	N	SC,X RZ,H, T,W,F	—	E	—	(t) (u)
6. Not Used						

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location[c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
	7. Cables	N	SC,X,RZ, H,T,W,F	—	E	—	(t) (u)
	8. Sprinklers or deluge water	N	H,W,SC, RZ,T,O	D	E	—	(t) (u)
	9. Foam, reaction or deluge	N	RZ,T	—	E	—	(t) (u)
U7	**Floor Leakage Detection System**	N	SC,RZ	—	E	—	
U8	**Vacuum Sweep System**	N	C,SC	—	E	—	
U9	**Decontamination System**	N	C,SC,RZ T,W,S,X	—	E	—	
U10	**Reactor Building**	3	C,SC,RZ, M	—	B	I	
U11	**Turbine Building**	N	T	—	E	—	(v)
U12	**Control Building/Control Building Annex**	3/N	X	—	B/E	I/—	
U13	**Radwaste Building**	N	W	—	E	—	(p)
U14	**Service Building**	N	H	—	E	—	
U19	**Hot Machine Shop**	N	MCH	—	E	—	
Y1	**Stack**	N	RZ	—	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Classification Summary (Continued)

Principal Component[a]		Safety Class[b]	Location [c]	Quality Group Classification[d]	Quality Assurance Requirement[e]	Seismic Category[f]	Notes
Y2	**Diesel Generator Fuel Oil Storage and Transfer System**	3	O,RZ	—	B	I	
Y3	**Site Security**	N	ALL	—	E	—	

Notes and footnotes are listed on pages 3.2-53 through 3.2-59

Table 3.2-1 Notes and Footnotes

* The RHR/ECCS low pressure flooder spargers are part of the reactor pressure vessel system, see Item B1.5.

† The ECCS high pressure core flooder spargers are part of the Reactor Pressure Vessel System, see Item B1.5.

‡ Pool suction piping, suction piping from condensate storage tank, test line to pool, pump discharge piping and return line to pool.

ƒ These sample lines are totally within containment and the fission product monitor provides no isolation function.

** Includes Reactor Building, Control Building, and Service Building thermal and radiological environmental control functions within the ABWR Standard Plant.

†† Controls environment in Main and Local control rooms, diesel-generator rooms, battery rooms, ECCS-RCIC, pump rooms within the ABWR Standard Plant.

‡‡ Controls environment in rooms or areas containing non-safety-related equipment within the ABWR Standard Plant.

a. A module is an assembly of interconnected components which constitute an identifiable device or piece of equipment. For example, electrical modules include sensors, power supplies, signal processors, and mechanical modules include turbines, strainers, and orifices. Safety-related motor control centers, power centers, metal clad switchgear, and remote mulitplexing units in the Reactor Building are located outside the Secondary Containment in the emergency electric equipment rooms. The specific location of many of the electrical modules in the Reactor Building are given on Table 9A.6-2.

b. 1, 2, 3, N = Nuclear safety-related function designation defined in Subsections 3.2.3 and 3.2.5.

c. C = Primary Containment
H = Service Building

M	=	Reactor Building steam tunnel
O	=	Outside onsite
RZ	=	Reactor Building Clean Zone (balance portion of the reactor building outside the Secondary Containment Zone)
SC	=	Secondary Containment portion of the reactor building
T	=	Turbine Building
W	=	Radwaste Building
X	=	Control Building/Control Building Annex
F	=	Firewater Pump House*
U	=	Ultimate Heat Sink Pump House*
P	=	Power Cycle Heat Sink Pump House*
MCH	=	Hot Machine Shop

d. A,B,C,D= Quality groups defined in Regulatory Guide 1.26 and Subsection 3.2.2. The structures, systems and components are designed and constructed in accordance with the requirements identified in Tables 3.2-2 and 3.2-3.

--- = Quality Group Classification not applicable to this equipment.

e. B = The quality assurance requirements of 10CFR50, Appendix B are applied in accordance with the quality assurance program described in Chapter 17.

E = Elements of 10CFR50, Appendix B are generally applied, commensurate with the importance of the equipment's function.

f. I = The design requirements of Seismic Category I structures and equipment are applied as described in Section 3.7, Seismic Design.

