

1D Summary of Changes in RS-5146900

1D.1 Introduction

The design certification rule for the U.S. ABWR was approved by the Nuclear Regulatory Commission (NRC) in 1997 and was amended effective 2012 to comply with 10 CFR 50.150, “Aircraft impact assessment” (AIA rule) requirements. This design certification is published in 10 CFR Part 52, Appendix A. 10 CFR Part 52, Appendix A incorporates by reference the GE Nuclear Energy (GE) “ABWR Design Control Document, Revision 4, March 1997” and creates the abbreviation “GE DCD” for that document. Appendix A incorporates by reference the STP Nuclear Operating Company “Design Control Document ABWR STP Aircraft Impact Assessment Amendment Revision 3, Copyright @ 2010” and creates the abbreviation “STPNOC DCD” for that document.

As allowed for by federal regulation, Toshiba Corporation has prepared this design control document for use in the renewal of the design certification. The Toshiba DCD is assigned Toshiba document number RS-5146900.

This appendix identifies changes made by Toshiba to the GE DCD. The specific changes are listed in Subsection 1D.2. Each change is categorized in accordance with NRC direction provided in Reference 1D-1 as follows:

“Modifications to the certified design are considered to be those changes that are necessitated by the requirement to update the application in accordance with § 52.57(a) [e.g., to correct known errors and defects] and § 52.59(a). Modifications must comply with the Atomic Energy Act (AEA) and the Commission’s regulations applicable and in effect at the time the certification was originally issued with the exception of those changes proposed by the DC Renewal applicant to comply with 10 CFR 50.150 as required by § 52.59(a).”

“Renewal Backfits to the certified design are considered to be those changes that are necessary to comply with additional requirements imposed by the NRC through application of the criteria in § 52.59(b). The NRC staff is responsible for justifying renewal backfits under this provision. However, to gain insight as to whether a change needs to be made under this criterion, additional information is being requested from the applicant pursuant to the updating requirement in 10 CFR 52.57(a).”

“Amendments to the certified design are considered to be those changes proposed by the DC Renewal applicant in accordance with § 52.59(c). Amendments must comply with the AEA and the Commission’s regulations applicable and in effect at the time of renewal. ABWR DC Renewal applications that include amendments to the certified design are not required to address the criteria in 10 CFR 52.63, but in accordance with § 52.59(c), if the amendment request entails such an extensive change to the certified design that an essentially new standard design is being proposed, a new DC application must be submitted.”

In addition to the NRC-defined change categories above, an additional category of “AIA Amendment” is used to identify changes made by Toshiba in the DCD to incorporate certified STPNOC DCD information that is applicable to the Standard Plant ABWR design.

1D.2 Changes Made in Revisions to RS-5146900

1D.2.1 Revision 1 to RS-5146900

Revision bars show the location of content changes made between the GE DCD and RS-5146900 Revision 1. Changes to figures are shown with revision bars and/or change bubbles.

Table 1D-1 lists changes made to the GE DCD that are contained in RS-5146900 Revision 1. The table also identifies each change as a Modification, Amendment or AIA Amendment.

In addition to the changes listed in Table 1D-1, Toshiba added the RS-5146900 document number and revision number to each DCD page and updated the Tier 1 and Tier 2 tables of contents. These changes are not marked with revision bars.

1D.2.2 Reserved for Future Use

1D.3 Reference

- 1D-1 “Advanced Boiling Water Reactor Design Certification Renewal Applications: Draft NRC Staff Views on Application Content and Draft Staff Review Guidelines, Revision 3,” U.S. Nuclear Regulatory Commission, December 1, 2010 (ADAMS Accession No. ML103140050).

Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900 Revision 1

Tier - Section	Section Title	Description of Change ¹	Category
—	Introduction	Made administrative changes to update citations to the current Code of Federal Regulations.	Modification
		Made administrative changes to delete references to the ABWR Standard Safety Analysis Report.	Modification
		Changed safety-related Instrumentation and Control (I&C) architecture.	Amendment
Tier 1 Chapter 1 - Introduction			
Tier 1 - 1.0	Introduction	No changes from the GE DCD.	—
Tier 1 - 1.1	Definitions	Clarified the “As-built” definition.	Modification
Tier 1 - 1.2	General Provisions	No changes from the GE DCD.	—
Tier 1 Chapter 2 - Certified Design for ABWR Systems			
Tier 1 - 2.0	Certified Design for ABWR Systems	No changes from the GE DCD.	—
Tier 1 - 2.1	Nuclear Steam Supply Systems	Clarified description of Reactor Internal Pump motor casing to indicate that some portions have cladding.	Modification
		Clarified the term “ATWS Permissive” with respect to Automatic Depressurization System automatic inhibition.	Modification
		Changed section to reflect use of Westinghouse Optima2 fuel.	Amendment
		Corrected the description of the safety classification of the Reactor Recirculation System.	Modification
Tier 1 - 2.2	Control and Instrument Systems	Changed safety-related I&C architecture.	Amendment
		Changed Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) for Rod Control and Information System power supplies.	Amendment
		Changed description of the Remote Shutdown System due to elimination of the Flammability Control System.	Amendment
		Corrected description of the Standby Liquid Control System operator interfaces in the main control room.	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 1 - 2.2 (Continued)	Control and Instrument Systems (Continued)	Corrected Standby Liquid Control System pump relief valve set point.	Modification
		Made administrative change(s).	Modification
Tier 1 - 2.3	Radiation Servicing Equipment	Eliminated Main Steam Isolation Valve automatic closure on high radiation in steam tunnel.	Amendment
		Changed Containment Atmospheric Monitoring System design description and ITAAC due to elimination of Flammability Control System.	Amendment
Tier 1 - 2.4	Core Cooling Systems	Changed from two to three Residual Heat Removal System loops connected to the Fuel Pool Cooling and Cleanup System.	Amendment
		Added Condensate Pump trip by Class 1E breakers.	Amendment
		Changed Reactor Core Isolation Cooling turbine-driven pump design.	Amendment
		Changed description of the Leak Detection and Isolation System due to elimination of Flammability Control System.	Amendment
		Changed Residual Heat Removal heat exchanger heat removal capacity.	Amendment
		Changed Emergency Core Cooling System pumps' NPSH ITAAC from "50% blocked strainer" acceptance criterion to comply with current Regulatory Guide 1.82, Rev. 3 acceptance criteria.	Amendment
		Made administrative change(s).	Modification
Tier 1 - 2.5	Reactor Servicing Equipment	Eliminated the New Fuel Storage Racks from the New Fuel Storage Vault.	Amendment
		Eliminated the Auxiliary Platform.	Amendment
Tier 1 - 2.6	Reactor Auxiliary Systems	Changed from two to three Residual Heat Removal System loops connected to the Fuel Pool Cooling and Cleanup System.	Amendment
		Clarified the Reactor Water Cleanup System safety classification.	Modification
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 1 - 2.7	Control Panels	Changed control panel due to elimination of Main Steam Isolation Valve automatic closure on high radiation in steam tunnel.	Amendment
		Changed control panel due to elimination of Flammability Control System.	Amendment
		Changed safety-related I&C architecture.	Amendment
Tier 1 - 2.8	Nuclear Fuel	Changed section to reflect use of Westinghouse Optima2 fuel.	Amendment
Tier 1 - 2.9	Radioactive Waste System	No changes from the GE DCD.	—
Tier 1 - 2.10	Power Cycle Systems	Added Condensate Booster Pumps to the Condensate and Feedwater System.	Amendment
