PALISADES SYSTEM OF CLASSIFICATION FOR STRUCTURES/SYSTEMS/COMPONENTS

Type	Source	Designation
Original Design, Functional(a)	1980 FSAR, Appendix A	Classes 1, 2 and 3
Original Design, Seismic	1980 FSAR, Appendix A	Seismic Classes 1, 2 and 3
Original Design, Mechanical (b)	1980 FSAR	ASME Section III-1965, Code Classes A, B and C or ASA B31.1 (1955)
Original Design, General	1984 FSAR Update	CP Co Design Class
Modifications Design, Seismic	Regulatory Guide 1.29	Seismic Category I
Service/Design for Electrical Equipment	FSAR Update for Electrical Equipment Resulting From SEP Program, EEQ and Other Reanalysis	Class 1E per IEEE 308 and IEEE 279
Maintenance/Inspection	ISI Program Safety Classification (Q-List) Regulatory Guide 1.26 P&IDs	ASME Section XI-2007 through 2008 Addenda, Code Classes 1, 2 and 3 (or Quality Groups A, B, C and D)
Service/Accident (Post TMI)	10 CFR 50.49 Regulatory Guide 1.89 Safety Classification (Q-List)	Environmentally Qualified
Service/Accident (Post TMI)	Regulatory Guide 1.97 Safety Classification (Q-List)	Category 1, 2, 3 and Types A, B, C, D and E
Generic	-	Safety Related or Important to Safety

(a) Mechanical equipment including electrical equipment supporting Class 1 mechanical equipment
(b) See Table 5.2-3 for more detail

STRUCTURES CLASSIFICATION

BUILDING	RG 1.29 INTREPRETATION SEISMIC CLASSIFICATION	DESIGN CLASS	DESIGN CODE
CONTAINMENT (SHELL AND BASE SLAB)	Category I	Class 1	
1. Concrete		ACI 301-66	ACI 318-63
2. Liner			ASME B&PV Code, Sec III, VIII and IX, 1965
3. Personnel Air Lock, Escape Air Lock, and Equipment Hatch			ACI 318-63 ASME, Sec III, 1965
4. Pipe, Electrical and HVAC Penetrations*			ACI 318-63 ASME, Sec III, 1965
CONTAINMENT INTERIOR STRUCTURES	Category I	Class 1	ACI 318-63 AISC 1963
AUXILIARY BUILDING (Excluding Admin and Access Control Areas)	Category I	Class 1	ACI 318-63 AISC 1963

*Steam Generator Blowdown and Recirc Penetration End Plates are ASME Section III, Subsection NC, 1986 Ed.

STRUCTURES CLASSIFICATION

BUILDING	RG 1.29 INTREPRETATION SEISMIC CLASSIFICATION	DESIGN CLASS	DESIGN CODE
1972 AUXILIARY BUILDING RADWASTE ADDITION	Category I	Class 1	ACI 318-63 AISC 1969
1983 AUXILIARY BUILDING TSC/EER/HVAC/ADDITION	(d)	Class 1	ACI 318-77 AISC 1978
COOLING TOWERS	Category I(b)	Class 3(a)	(d)(f)
COOLING TOWER PUMP HOUSE	Category I	Class 3(a)	ACI 318-71 AISC 1969
DISCHARGE STRUCTURE	Category I	Class 3(a)	UBC(e)
FEEDWATER PURITY BUILDING	Noncategory I	Class 3(a)	UBC(e)

(a) UBC-64 was utilized for seismic and wind loading design. In addition, International Building Code (IBC) 2006 and ASCE 7-05 were utilized for seismic and wind parameters for tower E-30A, and IBC 2012 and ASCE 7-10 were used for tower E-30B.
(b) Usually this applies to the basin and not the tower framing above the basin, if the basin is a backup source of water for safety functions.
(c) The definition of Class 1E electrical equipment is provided in Subsection 8.1.1.
(d) Information not located.
(e) Year unknown.
(f) The tower's pultruded structures were designed in accordance with Cooling Tower Institute Standard Specification 137.

STRUCTURES CLASSIFICATION

BUILDING	RG 1.29 INTREPRETATION SEISMIC CLASSIFICATION	DESIGN CLASS	DESIGN CODE
INTAKE STRUCTURE (Except as Noted)	Noncategory I	Class 3	UBC(e)
1. Portion Above Elevation 590 Housing Service Water Pumps, Fire Pumps/Drivers and Electrical Support	Category I	Class 1	ACI 318-63 AISC 1963
2. Triangular Portion Below Elevation 590 Adjacent to the Intersection of Column Rows Y and 5	Category I	Class 1	ACI 318-63 AISC 1963
SERVICE BUILDING	Noncategory I	Class 3(a)	UBC(e)
SUPPORTS FOR CLASS 1 MECHANICAL EQUIPMENT AND CLASS 1E ELECTRICAL EQUIPMENT(c)	Category I	Class 1	AISC 1969

(a) UBC-64 was utilized for seismic and wind loading design. In addition, International Building Code (IBC) 2006 and ASCE 7-05 were utilized for seismic and wind parameters for tower E-30A, and IBC 2012 and ASCE 7-10 were used for tower E-30B.
(b) Usually this applies to the basin and not the tower framing above the basin, if the basin is a backup source of water for safety functions.
(c) The definition of Class 1E electrical equipment is provided in Subsection 8.1.1.
(d) Information not located.
(e) Year unknown.
(f) The tower's pultruded structures were designed in accordance with Cooling Tower Institute Standard Specification 137.

STRUCTURES CLASSIFICATION

BUILDING	RG 1.29 INTREPRETATION SEISMIC CLASSIFICATION	DESIGN CLASS	DESIGN CODE
TURBINE BUILDING (Except as Noted)	Noncategory I	Class 3(a)	ACI 318-63 AISC 1963
1. Auxiliary Feedwater Pump Room	Category I	Class 1	ACI 318-63 AISC 1963
2. Electrical Penetration Enclosure	Category I	Class 1	ACI 318-63
CONDENSATE STORAGE TANK FOUNDATION	Category I	Class 1	ACI 318-63
PRIMARY SYSTEM MAKEUP TANK FOUNDATION (T-90)	Category I	Class 1	ACI 318-63
SIRW TANK FOUNDATION	Category I	Class 1	ACI 318-63

(a) UBC-64 was utilized for seismic and wind loading design. In addition, International Building Code (IBC) 2006 and ASCE 7-05 were utilized for seismic and wind parameters for tower E-30A, and IBC 2012 and ASCE 7-10 were used for tower E-30B.
(b) Usually this applies to the basin and not the tower framing above the basin, if the basin is a backup source of water for safety functions.
(c) The definition of Class 1E electrical equipment is provided in Subsection 8.1.1.
(d) Information not located.
(e) Year unknown.
(f) The tower's pultruded structures were designed in accordance with Cooling Tower Institute Standard Specification 137.

STRUCTURES CLASSIFICATION

BUILDING	RG 1.29 INTREPRETATION SEISMIC CLASSIFICATION	DESIGN CLASS	DESIGN CODE
UTILITY WATER TANK FOUNDATION (T-91)	Category I	Class 1	ACI 318-63
AUXILIARY FEEDWATER P-8D ENCLOSURE	Noncategory I	Class 3	IBC-2012

(a) UBC-64 was utilized for seismic and wind loading design. In addition, International Building Code (IBC) 2006 and ASCE 7-05 were utilized for seismic and wind parameters for tower E-30A, and IBC 2012 and ASCE 7-10 were used for tower E-30B.
(b) Usually this applies to the basin and not the tower framing above the basin, if the basin is a backup source of water for safety functions.
(c) The definition of Class 1E electrical equipment is provided in Subsection 8.1.1.
(d) Information not located.
(e) Year unknown.
(f) The tower's pultruded structures were designed in accordance with Cooling Tower Institute Standard Specification 137.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
REACTOR COOLANT SYSTEM				
Reactor Vessel	Category I	Class 1	ASME III Class 1	ASME III (1965) - Class A
Reactor Vessel Supports	Category I	Class 1	ASME III Class 1	ASME III (1965) - Class A
Steam Generators - Tube Side and Primary Head	Category I	Class 1	ASME III Class 1	ASME III (1977) - Section NB
Steam Generators - Secondary Side	Category I	Class 1	ASME III Class 2	ASME III (1977) - Section NC
Steam Generator Supports	Category I	Class 1	ASME III Class 1	ASME III (1965) - Class A
Pressurizer	Category I	Class 1	ASME III Class 1	ASME III (1965) - Class A ASA B31.1 (1955)
Primary Coolant Pumps (PCP)	Category I	Class 1	ASME III Class 1	ASME III (1965) - Class A Standards of Hydraulic Institute (SHI) ASA B31.1 (1955) ASA B16.5 (1961)

(a) Seismic category as identified in the Franklin Research Center Technical Evaluation Report TER-C5257-428 Pursuant to SEP Topic III-1 and other related materials. This column is intended for informational purposes only and is not intended to impose design requirements.
(b) Equipment classification was originally identified in the Palisades 1980 FSAR, APPENDIX A, and TER-C5257-428 and as modified by CPCo.
(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
Primary Coolant Pump Internals	Category I	Class 1	ASME III Class 1	-
Piping - PCS Hot and Cold Legs	Category I	Class 1	ASME III Class 1	ASA B31.1 (1955)
Interconnecting Piping of Systems That Form Part of Primary Coolant Pressure Boundary (PCPB)	Category I	Class 1	ASME III Class 1	ASA B31.1 (1955)
Pressurizer Surge and Spray	Category I	Class 1	ASME III Class 1	ASA B31.1 (1955)
Piping 3/4 Inch and Smaller Within PCPB	Category I	Class 1	ASME III Class 1	ASA B31.1 (1955)
Pressurizer Relief Discharge Piping - Upstream of Safety Valves	Category I	Class 1	ASME III Class 1	ASA B31.1 (1955)

(a) Seismic category as identified in the Franklin Research Center Technical Evaluation Report TER-C5257-428 Pursuant to SEP Topic III-1 and other related materials. This column is intended for informational purposes only and is not intended to impose design requirements.
(b) Equipment classification was originally identified in the Palisades 1980 FSAR, APPENDIX A, and TER-C5257-428 and as modified by CPCo.
(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
Valves				
Pressurizer Safety Valves	Category I	Class 1	ASME III Class 1	Combustion Engg Spec M1-L-B
Power-Operated Relief Valves	Category I	Class 1	ASME III Class 1	Combustion Engg Spec M1-L-B
Block Valves	Category I	Class 1	ASME III Class 1	-
Other Valves Within Quality Group A Portions of PCPB	Category I	Class 1	ASME III Class 1	ASA B16.5 (1961) MSS-SP-61 (1961) ASA B31.1 (1955) Code Case N-1, N-2 and N-10
Other Valves Within Quality Group B Portions of PCPB	Category I	Class 1	ASME III Class 2	ASA B16.5 (1961) MSS-SP-61 (1961) ASA B31.1 (1955) Code Cases N-1, N-2 and N-10

(a) Seismic category as identified in the Franklin Research Center Technical Evaluation Report TER-C5257-428 Pursuant to SEP Topic III-1 and other related materials. This column is intended for informational purposes only and is not intended to impose design requirements.
(b) Equipment classification was originally identified in the Palisades 1980 FSAR, APPENDIX A, and TER-C5257-428 and as modified by CPCo.
(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
REACTOR PRIMARY SHIELD COOLING SYSTEM				
Cooling Coils	Noncategory I	Class 3	Nonclass	ASA B31.1
Cooling Pumps	Noncategory I	Class 3	Nonclass	HSI, NEMA, ASA and ASTM
Heat Exchanger	Noncategory I	Class 3	Nonclass	ASME III, Class C, ASME VIII, Para UW-2, TEMA, Class C
Surge Tank	Noncategory I	Class 3	Nonclass	ASME III, Class C and ASME VIII, Para UW-2
Piping and Valves	Noncategory I	Class 3	Nonclass	ASA B31.1, ASA B16.5
SAFETY INJECTION SYSTEM				
Refueling Water Storage Tank	Category I	-	ASME III Class 2	ASA B96.1 (1967) ASME III (1977 and 78) Evaluated
Safety Injection Tanks	Category I	-	ASME III Class 2	ASME III (1965) - Class C
Interconnecting Piping and Valves Required To Perform Safety Injection Function	Category I	-	ASME III Class 2	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13

(a) Seismic category as identified in the Franklin Research Center Technical Evaluation Report TER-C5257-428 Pursuant to SEP Topic III-1 and other related materials. This column is intended for informational purposes only and is not intended to impose design requirements.
(b) Equipment classification was originally identified in the Palisades 1980 FSAR, APPENDIX A, and TER-C5257-428 and as modified by CPCo.
(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
Interconnecting Piping and Valves Required to Perform Recirculation Function	Category I	Class 1	ASME III Class 2	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
Long-Term Cooling Modification	Category I	Class 1	ASME III Classes 1 & 2	ASME/ANSI B31.1-1980 ANSI N18.2-1973
High-Pressure Safety Injection Pump	Category I	Class 1	ASME III Class 2	ASME VIII (1965) ASA B16.5 (1961) SHI
Low-Pressure Safety Injection Pumps	Category I	Class 1	ASME III Class 2	ASME VIII (1965) ASA B16.5 (1961) SHI

(a) Seismic category as identified in the Franklin Research Center Technical Evaluation Report TER-C5257-428 Pursuant to SEP Topic III-1 and other related materials. This column is intended for informational purposes only and is not intended to impose design requirements.
(b) Equipment classification was originally identified in the Palisades 1980 FSAR, APPENDIX A, and TER-C5257-428 and as modified by CPCo.
(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
CONTAINMENT SPRAY SYSTEM				
Pumps	Category I	Class 1	ASME III Class 2	SHI, ASA B31.1, ASA B16.5 (1967 Inclusive)
Interconnecting Piping and Valves Required To Perform Spray Function	Category I	Class 1	ASME III Class 2	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
Interconnecting Piping and Valves Required To Perform Test Function	Category I	Class 1	ASME III Class 2	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
CHEMICAL AND VOLUME CONTROL SYSTEM				
Regenerative Heat Exchange	Category I	Class 1	ASME III Class 1	ASME III (1965) - Class C ASME III, Ap IX (1965 W67)
Letdown Heat Exchanger - Tube Side	Category I	Class 1	ASME III Class 3	ASME III (1965) - Class C ASME III, Ap IX (1965 W67)
Letdown Heat Exchanger - Shell Side(g)	Category I	Class 3	Nonclass	ASME III (1965) - Class C
Purification Filter(g)	Category I	Class 3	Nonclass	ASME III (1965) - Class C

(a) Seismic category as identified in the Franklin Research Center Technical Evaluation Report TER-C5257-428 Pursuant to SEP Topic III-1 and other related materials. This column is intended for informational purposes only and is not intended to impose design requirements.
(b) Equipment classification was originally identified in the Palisades 1980 FSAR, APPENDIX A, and TER-C5257-428 and as modified by CPCo.
(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
Volume Control Tank (VCT)(g)	Category I	Class 3	Nonclass	ASME III (1965) - Class C
Charging Pumps(g)	Category I	Class 3	Nonclass	ASME VIII (1965) ASA B16.5 (1961)
Letdown Orifices(g)	Category I	Class 1	ASME III Class 3	ASA B31.1 (1955)
Interconnecting Piping and Valves Required To Perform Letdown, Charging, and Supply of makeup water to Safety Injection and Refueling Water Tanks' Functions(g)	Category I	Class 3	Nonclass	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
Concentrated Boric Acid Tanks (T-53)(g)	Category I	Class 3	Nonclass	ASME III (1965) - Class C
Boric Acid Filter (F-9)	Category I	Class 3	Nonclass	ASME III (1965) - Class C
Concentrated Boric Acid Transfer Pumps(g)	Category I	Class 3	Nonclass	SHI ASA B16.5 (1961)
Boric Acid Blender(g)	Category I	Class 3	Nonclass	Combustion Engg Spec M1-H Bechtel Spec M-52

(a) Seismic category as identified in the Franklin Research Center Technical Evaluation Report TER-C5257-428 Pursuant to SEP Topic III-1 and other related materials. This column is intended for informational purposes only and is not intended to impose design requirements.
(b) Equipment classification was originally identified in the Palisades 1980 FSAR, APPENDIX A, and TER-C5257-428 and as modified by CPCo.
(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
Interconnecting Piping and Valves Required for Boric Acid Storage and Supply Function(g)	Category I	Class 3	Nonclass	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
Boric Acid Supply Lines(g)	Category I	Class 3	Nonclass	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through n-13
Purification Demineralizer(g)	Category I	Class 3	Nonclass	ASME III (1965)
Deborating Demineralizer(g)	Category I	Class 3	Nonclass	ASME III (1965)
Interconnecting Piping and Valves Required to Perform Demineralizer Function(g)	Category I	Class 3	Nonclass	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
Auxiliary Pressurizer Spray Piping and Valves	Category I	Class 1	ASME III Class 1	ASA B31.1 (1955) ASA B16.5 (1965) Code Cases N-1 Through N-13

(a) Seismic category as identified in the Franklin Research Center Technical Evaluation Report TER-C5257-428 Pursuant to SEP Topic III-1 and other related materials. This column is intended for informational purposes only and is not intended to impose design requirements.
(b) Equipment classification was originally identified in the Palisades 1980 FSAR, APPENDIX A, and TER-C5257-428 and as modified by CPCo.
(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
SHUTDOWN COOLING SYSTEM				
Shutdown Cooling/Low Pressure Safety Injection Pumps	Category I	Class 1	ASME III Class 2	ASME VIII (1965) ASA B16.5 (1961)
Shutdown Cooling Heat Exchanger - Tube Side	Category I	Class 1	ASME III Class 2	ASME III (1965) - Class C TEMA, Class R, 4th Edition, 1959
Shutdown Cooling Heat Exchanger - Shell Side	Category I	Class 1	ASME III Class 3	ASME III (1965) - Class C TEMA, Class R, 4th Edition, 1959
Interconnecting Piping and Valves Required To Perform Residual Heat Removal Function	Category I	Class 1	ASME III Class 2	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13

(a) Seismic category as identified in the Franklin Research Center Technical Evaluation Report TER-C5257-428 Pursuant to SEP Topic III-1 and other related materials. This column is intended for informational purposes only and is not intended to impose design requirements.
(b) Equipment classification was originally identified in the Palisades 1980 FSAR, APPENDIX A, and TER-C5257-428 and as modified by CPCo.
(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
COMPONENT COOLING WATER SYSTEM				
Pumps	Category I	Class 1	ASME III Class 3	SHI, ASA and ASTM
Heat Exchanger - Tube Side and Shell Side	Category I	Class 1	ASME III Class 3	ASME III (1965) - Class C
Surge Tank	Category I	Class 1	ASME III Class 3	ASME III (1965) - Class C
Interconnecting Piping and Valves Required To Service Quality Groups B and C System Components	Category I	Class 1	ASME III Class 3	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13