--- = The seismic design requirements for the safe shutdown earthquake (SSE) are not applicable to the equipment. However, the equipment that is not safety-related but which could damage Seismic Category I equipment if its structural integrity failed is checked analytically and designed to assure its integrity under seismic loading resulting from the SSE.

g. 1. Lines 25A and smaller which are part of the reactor coolant pressure boundary and are ASME Code Section III, Class 2 and Seismic Category I.

2. All instrument lines which are connected to the reactor coolant pressure boundary and are utilized to actuate and monitor safety systems shall be Safety

* Pump House structures are out of the ABWR Standard Plant scope.

Class 2 from the outer isolation valve or the process shutoff valve (root valve) to the sensing instrumentation.

3. All instrument lines which are connected to the reactor coolant pressure boundary and are not utilized to actuate and monitor safety systems shall be Code Group D from the outer isolation valve or the process shutoff valve (root valve) to the sensing instrumentation.

4. All other instrument lines:

   i. Through the root valve the lines shall be of the same classification as the system to which they are attached.

   ii. Beyond the root valve, if used to actuate a safety system, the lines shall be of the same classification as the system to which they are attached.

   iii. Beyond the root valve, if not used to actuate a safety system, the lines may be Code Group D.

5. All sample lines from the outer isolation valve or the process root valve through the remainder of the sampling system may be Code Group D.

6. All safety-related instrument sensing lines shall be in conformance with the criteria of Regulatory Guides 1.11 and 1.151.

h. Safety/Relief valve discharge line (SRVDL) piping to the quencher shall be Quality Group C and Seismic Category I. In addition, all welds in the SRVDL piping in the wetwell above the surface of the suppression pool shall be non-destructively examined to the requirements of ASME Boiler and Pressure Vessel Code, Section III, Class 2.

   SRVDL piping from the safety/relief valve to the quenchers in the suppression pool consists of two parts: the first part is located in the drywell and is attached at one end to the safety/relief valve and attached at its other end to the diaphragm floor penetration. This first part of the SRVDL is analyzed with the main steam piping as a complete system. The second part of the SRVDL is in the wetwell and extends from the penetration to the quenchers in the suppression pool. Because of the penetration on this part of the line, it is physically decoupled from the main steam piping and the first part of the SRVDL piping and is, therefore, analyzed as a separate piping system.

i. Electrical devices include components such as switches, controllers, solenoids, fuses, junction boxes, and transducers which are discrete components of a larger subassembly/module. Nuclear safety-related devices are Seismic Category I. Fail-safe devices are non-Seismic Category I.

j. The control rod driver insert lines from the drive flange up to and including the first valve on the hydraulic control unit are Safety Class 2, and non-safety-related beyond the first valve.

k. The hydraulic control unit (HCU) is a factory-assembled engineered module of valves, tubing, piping, and stored water which controls two control rod drives by the application of pressures and flows to accomplish rapid insertion for reactor scram.

   Although the hydraulic control unit, as a unit, is field installed and connected to process piping, many of its internal parts differ markedly from process piping components because of the more complex functions they must provide. Thus, although the codes and standards invoked by Groups A, B, C, and D pressure integrity quality levels clearly apply at all levels to the interfaces between the HCU and the connection to conventional piping components (e.g., pipe nipples, fittings, simple hand valves, etc.), it is considered that they do not apply to the specialty parts (e.g., solenoid valves, pneumatic components, and instruments).

   The design and construction specifications for the HCU do invoke such codes and standards as can be reasonably applied to individual parts in developing required quality levels, but of the remaining parts and details. For example: (1) all welds are LP inspected; (2) all socket welds are inspected for gap between pipe and socket bottom; (3) all welding is performed by qualified welders; and (4) all work is done per written procedures. Quality Group D is generally applicable because the codes and standards invoked by that group contain clauses which permit the use of manufacturer standards and proven design techniques which are not explicitly defined within the codes for Quality Groups A, B, or C. This is supplemented by the QC technique described.

l. The turbine stop valve is designed to withstand the SSE and maintain its integrity.