		Changed exhaust point for Main Condenser Evacuation System at the beginning of startup.	Amendment
		Made administrative change(s).	Modification
Tier 1 - 2.11	Station Auxiliary Systems	Changed Reactor Building Cooling Water System cooling loads due to elimination of Flammability Control System.	Amendment
		Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Clarified description of tie-in point for Alternate Feedwater Injection System.	Modification
		Transferred cooling load for the Containment Atmospheric Monitoring System room Air Handling Units to the Heating, Ventilation, and Air Conditioning (HVAC) Emergency Cooling Water System.	Amendment
		Made administrative change(s).	Modification
Tier 1 - 2.12	Station Electrical Systems	Updated electrical breaker/fuse coordination and low voltage testing requirements.	Amendment
		Changed Class 1E I&C power distribution system from three to four safety-related divisions.	Amendment
		Replaced references to a specific vendor.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 1 - 2.12 (Continued)	Station Electrical Systems (Continued)	Updated the analysis techniques used for the station electrical systems.	Amendment
		Made administrative change(s).	Modification
Tier 1 - 2.13	Power Transmission	No changes from the GE DCD.	—
Tier 1 - 2.14	Containment and Environmental Control Systems	Eliminated Flammability Control System.	Amendment
		Made administrative change(s).	Modification
		Clarified the safety-related portion of the Standby Gas Treatment System.	Modification
Tier 1 - 2.15	Structures and Servicing Systems	Re-classified Radwaste Building Substructure from Seismic Category I to non-seismic.	Amendment
		Increased Diesel Generator engine room maximum temperature limit during operation from 50°C to 60°C.	Amendment
		Changed Reactor Building Safety-Related Equipment HVAC System description and ITAAC due to elimination of Flammability Control System.	Amendment
		Added safety-related Condensate Pump trip breakers to Turbine Building.	Amendment
		Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Changed the HVAC System designs for the Reactor Building.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed to allow Reactor Building loads to be cooled by the HVAC Emergency Cooling Water System.	Amendment
		Clarified safety classification for Control Room Habitability Area HVAC System.	Modification
		Made administrative change(s).	Modification
Tier 1 - 2.16	Yard Structures and Equipment	Changed Fuel Oil Storage and Transfer System design.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 1 - 2.17	Emergency Planning	No changes from the GE DCD.	—
Tier 1 Chapter 3 - Additional Certified Design Material			
Tier 1 - 3.0	Additional Certified Design Material	No changes from the GE DCD.	—
Tier 1 - 3.1	Human Factors Engineering	No changes from the GE DCD.	—
Tier 1 - 3.2	Radiation Protection	Changed figure due to elimination of Flammability Control System.	Amendment
		Changed safety-related I&C architecture.	Amendment
Tier 1 - 3.3	Piping Design	No changes from the GE DCD.	—
Tier 1 - 3.4	Instrumentation and Control	Changed safety-related I&C architecture.	Amendment
Tier 1 - 3.5	Initial Test Program	Made administrative change(s).	Modification
Tier 1 - 3.6	Design Reliability Assurance Program	Revised the Design Reliability Assurance Program ITAAC.	Amendment
Tier 1 Chapter 4 - Interface Requirements			
Tier 1 - 4.0	Interface Requirements	Made administrative change(s).	Modification
Tier 1 - 4.1	Ultimate Heat Sink	No changes from the GE DCD.	—
Tier 1 - 4.2	Offsite Power System	No changes from the GE DCD.	—
Tier 1 - 4.3	Makeup Water Preparation System	No changes from the GE DCD.	—
Tier 1 - 4.4	Potable and Sanitary Water System	No changes from the GE DCD.	—
Tier 1 - 4.5	Reactor Service Water System	No changes from the GE DCD.	—
Tier 1 - 4.6	Turbine Service Water System	No changes from the GE DCD.	—
Tier 1 - 4.7	Communication System	No changes from the GE DCD.	—