(a) Seismic category as identified in the Franklin Research Center Technical Evaluation Report TER-C5257-428 Pursuant to SEP Topic III-1 and other related materials. This column is intended for informational purposes only and is not intended to impose design requirements.
(b) Equipment classification was originally identified in the Palisades 1980 FSAR, APPENDIX A, and TER-C5257-428 and as modified by CPCo.
(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
SERVICE WATER SYSTEM				
Pumps	Category I	Class 1	ASME III Class 3	SHI, ASA and ASTM
Strainers	Category I	Class 1	ASME III Class 3	Bechtel Spec M-35
Interconnecting Piping and Valves Required To Service Quality Group C System Components	Category I	Class 1	ASME III Class 3	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
Noncritical Service Water	Noncategory I	Class 3	Nonclass	HSI, ASTM ASA B16.5 (1961) ASA B31.1 (1955)
Tie-In for Backup Supply from Fire Protection System	Category I	Class 1	ASME III Class 3	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13

(a) Seismic category as identified in the Franklin Research Center Technical Evaluation Report TER-C5257-428 Pursuant to SEP Topic III-1 and other related materials. This column is intended for informational purposes only and is not intended to impose design requirements.
(b) Equipment classification was originally identified in the Palisades 1980 FSAR, APPENDIX A, and TER-C5257-428 and as modified by CPCo.
(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
SPENT FUEL POOL COOLING SYSTEM				
Cooling Pumps	Category I	Class 1	ASME III Class 3	HSI
Heat Exchanger	Category I	Class 1	ASME III Class 3	ASME III, Class C and ASME VIII, Para UW-2
Recirc Booster Pump	Category I	Class 1	ASME III Class 3	HSI
Demineralizer	Category I	Class 1	ASME III Class 3	ASME III, Class C and ASME VIII, Para UW-2
Piping, Valves and Fittings (except Reactor Cavity Tilt Drain Pipe which is RG 1.26, Nonclass)	Category I	Class 1	ASME III Class 3	ASA B31.1 and ASA B16.5

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(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
MAIN STEAM SYSTEM				
Interconnecting Piping and Valves Comprising Main Steam Lines Extending From the Secondary Side of the Steam Generators up to and Including the Outermost Containment Isolation Valve in Each Main Steam Line and Connected Piping up to and Including the First Valve That Is Normally Closed or Capable of Automatic Closure During All Modes of Normal Reactor Operation	Category I	Class 1	ASME III Class 2	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
Main Steam Piping Outside Containment Between the Main Steam Isolation Valves and the Steam Takeoff Block Valves	Category I	Class 2	Nonclass	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
Remainder of System	Noncategory I	Class 3	Nonclass	-
Atmospheric Dump	Category I	Class 1	ASME III Class 2	ASA B31.1 (1955) ASA B16.5 (1961)

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(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
Safety Valves	Category I	Class 1	ASME III Class 2	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13 to ASME
Steam Generator Blowdown and Recirculation Lines, Extending from the Secondary Side of the SG through the Containment Penetration (For Piping from Outermost Containment Isolation Valve, Refer to "Feedwater System")	Category I	Class 1	ASME III Class 2	ANSI B31.1 - 1973 Design ASME III - 1986 Shop Fabrication and Materials Penetration USAS B 31.1 - 1967 Installation
CONDENSATE SYSTEM	Noncategory I	Class 3	Nonclass	ASME VIII

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(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
FEEDWATER SYSTEM				
Interconnecting Piping and Valves Comprising Feedwater Lines Extending From the Secondary Side of the Steam Generators up to and Including the Outermost Containment Isolation Valve in Each Feedwater Line and Connected Piping up to and Including the First Valve That Is Normally Closed or Capable of Automatic Closure During All Modes of Normal Reactor Operation	Category I	Class 1	ASME III Class 2	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13 ASME VIII
AUXILIARY FEEDWATER SYSTEM				
Pumps - Motor Driven	Category I	Class 1	ASME III Class 3	ASME III and VIII, 1969
Pumps - Turbine Driven	Category I	Class 2	ASME III Class 3	ASME III and VIII, 1969
Pump - Diesel Driven	Noncategory I	Class 3	ANSI B31.1	ANSI B31.1, 1973 Summer Addenda
Condensate Storage Tank	Category I	Class 1	ASME III	Bechtel Spec C-18, Class 3

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(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
Interconnecting Piping Between Condensate Storage Tank and Valve Pit Wall	Category I	Class 1	ASME III Class 3	ASA B31.1 (1955)
Interconnecting Piping from Condensate Storage Tank Outside of Valve Pit, Except Auxiliary Feedwater	Noncategory I	Class 3	ASME III Class 3	ASA B31.1 (1955)
Interconnecting Piping and Valves Required To Supply Auxiliary Feedwater From Condensate Storage Tank to Steam Generators	Category I	Class 1	ASME III Classes 2 & 3	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
Interconnecting Piping and Valves Required To Supply Steam From Main Steam System to Turbine-Driven Pumps	Category I	Class 1, 2, & 3	ASME III Classes 2 & 3	FC-966 ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
Tie-In for Backup Supply From Fire Protection System	Category I	Class 1	ASME III Class 3	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
CONTAINMENT PURGE SYSTEM				
Interconnecting Piping and Valves That	Category I	Class 1	ASME III	-

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(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
Form an Extension of the Containment Boundary up to and Including the Outermost Containment Isolation Valve			Class 2	
CONTAINMENT COOLING SYSTEM				
Containment Fan Coolers (Fans and Cooling Coils)	Category I	Class 1	ASME III Class 3	Bechtel Spec M-59 and M-60A and FSAR Update Tables 6-9, 6-10 and 9-16
Necessary Portions of System Ductwork and Dampers	Category I	Class 1	Nonclass	-
CONTAINMENT ISOLATION SYSTEM				
Interconnecting Piping and Valves of the Reactor Coolant Pressure Boundary That Penetrate the Containment up to and Including the Outermost Containment Isolation Valve	Category I	Class 1	ASME III Class 2	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13
Interconnecting Piping and Valves of Quality Group B, C or D System That Penetrate the Containment From the First Isolation Valve Inside Containment	Category I	Class 1	ASME III Class 2	ASA B31.1 (1955) ASA B16.5 (1961) Code Cases N-1 Through N-13

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(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
up to and Including the Outermost Containment Isolation Valve				
FIRE PROTECTION SYSTEM				
Pump - Diesel Driven, Including Its Auxiliary Equipment and Associated Piping	Noncategory I	Class 2	Nonclass	NFPA HSI 13, 1968 NFPA 14 NFPA 15, 1962 NFPA 20, 1959 NFPA 24, 1965
All Other Components	Noncategory I	Class 3	Nonclass	NFPA HSI 13, 1968 NFPA 14 NFPA 15, 1962 NFPA 20, 1959 NFPA 24, 1965
FP Piping Within Intake Structure	Noncategory I	Class 2 & Class 3 (w/seismic)	Nonclass	HIS

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(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
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MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
AIR SYSTEM				
Plant Instrument and Service Air	Noncategory I	Class 2 & 3	Nonclass	ASME VIII, ASA B31.1
High-Pressure Air	Category I (f)	Class 2	Nonclass	ASME VIII, ASA B31.1
Portion of HP Air Associated With Engineered Safeguards	Category I (f)	Class 1	Nonclass	ASME VIII, ASA B31.1
Nitrogen Gas Backup (e) Station 1 to CV0727 and CV0749 Station 2 to CV0522B	Noncategory I	Class 2	Nonclass	-
Nitrogen Backup System Station 1A to CV0847 Station 3A to CV3027 CV3056 Station 3B to CV0824 CV3070	Category I	Class 1	Nonclass	ASA B31.1 (1955)

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(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
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MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
Station 5 to CV3001 CV3002 CV3071 CV1211				
Nitrogen Gas Blanket Systems				
Station 6, from North Electrical Penetrations to Check Valve	Category I	Class 2	ASME III Class 2	-
Station 7, from South Electrical Penetrations to Check Valve	Category I	Class 2	ASME III Class 2	
Stations 6 and 7, from Check Valve to Nitrogen Bottles	Noncategory I	Class 2	Nonclass	

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(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
HVAC				
Portions of the System Important to Safety in the Following Areas: Control Room, Spent Fuel Pool, Radwaste, Auxiliary Feed Pump Room, Cable Spreading Room, Switchgear and Battery Room, Emergency Diesel Generator Room, Intake Room, Penetration and Fan Room)	Category I	Class 1	N/A	ASHRAE, Air Moving and Conditioning Assoc, NFPA Pamphlet 90A (Original)
Other	Noncategory I	Class 3	Nonclass	-
SAMPLING SYSTEM	Noncategory I	Class 3	Nonclass	-
FUEL HANDLING AND STORAGE	Category I	Class 1	Nonclass	Tables 9-19 and 9-20

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(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
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MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
CIRCULATING WATER SYSTEM				
Cooling Towers	Noncategory I	Class 3	Nonclass	UBC
Makeup Pumps	Noncategory I	Class 3	Nonclass	
Piping	Noncategory I	Class 3	Nonclass	-
RADIOACTIVE WASTE SYSTEM				
Liquid and Gaseous (Original)	Noncategory I	Classes 1 & 2	ASME VIII	ASME III, Class C, ASME VIII, ASA B16.5
Liquid and Gaseous (Modified)				
Components Added During July 1, 1973 Except Gas Decay Tanks	Noncategory I	Class 2	ASME VIII	ASME III, Class 3 (1971), ANSI B31.1 (1967), API 620, API 650 (Both 1970)
Processing Piping	Noncategory I	Class 2	ASME VIII	ASME III, Class 3, 1971
Gas Decay Tanks	-	Class 3	ASME VIII	

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(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

MECHANICAL SYSTEM/COMPONENT CLASSIFICATION

System/Component	Seismic Class per RG 1.29 Interpretation(a)	CP Co Design Class(b)	Class per RG 1.26 Interpretation(c)	Standards Used in Plant Design
Solid Radwaste (Original)	Noncategory I	Class 1	ASME VIII	-
Solid Radwaste (Modified)				
Tanks	Noncategory I	Class 2	API 650	API 650
Heat Exchangers/Coolers	Noncategory I	Class 2	ASME VIII	ASME VIII, 77, W79a
Piping/Strainers/Pumps	Noncategory I	Class 2	ANSI B31.1	ANSI B31.1
DIESEL GENERATOR OIL STORAGE				
Supply Piping	Category I	Class 1	-	ANSI B31.1
Storage Tank	Category I	Class 1	-	UL 58

(a) Seismic category as identified in the Franklin Research Center Technical Evaluation Report TER-C5257-428 Pursuant to SEP Topic III-1 and other related materials. This column is intended for informational purposes only and is not intended to impose design requirements.
(b) Equipment classification was originally identified in the Palisades 1980 FSAR, APPENDIX A, and TER-C5257-428 and as modified by CPCo.
(c) Class pursuant to the ASME B&PV Code, Section III, Division 1, Subsection NB, 1977 edition, 1978 addenda, as determined by TER-C5257-428, pursuant to SEP Topic III-1 and modified by CP Co.
(d) Current design requirements for non-PCS piping are reconciled to ANSI B 31.1, 1973 Ed with 1973 Summer Addenda. See Sections 5.10.1 and 5.10.2.
(e) Nitrogen Gas Backup Stations 1 and 2 reflect a seismic design from an earlier revision of the FSAR not consistent with the requirements in Section 5.2.2 of the current revision of the FSAR. The design of Stations 1 and 2 (FC-675) used 0.5 x OBE for seismic design.
(f) Seismic Class I Supported from Receivers to Operators on Engineered Safe-guards Systems.
(g) CPCo Design Class and ASME / Reg Guide 1.26 Class for the Chemical and Volume Control System were revised per EAR-1999-0081 to reflect that the system is no longer credited in the Chapter 14 safety analyses.

ELECTRICAL SYSTEMS/COMPONENT CLASSIFICATION(a)

SYSTEM / COMPONENT(b)	SAFETY CLASS 1E(c)
1. Emergency Generators	
Generator Skids 1-1 and 1-2	Yes
Generator Control Panels (G20, G21, G30, G31)	Yes
Static Exciters (C22, C26)	Yes
2. 2,400 V Bus System	
2,400 V Buses 1C and 1D (A11, A12)	Yes
Relay Test Panels (C18A, C19A)	No
Breaker Test Panels (C18, C19)	No
Terminal Panels Near Switchgear 1D (J9401, JL274, JL275)	Yes

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapters 7 and 8 for description of components listed.
(c) Refer to Chapter 8 definition.
(d) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(e) Components associated with the routing of plant circuits have been assigned safety classifications and channels consistent with the FSAR commitments. These assignments may be found in the Circuit\Raceway Schedule database.
(f) Containment Cooling Fan V-1A, V-2A, V-3A, and V-4A motors are Safety Class 1E. The motors for containment cooling fans V-1B, V-2B, V-3B, and V-4B are not Safety Class 1E.
(g) Charging pumps are supplied from a Safety Class 1E bus, but Chapter 14 safety analyses take no credit for them so they are not required to be Safety Class 1E.

ELECTRICAL SYSTEMS/COMPONENT CLASSIFICATION(a)

SYSTEM / COMPONENT(b)	SAFETY CLASS 1E(c)
3. 2,400/480 V Station Power Transformers	
Transformer 11 (X11)	Yes
Transformer 12 (X12)	Yes
Transformer 19 (X19)	Yes
Transformer 20 (X20)	Yes
4. 480 V Bus System	
480 V Buses 11, 12, 19 and 20 Switchgear (B11, B12, B19, B20)	Yes
480 V Motor Control Centers 1, 2, 21, 22, 23, 24, 25 and 26 (B01, B02, B21, B22, B23, B24, B25, B26)	Yes
480 V Motor Control Centers 7 and 8 (B07, B08)	No
Pressurizer Heater Transformers 15 and 16 (X15, X16)	No
480 V Buses 15 and 16 Switchgear SCR Controls (B15, B16)	No
Control Rod Drive Transformers 1 and 2 (X45, X46)	No

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapters 7 and 8 for description of components listed.
(c) Refer to Chapter 8 definition.
(d) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(e) Components associated with the routing of plant circuits have been assigned safety classifications and channels consistent with the FSAR commitments. These assignments may be found in the Circuit\Raceway Schedule database.
(f) Containment Cooling Fan V-1A, V-2A, V-3A, and V-4A motors are Safety Class 1E. The motors for containment cooling fans V-1B, V-2B, V-3B, and V-4B are not Safety Class 1E.
(g) Charging pumps are supplied from a Safety Class 1E bus, but Chapter 14 safety analyses take no credit for them so they are not required to be Safety Class 1E.

ELECTRICAL SYSTEMS/COMPONENT CLASSIFICATION(a)

SYSTEM / COMPONENT(b)	SAFETY CLASS 1E(c)
5. 125 V DC System	
Station Batteries and Racks 1 and 2 (D01, D02)	Yes
Battery Chargers 1, 2, 3, 4 (D15, D16, D17, D18)	Yes
DC Buses and Distribution Panels 1 and 2 (D10, D20, D11, D21, D11A, D21A)	Yes
DC Protection Panels 1 and 2 (JL258, JL259)	Yes
Diesel Fire Pump Batteries (D36, D38)	No
Data Logger Battery (D204)	No
Data Logger Battery (D205)	No
Data Logger Battery Chargers 1 and 2 (D206, D207)	No
NFPA 805 Dedicated Alternate Control Power (D222)	No

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapters 7 and 8 for description of components listed.
(c) Refer to Chapter 8 definition.
(d) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(e) Components associated with the routing of plant circuits have been assigned safety classifications and channels consistent with the FSAR commitments. These assignments may be found in the Circuit\Raceway Schedule database.
(f) Containment Cooling Fan V-1A, V-2A, V-3A, and V-4A motors are Safety Class 1E. The motors for containment cooling fans V-1B, V-2B, V-3B, and V-4B are not Safety Class 1E.
(g) Charging pumps are supplied from a Safety Class 1E bus, but Chapter 14 safety analyses take no credit for them so they are not required to be Safety Class 1E.

ELECTRICAL SYSTEMS/COMPONENT CLASSIFICATION(a)

SYSTEM / COMPONENT(b)	SAFETY CLASS 1E(c)
6. 120 V AC System	
Inverters 1, 2, 3, 4 (D06, D07, D08, D09)	Yes
Preferred AC Buses 1, 2, 3, 4 (Y10, Y20, Y30, Y40)	Yes
Instrument AC Transformers 1 and 2 (X21, X22)	No
Instrument AC Bus (Y01)	No
Bypass Regulator (Part of Y01)	No
Data Loggers Inverters 5 and 6 and Static Switch (Y210, Y220, Y230)	No
Data Logger Bypass Switch (S9003)	No
7. Electrical Control Panels	
Control Room Panel (C01) - Turbine Generator Controls	Partial(d)
Control Room Panel (C04) - Auxiliary Power Controls	Yes
Control Room Panel (C51) - Switchyard Controls	No

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapters 7 and 8 for description of components listed.
(c) Refer to Chapter 8 definition.
(d) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(e) Components associated with the routing of plant circuits have been assigned safety classifications and channels consistent with the FSAR commitments. These assignments may be found in the Circuit\Raceway Schedule database.
(f) Containment Cooling Fan V-1A, V-2A, V-3A, and V-4A motors are Safety Class 1E. The motors for containment cooling fans V-1B, V-2B, V-3B, and V-4B are not Safety Class 1E.
(g) Charging pumps are supplied from a Safety Class 1E bus, but Chapter 14 safety analyses take no credit for them so they are not required to be Safety Class 1E.

ELECTRICAL SYSTEMS/COMPONENT CLASSIFICATION(a)

SYSTEM / COMPONENT(b)	SAFETY CLASS 1E(c)
8. Electrical Raceways and Cabling	
Cable Trays Above Bus 1C	Yes
Cable Trays at Tunnel Cableway (Room 332)	Yes
Cable Trays at North Penetration (Outside Containment, Cable Penetration Room)	Yes
Cable Trays at North Penetration (Inside Containment)	Yes
Cable Trays Over Cable Spreading Room	Yes
Cable Trays at North Penetration (Inside Containment, on Shield Wall)	Yes
Cable Trays at Southwest Penetration (Inside Containment)	Yes
Conduits	Mix(e)

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapters 7 and 8 for description of components listed.
(c) Refer to Chapter 8 definition.
(d) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(e) Components associated with the routing of plant circuits have been assigned safety classifications and channels consistent with the FSAR commitments. These assignments may be found in the Circuit\Raceway Schedule database.
(f) Containment Cooling Fan V-1A, V-2A, V-3A, and V-4A motors are Safety Class 1E. The motors for containment cooling fans V-1B, V-2B, V-3B, and V-4B are not Safety Class 1E.
(g) Charging pumps are supplied from a Safety Class 1E bus, but Chapter 14 safety analyses take no credit for them so they are not required to be Safety Class 1E.