m. The RCIC turbine and pump are designed and fabricated to ASME Code Section III.

n. All cast pressure-retaining parts of a size and configuration for which volumetric methods are effective are examined by radiographic methods by qualified personnel. Ultrasonic examination to equivalent standards is used as an alternate to radiographic methods. Examination procedures and acceptance standards are at least equivalent to those defined in Paragraph 136.4, Nonboiler External Piping, ANSI B31.1.

o. The following qualifications are met with respect to the certification requirements:

   1. The manufacturer of the turbine stop valves, turbine control valves, turbine bypass valves, and main steam leads from turbine control valve to turbine

casing utilizes quality control procedures commensurate with the importance of the prevention of faults.

2. A certification obtained from the manufacturer of these valves and steam loads demonstrates that the quality control program as defined has been accomplished.

The following requirements shall be met in addition to the Quality Group D requirements:

1. All longitudinal and circumferential butt weld joints shall be radiographed (or ultrasonically tested to equivalent standards). Where size or configuration does not permit effective volumetric examination, magnetic particle or liquid penetrate examination may be substituted. Examination procedures and acceptance standards shall be at least equivalent to those specified as supplementary types of examinations, Paragraph 136.4 in ANSI B31.1.

2. All fillet and socket welds shall be examined by either magnetic particle or liquid penetrant methods. All structural attachment welds to pressure retaining materials shall be examined by either magnetic particle or liquid penetrate methods. Examination procedures and acceptance standards shall be at least equivalent to those specified as supplementary types of examinations, Paragraph 136.4 in ANSI B31.1

3. All inspection records shall be maintained for the life of the plant. These records shall include data pertaining to qualification of inspection personnel, examination procedures, and examination results.

p. A quality assurance program meeting the guidance of Regulatory Guide 1.143 will be applied during design and construction.

q. Detailed seismic design criteria for the offgas system are provided in Subsection 11.3.4.8.

r. See Subsection 3.2.5.3.

s. The recirculation motor cooling system (RMCS) is classified Quality Group B and Safety Class 2 which is consistent with the requirements of 10CFR50.55a. The RMCS, which is part of the reactor coolant pressure boundary (RCPB) meets 10CFR50.55a (c)(2). Postulated failure of the RMCS piping cannot cause a loss of reactor coolant in excess of normal makeup (CRD return or RCIC flow), and the RMCS is not an engineered safety feature. Thus, in the event of a postulated failure of the RMCS piping during normal operation, the reactor can be shutdown and cooled down in an orderly manner, and reactor coolant makeup can be provided by a normal make up system (e.g., CRD return or RCIC system). Thus, per

10CFR50.55a(c)(2), the RMCS need not be classified Quality Group A or Safety Class 1, however, for plant availability, the system is designed, fabricated and constructed in accordance with ASME Boiler and Pressure Vessel Code, Section III, Class 1 criteria as specified in Subsection 3.9.3.1.4 and Figure 5.4-4.

t. A quality assurance program for the Fire Protection System meeting the guidance of Branch Technical Position CMEB 9.5-1 (NUREG-0800), is applied.

u. Special seismic qualification and quality assurance requirements are applied.

v. See Regulatory Guide 1.143, Paragraph C.5 for the offgas vault seismic requirements.

w. The condensate storage tank will be designed, fabricated, and tested to meet the intent of API Standard API 650. In addition, the specification for this tank will require: (1) 100% surface examination of the side wall to bottom joint and (2) 100% volumetric examination of the side wall weld joints.

x. The cranes and fuel servicing equipment are designed to hold up their loads and to maintain their positions over the units under conditions of SSE.

y. All off-engine components are constructed to the extent possible to the ASME Code, Section III, Class 3.

z. Components associated with safety-related function (e.g., isolation) are safety-related.

aa. Structures which support or house safety-related mechanical or electrical components are safety-related.

bb. All quality assurance requirements shall be applied to ensure that the design, construction and testing requirements are met.

cc. A quality assurance program, which meets or exceeds the guidance of Generic Letter 85-06, is applied to all non-safety-related ATWS equipment.