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change ¹	Category
Tier 1 - 4.8	Site Security	No changes from the GE DCD.	—
Tier 1 - 4.9	Circulating Water System	No changes from the GE DCD.	—
Tier 1 - 4.10	Heating, Ventilating and Air Conditioning System	No changes from the GE DCD.	—
Tier 1 Chapter 5 - Site Parameters			
Tier 1 - 5.0	Site Parameters	Increased ambient design wet bulb temperatures and maximum rainfall rates.	Amendment
		Specified outdoor temperature used for non-safety-related HVAC System design.	Amendment
		Made administrative change(s).	Modification
Tier 1 Appendices			
Appendix A	Legend for Figures	No changes from the GE DCD.	—
Appendix B	Abbreviations and Acronyms Used in the ABWR Certified Design Material	Changed abbreviations for safety-related I&C architecture.	Amendment
		Deleted abbreviations for Flammability Control System.	Amendment
		Made administrative change(s).	Modification
Appendix C	Conversion to ASME Standard Units	Made administrative change(s).	Modification
Tier 2 Chapter 1 - Introduction and General Description of Plant			
Tier 2 - 1.1	Introduction	Changed rated heat balance due to turbine design changes and changes in Reactor Internal Pump and Control Rod Drive System purge flows.	Amendment
		Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Revised site-specific element descriptions to reflect Ultimate Heat Sink and Power Cycle Heat Sink conceptual design changes.	Amendment
		Changed nuclear steam supply system vendor.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 1.1 (Continued)	Introduction (Continued)	Removed non-Toshiba proprietary information.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 1.2	General Plant Description	Changed text due to elimination of Main Steam Isolation Valves automatic closure on high radiation in steam tunnel.	Amendment
		Changed text due to new Reactor Core Isolation Cooling System turbine-driven pump design.	Amendment
		Changed text due to elimination of Flammability Control System.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Added new Control Building Annex.	Amendment
		Changed Turbine Building design to accommodate replacement of the turbine generator and related turbine cycle equipment.	Amendment
		Changed Radwaste Building design, including resizing, due to process and other changes.	Amendment
		Changed medium-voltage electrical distribution system.	Amendment
		Revised Control Rod Drive handling equipment description.	Amendment
		Added Turbine Island HVAC, Service Building HVAC, and Radwaste Building HVAC to list of ABWR environmental systems.	Amendment
		Changed design of turbines, generators and exciters.	Amendment
		Changed conceptual design of Standard Plant Main Condenser and Circulating Water System.	Amendment
		Changed load rejection capability.	Amendment
		Changed radioactive waste processing and handling systems.	Amendment
		Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Deleted Offgas Condenser from list of equipment cooled by Condensate and Feedwater System.	Amendment
		Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 1.2 (Continued)	General Plant Description (Continued)	Revised Radwaste Building, including resizing, due to process and other changes.	Amendment
		Eliminated the New Fuel Storage Racks from the New Fuel Storage Vault.	Amendment
		Removed reference to vendor-specific commercial products.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 1.3	Comparison Tables	Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Corrected inconsistent time and/or reactor coolant temperature performance description for Residual Heat Removal System following reactor shutdown.	Modification
Tier 2 - 1.4	Identification of Agents and Contractors	Incorporated Toshiba design and construction experience.	Amendment
Tier 2 - 1.5	Requirements for Further Technical Information	No changes from the GE DCD.	—
Tier 2 - 1.6	Topical Reports and Other Documents	Updated list of reference reports based on changes in other sections, including the addition of new references and the deletion of references that are no longer used.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 1.7	Drawings	Changed drawing list due to elimination of Flammability Control System and addition of Power Distribution System routing diagram.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Added P&ID minimum pipe schedule.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 1.8	Conformance with Standard Review Plan and Applicability of Codes and Standards	Updated the lists of Standard Review Plan (SRP) sections, codes and standards to reflect changes described in other sections.	Amendment
		Updated domestic operating experience summary and provided Japanese operating experience.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