ELECTRICAL SYSTEMS/COMPONENT CLASSIFICATION(a)

SYSTEM / COMPONENT(b)	SAFETY CLASS 1E(c)
9. Electrical Loads	
Primary Coolant Pumps Motors	No
High-Pressure Safety Injection Pumps Motors	Yes
Low-Pressure Safety Injection Pumps Motors	Yes
Containment Spray Pumps Motors	Yes
Charging Pumps Motors	No(g)
Concentrated Boric Acid Transfer Pumps Motors	No
Component Cooling Water Pumps Motors	Yes
Auxiliary Feedwater Pumps Motors	Yes
Containment Cooling Fans Motors	Mix(f)
Service Water Pumps Motors	Yes
10. Equipment Qualified per EEQ	(d)

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapters 7 and 8 for description of components listed.
(c) Refer to Chapter 8 definition.
(d) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(e) Components associated with the routing of plant circuits have been assigned safety classifications and channels consistent with the FSAR commitments. These assignments may be found in the Circuit\Raceway Schedule database.
(f) Containment Cooling Fan V-1A, V-2A, V-3A, and V-4A motors are Safety Class 1E. The motors for containment cooling fans V-1B, V-2B, V-3B, and V-4B are not Safety Class 1E.
(g) Charging pumps are supplied from a Safety Class 1E bus, but Chapter 14 safety analyses take no credit for them so they are not required to be Safety Class 1E.

INSTRUMENTATION AND CONTROL/COMPONENT CLASSIFICATION(a)

	Safety Class 1E(b)
1. Reactor Protective System Channels Inputs	
Nuclear Instrumentation Power Range Safety	Yes
Primary Coolant Flow	Yes
Pressurizer Pressure	Yes
Primary Coolant Temperatures	Yes
Steam Generator Level	Yes
Steam Generator Pressure	Yes
2. Reactor Protective System Control Devices (Including CRDM Clutches and Manual Activation) (Does Not Include Clutch Power Supplies)	Yes
3. Engineered Safeguards Controls Channels Inputs	
Pressurizer Pressure	Yes
Containment Pressure	Yes
Containment Radiation	Yes
Refueling Radiation	No
SIRW Tank Level	Yes

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapter 8 definition.
(c) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(d) These components may or may not be Class 1E according to the Plant safety classification (Q-List).
(e) Instrumentation and controls on containment cooling fans V-1A, V-2A, V-3A, and V-4A are safety class 1E. Certain instrumentation and controls on containment cooling fans V-1B, V-2B, V-3B, and V-4B are safety class 1E.

INSTRUMENTATION AND CONTROL/COMPONENT CLASSIFICATION(a)

	Safety Class 1E(b)
4. Engineered Safeguards Control Devices (for Activation of)	
HPSI Pumps	Yes
LPSI Pumps	Yes
Containment Spray Pumps	Yes
Charging Pumps	No
Letdown Control Valves	Yes
Valve Between Auxiliary Spray Line and Charging	Yes
Valve Between the Charging Pumps and the HPSI System	Yes
Motor Operated Valves in the SI System	Yes
Valves for Safety Injection Recirculation	Yes
Containment Isolation Valves	Yes
Component Cooling Water Pumps	Yes
Component Cooling Water Valves	Yes
Service Water Pumps	Yes
Service Water Valves	Yes
Containment Recirculation Air Cooler Fans	Mix (e)
Emergency Generators	Yes

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapter 8 definition.
(c) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(d) These components may or may not be Class 1E according to the Plant safety classification (Q-List).
(e) Instrumentation and controls on containment cooling fans V-1A, V-2A, V-3A, and V-4A are safety class 1E. Certain instrumentation and controls on containment cooling fans V-1B, V-2B, V-3B, and V-4B are safety class 1E.

INSTRUMENTATION AND CONTROL/COMPONENT CLASSIFICATION(a)

	Safety Class 1E(b)
5. Engineered Safeguards Controls Instrumentation	
HPSI Flow to Primary Coolant System	Yes
Safety Injection Tank Level (Passive Injection)	No
Safety Injection Tank Pressure (Passive Injection)	No
Service Water Break Detectors (in Containment)	No
6. Safe Shutdown and Auxiliary Feedwater Instruments	Yes
7. Safe Shutdown and Auxiliary Feedwater Control Devices (Activating Circuits)	
Power Operated Relief Valves	Yes
Shutdown Cooling Isolation Valves	Yes
Turbine-Driven Auxiliary Feedwater Pump	Yes
Motor-Driven Auxiliary Feedwater Pumps	Yes
Pressurizer Heaters	No
Atmospheric Dump Valves	No
AFW Control Valves	Yes
8. AFW Automatic Initiation, Isolation and FOGG Control Devices (Including AFW Pumps Suction Pressure)	Yes

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapter 8 definition.
(c) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(d) These components may or may not be Class 1E according to the Plant safety classification (Q-List).
(e) Instrumentation and controls on containment cooling fans V-1A, V-2A, V-3A, and V-4A are safety class 1E. Certain instrumentation and controls on containment cooling fans V-1B, V-2B, V-3B, and V-4B are safety class 1E.

INSTRUMENTATION AND CONTROL/COMPONENT CLASSIFICATION(a)

	Safety Class 1E(b)
9. Primary Coolant Overpressurization Control Devices	
Pressurizer Pressure Channels	Yes
PCS Overpressurization Protection Devices	Yes
Shutdown Cooling Isolation Valves Controls	Yes
10. Reactor Vessel Gas Vent Isolation Valves Controls	Yes
11. Engineered Safeguards Pump Rooms and Radwaste Area Radiation Monitors	No
12. Control Room Ventilation, Instrumentation and Controls (See Table 9-14)	Yes(c)

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapter 8 definition.
(c) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(d) These components may or may not be Class 1E according to the Plant safety classification (Q-List).
(e) Instrumentation and controls on containment cooling fans V-1A, V-2A, V-3A, and V-4A are safety class 1E. Certain instrumentation and controls on containment cooling fans V-1B, V-2B, V-3B, and V-4B are safety class 1E.

INSTRUMENTATION AND CONTROL/COMPONENT CLASSIFICATION(a)

	Safety Class 1E(b)
13. Other Safety-Related Display Systems	
Subcooled Margin Monitor	Yes
Containment Pressure	Yes
Containment Water Level	Yes
Containment Temperature	No
Wide-Range Steam Generator Level	Yes
Containment Hydrogen Monitor	No
High-Range Containment Gamma Radiation Monitor	Yes
Reactor Vessel Level Monitoring System	Yes
Core Exit Thermocouples (16 of 43)	Yes
14. Local Instrumentation (Refer to Plant Safety Classification (Q-List) for Details)	
Transmitters (Inputs to Reactor Protective System)	Mix(d)
Level, Pressure, etc, Switches (Inputs to Reactor Protective System)	Mix(d)
Transmitters (Inputs to Engineered Safeguards and Containment Isolation)	Mix(d)
Level, Pressure, etc, Switches (Inputs to Engineered Safeguards and CI)	Mix(d)
Transmitters (Inputs to Reactor Shutdown and Decay Heat Removal)	Mix(d)
Level, Pressure, etc, Switches (Inputs to Reactor Shutdown and DHR)	Mix(d)

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapter 8 definition.
(c) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(d) These components may or may not be Class 1E according to the Plant safety classification (Q-List).
(e) Instrumentation and controls on containment cooling fans V-1A, V-2A, V-3A, and V-4A are safety class 1E. Certain instrumentation and controls on containment cooling fans V-1B, V-2B, V-3B, and V-4B are safety class 1E.

INSTRUMENTATION AND CONTROL/COMPONENT CLASSIFICATION(a)

	Safety Class 1E(b)
15. Valve Actuators	
Primary Coolant Power Operated Relief Valves Actuators	Yes
Primary Coolant PORV Block Valves Actuators	Yes
Interconnecting Valve (Actuators) Required To Perform Safety Injection Function	Yes
Interconnecting Valve (Actuators) Required To Perform Recirculating Function	Yes
Interconnecting Valve (Actuators) Required To Perform Spray and Spray Test Function	Yes
Interconnecting Valve (Actuators) Required To Perform Letdown, Charging and Supply of SIRW Tank Functions	No
Interconnecting Valve (Actuators) Required To Perform Boric Acid Storage and Supply Function	No
Interconnecting Valves (Actuators) Required To Perform Demineralizer Function	No
Auxiliary Pressurizer Spray Valve Actuators	No
Interconnecting Valve (Actuators) Required To Perform Residual Heat Removal Function (Shutdown Cooling)	Yes
Interconnecting Valve (Actuators) Required To Perform Quality Groups B and C Components Cooling	Yes
Interconnecting Valve (Actuators) Required To Perform Quality Group C Service Cooling	Yes
Interconnecting Valve (Actuators) Within Main Steam Lines From Secondary Side of the Steam Generators up to and Including the Outermost Containment Isolation Valve	Yes
Atmospheric Dump Valve Actuator	No
Interconnecting Valve (Actuators) Within Feedwater Lines Extending From the Secondary Side of the Steam Generators up to and Including the Outermost Containment Isolation Valve	Yes

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapter 8 definition.
(c) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(d) These components may or may not be Class 1E according to the Plant safety classification (Q-List).
(e) Instrumentation and controls on containment cooling fans V-1A, V-2A, V-3A, and V-4A are safety class 1E. Certain instrumentation and controls on containment cooling fans V-1B, V-2B, V-3B, and V-4B are safety class 1E.

INSTRUMENTATION AND CONTROL/COMPONENT CLASSIFICATION(a)

	Safety Class 1E(b)
Interconnecting Valve (Actuators) Required To Supply AFW From Condensate Storage Tank to Steam Generators	Yes
Interconnecting Valve (Actuators) Required To Supply Steam From Main Steam System to AFW Turbine-Driven Pump	Yes
Interconnecting Valve (Actuators) That Form an Extension of the Containment Boundary up to and Including the Outermost Containment Isolation Valve for the Containment Purge System	Yes
Containment Cooling Dampers Actuators	Yes
Interconnecting Valves (Actuators) of the Reactor Coolant Pressure Boundary That Penetrate the Containment up to and Including the Outermost Containment Isolation Valve	Yes
Interconnecting Valves (Actuators) of Quality Group B, C or D System That Penetrate the Containment From the First Isolation Valve Inside Containment up to and Including the Outermost Containment Isolation Valve	Yes

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapter 8 definition.
(c) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(d) These components may or may not be Class 1E according to the Plant safety classification (Q-List).
(e) Instrumentation and controls on containment cooling fans V-1A, V-2A, V-3A, and V-4A are safety class 1E. Certain instrumentation and controls on containment cooling fans V-1B, V-2B, V-3B, and V-4B are safety class 1E.

INSTRUMENTATION AND CONTROL/COMPONENT CLASSIFICATION(a)

	Safety Class 1E(b)
16. Instrument and Control Panels	
Control Room Panel (C02) - Primary Process and Reactor	Yes
Control Room Panel (C03) - Containment Isolation and Miscellaneous	Yes
Control Room Panel (C06) - Reactor Protective System	Yes
Control Room Panel (C08) - Service Water and Comp Cooling	Partial(c)
Control Room Panel (C09) - Turbine Interface Panel	No
Control Room Panel (C11) - Radiation and Turbine Mon	Partial(c)
Control Room Panel (C12) - Feedwater, Primary Process, NI	Partial(c)
Control Room Panel (C13) - DBA, Shutdown and Miscellaneous	Yes
Local Control Panel (C15) - Rod Drive Controls	No
Local Control Panel (C17) - Charging Pump A Speed Control	No
Control Room Panel (C27) - ΔT Power and RPS Calibration	Partial (c)
Local Control Panel (C33) - Engineered Safeguards Auxiliary	Yes
Local Control Panel (C35) - Air Compressor Controls	No
Local Control Panel (C36) - Motor-Driven Fire Pump Control	No
Local Control Panel (C37) - Diesel-Driven Fire Pump Control	No
Local Control Panel (C40) - Radwaste Controls	No
Local Control Panel (C41) - Refueling Disconnect	No
Local Control Panel (C101) - Radwaste System Sample	No
Local Control Panel (C103) - Auxiliary Building Gas Analyzer	No
Control Room Panel (C106) - Cooling Tower Controls	No

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapter 8 definition.
(c) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(d) These components may or may not be Class 1E according to the Plant safety classification (Q-List).
(e) Instrumentation and controls on containment cooling fans V-1A, V-2A, V-3A, and V-4A are safety class 1E. Certain instrumentation and controls on containment cooling fans V-1B, V-2B, V-3B, and V-4B are safety class 1E.

INSTRUMENTATION AND CONTROL/COMPONENT CLASSIFICATION(a)

	Safety Class 1E(b)
Control Room Panel (C115) - Radwaste Addition Rad Mon	No
Control Room Panel (C125) - H&V Controls	No
Control Room Panel (C126) - Circulating Water and Iodine Removal	Partial
Local Control Panel (C150) - Auxiliary Shutdown Controls	Yes
Local Control Panel (C207) - Rad Monitoring Controls (FW Purity)	No
Control Room Panel (C11A) - Control Room HVAC	Yes(c)
Control Room Panel (C11A) - NFPA 805 Alternate Controls	No
Local Control Panel (C253) - Plant Process Computer - SOE Node	No
Local Control Panel (C269) - Plant Process Computer - Communication Hub	No
17. Post-Accident Monitoring Equipment per Regulatory Guide 1.97 (See Appendix 7C)	(c)

(a) Safety Class 1E components are Seismic Category I per Regulatory Guide 1.29.
(b) Refer to Chapter 8 definition.
(c) These components have a mix of Class 1E and Nonclass 1E circuits per Plant safety classification (Q-List).
(d) These components may or may not be Class 1E according to the Plant safety classification (Q-List).
(e) Instrumentation and controls on containment cooling fans V-1A, V-2A, V-3A, and V-4A are safety class 1E. Certain instrumentation and controls on containment cooling fans V-1B, V-2B, V-3B, and V-4B are safety class 1E.

TORNADO DESIGN PRESSURES

STRUCTURE	WALL PRESSURE DESIGN EQUATION	DESIGN VALUE lb/ft^2 (psig)
Auxiliary Building (Class I Portion Except for the Enclosure Over the Spent Fuel Pool)	$P = .002558\left(300\frac{mi}{h}\right)^2 + 3\,psi\left[144\frac{in^2}{ft^2}\right]$	662 (4.6)
Auxiliary Building Radwaste Addition	$P = .73(.002558)\left(300\frac{mi}{h}\right)^2 + 3\,psi\left[144\frac{in^2}{ft^2}\right]$	600 (4.2)
Auxiliary Building TSC/EER/HVAC Addition	$P = 3\,psi\left[144\frac{in^2}{ft^2}\right]$	432 (3.0)
Auxiliary Feedwater Pump Room	$P = 3\,psi\left[144\frac{in^2}{ft^2}\right]$	432 (3.0)(a)
Containment Structure	$P = 3\,psi\left[144\frac{in^2}{ft^2}\right]$	(b)
Electrical Penetration Enclosure	$P = 3\,psi\left[144\frac{in^2}{ft^2}\right]$	432 (3.0)
Intake Structure (Class 1 Portion)	$P = 3\,psi\left[144\frac{in^2}{ft^2}\right]$	432 (3.0)

(a) This room is located below grade.

(b) In all cases, seismic loads on the containment structure were larger than their wind or tornado counterparts (missile impact excluded) and since seismic loads were used in the same or similar load combinations (see Subsections 5.8.3.1.2 and 5.8.3.1.3) as the wind and tornado loads, there was no need to analyze the containment for wind and tornado loads. The resulting containment structure design is inherently resistant to the tornado wind and differential pressure loads.

SAFETY-RELATED EQUIPMENT THAT REQUIRES PROTECTION FROM FLOODING DUE TO FAILURES OF NONCLASS 1 SYSTEMS

Description	Location	Elevation of Supporting Floor
Auxiliary Feedwater Pumps	Turbine Bldg	571'-0"
Batteries	Auxiliary Bldg	607'-6"
Containment Spray Pumps	Auxiliary Bldg	570'-0"
Emergency Diesel Generators	Auxiliary Bldg	590'-0"
480 V Load Centers	Auxiliary Bldg	607'-6"
480 V Motor Control Centers	Auxiliary Bldg	607'-6"
Safety Injection Pumps	Auxiliary Bldg	570'-0"
Service Water Pumps	Intake Structure	590'-0"
2,400 V Switchgear	Auxiliary Bldg	607'-6"

CLASS 1 STRUCTURES
WALL AND ROOF THICKNESS

Structure or Structural Component	Description/Remarks	Wall Thickness	Roof Thickness
Auxiliary Building (Class 1 Portion)	Steel Frame Above Elevation 649'-0"	Metal Siding	Metal Deck
	Reinforced Concrete Below Elevation 649'-0" (f'_c = 3,000 psi)	18"	12" Minimum
Auxiliary Building Radwaste Addition	Reinforced Concrete (f'_c = 3,000 psi)	24" Minimum	24" Minimum
Auxiliary Building TSC/EER/HVAC Addition	Reinforced Concrete (f'_c = 4,000 psi)	18" (Note 1)	18" Minimum
Auxiliary Feed-water Pump Room	Reinforced Concrete (f'_c = 3,000 psi) Below Grade	24" Minimum	12"
Containment Structure	Reinforced and Pre-stressed Concrete (f'_c = 5,000 psi)	42"	36" (Dome)
Electrical Penetration Enclosure	Reinforced Concrete (f'_c = 3,000 psi)	24"	8"
Intake Structure (Class 1 Portion)	Reinforced Concrete (f'_c = 3,000 psi)	24"	24"

Note 1: Portion of TSC boundary in Track Alley removed and replaced with equivalent steel plate per Engineering Change 59170.