dd. Deleted.

ee. Figure 3.2-1 depicts the classification requirements for the feedwater system. At the interface between Seismic and non-Seismic Category I feedwater piping system, the Seismic Category I dynamic analyses will be extended to either the first anchor point in the non-seismic system or to sufficient distance in the non-seismic system so as not to degrade the validity of the Seismic Category I analysis.

ff. Deleted

gg. The Head Holding Pedestal is non-safety related and Seismic Category I. All other reactor vessel servicing equipment is non-seismic Category I.

hh. Light fixtures and bulbs are not seismically qualified but fixtures which receive Class 1E power are seismically supported (see Subsections 9.5.3.2.2.1 and 9.5.3.2.3.1).

Table 3.2-2 Minimum Design Requirements for an Assigned Safety Designation

	Minimum Design Requirements*			
Safety Designation†	Quality Group‡	Seismic Category *ƒ*	Electrical Classification**	Quality Assurance††
SC-1	A	I	—	B
SC-2	B	I	—	B
SC-3	C	I	1E	B
NNS	†	‡	*ƒ*	**

* For structural design requirements that are not covered here and in Table 3.2-3, see Section 3.8.

† Safety designations are defined in Subsections 3.2.3 and 3.2.5.

‡ Table 3.2-3 shows applicable codes and standards for components and structures in accordance with their quality group identified in Table 3.2-1.

Non-nuclear safety (NNS) related structures, systems and equipment that are not assigned a Quality Group in Table 3.2-1 are designed to requirements of applicable industry codes and standards (see Subsection 3.2.5.2).

Some NNS structures, systems, and components are optionally designed to Quality Group C or D requirements of Table 3.2-3, per Quality Group designation on Table 3.2-1.

ƒ Seismic Category I structures, systems and components meet design and analysis requirements of Subsection 3.7.

Some NNS structures, systems and components are optionally designed to Seismic Category I design criteria as noted on Table 3.2-1. Some safety-related components (e.g., Pipe whip restraints) have no safety-related function in the event of an SSE, and are not Seismic Category I.

** Safety-related electrical equipment and instrumentation are designated SC-3 and are designed to meet IEEE Class 1E (as well as Seismic Category I) design requirements.

Some NNS electrical equipment and instrumentation are optionally designed to IEEE Class 1E requirements as noted on Table 3.2-1.

†† Safety-related structures, systems and components meet the quality assurance requirements of 10CFR50, Appendix B, as described in Chapter 17.

Some NNS structures, systems, and components meet the QA requirements as noted on Table 3.2-1.

Table 3.2-3 Quality Group Designations—Codes and Industry Standards

Quality Group Classif-ication	ASME Section III Code Classes*	Pressure Vessels and Heat Exchangers*	Pipes, Valves and Pumps	Storage Tanks 0-15 psig	Storage Tanks Atmospheric	ASME Section III Component Parts	Core Support Structures	Primary Containment Boundary
A	1	NCA and NB TEMA C	[*NCA and NB*][f]	—	—	[*NCA and NF*][f]	—	—
B	2	NCA and NC TEMA C	[*NCA and NC*][f]	NCA and NC	NCA and NC	[*NCA and NF*][f]	—	—
	CC and MC	—	—	—	—	—	—	NCA, CC and NE
	CS	—	—	—	—	—	NG	—
C	3	NCA and ND TEMA C	[*NCA and ND*][f]	NCA and ND	NCA and ND	[*NCA and NF*][f]	—	—
D	—	ASME Section VIII Div 1 TEMA C	Piping & Valves ANSI B31.1. Pumps†	API-620 or equivalent‡	API-650 AWWA-D100 ANSI B96.1 or equivalent	—	—	—

* Applicable Standards or Subsections of the ASME Code Section III.

† For pumps classified in Group D, ASME Code Section VIII, Division 1, shall be used as a guide in calculating the wall thickness for pressure-retaining parts ad in sizing the cover bolting.

‡ Tanks shall be designed to meet the intent of API, AWWA, and/or ANSI B96.1 Standards as applicable.

f See Subsection 3.9.1.7. The change restriction is limited only to the applicability to design of piping and piping supports. See Table 1.8-21 for restriction to change of ASME Code Edition for design of piping and supports only.

