SECTION 3.0 DESIGN OF STRUCTURES, COMPONENTS, EQUIPMENT, AND SYSTEMS

3.1 CONFORMANCE WITH NRC GENERAL DESIGN CRITERIA

This section briefly outlines the General Design Criteria (GDC) applicable to the Integrated Safeguards System of the Westinghouse Advanced Pressurized Water Reactor (WAPWR) per Title 10, Code of Federal Regulations, Part 50 (10CFR50), Appendix A, "General Design Criteria for Nuclear Power Plants". As presented in this section, each criterion is listed to denote applicability to the Primary Side Safeguards System (see Table 3.1-1).

A detailed discussion of the compliance of each criterion is provided in the "Structural/Equipment Design" module.



TABLE 3.1-1 GDC APPLICABLE TO PSSS

Criterion .

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Title

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1	Quality standards and records.
2	Design bases for protection against natural phenomena
3	Fire protection
4	Environmental and missile design bases
5	Sharing of structures, systems and components
10	Reactor design
14	Reactor coolant pressure boundary
15	Reactor coolant system design
30	Quality of reactor coolant pressure boundary
34	Residual heat removal
35	Emergency core cooling
36	Inspection of emergency core cooling
37	Testing of emergency core cooling system
38	Containment heat removal
39	Inspection of containment heat removal
40	Testing of containment heat removal system
54	Piping systems penetrating cor ainment

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3.2 CLASSIFICATION OF STRUCTURES, COMPONENTS, AND SYSTEMS

Certain structures, components, and systems of the ISS are important to safety because they:

- a. Assure the integrity of the reactor coolant pressure boundary.
- b. Assure the capability to shut down the reactor and maintain it in a safe condition.
- c. Assure the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the guideline exposures of 10 CFR 100.
- d. Contain or may contain radioactive material.

The purpose of this section is to classify structures, systems, and components according to the importance of the item in order to provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. Table 3.2-1 delineates each of the items in the plant which fall under the above-mentioned categories and the respective associated classification that the NRC, ANS, and industrial codes committees have developed. Each of the classification categories in Table 3.2-1 is addressed in the following sections.

The classification of specific piping runs and valves in these runs is provided in the ISS flow diagrams contained in this module. Instrumentation and electrical equipment required to shutdown the plant or mitigate an accident which is associated with the ISS will be classified as IE (or Safety Class 3 per ANS 51.1) and identified in a future module.

Additional information regarding the classification of structures, components, and systems is provided in the "Structural/Equipment Design" Module.

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3.2.1 Seismic Classification

Seismic classification criteria are set forth in 10 CFR 100 and supplemented by Regulatory Guide 1.29.

All components classified as Safety Class 1, 2, or 3 (classifications are as defined by Reference 1), are seismic Category I.

Seismic Category I structures, components, and systems are designed to withstand the safe shutdown earthquake (SSE), as discussed in Sections 3.7, and other applicable load combinations, as discussed in Section 3.8.5 (see "Structural/Equipment Design" module). Seismic Category I structures are sufficiently isolated or protected from the other structures to ensure that their integrity is maintained.

3.2.2 System Quality Group Classification

The components are classified according to their importance to safety, as dictated by service and functional requirements and by the consequences of their failure. The quality assurance requirements and code requirements for the ISS meet the intent of Regulatory Guide 1.26. However, specific Quality Groups are not implemented by Westinghouse.

3.2.3 Safety Classes

Table 3.2-1 lists the safety class assigned to applicable sytems and components in accordance with ANS 51.1 (Ref. 1). The criteria (of Ref. 1) are used in the plant design to provide an added degree of assurance that the plant is designed, constructed, and operated without undue risk to the health and safety of the public.

3.2.5 References

 "Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants," ANS-51.1, November 1982.

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TABLE 3.2-1

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	System/Component	Location	ANS Safety Class	Quality Assurance	Code Class	struction Codes and Standards	Seismic Categor
	High Head Safety Injection Pump	OC	2	Note 1	2	ASME III	1
•	Low Head pumps	oc	2	Note 1	2	ASME III	I
	Accumulators	С	2	Note 1	2	ASME III	1
	Core Reflood Tank	С	2	Note 1	2	ASME III	1
	Emergency Water Storage Tank	С	2	Note 1		Later	1
	RHR Heat Exchangers Tube Side Shell Side	с	2 3	Note 1 Note 2	2 3	ASME III ASME III	I
•	Low Head Pump Miniflow HX Tube Side Shell Side	00	2 3	Note 1 Note 2	23	ASME III ASME III	1
	Containment Spray Header Nozzles	С	2	Note 1	2	ASME III	I
	Active Valves	C/0C	1/2/3	Note 1/2	1/2/	3 ASME III	1
	Inactive Valves	C/0C	1/2/3	Note 1/2	1/2/	3 ASME III	1
	Piping	C/0C	1/2/3	Note 1/2	1/2/	3 ASME III	1

CLASSIFICATION OF STRUCTURES, SYSTEMS, AND COMPONENTS FOR THE INTEGRATED SAFEGUARDS SYSTEM

Note 1 - Meets "Quality Control System Requirements," Westinghouse QCS-1, which satisfies requirements of 10CFR50, Appendix B, Quality Assurance Criteria.

Note 2

 Meets "Quality Control System Requirements," Westinghouse QCS-2, which satisfies requirements of 10CFR50, Appendix B.