BURST PROBABILITY FOR EACH LP ROTOR AND TOTAL UNIT AT 120% RATED SPEED

HOURS	DATE	LP1	LP2	UNIT	ALLOWABLE
12,000	Spring 2001	0.00E+00	0.00E+00	0.00E+00	1.00E-04
24,000	Fall 2002	0.00E+00	0.00E+00	0.00E+00	1.00E-04
36,000	Spring 2004	0.00E+00	0.00E+00	0.00E+00	1.00E-04
48,000	Fall 2005	9.30E-08	0.00E+00	9.30E-08	1.00E-04
60,000	Spring 2007	1.20E-06	4.60E-08	1.25E-06	1.00E-04
72,000	Fall 2008	3.40E-06	7.50E-07	4.15E-06	1.00E-04
84,000	Spring 2010	9.80E-06	2.10E-06	1.19E-05	1.00E-04
96,000	Fall 2011	2.12E-05	6.20E-06	2.74E-05	1.00E-04
108,000	Spring 2013	3.80E-05	1.38E-05	5.18E-05	1.00E-04
120,000	Fall 2014	6.50E-05	2.54E-05	9.04E-05	1.00E-04
132,000	Spring 2016	1.65E-04	3.90E-05	2.04E-04	1.00E-04
144,000	Fall 2017	3.30E-04	6.20E-05	3.92E-04	1.00E-04

HIGH-ENERGY PIPE FAILURES OUTSIDE CONTAINMENT - SUMMARY OF OPERATING STRESSES
(Calculated 1979-1981)

System: MAIN STEAM (EB-1-36", EB-1-26")

Point No	Pressure Stress, P	Weight Stress, W	P + W	S_h(a)	Seismic Stress, S	P+W+S	$1.2S_h$(b)	Expansion Stress, T	S_A(c)	P+W+S+T	$0.8(S_h+S_A)$(d)
1	6,459	1,325	7,784	17,500	6,660	14,444	21,000	2,994	26,250	17,438	35,000
2	6,459	3,399	9,858	17,500	3,913	13,771	21,000	6,115	26,250	19,886	35,000
3	6,459	2,992	9,451	17,500	3,865	13,316	21,000	5,336	26,250	18,652	35,000
4	6,459	748	7,207	17,500	3,873	11,080	21,000	3,782	26,250	14,862	35,000
5	6,459	875	7,334	17,500	3,479	10,813	21,000	4,592	26,250	15,405	35,000
6	6,459	1,099	7,558	17,500	3,425	10,983	21,000	2,876	26,250	13,859	35,000
7	8,210	1,111	9,321	17,500	7,261	16,582	21,000	5,903	26,250	22,485	35,000
8	8,210	1,089	9,299	17,500	5,785	15,084	21,000	7,519	26,250	22,063	35,000
9	8,210	321	8,531	17,500	5,831	14,362	21,000	6,754	26,250	21,116	35,000
10	8,210	321	8,531	17,500	5,831	14,362	21,000	6,754	26,250	21,116	35,000
11	8,210	228	8,438	17,500	5,313	13,751	21,000	5,975	26,250	19,726	35,000
12	8,210	1,459	9,669	17,500	5,320	14,989	21,000	6,026	26,250	21,015	35,000
13	8,210	2,557	10,767	17,500	5,481	16,248	21,000	7,084	26,250	23,332	35,000
14	8,210	3,372	11,582	17,500	7,353	18,935	21,000	7,590	26,250	26,525	35,000
15	8,210	3,459	11,669	17,500	9,872	21,541	21,000	9,901	26,250	31,442	35,000
16	5,457	1,016	6,473	17,500	3,372	9,845	21,000	3,450	26,250	13,295	35,000
17	8,210	1,717	9,927	17,500	10,479	20,406	21,000	7,091	26,250	27,497	35,000
18	8,210	941	9,151	17,500	9,567	18,718	21,000	6,602	26,250	25,320	35,000
19	8,210	2,253	10,463	17,500	5,655	16,118	21,000	4,509	26,250	20,627	35,000
20	8,210	3,243	11,453	17,500	5,224	16,677	21,000	3,812	26,250	20,489	35,000
21	8,210	2,973	11,183	17,500	6,520	17,703	21,000	7,886	26,250	25,589	35,000
22	8,210	2,949	11,159	17,500	9,429	20,588	21,000	11,016	26,250	31,604	35,000
23	5,457	912	6,369	17,500	3,333	9,702	21,000	3,600	26,250	13,302	35,000
24	6,459	1,981	8,440	17,500	3,326	11,766	21,000	2,546	26,250	14,312	35,000
25	6,459	4,532	10,991	17,500	3,509	14,500	21,000	4,941	26,250	19,441	35,000
26	6,459	4,872	11,331	17,500	4,020	15,351	21,000	5,561	26,250	20,912	35,000
27	6,459	1,049	7,508	17,500	3,344	10,852	21,000	4,047	26,250	14,899	35,000

(a) S_h = Allowable limit of P + W per applicable code
(b) $1.2S_h$ = Allowable limit of P + W + S per applicable code
(c) S_A = Allowable limit of T per applicable code
(d) $0.8(S_h + S_A)$ = Threshold of stress for mandatory break location in this study, AEC criteria

HIGH-ENERGY PIPE FAILURES OUTSIDE CONTAINMENT - SUMMARY OF OPERATING STRESSES
(Calculated 1979-1981)

System: MAIN STEAM (EB-1-36", EB-1-26")

Point No	Pressure Stress, P	Weight Stress, W	P + W	S_h(a)	Seismic Stress, S	P+W+S	$1.2S_h$(b)	Expansion Stress, T	S_A(c)	P+W+S+T	$0.8(S_h+S_A)$(d)
28	6,459	1,007	7,466	17,500	3,795	11,261	21,000	3,458	26,250	14,719	35,000
29	6,459	883	7,342	17,500	2,309	9,651	21,000	1,133	26,250	10,784	35,000
30	8,212	911	9,123	17,500	4,441	13,564	21,000	6,266	26,250	19,830	35,000
31	8,212	424	8,636	17,500	4,539	13,175	21,000	7,005	26,250	20,180	35,000
32	8,212	424	8,636	17,500	4,539	13,175	21,000	7,005	26,250	20,180	35,000
33	8,212	865	9,077	17,500	4,108	13,185	21,000	6,291	26,250	19,476	35,000
34	8,212	1,591	9,803	17,500	4,641	14,444	21,000	6,807	26,250	21,251	35,000
35	8,212	1,288	9,500	17,500	3,843	13,343	21,000	5,822	26,250	19,165	35,000
36	8,212	1,519	9,731	17,500	5,881	15,612	21,000	2,325	26,250	17,937	35,000
37	8,212	2,472	10,684	17,500	6,373	17,057	21,000	4,403	26,250	21,460	35,000
38	5,457	2,432	7,889	17,500	8,292	16,181	21,000	8,548	26,250	24,729	35,000
39	5,457	1,041	6,498	17,500	4,305	10,803	21,000	4,320	26,250	15,123	35,000
40	8,212	1,124	9,336	17,500	7,476	16,812	21,000	4,519	26,250	21,331	35,000
41	8,212	623	8,835	17,500	6,816	15,651	21,000	3,976	26,250	19,627	35,000
42	8,212	2,765	10,977	17,500	4,968	15,945	21,000	1,736	26,250	17,681	35,000
43	8,212	2,321	10,533	17,500	3,995	14,528	21,000	1,621	26,250	16,149	35,000
44	8,212	809	9,021	17,500	3,299	12,320	21,000	2,609	26,250	14,929	35,000
45	8,212	1,476	9,688	17,500	4,605	14,293	21,000	3,899	26,250	18,192	35,000
46	5,457	3,223	11,435	17,500	8,136	24,212	21,000	5,555	26,250	29,767	35,000
47	5,457	1,469	9,681	17,500	3,982	13,663	21,000	2,687	26,250	16,350	35,000

(a) S_h = Allowable limit of P + W per applicable code
(b) $1.2S_h$ = Allowable limit of P + W + S per applicable code
(c) S_A = Allowable limit of T per applicable code
(d) $0.8(S_h + S_A)$ = Threshold of stress for mandatory break location in this study, AEC criteria

HIGH-ENERGY PIPE FAILURES OUTSIDE CONTAINMENT - SUMMARY OF OPERATING STRESSES
(Calculated 1979-1981)

System: FEEDWATER (DB-1-18" and EB-9-18", DB-1-12")

Point No	Pressure Stress, P	Weight Stress, W	P + W	S_h(a)	Seismic Stress, S	P+W+S	1.2S_h(b)	Expansion Stress, T	S_A(c)	P+W+S+T	0.8(S_h+S_A)(d)
1	5,787	247	6,034	15,000	3,194	9,228	18,000	6,123	22,500	15,351	30,000
2	5,787	125	5,912	15,000	710	6,622	18,000	801	22,500	7,423	30,000
3	5,787	250	6,037	15,000	172	6,209	18,000	493	22,500	6,702	30,000
4	5,787	280	6,067	15,000	2,215	8,282	18,000	10,523	22,500	18,805	30,000
5	5,787	769	6,556	15,000	2,585	9,141	18,000	10,893	22,500	20,034	30,000
6	5,787	516	6,303	15,000	1,800	8,103	18,000	10,191	22,500	18,294	30,000
7	5,787	740	6,527	15,000	1,533	8,060	18,000	8,385	22,500	16,445	30,000
8	5,787	571	6,358	15,000	1,648	8,006	18,000	4,182	22,500	12,188	30,000
9	5,787	337	6,124	15,000	2,072	8,196	18,000	3,123	22,500	11,319	30,000
10	5,787	273	6,060	15,000	2,171	8,231	18,000	4,060	22,500	12,291	30,000
11	5,787	25	5,812	15,000	1,937	7,749	18,000	2,733	22,500	10,482	30,000
12	5,787	567	6,354	15,000	1,924	8,278	18,000	1,508	22,500	9,786	30,000
13	5,787	1,065	6,852	15,000	3,683	10,535	18,000	6,841	22,500	17,376	30,000
14	5,787	745	6,532	15,000	2,907	9,439	18,000	5,112	22,500	14,551	30,000
15	-	-	-	-	-	-	-	-	-	-	-
16	5,787	377	6,164	15,000	1,844	8,008	18,000	3,222	22,500	11,230	30,000
17	5,896	903	6,690	15,000	2,011	8,701	18,000	2,604	22,500	11,305	30,000
18	5,896	1,009	6,905	15,000	3,423	10,328	18,000	2,154	22,500	12,482	30,000
19	5,896	302	6,198	15,000	1,115	7,313	18,000	641	22,500	7,954	30,000
20	5,896	218	6,114	15,000	1,013	7,127	18,000	856	22,500	7,983	30,000
21	5,787	773	6,560	15,000	3,255	9,815	18,000	842	22,500	10,657	30,000
22	5,787	632	6,419	15,000	2,278	8,697	18,000	2,323	22,500	11,020	30,000
23	5,787	387	6,174	15,000	3,880	10,054	18,000	3,950	22,500	14,004	30,000
24	5,787	126	5,913	15,000	1,897	7,810	18,000	1,682	22,500	9,492	30,000
25	5,991	487	6,478	15,000	3,512	9,990	18,000	2,516	22,500	12,506	30,000
26	5,991	345	6,336	15,000	1,713	8,049	18,000	806	22,500	8,855	30,000
27	5,787	1,395	7,182	15,000	5,165	12,347	18,000	4,477	22,500	16,824	30,000

(a) S_h = Allowable limit of P + W per applicable code
(b) 1.2S_h = Allowable limit of P + W + S per applicable code
(c) S_A = Allowable limit of T per applicable code
(d) 0.8(S_h + S_A) = Threshold of stress for mandatory break location in this study, AEC criteria

HIGH-ENERGY PIPE FAILURES OUTSIDE CONTAINMENT - SUMMARY OF OPERATING STRESSES
(Calculated 1979-1981)

System: FEEDWATER (DB-1-18" and EB-9-18", DB-1-12")

Point No	Pressure Stress, P	Weight Stress, W	P + W	S_h(a)	Seismic Stress, S	P+W+S	1.2S_h(b)	Expansion Stress, T	S_A(c)	P+W+S+T	0.8(S_h+S_A)(d)
28	5,787	1,459	7,246	15,000	3,960	11,206	18,000	3,272	22,500	14,478	30,000
29	5,787	1,375	7,162	15,000	3,828	10,990	18,000	2,651	22,500	13,641	30,000
30	5,787	1,056	6,843	15,000	3,892	10,735	18,000	2,114	22,500	12,849	30,000
30A	5,787	1,087	6,874	15,000	1,490	8,364	18,000	1,364	22,500	9,728	30,000
31	5,787	1,167	6,954	15,000	3,208	10,162	18,000	3,952	22,500	14,114	30,000
32	5,787	808	6,595	15,000	3,195	9,790	18,000	4,756	22,500	14,546	30,000
32A	5,787	759	6,546	15,000	3,893	10,439	18,000	4,900	22,500	15,339	30,000
33	5,787	644	6,431	15,000	4,465	10,896	18,000	5,783	22,500	16,679	30,000
34	5,787	557	6,344	15,000	4,720	11,064	18,000	4,995	22,500	16,059	30,000
34A	5,787	1,132	6,919	15,000	6,663	13,582	18,000	6,399	22,500	19,981	30,000
35	5,787	2,401	8,188	15,000	7,345	15,533	18,000	7,898	22,500	23,431	30,000
36	4,587	490	5,077	15,000	1,635	6,712	18,000	1,458	22,500	8,170	30,000
37	4,587	855	5,442	15,000	3,660	9,102	18,000	2,679	22,500	11,781	30,000
38	5,680	1,128	6,808	15,000	3,695	10,503	18,000	3,695	22,500	14,198	30,000
39	5,680	1,170	6,850	15,000	4,244	11,094	18,000	5,916	22,500	17,010	30,000
40	5,680	3,843	9,523	15,000	8,123	17,646	18,000	10,622	22,500	28,268	30,000
41	4,587	858	5,445	15,000	2,616	8,061	18,000	4,114	22,500	12,175	30,000
42	4,587	632	5,219	15,000	3,468	8,687	18,000	4,325	22,500	13,012	30,000
43	4,587	613	5,200	15,000	3,603	8,803	18,000	4,317	22,500	13,120	30,000
44	4,587	391	4,978	15,000	1,942	6,920	18,000	2,264	22,500	9,184	30,000
45	4,587	69	4,656	15,000	3,812	8,468	18,000	5,780	22,500	14,248	30,000
46	5,699	1,382	7,081	15,000	10,205	17,286	18,000	10,760	22,500	28,046	30,000
47	5,680	888	6,568	15,000	5,104	11,672	18,000	2,961	22,500	14,633	30,000
48	5,680	768	6,448	15,000	4,187	10,635	18,000	2,018	22,500	12,653	30,000
49	5,680	785	6,465	15,000	5,393	11,858	18,000	2,376	22,500	14,234	30,000
50	5,680	509	6,189	15,000	5,396	11,585	18,000	2,861	22,500	14,446	30,000
51	5,680	220	5,900	15,000	4,398	10,289	18,000	2,712	22,500	13,001	30,000

(a) S_h = Allowable limit of P + W per applicable code
(b) 1.2S_h = Allowable limit of P + W + S per applicable code
(c) S_A = Allowable limit of T per applicable code
(d) 0.8(S_h + S_A) = Threshold of stress for mandatory break location in this study, AEC criteria

HIGH-ENERGY PIPE FAILURES OUTSIDE CONTAINMENT - SUMMARY OF OPERATING STRESSES
(Calculated 1979-1981)

System: FEEDWATER (DB-1-18" and EB-9-18", DB-1-12")

Point No	Pressure Stress, P	Weight Stress, W	P + W	S_h(a)	Seismic Stress, S	P+W+S	$1.2S_h$(b)	Expansion Stress, T	S_A(c)	P+W+S+T	$0.8(S_h+S_A)$(d)
52	5,680	795	6,475	15,000	5,074	11,549	18,000	1,037	22,500	12,586	30,000
53	5,680	188	5,868	15,000	6,155	12,023	18,000	1,695	22,500	13,718	30,000
54	5,680	196	5,876	15,000	6,872	12,748	18,000	1,224	22,500	13,972	30,000
55	5,680	140	5,820	15,000	6,380	12,200	18,000	337	22,500	12,537	30,000
56	5,680	212	5,892	15,000	9,705	15,597	18,000	3,310	22,500	18,907	30,000
57	5,680	401	6,081	15,000	9,248	15,329	18,000	3,919	22,500	19,248	30,000
58	5,680	549	6,229	15,000	4,916	11,145	18,000	3,503	22,500	14,648	30,000
59	5,680	509	6,189	15,000	9,023	15,212	18,000	2,723	22,500	17,935	30,000
60	5,680	348	6,028	15,000	6,801	12,829	18,000	3,815	22,500	16,644	30,000
61	5,680	271	5,951	15,000	7,357	13,308	18,000	4,333	22,500	17,641	30,000
62	-	-	-	-	-	-	-	-	-	-	-
63	5,680	472	6,152	15,000	8,015	14,167	18,000	6,236	22,500	20,403	30,000
64	5,680	162	5,842	15,000	4,259	10,101	18,000	3,078	22,500	13,179	30,000
65	4,587	124	4,711	15,000	1,119	5,830	18,000	1,218	22,500	7,048	30,000
66	4,587	268	4,855	15,000	3,949	8,804	18,000	1,967	22,500	10,771	30,000
67	5,699	1,475	7,174	15,000	8,302	15,476	18,000	4,386	22,500	19,862	30,000
68	5,680	538	6,218	15,000	3,774	9,992	18,000	3,947	22,500	13,939	30,000
69	5,680	333	6,013	15,000	1,865	7,878	18,000	2,020	22,500	9,898	30,000
70	5,680	332	6,012	15,000	1,765	7,777	18,000	1,516	22,500	9,293	30,000
71	4,587	2,077	6,664	15,000	5,363	12,027	18,000	2,171	22,500	14,198	30,000
72	4,587	683	5,270	15,000	930	6,200	18,000	679	22,500	6,879	30,000
73	5,787	441	6,228	15,000	147	6,375	18,000	535	22,500	6,910	30,000
74	5,787	1,293	7,080	15,000	5,111	12,191	18,000	4,914	22,500	17,105	30,000
75	5,787	1,103	6,890	15,000	5,624	12,514	18,000	5,308	22,500	17,822	30,000
76	5,787	399	6,186	15,000	3,012	9,198	18,000	3,525	22,500	12,723	30,000
77	5,787	665	6,452	15,000	3,041	9,493	18,000	4,577	22,500	14,070	30,000
78	5,787	620	6,407	15,000	2,840	9,247	18,000	4,693	22,500	13,940	30,000

(a) S_h = Allowable limit of P + W per applicable code
(b) $1.2S_h$ = Allowable limit of P + W + S per applicable code
(c) S_A = Allowable limit of T per applicable code
(d) $0.8(S_h + S_A)$ = Threshold of stress for mandatory break location in this study, AEC criteria

HIGH-ENERGY PIPE FAILURES OUTSIDE CONTAINMENT - SUMMARY OF OPERATING STRESSES
(Calculated 1979-1981)

System: FEEDWATER (DB-1-18" and EB-9-18", DB-1-12")