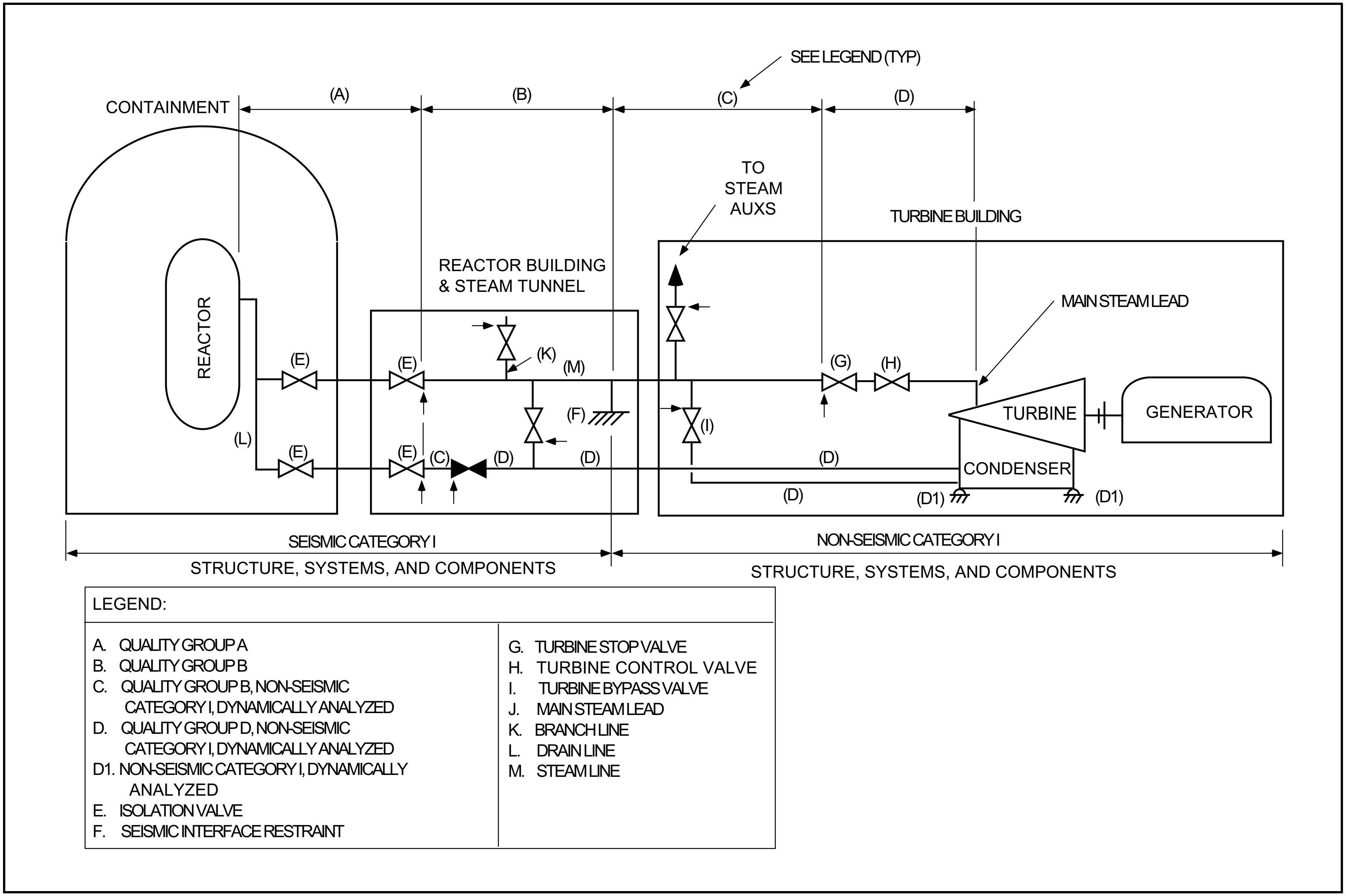

Figure 3.2-1 Quality Group and Seismic Category Classification Applicable to Power Conversion System

