

1. INTRODUCTION AND GENERAL DESCRIPTION OF THE PLANT

US-APWR Design Control Document

Table 1.9.1-1 US-APWR Conformance with Division 1 Regulatory Guides (Sheet 6 of 20)

Reg Guide Number	Title	Status	Corresponding Chapter/Section/Subsection
1.59	Design Basis Floods for Nuclear Power Plants (Rev. 2, August 1977)	Conformance with exceptions. RG applies to a site-specific characterization for flooding.	2.4, 3.4.1.2
1.60	Design Response Spectra for Seismic Design of Nuclear Power Plants (Rev. 1, December 1973)	Conformance with no exceptions identified. Note: COL Applicant will verify site-specific data is bounded by data used in DCD analyses.	2.3, 2.5, 3.7 <u>3.7.1.1</u>
1.61	Damping Values for Seismic Design of Nuclear Power Plants (Rev. 1, March 2007)	Conformance with no exceptions identified.	3.7 <u>3.7.1.2, 3.7.2.3.5, 3.7.2.5, 3.7.3</u> , 3.9.2, 3.12.3, 3.12.5.4, 3.12.6.8
1.62	Manual Initiation of Protective Actions (Rev. 0, October 1973)	Conformance with no exceptions identified.	8.1.5.3, 18.7.3.2, Table 7.2-6,7, Table 7.3-5,6
1.63	Electric Penetration Assemblies in Containment Structures for Nuclear Power Plants (Rev. 3, February 1987)	Conformance with no exceptions identified.	3.11, 8.1.5.3
1.65	Materials and Inspections for Reactor Vessel Closure Studs (Rev. 0, October 1973)	Conformance with no exceptions identified.	3.13.1.1, 3.13.1.2, 3.13.2, 5.2.3.6, 5.3.1.7, 5.3.3, 16.0
1.68	Initial Test Programs for Water-Cooled Nuclear Power Plants (Rev. 3, March 2007)	Conformance with exception. Programmatic/operational aspect is not applicable to US-APWR design certification.	14.2
1.68.2	Initial Startup Test Program To Demonstrate Remote Shutdown Capability for Water-Cooled Nuclear Power Plants (Rev. 1, July 1978)	Conformance with no exceptions identified.	14.2
1.68.3	Preoperational Testing of Instrument and Control Air Systems (Rev. 0, April 1982)	Conformance with exceptions. C.7: This criterion applies to instrument and control air system important safety. US-APWR instrument and control air system is not important to safety.	9.3.1.4, 14.2.7

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Table 1.9.1-1 US-APWR Conformance with Division 1 Regulatory Guides (Sheet 9 of 20)

Reg Guide Number	Title	Status	Corresponding Chapter/Section/Subsection
1.91	Evaluations of Explosions Postulated To Occur on Transportation Routes Near Nuclear Power Plants (Rev. 1, February 1978)	Not applicable. RG applies to a site-specific analysis.	N/A
1.92	Combining Modal Responses and Spatial Components in Seismic Response Analysis (Rev. 2, July 2006)	Conformance with no exceptions identified.	3.7.2.3.7.2.7, 3.7.3.1.7.1, 3.8.1, 3.12.3.2.4, 3.12.5.5
1.93	Availability of Electric Power Sources (Rev. 0, December 1974)	Conformance with no exceptions identified.	8.1.5.3
1.94	Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants (Rev. 1, April 1976)	Withdrawn	N/A
1.97	Criteria For Accident Monitoring Instrumentation For Nuclear Power Plants (Rev. 4, June 2006)	Conformance with no exceptions identified.	7.5.1.1, 7.5.2.1, 14.3.4
1.99	Radiation Embrittlement of Reactor Vessel Materials (Rev. 2, May 1988)	Conformance with no exceptions identified.	5.3.1, 5.3.2, 16.0
1.100	Seismic Qualification of Electric and Mechanical Equipment for Nuclear Power Plants (Rev. 23, June 1988 <u>September 2009</u>)	Conformance with no exceptions identified.	3.10
1.101	Emergency Planning and Preparedness for Nuclear Power Reactors (Rev. 5, June 2005)	Conformance with exceptions. Full conformance by COL Applicant with site-specific EP data	13.3.5
1.102	Flood Protection for Nuclear Power Plants (Rev. 1, September 1976)	Conformance with exceptions. Full conformance by COL Applicant with site-specific flood data	3.4.1
1.105	Setpoints for Safety-Related Instrumentation (Rev. 3, December 1999)	Conformance with no exceptions identified.	7.2.2.7, 7.3.2.7

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Table 1.9.1-1 US-APWR Conformance with Division 1 Regulatory Guides (Sheet 11 of 20)