Point No	Pressure Stress, P	Weight Stress, W	P + W	S_h(a)	Seismic Stress, S	P+W+S	1.2S_h(b)	Expansion Stress, T	S_A(c)	P+W+S+T	0.8(S_h+S_A)(d)
79	5,787	663	6,450	15,000	2,191	8,641	18,000	3,845	22,500	12,486	30,000
80	5,787	341	6,128	15,000	1,860	7,988	18,000	319	22,500	8,307	30,000
81	5,787	310	6,097	15,000	1,500	7,597	18,000	336	22,500	7,933	30,000
82	5,787	626	6,413	15,000	1,209	7,622	18,000	1,110	22,500	8,732	30,000
83	5,787	1,700	7,487	15,000	5,035	12,522	18,000	4,280	22,500	16,802	30,000
83A	5,787	2,364	8,151	15,000	6,817	14,968	18,000	5,543	22,500	20,511	30,000
84	5,787	2,467	8,254	15,000	7,077	15,331	18,000	4,876	22,500	20,207	30,000
85	5,991	1,056	12,404	15,000	3,321	15,725	18,000	1,363	22,500	17,088	30,000
86	5,991	804	6,795	15,000	2,212	9,007	18,000	952	22,500	9,959	30,000
87	5,896	453	6,349	15,000	1,010	7,359	18,000	1,047	22,500	8,406	30,000
88	5,896	334	6,230	15,000	523	6,753	18,000	474	22,500	7,227	30,000
89	5,896	1,497	7,393	15,000	4,707	12,100	18,000	1,734	22,500	13,834	30,000
90	5,896	1,077	6,973	15,000	4,720	11,693	18,000	2,819	22,500	14,512	30,000
91	5,787	900	6,687	15,000	4,129	10,816	18,000	5,967	22,500	16,783	30,000
92	5,787	1,724	7,511	15,000	3,523	11,034	18,000	6,410	22,500	17,444	30,000
93	5,787	1,784	7,571	15,000	2,593	10,164	18,000	2,988	22,500	13,152	30,000
94	5,787	1,801	7,588	15,000	2,950	10,538	18,000	2,387	22,500	12,925	30,000
95	5,787	2,467	8,254	15,000	2,935	11,189	18,000	6,255	22,500	17,444	30,000
96	5,787	759	6,546	15,000	2,429	8,975	18,000	8,353	22,500	17,328	30,000
97	5,787	1,365	7,152	15,000	2,515	9,667	18,000	7,197	22,500	16,864	30,000
98	5,787	1,431	7,218	15,000	2,585	9,803	18,000	6,398	22,500	16,201	30,000
99	5,787	1,081	6,868	15,000	2,955	9,823	18,000	5,212	22,500	15,035	30,000
100	4,475	576	5,051	15,000	1,188	6,239	18,000	1,430	22,500	7,669	30,000
101	4,475	734	5,209	15,000	7,007	12,216	18,000	8,434	22,500	20,650	30,000
102	5,787	1,393	7,180	15,000	2,728	9,908	18,000	2,056	22,500	11,964	30,000
103	5,787	1,425	7,212	15,000	2,083	9,295	18,000	1,786	22,500	11,081	30,000
104	5,787	1,275	7,062	15,000	2,171	9,233	18,000	835	22,500	10,068	30,000

(a) S_h = Allowable limit of P + W per applicable code
(b) 1.2S_h = Allowable limit of P + W + S per applicable code
(c) S_A = Allowable limit of T per applicable code
(d) 0.8(S_h + S_A) = Threshold of stress for mandatory break location in this study, AEC criteria

HIGH-ENERGY PIPE FAILURES OUTSIDE CONTAINMENT - SUMMARY OF OPERATING STRESSES
(Calculated 1979-1981)

System: FEEDWATER (DB-1-18" and EB-9-18", DB-1-12")

Point No	Pressure Stress, P	Weight Stress, W	P + W	S_h(a)	Seismic Stress, S	P+W+S	1.2S_h(b)	Expansion Stress, T	S_A(c)	P+W+S+T	0.8(S_h+S_A)(d)
105	5,787	1,155	6,942	15,000	2,176	9,118	18,000	1,116	22,500	10,234	30,000
106	5,787	1,996	7,783	15,000	2,873	10,656	18,000	1,465	22,500	12,121	30,000
107	5,787	362	6,149	15,000	942	7,091	18,000	402	22,500	7,493	30,000
108	5,787	825	6,612	15,000	8,121	14,733	18,000	2,597	22,500	17,330	30,000
109	5,787	825	6,612	15,000	8,121	14,733	18,000	2,597	22,500	17,330	30,000
110	5,787	283	6,070	15,000	4,924	10,994	18,000	1,342	22,500	12,336	30,000

(a) S_h = Allowable limit of P + W per applicable code
(b) 1.2S_h = Allowable limit of P + W + S per applicable code
(c) S_A = Allowable limit of T per applicable code
(d) 0.8(S_h + S_A) = Threshold of stress for mandatory break location in this study, AEC criteria

HIGH-ENERGY PIPE FAILURES OUTSIDE CONTAINMENT - SUMMARY OF OPERATING STRESSES
(Calculated 1979-1981)

System: MAIN STEAM DUMP (EB-1-8", GB-19-8")

Point No	Pressure Stress, P	Weight Stress, W	P + W	S_h(a)	Seismic Stress, S	P+W+S	$1.2S_h$(b)	Expansion Stress, T	S_A(c)	P+W+S+T	$0.8(S_h+S_A)$(d)
1	2,680	9	2,689	15,000	1,639	4,328	18,000	833	22,500	5,161	30,000
2	2,680	927	3,607	15,000	2,110	5,717	18,000	1,130	22,500	6,847	30,000
3	5,956	225	6,181	15,000	1,091	7,272	18,000	2,610	22,500	9,882	30,000
4	5,956	1,577	7,533	15,000	2,377	9,910	18,000	5,397	22,500	15,307	30,000
5	5,956	932	6,888	15,000	1,113	8,001	18,000	15,565	22,500	23,566	30,000
6	5,956	1,204	7,160	15,000	1,159	8,319	18,000	15,559	22,500	23,878	30,000
7	5,956	1,705	7,661	15,000	1,679	9,340	18,000	9,157	22,500	18,497	30,000
8	5,956	1,868	7,824	15,000	1,784	9,608	18,000	9,687	22,500	28,009	30,000
9	5,956	1,857	7,813	15,000	1,848	9,661	18,000	13,441	22,500	30,702	30,000

(a) S_h = Allowable limit of P + W per applicable code
(b) $1.2S_h$ = Allowable limit of P + W + S per applicable code
(c) S_A = Allowable limit of T per applicable code
(d) $0.8(S_h + S_A)$ = Threshold of stress for mandatory break location in this study, AEC criteria

SUMMARY OF ELIMINATED HARDWARE RESULTING FROM APPLICATION OF GENERIC LETTER 87-11, "RELAXATION OF ARBITRARY PIPE RUPTURE REQUIREMENTS"

SYSTEM	ELIMINATED HARDWARE DESCRIPTION
Auxiliary Feedwater	All pipe rupture restraints associated with AFW pump discharge piping as defined in Stress Package 05904.
Main Steam System	Arbitrary intermediate pipe ruptures on the MSS inside containment are not required to be postulated per report PLP-RPT-14-00001 and Engineering Change (EC) 48479, which evaluated the MSS for Generic Letter 87-11 applicability.

Note: "Eliminated hardware" infers elimination of the need for associated hardware which may or may not be physically removed from the plant.

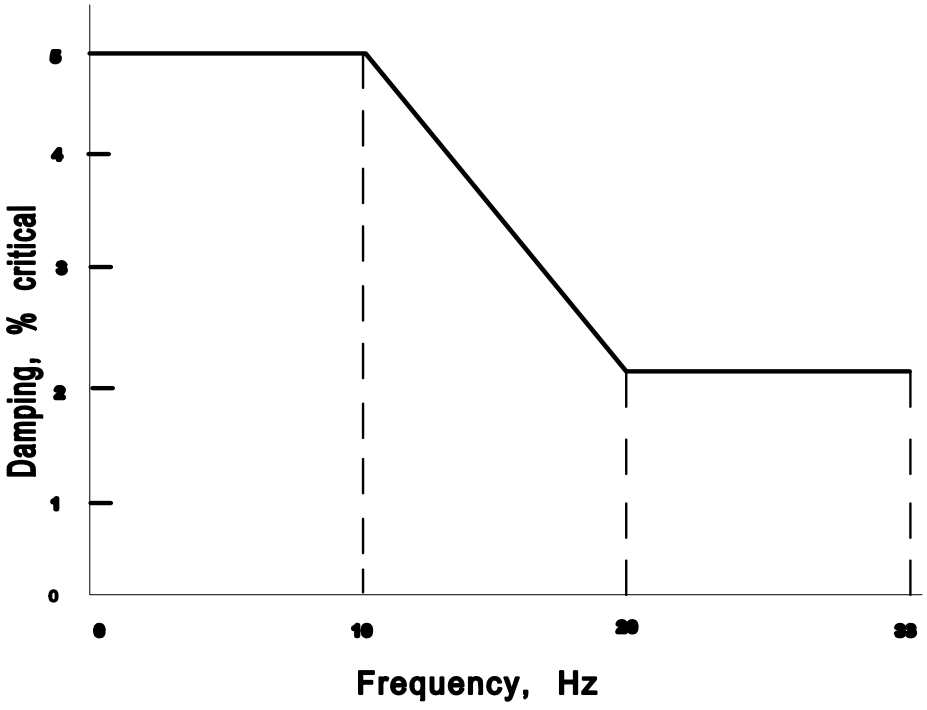
LIST OF COMPUTER CODES

Bechtel Code Number	Name	Original Source	Description	Reference Section
CE611	Time Loading	Bechtel	Time History Response Analysis	5.7.1.3
CE802	SPECTRA	Bechtel	Floor Response Spectra	5.7.1.3
CE800	BSAP	UC Berkeley	Static and Dynamic Structural Analysis	5.7.1.3, 5.7.3.4
CE309	Stress	MIT	Linear Stress Analysis	5.7.2
CE617	Diagonalization	Bechtel	Mode Shapes and Frequencies	5.7.2
CE641	-	Bechtel	Response Spectrum Analysis	5.7.2
CE207	DAMPSI	Bechtel	Composite Modal Damping	5.7.3.4
CE201	BSAP-POST	Bechtel	Plot Mode Shapes, etc	5.7.3.4
CE705	-	Bechtel	Beam on Elastic Foundation	5.7.3.4
-	PISOL	EDS Nuclear	Piping Analysis	5.7.4
ME632(a)	Piping	Bechtel	Piping Analysis	5.7.4
ME101	Piping	Bechtel	Piping Analysis	5.7.4
-	MEC-21	Mare Island Naval Shipyard	Unknown	5.7.5.1
CE991	STARDYNE	Mechanics Research	Static and Dynamic Structural Analysis	5.7.6
CE798	ANSYS	Swanson Analysis	Nonlinear Analysis	5.7.6

(a) ME101 replaces ME632.

MATERIAL DAMPING VALUES FOR VARIOUS MATERIALS AND TYPES OF CONSTRUCTION

	% of Critical Damping	
	OBE	SSE
Welded Steel Plate Assemblies	1.0	1.0
Welded Steel Frame Assemblies	2.0	2.0
Bolted Steel Frame Assemblies	2.0	2.0
Concrete Equipment Supports on Another Structure	2.0	2.0
Steel Piping(a)	0.5	0.5
Soil(b)	3.0	3.0



(a) For reevaluations and modifications reviewed after July 1986, the damping values from ASME Code Case N-411, Figure 1, will be used.

(b) Material damping for TSC/EER analysis only.

MATERIAL DAMPING VALUES FOR VARIOUS CLASS 1 STRUCTURES

	% of Critical Damping	
	OBE	SSE
Containment Building (Posttensioned and Reinforced Concrete)	2.0	5.0
Auxiliary Building (Reinforced Concrete)	2.0	(a)
Auxiliary Building (Steel Framing)	0.5(c)	(a)
Auxiliary Building Radwaste Addition (Reinforced Concrete)	5.0	(a)
Auxiliary Building TSC/EER Addition (Reinforced Concrete)	5.0	(a)
Electrical Penetration Enclosure (Reinforced Concrete)	5.0	(a)
Soil (Rocking and Swaying) for Containment Building(b)	5.0	10.0
Soil (Rocking and Swaying) for Auxiliary Building(b)	5.0	(a)
Spent Fuel Storage Racks	4.0	4.0

(a) No SSE analysis was performed.

(b) Radiation damping.

(c) For purposes of employing composite damping in the overall building structural model only.

AUXILIARY BUILDING TSC/EER ADDITION SUMMARY OF MODAL PARAMETERS FLEXIBLE BASE ANALYSIS

TORSIONAL STIFFNESS BASED ON INDIVIDUAL WALL SECTIONS

Mode	Frequency (Hz)	Damping (%)	Participation Factors North-South	East-West	Vertical
1	1.29	4.7	-0.223	-4.607	0.032
2	3.58	5.0	-0.776	-0.517	0.025
3	4.27	5.2	-8.565	1.684	0.392
4	4.61	6.4	1.393	7.421	-0.645
5	6.57	5.4	-1.797	-1.573	-0.345
6	9.27	10.0	-0.858	-0.653	-10.557
7	13.90	10.0	-5.826	0.076	0.777
8	15.04	10.0	-0.049	5.618	-0.373
9	20.38	10.0	0.039	-0.439	-0.069
10	23.86	10.0	-0.310	0.061	-1.084

TORSIONAL STIFFNESS BASED ON WALLS ACTING TOGETHER

Mode	Frequency (Hz)	Damping (%)	Participation Factors North-South	East-West	Vertical
1	3.45	4.1	0.405	-8.529	0.358
2	4.38	5.4	8.873	0.415	-0.557
3	7.22	5.7	0.545	-1.256	0.240
4	9.27	10.0	-0.838	-0.525	-10.568
5	12.54	10.0	-0.071	-5.525	0.252
6	13.90	10.0	-5.827	0.024	0.778
7	17.85	10.0	0.064	-2.893	0.174
8	22.14	10.0	0.066	-0.633	-0.086
9	23.83	10.0	0.308	-0.160	1.075
10	25.99	6.5	0.074	0.220	0.139

NOTE: Participation factors for significant modes are underlined.

COMPARISON OF SPECIFICATIONS FOR SEISMIC REQUIREMENTS

ITEM	DESCRIPTION		
Spec No	10512/034-C-175.07	12447/009-C-174(Q)	12447-C-175(Q)
Date - Rev	Circa 1975, Rev 0	1/3/79, Rev 0	8/12/80, Rev 0
Building	Main Auxiliary	Main Auxiliary	All Class 1
ANALYSIS			
DAMPING			
Specified	0.5%(a)	2%(a)	Not Specified
Spectra	0.5%	0.5%, 2%, 5%	As Supplied
COMBINATIONS			
Modes	NRC RG 1.92 "Grouping"	NRC RG 1.92 "Grouping"	NRC RG 1.92 "Grouping"
Directions	SRSS 3 Directions	Absolute Sum of One Horizontal Plus Vertical	Absolute Sum of Maximum Horizontal Plus Vertical
FREQUENCY			
Rigid	33 Hz	33 Hz	33Hz
Variations	± 10%	± 10%	± 10%
TESTING			
Standards	IEEE 344-1975/323-1974	IEEE 344-1975	IEEE 344-1975
Requirement	TRS > RRS(b)	TRS > RRS(b)	TRS > RRS(b)

(a) Higher values may be used if substantiated by test or other results.

(b) TRS - Test Response Spectrum.
RRS - Required Response Spectrum.

COMPARISON OF SPECIFICATIONS FOR SEISMIC REQUIREMENTS

ITEM	DESCRIPTION		
MOTION			
Type	Single or Multiple Frequency as Appropriate	Single or Multiple Frequency	Single (With Permission) or Multiple Frequency
Directions	Uniaxial, Biaxial, Triaxial	Biaxial for Each Horizontal Direction	Biaxial for Each Horizontal Direction
Frequency	Not Specified	1-40 Hz	1-40 Hz
Duration	20 Seconds	30 Seconds	30 Seconds
TEST TYPE	Not Specified	Proof or Fragility	Proof or Fragility
Spec No	10512/034-C-175.07	1244/009-C-174(Q)	12447-C-175(Q)
COMBINED TESTING AND ANALYSIS	IEEE 344-1975	Not Specified	IEEE 344-1975
OTHER CONSIDERATIONS	Time History Analysis, Nonlinear Systems, Multiple Equipment Frequencies Under Widened Spectrum Peak (Section 5.3.1 of BC-TOP-4-A), Certification of Results by PE		Multiple Supports - Use Envelope of Spectra Plus Support Movements

(a) Higher values may be used if substantiated by test or other results.

(b) TRS - Test Response Spectrum.
RRS - Required Response Spectrum.

MAJOR CLASS 1 COMPONENTS SEISMIC LOADS (g)

System	Component	Specification Values OBE	Specification Values SSE	Direction
Auxiliary Feedwater	Auxiliary Feed Pumps	0.10 g 0.067 g	0.20 g 0.14 g	Horizontal Vertical
Component Cooling	Component Cooling Heat Exchangers	0.121 g 0.067 g	0.23 g 0.14 g	Horizontal Vertical
	Component Cooling Pumps	0.121 g 0.067 g	0.229 g 0.133 g	Horizontal Vertical
	Component Cooling Water Surge Tank (T-3)	0.16 g 0.07 g	0.30 g 0.14 g	Horizontal Vertical
Containment Spray	Containment Spray Pumps	0.10 g 0.067 g	0.20 g 0.14 g	Horizontal Vertical
	Shutdown Cooling Heat Exchangers	- -	0.7 g 0.47 g	Horizontal Vertical
Emergency Diesel Generator	Diesels	0.121 g 0.067 g	0.230 g 0.133 g	Horizontal Vertical
	Generators (Class 1E)	0.121 g 0.067 g	0.230 g 0.133 g	Horizontal Vertical
Safety Injection	Containment Safety Injection Tanks (T-82A, T-82B, T-82C, T-82D)	0.9 g 0.1 g	1.5 g 0.2 g	Horizontal Vertical
	High- and Low-Pressure Safety Injection Pumps	- -	0.35 g 0.24 g	Horizontal Vertical
	Safety Injection and Refueling Water Tank (T-58)	0.23 g 0.07 g	0.42 g 0.133 g	Horizontal Vertical
Service Water	Service Water Pumps	0.46 g 0.07 g	0.90 g 0.14 g	Horizontal Vertical
Shield Cooling	Shield Coolant Surge Tank (T-62)	0.16 g 0.07 g	0.30 g 0.14 g	Horizontal Vertical

MAJOR CLASS 1 COMPONENTS SEISMIC LOADS (g)

System	Component	Specification Values OBE	SSE	Direction
Spent Fuel Pool	Fuel Pool	0.121 g	0.230 g	Horizontal
	Demineralizer (Mixed Bed)	0.067 g	0.133 g	Vertical
	Fuel Pool Filter	0.121 g	0.230 g	Horizontal
		0.067 g	0.133 g	Vertical
	Fuel Pool Cooling Heat Exchangers	0.121 g	0.23 g	Horizontal
		0.067 g	0.14 g	Vertical

NOTE: This is a list of the seismic requirements for various CP Co Design Class 1 components as described in the components' specifications. Since these specifications were written, Palisades has upgraded its seismic methodologies to reflect industry standards. These upgraded seismic methodologies are described in Specification C -175, "Requirements for Seismic Evaluation of Electrical and Mechanical Components."