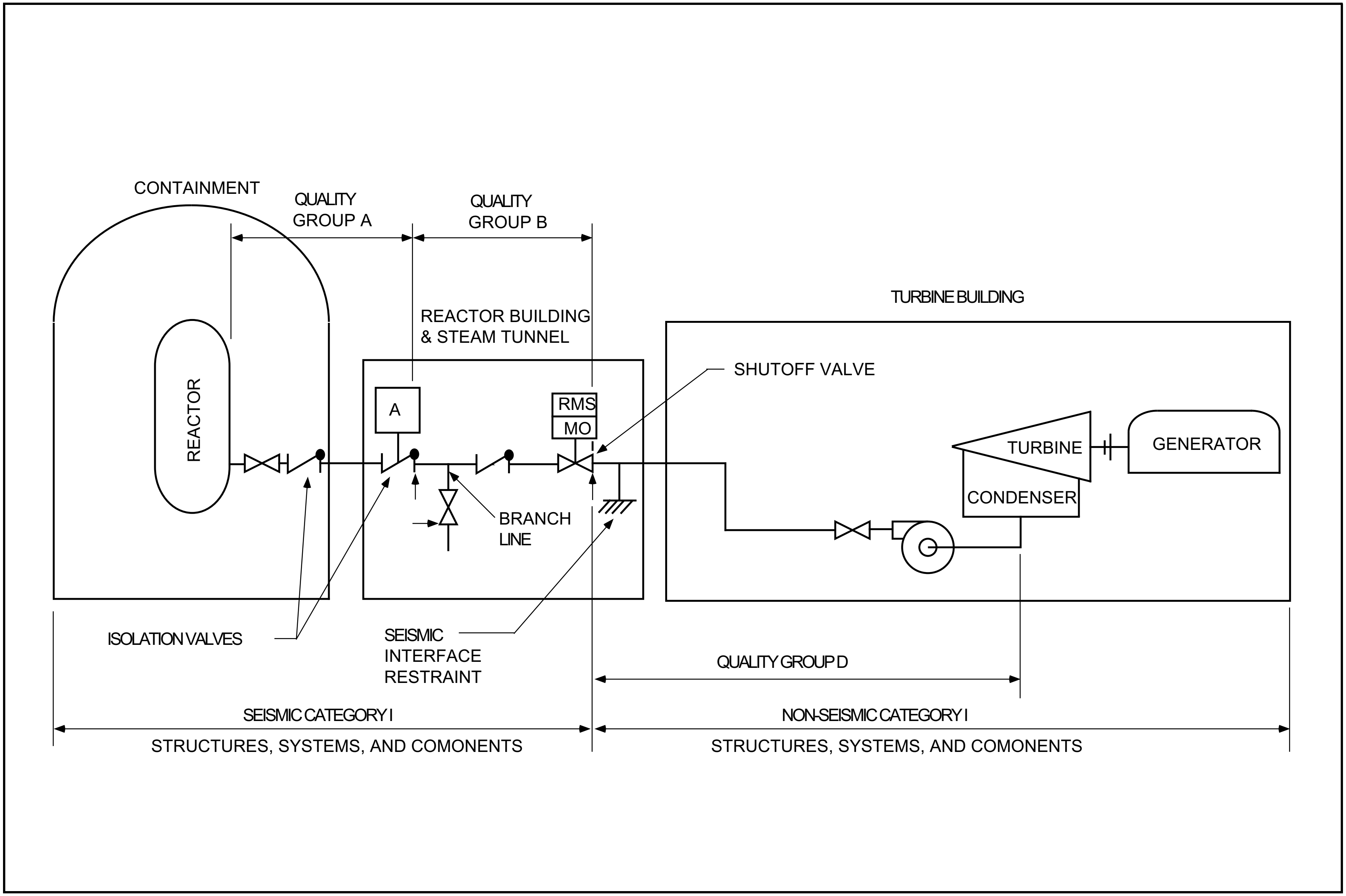

Figure 3.2-2 Quality Group and Seismic Category Classification Applicable to Feedwater System