Reg Guide Number	Title	Status	Corresponding Chapter/Section/Subsection
1.116	Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems (Rev. 0-R, May 1977)	Withdrawn	N/A
1.117	Tornado Design Classification (Rev. 1, April 1978)	Conformance with no exceptions identified.	3.3
1.118	Periodic Testing of Electric Power and Protection Systems (Rev. 3, April 1995)	Conformance with no exceptions identified.	7.1.3.14, 8.1.5.3, 14.2.7
1.121	Bases for Plugging Degraded PWR Steam Generator Tubes (Rev. 0, August 1976)	Conformance with no exceptions identified.	5.4.2.1.8, 5.4.2.2.2
1.122	Development of Floor Design Response Spectra for Seismic Design of Floor-Supported Equipment or Components (Rev. 1, February 1978)	Conformance with no exceptions identified.	3.7.2.3 <u>3.7.2.5</u> , 3.12.3.2.1
1.124	Service Limits and Loading Combinations for Class 1 Linear-Type Supports (Rev. 2, February 2007)	Conformance with no exceptions identified.	3.9.3.4, 3.12.6.1
1.125	Physical Models for Design and Operation of Hydraulic Structures and Systems for Nuclear Power Plants (Rev. 1, October 1978)	Conformance with no exceptions identified.	2.4
1.126	An Acceptable Model and Related Statistical Methods for the Analysis of Fuel Densification (Rev. 1, March 1978)	Conformance with no exceptions identified	4.2, 4.4
1.127	Inspection of Water-Control Structures Associated with Nuclear Power Plants (Rev. 1, March 1978)	Not applicable. RG applies to a site-specific operational program.	N/A
1.128	Installation Design and Installation of Vented Lead-Acid Storage Batteries for Nuclear Power Plants (Rev. 2, February 2007)	Conformance with no exceptions identified.	8.1.5.3, 14.2.7
1.129	Maintenance, Testing, and Replacement of Vented Lead-Acid Storage Batteries for Nuclear Power Plants (Rev. 2, February 2007)	Conformance with exceptions. Design certification applicability is to assure design features accommodate functions described in RG; full conformance in terms of program and activities will be the responsibility of the COL Applicant.	8.1.5.3

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Table 1.9.5-2 Detailed Treatment of Requirements of SECY-93-087 (Sheet 7 of 15)

Issue Number	Description	Requirements	Comment
I.M	Elimination of Operating-Basis Earthquake	<p>Approved by Commission in SRM dated 7/21/93. "The Commission approves the staff's recommendation to account for earthquake cycles in the fatigue analyses of piping systems performed until the new guidance is issued, using two SSE events with 10 maximum stress cycles per event (20 full cycles of the maximum SSE stress range). Alternatively, the number of fractional vibratory cycles equivalent to that of 20 full SSE vibratory cycles may be used (but with an amplitude not less than one-third of the maximum SSE amplitude) when derived in accordance with Appendix D of IEEE Standard 344-1987.</p> <p>The Commission approves the staff's recommendation that the effects of anchor displacements in the piping caused by an SSE be considered with the Service Level D limit.</p> <p>The Commission approves the staff's recommendation to eliminate the OBE from the design of systems, structures, and components. When the OBE is eliminated from the design, no replacement earthquake loading should be used to establish the postulated pipe rupture and leakage crack locations.</p> <p>The Commission approves the staff's recommendation that the mechanistic pipe break and high-energy leakage crack locations determined by the piping high stress (without the OBE) and fatigue locations may be used for equipment environmental qualification and compartment pressurization purposes.</p>	<p>Addressed for US-APWR in DCD sections 3.2.1, 3-73.7.1.1, 3.10.2 and 3.12.5</p>
I.M	Elimination of Operating-Basis Earthquake (continued)	<p>The Commission agrees that with the elimination of the OBE, two alternatives exist that will essentially maintain the requirements provided in IEEE Standard 344-1987 to qualify equipment with the equivalent of five OBE events followed by one SSE event (with 10 maximum stress cycles per event). Of these alternatives, the equipment should be qualified with five one-half SSE events followed by one full SSE event.</p> <p>Alternatively, a number of fractional peak cycles equivalent to the maximum peak cycles for five one-half SSE events may be used in accordance with Appendix D of IEEE Standard 3441987 when followed by one full SSE.</p> <p>The Commission agrees that the above requirements should also apply to passive ALWRs. The Commission understands that the OBE will continue to be used as a threshold criterion for conducting inspections following an earthquake event. The staff should keep the Commission and the ACRS informed as the staff's further analysis and review proceed."</p>	

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