CLASS 1E(a) ELECTRICAL EQUIPMENT AND INSTRUMENTATION SEISMIC LOADS(b)

Component(c)	Specification Values	Qualification Values
Emergency Diesel Generators	0.230 g Horiz 0.133 g Vert	2.5 g for Locomotive and Marine Service
2,400 V Switchgear Buses 1C, 1D (A11, A12)	0.25 g Horiz 0.14 g Vert	
Breakers		3.0 g Test
Relays		5.0 g Test/Analysis
Structure		Analysis
480 V Load Centers Buses 11, 12 (B11, B12)	0.25 g Horiz 0.14 g Vert	
Transformers 11, 12		Test > 6.0 g
Breakers, Relays, Structure		Test at 5.0 g
480 V Motor Control Centers MCC 1, 2 (B01, B02) (Breakers, Starters, Structure)	0.25 g Horiz 0.14 g Vert	1.3 g Marine Service
DC Control and Distribution Centers Buses 1, 2 (D11, D21)	0.282 g Horiz 0.133 g Vert	
New Batteries 1, 2 (D01, D02)		
New Battery Racks		
Battery Chargers 1, 2, 3, 4	0.28 g Horiz 0.13 g Vert	Analysis for 0.75 g
Inverters 1, 2, 3, 4	0.28 g Horiz 0.13 g Vert	Analysis for 0.75 g
Preferred AC Distribution Panels (Y10, Y20, Y30, Y40)	0.282 g Horiz 0.133 g Vert	Analysis for 0.75 g

CLASS 1E(a) ELECTRICAL EQUIPMENT AND INSTRUMENTATION SEISMIC LOADS(b)

Component(c)	Specification Values	Qualification Values
Main Control Boards and Auxiliary Panels (C01, C02, C03, C04, C06, C08, C11, C12, C13, C125, C126, C106, C11A)	0.30 g Horiz 0.14 g Vert	Analysis
Engineered Safeguards Auxiliary Panel (C-33)	0.20 g Horiz 0.13 g Vert	Analysis
Decay Heat Removal System, Engineered Safeguards Systems, Reactor Protective System		
Transmitters	0.30 g Horiz 0.14 g Vert	Test > 0.5 g
Switches	0.30 g Horiz 0.14 g Vert	Test at 15 g
Reactor Protective System		0.8 g Horiz
Structure, Component Supports, Wiring	0.30 g Horiz 0.14 g Vert	
Nuclear Instrumentation	Unknown	

(a) The definition of Class 1E electrical equipment and instrumentation is provided in Subsection 8.1.1.

(b) This is a list of the original seismic requirements for various electrical equipment and instrumentation. Since these requirements were established, Palisades has upgraded its seismic methodologies to reflect industry standards. These upgraded methodologies are described in Specification C-175, "Requirements for Seismic Evaluation of Electrical and Mechanical Components."

(c) Numbers not in parentheses are "function" numbers. Numbers in parentheses are "equipment" numbers. See Figure 81.

CLASS 1 TANKS SEISMIC LOADS(g)

Tank	Specification Values Horizontal	Vertical	Earthquake
Condensate Storage (T-2)	0.10 g 0.20 g	0.07 g 0.133 g	OBE SSE
Miscellaneous Drain (T-60, T-70, T-74, T-76, T-80)	0.228 g 0.418 g	0.067 g 0.133 g	OBE SSE
Miscellaneous Shop Fabricated (T-4A, T-4B, T-5, T-28 T-29, T-63, T-66A, T-66B, T-67, T-68A, T-68B, T-68C, T-69)	0.16 g 0.30 g	0.07 g 0.14 g	OBE SSE
Fuel Oil Storage (T-10A)	0.155g 0.31g	0.105g 0.21g	OBE SSE

NOTE: This is a list of the seismic requirements for various CP Co Design Class 1 components as described in the components' analysis or specifications. Since these specifications were written, Palisades has upgraded its seismic methodologies to reflect industry standards. These upgraded seismic methodologies are described in Specification C-175, "Requirements for Seismic Evaluation of Electrical and Mechanical Components."

SAFETY-RELATED HYDRAULIC SHOCK SUPPRESSORS (SNUBBERS)

Palisades ID Number	System	Location	Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
37	ESS	GC-1 LPSI Pump Discharge				X
38	ESS	GC-1 LPSI Pump Discharge				X
42	ESS	GC-1 LPSI Pump Discharge				X
44	ESS	GC-1 LPSI Pump Discharge (After CV-3025 SDHX to LPSI Valves)				X
46	MSS	Steam Generator A, Restraint 1-SS-1	X	X	X	
47	MSS	Steam Generator A, Restraint 1-SS-2	X	X	X	
48	MSS	Steam Generator A, Restraint 1-SS-3	X	X	X	
49	MSS	Steam Generator A, Restraint 1-SS-4	X	X	X	
50	MSS	Steam Generator A, Restraint 1-SS-5	X	X	X	
51	MSS	Steam Generator A, Restraint 1-SS-6	X	X	X	
52	MSS	Steam Generator A, Restraint 1-SS-7	X	X	X	
53	MSS	Steam Generator A, Restraint 1-SS-8	X	X	X	
54	MSS	Steam Generator B, Restraint 2-SS-1	X	X	X	
55	MSS	Steam Generator B, Restraint 2-SS-2	X	X	X	

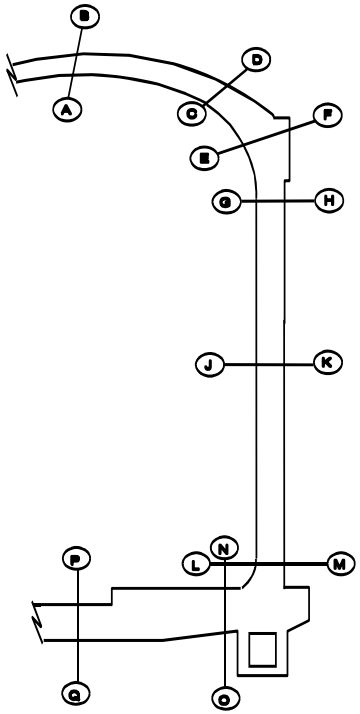
SAFETY-RELATED HYDRAULIC SHOCK SUPPRESSORS (SNUBBERS)

Palisades ID Number	System	Location	Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
56	MSS	Steam Generator B, Restraint 2-SS-3	X	X	X	
57	MSS	Steam Generator B, Restraint 2-SS-4	X	X	X	
58	MSS	Steam Generator B, Restraint 2-SS-5	X	X	X	
59	MSS	Steam Generator B, Restraint 2-SS-6	X	X	X	
60	MSS	Steam Generator B, Restraint 2-SS-7	X	X	X	
61	MSS	Steam Generator B, Restraint 2-SS-8	X	X	X	
62	SIS	On Low-Pressure Safety Injection Line Inside Containment Before MOVs			X	
63	SIS	Low-Pressure Safety Injection to T-82C			X	
64	SIS	Low-Pressure Safety Injection to T-82C			X	

SAFETY-RELATED MECHANICAL SHOCK SUPPRESSORS (SNUBBERS)

Palisades ID Number	System	Location	Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
68	SIS	CC-4 From Safety Injection Tank T-82B	X	X	X	
70	SIS	CC-4 From Safety Injection Tank T-82D	X		X	
71	SIS	CC-4 From Safety Injection Tank T-82D	X		X	
79	ESS	CV-3084 actuator support	X		X	
80	ESS	CV-3085 actuator support	X		X	

CONTAINMENT STRUCTURE SUMMARY OF CONCRETE AND REINFORCING STEEL STRESSES



KEY ELEVATION
SHOWING LOCATION OF
REFERENCE SECTIONS

	Structural Data				
	Concrete		Reinforcing Steel		
Location	f'_c-Psi	t-in	Type	P_m-%	P_h-%
A	5,000	36	A-15	0.07	0.07
B	5,000	36	A-15	0.23	0.23
C	5,000	60	A-15	0.09	0.09
D	5,000	60	A-15	0.24	0.22
E	5,000	148	A-432	-	-
F	5,000	148	A-432	0.09	0.09
G	5,000	50	A-432	0.11	-
H	5,000	50	A-432	0.73	0.28
J	5,000	42	A-15	-	-
K	5,000	42	A-15	0.25	0.25
L	5,000	78	A-432	0.46	0.21
M	5,000	78	A-432	0.57	0.57
N	4,000	126	A-432	0.40	0.40
0	4,000	126	A-432	0.33	0.33
P	4,000	102	A-432	0.23	0.23
Q	4,000	102	A-432	0.98	0.98

CONTAINMENT STRUCTURE SUMMARY OF CONCRETE AND REINFORCING STEEL STRESSES

NOTES:

1. This table presents the results of the design effort for several load combinations of Subsections 5.8.3 which were considered to be significant in the design of the containment structure.

2. Loading Cases I, II and III are working stress analyses whereas Loading Cases IV, V and VI are yield strength analyses.

3. Because the live load (see Subsection 5.3.1.2) on the containment structure is insignificant, it was arbitrarily not included in the tabulation of Load Cases II and III.

4. The load combinations in this table are meant to illustrate gross structural behavior. Therefore, the effects of "H" (see Subsection 5.8.3.1.3), which are local, have not been included in Load Cases V and VI.

5. For notation and allowable stresses, see Sheet 2.

6. The stresses shown for the load cases including T_a are based on cracked section analysis unless noted by*.

7. Stresses computed for the working stress loading cases may exceed their associated allowables provided that the yield strength criteria of Subsection 5.8.5.2.4 are satisfied.

8. All concrete extreme fiber stresses are shown for the inside surface. Outside surface stresses are indicated by ( ). The stresses listed are the controlling stresses for that section.

9. Computed v allowable ratios for Cases IV, V and VI include appropriate Ø factors; eg, $\frac{\sigma a}{f_a} = \frac{\sigma a}{\text{Ø}a\, f'_c}$.

10. Allowable shear stresses include stirrups wherever applicable.

CONTAINMENT STRUCTURE SUMMARY OF CONCRETE AND REINFORCING STEEL STRESSES

Notation		Allowable Stresses: Working Stress Design	Allowable Stresses: Yield Strength Design
D	Dead Load	Shell Concrete f_a = 1,500 psi	$f_a = \phi_a f'_c$ = (0.85)(5,000) = 4,250 psi
F_i	Initial Prestress		
F_f	Final Prestress		
P	DBA Pressure	f_{ce} = 3,000 psi	$f_{ce} = \phi_{ce} f'_c$ = (0.90)(5,000) = 4,500 psi
E	OBE		
E'	SSE Base Concrete f_a = 1,200 psi	$f_a = \phi_a f'_c$ = (0.85)(4,000) = 3,400 psi	
T_a	DBA Temperature		
f'_c	Ultimate Concrete Stress	f_{ce} = 1,800 psi	$f_{ce} = \phi_{ce} f'_c$ = (0.90)(4,000) = 3,600 psi
fy	Reinforcing Steel Yield Stress		
fa	Allowable Concrete Membrane Compressive Stress	Steel - A-15 f_s = 20,000 psi	$f_s = \phi f_y$ = (0.90)(40,000) = 36,000 psi
fce	Allowable Concrete Combined Compressive Stress (Membrane + Flexure)	A-432 f_s = 30,000 psi	$f_s = \phi f_y$ = (0.90)(60,000) = 54,000 psi
v	Allowable Concrete Shear Stress Including Stirrups If Applicable		
fs	Allowable Reinforcing Steel Stress		
ϕ	Yield Capacity Reduction Factor		
σa	Concrete Membrane Stress		
σe	Concrete Combined Stress (Membrane + Flexure)		
τ	Concrete Shear Stress		
σ	Reinforcing Steel Stress		
h	Subscript Indicating Hoop Direction		
m	Subscript Indicating Meridional Direction		
a	Subscript Indicating Association With f_a		
ce	Subscript Indicating Association With f_{ce}		
t	Thickness of Concrete Section		
P_h	Hoop Steel Percentage		
P_m	Meridional Steel Percentage		
+	Tensile Stresses		
-	Compressive Stresses		

NOTE: Allowable shear stresses are computed in accordance with the provisions of Subsections 5.8.5.2.3 and 5.8.5.2.4.

CONTAINMENT STRUCTURE SUMMARY OF CONCRETE AND REINFORCING STEEL STRESSES

Case I - D + F Initial (Stresses in Psi)
Concrete

		Meridional			Hoop			Shear		
	Section	σ Outside	σ Inside	σ Axial	σ Outside	σ Inside	σ Axial	τ	vci	vcw
SHELL	A - B	-1,470	-1,250	-1,290	-1,187	-916	-922	-61	849	975
	C - D	-333	-1,240	-825	-363	-475	-426	+60	97	822
	E - F	-265	-685	-524	-313	-415	-389	+41	170	671
	G - H	-41	-1,100	-635	-370	-595	-521	+117	188 + 60	733
	J - K	-810	-830	-830	-1,390	-1,478	-1,450	0	0	837
	L - M	-223	-962	-472	-310	-534	-402	-180	343 + 248	660
BASE	N - 0	+340	-528	-87	+102	-324	-120	-46	100 + 247	382
	P - Q	+36	-113	-32	+20	-86	-32	-25	144 + 94	320

Allowable Concrete Compressive Stresses

Shell: fa = 1,500 psi
fce = 3,000 psi

Base: fa = 1,200 psi
fce = 1,800 psi

CONTAINMENT STRUCTURE SUMMARY OF CONCRETE AND REINFORCING STEEL STRESSES

Sec-tion	Load Case	Concrete: Computed (Psi) σem	σeh	σam	σah	Concrete: Computed v Allowable τ/v	σe/fce	σa/fa	Reinforcing Steel: Computed (Psi) τ/v	σm	Reinforcing Steel: Allowable σh	Computed v σm/fs	σh/fs
A-B	II - D+F_f+1.15P	(-285)*	(-236)*	-314	-245	-21	0.095	0.209	0.300	-	-	-	-
	III - D+F_f+P+T_a	-974	-687	-387	-287	-37	0.325	0.258	0.440	+7,500	+22,000	0.375	1.100
	IV - 1.05D+F_f+1.5P+T_a	-20	-10	-11	+3	-26	0	0	0.552	+19,200	+32,920	0.534	0.914
	V - 1.05D+F_f+1.25P+1.25E+T_a	-470	-245	-199	-142	-33	0.104	0.047	0.347	+20,700	+28,800	0.575	0.800
	VI - D+F_f+P+E'+T_a	-974	-687	-390	-289	-40	0.216	0.092	0.421	+7,500	+22,000	0.208	0.610
C-D	II - D+F_f+1.15P	(-357)*	-296*	-318	-291	+91	0.119	0.212	0.586	-	-	-	-
	III - D+F_f+P+T_a	-1,347	-1,689	-361	-420	+70	0.563	0.280	0.318	+12,830	+17,460	0.642	0.873
	IV - 1.05D+F_f+1.5P+T_a	-593*	-974	-191	-386	+90	0.216	0.091	0.476	-	+19,300	-	0.536
	V - 1.05D+F_f+1.25P+1.25E+T_a	-961	-1,521	-277	-403	+81	0.214	0.095	0.280	+8,900	+16,000	0.247	0.444
	VI - D+F_f+P+E'+T_a	-1,390	-1,704	-361	-420	+73	0.378	0.099	0.264	+12,900	+17,600	0.358	0.489
E-F	II - D+F_f+1.15P	(-274)*	(-287)*	-293	-305	+40	0.092	0.204	0.185	-	-	-	-
	III - D+F_f+P+T_a	-617*	-1,855	-325	-505	+45	0.618	0.337	0.287	-	+8,800	-	0.294
	IV - 1.05D+F_f+1.5P+T_a	-397*	-1,750	-258	-491	+50	0.380	0.115	0.144	-	+2,000	-	0.037
	V - 1.05D+F_f+1.25P+1.25E+T_a	-511*	-1,815	-293	-498	+51	0.394	0.117	0.254	-	+5,660	-	0.105
	VI - D+F_f+P+E'+T_a	-625*	-1,871	-328	-505	+52	0.407	0.118	0.258	-	+9,000	-	0.167

CONTAINMENT STRUCTURE SUMMARY OF CONCRETE AND REINFORCING STEEL STRESSES

Sec-tion	Load Case	Concrete: Computed (Psi) σem	σeh	σam	σah	Concrete: Computed v Allowable τ	σe/fce	σa/fa	Reinforcing Steel: Computed (Psi) τ/v	σm	Reinforcing Steel: Allowable σh	Computed v σm/fs	σh/fs
G-H	II - D+F_f+1.15P	-197	-187	-136	-185	+8	0.066	0.123	0.056	-	-	-	-
	III - D+F_f+P+T_a	-1,511	-1,384	-215	-253	+15	0.503	0.169	0.137	+26,220	+25,540	0.875	0.850
	IV - 1.05D+F_f+1.5P+T_a	-530	-777	-36	-151	-20	0.173	0.035	0.179	+26,340	+27,500	0.488	0.510
	V - 1.05D+F_f+1.25P+1.25E+T_a	-997	-1,079	-126	-202	-5	0.240	0.048	0.047	+25,350	+27,450	0.470	0.509
	VI - D+F_f+P+E'+t_a	-1,550	-1,400	-216	-253	+15	0.345	0.060	0.141	+26,400	+26,000	0.489	0.481
J-K	II - D+F_f+1.15P	-212	-337	-217	-348	+13	0.112	0.232	0.260	-	-	-	-
	III - D+F_f+P+T_a	-1,411	-1,705	-297	-461	+11	0.570	0.308	0.156	+15,300	+10,800	0.765	0.540
	IV - 1.05D+F_f+1.5P+T_a	-241	-312	-80	-69	+17	0.069	0.019	0.120	+25,600	+25,250	0.711	0.702
	V - 1.05D+F_f+1.25P+1.25E+T_a	-741	-1,667	-189	-265	+14	0.370	0.062	0.100	+20,300	+10,730	0.564	0.298
	VI - D+F_f+P+E'+T_a	-1,450	-1,800	-300	-463	+11	0.400	0.109	0.080	+18,000	+13,000	0.500	0.361
L-M	II - D+F_f+1.15P	(-308)	-237	-188	-250	-47	0.102	0.167	0.147	-	-	-	-
	III - D+F_f+P+T_a	-807	-976	-215	-183	-199	0.325	0.143	0.307	+6,040	+14,550	0.201	0.485
	IV - 1.05D+F_f+1.5P+T_a	-120	-654	-108	-174	-65	0.142	0.041	0.203	0	+15,250	0	0.282
	V - 1.05D+F_f+1.25P+1.25E+T_a	-1,464	-300	-38	+165	-157	0.318	Net Ten-sion	0.620	+12,940	+34,200	0.240	0.634
	VI - D+F_f+P+E'+T_a	-1,340	0	-76	+306	-213	0.292	Net Ten-sion	0.677	+23,240	+47,600	0.431	0.882
	II - D+F_f+1.15P	(+124)*	-285*	0	-72	-88	0.158	fa =	0.209	-	-	-	-

CONTAINMENT STRUCTURE SUMMARY OF CONCRETE AND REINFORCING STEEL STRESSES

Section	Load Case	Concrete: Computed (Psi) σem	σeh	σam	σah	Concrete: Computed v Allowable τ v	σe fce	σa fa	Reinforcing Steel: Computed (Psi) σm	Allowable σh	Computed v σm fs	Computed v σh fs
N-O	III - $D+F_f+P+T_a$	-583	-1,114	-76	-113	-91	0.620	0.3 f'_c	0.255	+14,780	+20,060	0.492	0.670
	IV - $1.05D+F_f+1.5P+T_a$	-30	-798	-33	-85	-149	0.222	not applicable to slab.	0.394	+9,300	+21,460	0.172	0.398
	V - $1.05D+F_f+1.25P+1.25E+T_a$	0	-735	+2	-266	-243	0.204		0.630	+10,140	+35,130	0.188	0.650
	VI - $D+F_f+P+E'+T_a$	-38	-686	+4	-351	-266	0.191		0.820	+12,800	+38,100	0.237	0.705
P-Q	II - $D+F_f+1.15P$	-81*	-70*	+149	+152	-1	0.045		0.008	-	-	-	-
	III - $D+F_f+P+T_a$	-338	0	+139	+166	-5	0.188	METE	0.035	+17,540	+21,050	0.585	0.702
	IV - $1.05D+F_f+1.5P+T_a$	-459	0	+225	+253	-15	0.128	BRANE SION	0.112	+19,300	+29,900	0.358	0.554
	V - $1.05D+F_f+1.25P+1.25E+T_a$	-845	0	+198	+281	-90	0.234		0.660	+31,000	+37,400	0.575	0.693
	VI - $D+F_f+P+E'+T_a$	-1,538	-381	+163	+296	-133	0.424		0.842	+29,250	+44,000	0.542	0.815

CONTAINMENT STRUCTURE TENDON ANCHORAGE ZONE REINFORCEMENT STRESSES

	Computed Stress Psi	Allowable Stress $0.9 f_y$ Psi
Buttress		
Vertical Reinforcement		
Bursting	8,000	
$D+F_f+1.5P+T_a$	14,000	
	22,000	36,000
Hoop Reinforcement		
$D+F_f+1.5P+T_a$	16,000	36,000
Radial Reinforcement		
Bursting	19,000	36,000
Ring Girder - Dome Tendons		
Spiral Reinforcement	7,000	36,000
Vertical Reinforcement		
Bursting	11,900	
$D+F_f+1.5P+T_a$	16,600	
	28,500	54,000
Hoop Reinforcement		
Bursting	23,700	
$D+F_f+1.5P+T_a$	11,300	
	35,000	54,000
Ring Girder - Vertical Tendons		
Radial Reinforcement		
Bursting	39,000	
$D+F_f+1.5P+T_a$	11,000	
	50,000	54,000
Hoop Reinforcement		
Bursting	16,000	
$D+F_f+1.5P+T_a$	11,000	
	27,000	54,000

CONTAINMENT STRUCTURE TENDON ANCHORAGE ZONE REINFORCEMENT STRESSES

	Computed Stress Psi	Allowable Stress $0.9 f_y$ Psi
Base Slab		
Radial Reinforcement		
Bursting	30,000	
$D+F_f+T_a+E'$	23,000	
	53,000	54,000
Hoop Reinforcement		
Bursting Force	30,000	54,000

CONTAINMENT STRUCTURE LINER PLATE ANCHOR ANALYSIS

Case	Nominal Plate Thickness (in)	Initial Inward Displacement (in)	Anchor Spacing L_1 (in)	Anchor Spacing L_2 (in)	Factor of Safety Against Failure
I	0.25	0.125	15	15	37.0
II	0.25	0.125	15	15	19.4
III	0.25	0.125	15	15	9.9
IV	0.25	0.125	15	15	6.28
V	0.25	0.25	30	15	4.25

CONTAINMENT PENETRATIONS AND APPENDIX J TEST REQUIREMENTS

PEN NO.	SYSTEM NAME AND SERVICE LINE SIZE	PEN CLASS NO.	VALVE ID NO.	VALVE TYPE OR DESCRIPTION	LOCATION OC	LOCATION IC	NOR MAL	POST LOCA (SIAS, CHR,CHP)	TEST REQUIREMENTS
1A	PURGE AIR EXHAUST (8" Ø)	A1	CV-1805	AO BUTF VLV	X		ELC	C	TYPE C TEST
			CV-1806	AO BUTF VLV	X		ELC	C	
			MV-VA506	MAN GA TEST VLV	X		LC	C	
1B	PURGE AIR EXHAUST BYPASS (4" Ø)	A2	MV-VA100	MAN GATE VLV	X		LC	C	TYPE C TEST
			MV-VA101	MAN GATE VLV	X		LC	C	
			MV-VA507	MAN GL TEST VLV	X		LC	C	
1C	PURGE AIR EXHAUST (8" Ø)	A1	CV-1807	AO BUTF VLV	X		ELC	C	TYPE C TEST
			CV-1808	AO BUTF VLV	X		ELC	C	
			MV-VA508	MAN GA TEST VLV	X		LC	C	
2	MAIN STEAM LINE (S/G E-50A) (36" Ø)	C1	CV-0510	POS CK VLV	X		O	C	NOT REQUIRED TO BE TESTED; S/G SHELL IS CONSIDERED AN EXTENSION OF THE CONTAINMENT BOUNDARY.
			MO-0510	MSIV BYPASS VLV	X		NC	C	
			CV-0781	AO GL VLV	X		NC	C	
			CV-0782	AO GL VLV	X		NC	C	
			CV-0522B	AO GL VLV	X		NC	C	
			MV-MS500	MAN GL VLV	X		LC	C	
			MV-MS515	MAN GA VLV	X		O	O	
			MV-MS521	MAN GL VLV	X		LC	C	
			MV-MS522	MAN GA VLV	X		LC	C	
			MV-MS519	MAN GA VLV	X		O	O	
			MV-MS517	MAN GL VLV	X		LC	C	
			MV-MS518	MAN GA VLV	X		LC	C	
			MV-FW506A	MAN GA VLV	X		O	O	
			MV-FW508A	MAN GA VLV	X		LC	C	
			MV-FW711	MAN GA VLV	X		LC	C	
			MV-FW712	MAN GA VLV	X		LC	C	
3	MAIN STEAM LINE (S/G E-50B) (36" Ø)	C1	CV-0501	POS CK VLV	X		O	C	NOT REQUIRED TO BE TESTED; S/G SHELL IS CONSIDERED AN EXTENSION OF THE CONTAINMENT BOUNDARY.
			MO-0501	MSIV BYPASS VLV	X		NC	C	
			CV-0779	AO GL VLV	X		NC	C	
			CV-0780	AO GL VLV	X		NC	C	
			MV-MS152	MAN GA VLV	X		LC	C	
			MV-MS523	MAN GA VLV	X		O	O	
			MV-MS525	MAN GL VLV	X		LC	C	
			MV-MS526	MAN GA VLV	X		LC	C	
			MV-MS527	MAN GA VLV	X		O	O	
			MV-MS529	MAN GL VLV	X		LC	C	
			MV-MS530	MAN GA VLV	X		LC	C	
4	SEALED	N/A							PENETRATION TESTED DURING TYPE A TEST.

CONTAINMENT PENETRATIONS AND APPENDIX J TEST REQUIREMENTS

PEN NO.	SYSTEM NAME AND SERVICE LINE SIZE	PEN CLASS NO.	VALVE ID NO.	VALVE TYPE OR DESCRIPTION	LOCATION OC	LOCATION IC	NOR MAL	POST LOCA (SIAS, CHR,CHP)	TEST REQUIREMENTS
5	S/G (E-50A) BLOWDOWN (4" Ø)	C1	CV-0767	AO ANGLE VLV	X		NO	C	NOT REQUIRED TO BE TESTED; S/G SHELL IS CONSIDERED AN EXTENSION OF THE CONTAINMENT BOUNDARY.
6	S/G (E-50B) BLOWDOWN (4" Ø)	C1	CV-0768	AO ANGLE VLV	X		NO	C	NOT REQUIRED TO BE TESTED; S/G SHELL IS CONSIDERED AN EXTENSION OF THE CONTAINMENT BOUNDARY.
7	FEEDWATER TO S/G (E-50A) (18" Ø)	C1	CK-FW702 MV-FW746	CHECK VLV MAN GA VLV	X X		O LC	C C	NOT REQUIRED TO BE TESTED; S/G SHELL IS CONSIDERED AN EXTENSION OF THE CONTAINMENT BOUNDARY.
8	FEEDWATER TO S/G (E-50B) (18" Ø)	C1	MV-FW747 CK-FW701	MAN GA VLV CHECK VLV	X X		LC O	C C	NOT REQUIRED TO BE TESTED; S/G SHELL IS CONSIDERED AN EXTENSION OF THE CONTAINMENT BOUNDARY.
9	AUX FEED TO S/G (E-50A) (4" Ø)	C1	CK-FW704 CK-FW729 MV-FW720	CHECK VLV CHECK VLV MAN GL VLV	X X X		NC NC LC	O O C	NOT REQUIRED TO BE TESTED; S/G SHELL IS CONSIDERED AN EXTENSION OF THE CONTAINMENT BOUNDARY.
10	SERVICE AIR (2" Ø)	A2	MV-CA122 MV-CA728 MV-CA142	MAN GA VLV MAN GA VLV MAN GA TEST VLV	X X X		LC LC LC	C C C	TYPE C TEST
11	CONDENSATE TO SHIELD COOLING SURGE TANK (1 1/2" Ø)	A1	CV-0939 CK-CD401 MV-CD536	AO GL VLV CHECK VLV MAN GL TEST VLV	X X X		NO O LC	C C C	TYPE C TEST
12	SERVICE WATER SUPPLY (16" Ø)	C1	CV-0847 MV-SW571	AC BUTF VLV MAN GA VLV	X X		ELO LC	O C	NOT REQUIRED TO BE TESTED. SYSTEM WILL BE IN OPERATION FOLLOWING ACCIDENT.
13	SERVICE WATER RETURN (16" Ø)	C1	CV-0824 MV-SW572 MV-SW385	AC BUTF VLV MAN GA VLV MAN GA VLV	X X X		ELO LC LC	O C C	NOT REQUIRED TO BE TESTED. SYSTEM WILL BE IN OPERATION FOLLOWING ACCIDENT.

CONTAINMENT PENETRATIONS AND APPENDIX J TEST REQUIREMENTS

PEN NO.	SYSTEM NAME AND SERVICE LINE SIZE	PEN CLASS NO.	VALVE ID NO.	VALVE TYPE OR DESCRIPTION	LOCATION OC	LOCATION IC	NOR MAL	POST LOCA (SIAS, CHR,CHP)	TEST REQUIREMENTS
14	COMPONENT COOLING WATER IN (10" Ø)	C2	CK-CC910	CHECK VLV	X		O	O/C	TYPE C TEST
			MV-CC507	MAN GL TEST VLV	X		LC	C	
			CV-0910	AC BUTF	X		NO	O/C	
15	COMPONENT COOLING WATER OUT (10" Ø)	C2	CV-0911	AC BUTF	X		NO	O/C	TYPE C TEST
			CV-0940	AC BUTF	X		NO	O/C	
			MV-CC508	MAN GL TEST VLV	X		LC	C	
16	S/G (E-50A) RECIRCULATION (4" Ø)	C1	CV-0739	AO ANGLE VLV	X		C	C	NOT REQUIRED TO BE TESTED; S/G SHELL IS CONSIDERED AN EXTENSION OF THE CONTAINMENT BOUNDARY.
17	CONTAINMENT PRESSURE INSTRUMENTATION (4 X 1/2" Ø)	A2	MV-VA1802B	MAN NEEDLE VALVE	X		LC	C	TYPE C TEST
			MV-VA1802C	MAN NEEDLE VALVE	X		LC	C	
			MV-VA1804B	MAN NEEDLE VALVE	X		LC	C	
			MV-VA1804C	MAN NEEDLE VALVE	X		LC	C	
			MV-VA1812A	MAN NEEDLE VALVE	X		LC	C	
			MV-VA1812C	MAN GL VALVE	X		LC	C	
			MV-VA1814A	MAN NEEDLE VALVE	X		LC	C	
			MV-VA1814B	MAN NEEDLE VALVE	X		LC	C	
17A	CONTAINMENT SUMP LEVEL INSTRUMENTATION (1/2" Ø)		MV-VA1814F	MAN GL VALVE	X		LC	C	
			MV-VA1814G	MAN GL VALVE	X		LC	C	
18	FUEL TRANSFER TUBE (36" Ø)	X	MZ-18	36" FLANGE		X	C	C	TYPE B TEST OF FLANGES
			MZ-18-1	TEST CONN W/CAP		X	C	C	
18A	(WINCH CABLE)		MZ-18A	2" FLANGE		X	C	C	
			MZ-18A-1	TEST CONN W/CAP		X	C	C	

CONTAINMENT PENETRATIONS AND APPENDIX J TEST REQUIREMENTS

PEN NO.	SYSTEM NAME AND SERVICE LINE SIZE	PEN CLASS NO.	VALVE ID NO.	VALVE TYPE OR DESCRIPTION	LOCATION OC	LOCATION IC	NOR MAL	POST LOCA (SIAS, CHR,CHP)	TEST REQUIREMENTS
19	PERSONNEL LOCK	X	OUTER DOOR	-	X		C	C	TYPE B TEST
			-	PRESS EQUAL VLV	X		C	C	
19-3			-	TEST CONN	X		C	C	
19-4			CAP	INST TUBE W/CAP	X		C	C	
19-5			MV-VA532	MAN BALL TEST VLV	X		LC	C	
19-6			MV-VA533	MAN GA TEST VLV	X		LC	C	
			INNER DOOR	-		X	C	C	
			-	PRESS EQUAL VLV		X	C	C	
19-1			CAP	INST TUBE W/CAP		X	C	C	
19-2			CAP	INST TUBE W/CAP		X	C	C	
20	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.
21	HYDROGEN MONITORING	A1	SV-2415A	SOLENOID VLV	X		C	C/O	TYPE C TEST
	RETURN LINE LEFT		SV-2415B	SOLENOID VLV	X		C	C/O	
	CHANNEL (1/2" Ø)		MV-WG531B	MAN TEST VLV	X		LC	C	
21A	HYDROGEN MONITORING	A1	SV-2413A	SOLENOID VLV	X		C	C/O	TYPE C TEST
	SUPPLY LINE LEFT		SV-2413B	SOLENOID VLV	X		C	C/O	
	CHANNEL (1/2" Ø)		MV-WG531A	MAN TEST VLV	X		LC	C	
22	HIGH PRESSURE SAFETY	X	CK-ES3250	CHECK VLV		X	C	O	NOT REQUIRED TO BE TESTED. SYSTEM WILL BE IN OPERATION
	INJECTION TRAIN 2 (6" Ø)		CK-ES3251	CHECK VLV		X	C	O	FOLLOWING ACCIDENT.
			CK-ES3252	CHECK VLV		X	C	O	
			CK-ES3253	CHECK VLV		X	C	O	
			CK-ES3409	CHECK VLV		X	C	C/O	
			CV-3018	AO GA VLV	X		ELC	C/O	
			CV-3036	AC GA VLV	X		ELO	O	
			MO-3072	MO GL VLV	X		ELC	C/O	
			MV-ES561	MAN GL VLV		X	LC	LC	

CONTAINMENT PENETRATIONS AND APPENDIX J TEST REQUIREMENTS

PEN NO.	SYSTEM NAME AND SERVICE LINE SIZE	PEN CLASS NO.	VALVE ID NO.	VALVE TYPE OR DESCRIPTION	LOCATION OC	LOCATION IC	NOR MAL	POST LOCA (SIAS, CHR,CHP)	TEST REQUIREMENTS
23	HIGH PRESSURE SAFETY INJECTION TRAIN 1 (6" Ø)	X	CK-ES3104	CHECK VLV		X	C	O	NOT REQUIRED TO BE TESTED. SYSTEM WILL BE IN OPERATION FOLLOWING ACCIDENT.
			CK-ES3119	CHECK VLV		X	C	O	
			CK-ES3134	CHECK VLV		X	C	O	
			CK-ES3149	CHECK VLV		X	C	O	
			CK-ES3408	CHECK VLV		X	C	C/O	
			MV-ES3007A	MAN GL TEST VLV		X	LC	LC	
			MV-ES3009A	MAN GL TEST VLV		X	LC	LC	
			MV-ES3011A	MAN GL TEST VLV		X	LC	LC	
			MV-ES3013A	MAN GL TEST VLV		X	LC	LC	
			CV-3059	AC GA VLV	X		ELO	O	
			CV-3037	AO GA VLV	X		ELC	C/O	
24	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.
25	CLEAN WASTE RECEIVER TANK VENT TO STACK (2" Ø)	A1	CV-1064	AO GL VLV	X		NO	C	TYPE C TEST
			CV-1065	AO GL VLV	X		NO	C	
			MV-CRW512	MAN GL TEST VLV	X		LC	C	
26	NITROGEN TO CONTAINMENT (1" Ø)	C2	CV-1358	AO GL VLV	X		NC	C	TYPE C TEST
			CK-N2/400	CHECK VLV	X		C	C	
			MV-N2/581	MAN GL TEST VLV	X		LC	C	
27	INTEGRATED LEAK RATE TEST LINE (6" Ø)	A2	MO-P1	MO BUTF VLV	X		ELC	C	TYPE C TEST OF VALVES
			MV-VA604	MAN GA TEST VLV	X		LC	C	
			MZ-27-1	FLANGE		X	C	C	TYPE B TEST OF FLANGE
28	CONTAINMENT AIR SAMPLE LINE (1/2" Ø)	N/A		CAPPED		X	C	C	PENETRATION TESTED DURING TYPE A TEST.
29	CAPPED SPARE	N/A	CAP	PIPE END W/ CAP	X		C	C	PENETRATION TESTED DURING TYPE A TEST.

CONTAINMENT PENETRATIONS AND APPENDIX J TEST REQUIREMENTS

PEN NO.	SYSTEM NAME AND SERVICE LINE SIZE	PEN CLASS NO.	VALVE ID NO.	VALVE TYPE OR DESCRIPTION	LOCATION OC	LOCATION IC	NOR MAL	POST LOCA (SIAS, CHR,CHP)	TEST REQUIREMENTS
30	CONTAINMENT SPRAY PUMP DISCHARGE (8" Ø)	X	CV-3001	AC DRAG GL VLV	X		NC	O/T	NOT REQUIRED TO BE TESTED. SYSTEM WILL BE IN OPERATION FOLLOWING ACCIDENT.
			CK-ES3226	CHECK VLV	X		C	O	
			MV-ES3344	MAN GL TEST VLV	X		LC	C	
			MV-ES3227	MAN GL VLV	X		LC	C	
31	CONTAINMENT SPRAY PUMP DISCHARGE (8" Ø)	X	CV-3002	AC DRAG GL VLV	X		NC	O/T	NOT REQUIRED TO BE TESTED. SYSTEM WILL BE IN OPERATION FOLLOWING ACCIDENT.
			CK-ES3216	CHECK VLV	X		C	O	
			MV-ES3346	MAN GL TEST VLV	X		LC	C	
			MV-ES3217	MAN GL VLV	X		LC	C	
32	LOW PRESSURE SAFETY INJECTION (12" Ø)	X	CK-ES3103	CHECK VLV		X	C	O	NOT REQUIRED TO BE TESTED. SYSTEM WILL BE IN OPERATION FOLLOWING ACCIDENT.
			CK-ES3118	CHECK VLV		X	C	O	
			CK-ES3133	CHECK VLV		X	C	O	
			CK-ES3148	CHECK VLV		X	C	O	
			MV-ES3008	MAN GL TEST VLV		X	LC	LC	
			MV-ES3010	MAN GL TEST VLV		X	LC	LC	
			MV-ES3012	MAN GL TEST VLV		X	LC	LC	
			MV-ES3014	MAN GL TEST VLV		X	LC	LC	
			CV-3006	AC GL VLV	X		ELO	O	
			CV-3025	AO GL VLV	X		ELC	C/O	
			MV-ES3163	MAN GL VLV	X		LC	C	
33	SAFETY INJECTION TANK DRAIN (2" Ø)	C3	MV-ES3234	MAN BALL VLV	X		LC	C	TYPE C TEST
			MV-ES3234A	MAN BALL VLV	X		LC	C	
			MV-ES3348A	MAN BALL TEST VLV	X		LC	C	
34	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.

CONTAINMENT PENETRATIONS AND APPENDIX J TEST REQUIREMENTS

PEN NO.	SYSTEM NAME AND SERVICE LINE SIZE	PEN CLASS NO.	VALVE ID NO.	VALVE TYPE OR DESCRIPTION	LOCATION OC	LOCATION IC	NOR MAL	POST LOCA (SIAS, CHR,CHP)	TEST REQUIREMENTS
35	SHUTDOWN COOLING RETURN (14" Ø)	B2	MO-3016	MO GA VLV		X	ELC	C/O	NOT REQUIRED TO BE TESTED. SYSTEM WILL BE IN OPERATION
			MO-3015	MO GA VLV		X	ELC	C/O	FOLLOWING ACCIDENT.
36	LETDOWN TO PURIFICATION ION EXCHANGER (2" Ø)	B1	CV-2009	AO GL VLV	X		NO	C	TYPE C TEST
37	PRIMARY SYSTEM DRAIN TANK PUMP RECIRC (1 1/2" Ø)	C2	CV-1001	AO GL VLV	X		NC	C	TYPE C TEST
			CK-CRW403	CHECK VLV	X		C	C	
			MV-CRW503	MAN GL TEST VLV	X		LC	C	
38	CONDENSATE RETURN FROM STEAM HEATING UNITS (2" Ø)	N/A		CAPPED	X		NC	C	PENETRATION TESTED DURING TYPE A TEST.
39	CONTAINMENT HEATING SYSTEM (4" Ø)	N/A		CAPPED	X		NC	C	PENETRATION TESTED DURING TYPE A TEST.
40	PRIMARY COOLANT SYSTEM SAMPLE LINE (1/2" Ø)	B1	CV-1910	AO GL VLV	X		O/C	C	TYPE C TEST
			CV-1911	AO GL VLV	X		O/C	C	
			MV-PC1170A	MAN GL TEST VLV	X		LC	C	
40A	HYDROGEN MONITOR RETURN LINE RIGHT CHANNEL (1/2" Ø)	A1	SV-2414A	SOLENOID VLV	X		C	C/O	TYPE C TEST
			SV-2414B	SOLENOID VLV	X		C	C/O	
			MV-WG530B	MAN GL TEST VLV	X		LC	C	
40B	HYDROGEN MONITOR SUPPLY LINE RIGHT CHANNEL (1/2" Ø)	A1	SV-2412A	SOLENOID VLV	X		C	C/O	TYPE C TEST
			SV-2412B	SOLENOID VLV	X		C	C/O	
			MV-WG530A	MAN GL TEST VLV	X		LC	C	

CONTAINMENT PENETRATIONS AND APPENDIX J TEST REQUIREMENTS

PEN NO.	SYSTEM NAME AND SERVICE LINE SIZE	PEN CLASS NO.	VALVE ID NO.	VALVE TYPE OR DESCRIPTION	LOCATION OC	LOCATION IC	NOR MAL	POST LOCA (SIAS, CHR,CHP)	TEST REQUIREMENTS
41	DEGASIFIER PUMP DISCHARGE (3" Ø)	A1	CV-1004	AO GL VLV	X		NO	C	TYPE C TEST
			CK-CRW407	CHECK VLV	X		O	C	
			MV-CRW506	MAN GL TEST VLV	X		LC	C	
42	DEMINERALIZED WATER TO QUENCH TANK (2" Ø)	C2	CV-0155	AO GL VLV	X		NC	C	TYPE C TEST
			CK-PC155B	CHECK VLV	X		C	C	
			MV-PC1126	MAN GL TEST VLV	X		LC	C	
43	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.
44	CONTROLLED BLEEDOFF FROM PCP'S (3/4" Ø)	B1	CV-2083	AO GL VLV	X		NO	C	TYPE C TEST
			MV-CVC2083	MAN GL TEST VLV	X		LC	C	
			CV-2099	AO GL VLV	X		NO	C	
45	CHARGING PUMP DISCHARGE (2" Ø)	B1	CK-CVC2110	CHECK VLV	X		O	O	NOT REQUIRED TO BE TESTED. SYSTEM WILL BE IN OPERATION FOLLOWING ACCIDENT.
			CV-2111	AC GL VLV	X		NO	O	
46	CONTAINMENT VENT HEADER (4" Ø)	C2	CV-1101	AO GL VLV	X		NC	C	TYPE C TEST
			CV-1102	AO GL VLV	X		NC	C	
			MV-WG511	MAN GL TEST VLV	X		LC	C	
47	PRIMARY SYSTEM DRAIN TANK PUMP SUCTION (4" Ø)	C2	CV-1002	AO GL VLV	X		NO	C	TYPE C TEST
			CV-1007	AO GL VLV	X		NO	C	
			MV-CRW502	MAN GL TEST VLV	X		LC	C	

CONTAINMENT PENETRATIONS AND APPENDIX J TEST REQUIREMENTS

PEN NO.	SYSTEM NAME AND SERVICE LINE SIZE	PEN CLASS NO.	VALVE ID NO.	VALVE TYPE OR DESCRIPTION	LOCATION OC	LOCATION IC	NOR MAL	POST LOCA (SIAS, CHR,CHP)	TEST REQUIREMENTS
48	CONTAINMENT PRESSURE INSTRUMENTATION (4 1/2" Ø LINES)	A2	MV-VA1801B	MAN GL VLV	X		LC	C	TYPE C TEST
			MV-VA1801C	MAN GL VLV	X		LC	C	
			MV-VA1803B	MAN GL VLV	X		LC	C	
			MV-VA1803C	MAN GL VLV	X		LC	C	
			MV-VA1805A	MAN GL VLV	X		LC	C	
			MV-VA1805C	MAN GL VLV	X		LC	C	
			MV-VA1815A	MAN GL VLV	X		LC	C	
			MV-VA1815B	MAN GL VLV	X		LC	C	
49	CLEAN WASTE RECEIVER TANK CIRCULATION PUMP SUCTION (6" Ø)	A1	CV-1038	AO GL VLV	X		NO	C	TYPE C TEST
			CV-1036	AO GL VLV	X		NO	C	
			MV-CRW513	MAN GL TEST VLV	X		LC	C	
50	EMERGENCY ACCESS LOCK	X	OUTER DOOR	-	X		C	C	TYPE B TEST
			-	PRESS EQUAL VLV	X		C	C	
50-3			CAP	INST TUBE W/CAP	X		C	C	
50-4			CAP	INST TUBE W/CAP	X		C	C	
50-6			PLUG	TEST CONN W/PLUG	X		C	C	
50-7			MV-VA-P6	MAN BALL TEST VLV	X		LC	C	
			INNER DOOR	-		X	C	C	
			-	PRESS EQUAL VLV		X	C	C	
50-1			CAP	INST TUBE		X	C	C	
50-2			CAP	INST TUBE		X	C	C	
50-5			PLUG	TEST CONN W/PLUG		X	C	C	
51	EQUIPMENT DOOR	X	HATCH	HATCH W/2 O-RINGS		X	C	C	TYPE B TEST
			MV-CIS500	MAN TEST VLV	X		LC	C	
52	CONTAINMENT SUMP DRAIN TO SUMP TANK (4" Ø)	A1	CV-1103	AO BALL VLV	X		NC	C	TYPE C TEST
			CV-1104	AO BALL VLV	X		NC	C	
			MV-DRW500	MAN GL TEST VLV	X		LC	C	
52A	CONTAINMENT SUMP LEVEL INSTRUMENTATION (3/8" Ø)	A2	MV-DRW618F	MAN GL VLV	X		LC	C	TYPE C TEST
			MV-DRW618H	MAN GL VLV	X		LC	C	
			MV-DRW618E	MAN GL VLV	X		LC	C	
			MV-DRW618G	MAN GL VLV	X		LC	C	
			MV-DRW618C	MAN GL VLV	X		LC	C	
			MV-DRW618D	MAN GL VLV	X		LC	C	

CONTAINMENT PENETRATIONS AND APPENDIX J TEST REQUIREMENTS

PEN NO.	SYSTEM NAME AND SERVICE LINE SIZE	PEN CLASS NO.	VALVE ID NO.	VALVE TYPE OR DESCRIPTION	LOCATION OC	LOCATION IC	NOR MAL	POST LOCA (SIAS, CHR,CHP)	TEST REQUIREMENTS
52B	CONTAINMENT SUMP LEVEL INSTRUMENTATION (3/8" Ø)	A2	MV-DRW619F	MAN GL VLV	X		LC	C	TYPE C TEST
			MV-DRW619H	MAN GL VLV	X		LC	C	
			MV-DRW619E	MAN GL VLV	X		LC	C	
			MV-DRW619G	MAN GL VLV	X		LC	C	
			MV-DRW619C	MAN GL VLV	X		LC	C	
			MV-DRW619D	MAN GL VLV	X		LC	C	
53	EAST SAFEGUARDS PUMPS SUCTION (24" Ø)	X	CV-3029	AO GA VLV	X		ELC	O	NOT REQUIRED TO BE TESTED. SYSTEM WILL BE IN OPERATION FOLLOWING ACCIDENT.
54	WEST SAFEGUARDS PUMPS SUCTION (24" Ø)	X	CV-3030	AO GA VLV	X		ELC	O	NOT REQUIRED TO BE TESTED. SYSTEM WILL BE IN OPERATION FOLLOWING ACCIDENT.
55	S/G (E-50B) RECIRCULATION (4" Ø)	C1	CV-0738	AO ANGLE VLV	X		C	C	NOT REQUIRED TO BE TESTED; S/G SHELL IS CONSIDERED AN EXTENSION OF THE CONTAINMENT BOUNDARY.
56	CONTAINMENT SUMP LEVEL INSTRUMENTATION (1/2" Ø)	A2	MV-VA606B	MA GA VALVE	X		LC	C	TYPE C TEST
			MV-VA606C	MA GA VALVE	X		LC	C	
57	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.
58	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.
59	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.
60	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.
61	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.
62	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.
63	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.
64	REFUELING CAVITY FILL AND RECIRC (6" Ø)	A2	MV-SFP121	MAN GA VLV		X	LC	C	TYPE C TEST
			MV-SFP120	MAN GA VLV	X		LC	C	
			MV-SFP514	MAN GL TEST VLV	X		LC	C	
65	INSTRUMENT AIR (1 1/2" Ø)	C2	CV-1211	AC GL VLV	X		NO	O	TYPE C TEST OF CHECK VALVE
			CK-CA400	CHECK VLV	X		O	O	
			MV-CA612	MAN GL TEST VLV	X		LC	C	

CONTAINMENT PENETRATIONS AND APPENDIX J TEST REQUIREMENTS

PEN NO.	SYSTEM NAME AND SERVICE LINE SIZE	PEN CLASS NO.	VALVE ID NO.	VALVE TYPE OR DESCRIPTION	LOCATION OC	LOCATION IC	NOR MAL	POST LOCA (SIAS, CHR,CHP)	TEST REQUIREMENTS
66	ILRT	A2	MV-VA601	MAN GA VLV		X	LC	C	TYPE C TEST
	INSTRUMENT LINE		MV-VA-L-6	MAN GA VLV	X		LC	C	
	(1 1/2" Ø)		MV-VA603	MAN GA TEST VLV	X		LC	C	
			MV-VA602	MAN GL TEST VLV	X		LC	C	
67	CLEAN WASTE	A1	CV-1037	AO GL VLV	X		NO	C	TYPE C TEST
	RECEIVER TANK PUMP		CK-CRW408	CHECK VLV	X		O	C	
	RECIRC (3" Ø)		MV-CRW515	MAN GL TEST VLV	X		LC	C	
68	AIR SUPPLY TO	A1	CV-1813	AO BUTF VLV	X		ELC	C	TYPE C TEST
	AIR ROOM (12" Ø)		CV-1814	AO BUTF VLV	X		ELC	C	
			MV-VA505	MAN GL TEST VLV	X		LC	C	
69	CLEAN WASTE	A1	CV-1045	AO GL VLV	X		NO	C	TYPE C TEST
	RECEIVER TANK PUMP		CV-1044	AO GL VLV	X		NO	C	
	SUCTION (4" Ø)		MV-CRW518	MAN GL TEST VLV	X		LC	C	
70	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.
71	SPARE	N/A							PENETRATION TESTED DURING TYPE A TEST.
72	REACTOR REFUELING	A2	MV-SFP117	MAN GA VLV		X	LC	C	TYPE C TEST
	CAVITY DRAIN (8" Ø)		MV-SFP118	MAN GA VLV	X		LC	C	
			MV-SFP515	MAN GL TEST VLV	X		LC	C	
73	AUX FEED TO S/G	C1	CK-FW703	CHECK VLV	X		NC	O	NOT REQUIRED TO BE TESTED; S/G SHELL IS CONSIDERED
	(E-50B) (4" Ø)		CK-FW728	CHECK VLV	X		NC	O	AN EXTENSION OF THE CONTAINMENT BOUNDARY.
			MV-FW718	MAN GL VLV	X		LC	C	
NORTH ELEC PEN	NORTH ELECTRICAL PENETRATION NITROGEN BLANKET SYSTEM	X	CK-N2/462	CHECK VLV	X		NO	C	TYPE B TEST
			MV-N2/585	MAN GA TEST VLV	X		LC	C	TYPE C TEST OF CHECK VALVE
SOUTH ELEC PEN	SOUTH ELECTRICAL PENETRATION NITROGEN BLANKET SYSTEM	X	CK-N2/465	CHECK VLV	X		NO	C	TYPE B TEST
			MV-N2/588	MAN GA TEST VLV	X		LC	C	TYPE C TEST OF CHECK VALVE

NOTE: TEST VALVES ARE NOT TESTED FOR SEAT LEAKAGE.

MAJOR EQUIPMENT SUPPORTS, MATERIALS OF CONSTRUCTION

Materials	Reactor Vessel	Steam Generators	Pressurizer	Primary Coolant Pumps	Safety Injection Tanks
Steel Plates and Shapes	ASTM A-36 f_y(a) = 36 Ksi	ASTM A-36 f_y = 36 Ksi	ASTM A-36 f_y = 36 Ksi	ASTM A-36 f_y = 36 Ksi	ASTM A-36 f_y = 36 Ksi
Steel Casting	None	ASTM A-27 Gr 70-40 f_y = 40 Ksi	None	ASTM A-27 Gr 65-35 f_y = 35 Ksi	None
Bolts					
Anchor Bolts	None	ASTM A-490 f_y = 115 Ksi	ASTM A-490 f_y = 130 Ksi and ASTM A-307 f_y = 36 Ksi	ASTM A-490 f_y = 130 Ksi	None
Steel Connections	None	None	ASTM A-325 f_y = 77 Ksi	ASTM A-490 f_y = 130 Ksi	ASTM A-325 f_y = 77 Ksi
Concrete, 28-Day Strength	5,000 psi	5,000 psi	None	None	None
Reinforcing Steel	ASTM A-432 f_y = 60 Ksi	ASTM A-432 f_y = 60 Ksi	None	None	None

(a) f_y = Minimum yield strength

CLASS 1 SYSTEMS OR PORTIONS THEREOF INCLUDED IN THE 1974 REVIEW OF AS-BUILT PIPE SUPPORTS

P&ID Number	System Description(a)
M-201, M-202	CVCS Letdown System Through Flow Control Valves(b)
M-201, M-202	Charging System(b)
M-201	Connections to the Primary Coolant Loop Through the Isolation Valves
M-201, M-202, M-203, M-204, M-201, M-221	High- and Low-Pressure Safety Injection Systems Inside and Outside Containment
M-202	Concentrated Boric Acid System(b)
M-203, M-204	Containment Spray System
M-207, M-220	Auxiliary Feedwater System
M-208, M-213	Critical Service Water System Inside and Outside Containment
M-209	Component Cooling Water System Outside Containment
M-211	Gas Decay Tank Connections
M-214	Diesel Generator Auxiliary Systems
M-214, M-653, M-655	Fuel Oil to Emergency Diesels
M-218	Air Room Purge and Containment Air Purge Outside Containment
M-225	High-Pressure Air to Safeguard Valves

(a) The review included the system, or portion thereof, and each branch connection through the first restraint beyond a remote operable or accessible manual isolation valve.

(b) The portion of these systems not associated with Primary Coolant Isolation or Containment Isolation are Class 3.

SYSTEMS CONTAINING SAFETY-RELATED PIPING

P&ID Number	System Description
M-201	Primary Coolant System
M-202	Chemical and Volume Control System
M-203 and M-204	Safety Injection, Containment Spray and Shutdown Cooling Systems
M-205	Main Steam and Auxiliary Feedwater Systems
M-207	Feedwater and Condensate Systems
M-208	Service Water System
M-209	Component Cooling Water System
M-210	Radwaste Treatment System - Clean
M-211	Radwaste Treatment System - Dirty and Gaseous
M-212	Instrument and Service Air System
M-213	Circulating Water, Screen Structure Chlorination, and Fire Protection Systems
M-214	Lube Oil, Fuel Oil and Diesel Generator
M-215	Plant Heating System
M-218	Heating, Ventilating and Air-Conditioning System
M-219	Sampling System
M-220	Makeup Water, Domestic Water and Chemical Injection
M-221	Spent Fuel Pool Coolant and Shield Cooling System
M-222	Miscellaneous Gas Supply System
M-224	Gas Analyzing System
M-225	High-Pressure, Air-Operated Valves
M-226	Steam Generator Blowdown Modification
M-650	Radwaste Evaporator System - Clean Wastes
M-651	Radwaste Evaporator System - Miscellaneous Wastes