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Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 1.8 (Continued)	Conformance with Standard Review Plan and Applicability of Codes and Standards (Continued)	Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Made administrative change(s).	Modification
Tier 2 - 1.9	COL License Information	Updated list of COL items to reflect changes made in other Tier 2 sections.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 1A	Response to TMI Related Matters	Changed to reflect elimination of Main Steam Isolation Valves automatic closure on high radiation in steam tunnel.	Amendment
		Changed to reflect Reactor Core Isolation Cooling System turbine-driven pump design change.	Amendment
		Changed due to elimination of Flammability Control System.	Amendment
		Eliminated non-historical references to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 1AA	Plant Shielding to Provide Access to Vital Areas and Protective Safety Equipment for Post-Accident Operation [II.B.2]	Reevaluated integrated doses for environmental qualification based on more detailed design.	Amendment
		Changed due to change from two to three Residual Heat Removal System loops connected to the Fuel Pool Cooling and Cleanup System.	Amendment
		Changed due to elimination of Flammability Control System.	Amendment
		Clarified basis for probability of loss of offsite power.	Modification
		Eliminated references to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 1B	Not Used	No changes from the GE DCD.	—
Tier 2 - 1C	ABWR Station Blackout Considerations	Changed design code for building housing the Combustion Turbine Generator to the International Building Code.	Amendment
		Changed medium-voltage electrical distribution system and Combustion Turbine Generator design.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
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Tier - Section	Section Title	Description of Change ¹	Category
Tier 2 - 1C (Continued)	ABWR Station Blackout Considerations (Continued)	Added Condensate Booster Pumps to components supplied with standby power from the Combustion Turbine Generator.	Amendment
		Made administrative change(s).	Modification
Tier 2 Chapter 2 - Site Characteristics			
Tier 2 - 2.0	Site Characteristics	Increased ambient design wet bulb temperatures and maximum rainfall rates.	Amendment
		Specified outdoor temperatures used for non-safety-related HVAC System design.	Amendment
Tier 2 - 2.1	Limits Imposed on SRP Section II Acceptance Criteria by ABWR Standard Plant	No changes from the GE DCD.	—
Tier 2 - 2.2	Requirements for Determination of ABWR Site Acceptability	Deleted the requirement that the CRAC2 computer code be used for accident consequence analysis.	Amendment
Tier 2 - 2.3	COL License Information	Updated COL item due to deletion of requirement that CRAC2 be used for accident consequence analysis.	Amendment
		Updated COL item to require COL applicant to perform evaluations per DC/COL-ISG-1 under specific conditions.	Amendment
Tier 2 - 2A	Input to CRAC 2 Computer Code for Determination of ABWR Site Acceptability	Made administrative changes for consistency with change made to Tier 2 Section 2.2.	Modification
Tier 2 Chapter 3 - Design of Structures, Components, Equipment and Systems			
Tier 2 - 3.1	Conformance with NRC General Design Criteria	Changed due to change from two to three Residual Heat Removal System loops connected to the Fuel Pool Cooling and Cleanup System.	Amendment
		Changed to reflect re-classification of Radwaste Building substructure from Seismic Category I to non-seismic.	Amendment
		Changed safety-related I&C architecture.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 3.1 (Continued)	Conformance with NRC General Design Criteria (Continued)	Changed due to elimination of the New Fuel Storage Racks from New Fuel Storage Vault.	Amendment
		Deleted reference to Leak-Before-Break analysis in relation to pipe rupture analysis.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 3.2	Classification of Structures, Components, and Systems	Changed to reflect Reactor Core Isolation Cooling System turbine-driven pump design change.	Amendment
		Changed due to elimination of Flammability Control System.	Amendment
		Added Hot Machine Shop location for Breathing Air System.	Amendment
		Changed to reflect re-classification of Radwaste Building substructure from Seismic Category I to non-seismic.	Amendment
		Changed to reflect addition of new Control Building Annex.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed due to revision of fuel storage and handling equipment.	Amendment
		Changed to reflect medium-voltage electrical distribution system change.	Amendment
		Added Hot Machine Shop safety class information.	Amendment
		Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Revised safety class and quality group classification of Residual Heat Removal main and jockey pump motors.	Amendment
		Added Diesel Generator Fuel Oil Storage and Transfer System vaults to safety classification table.	Amendment
		Corrected classification information for Emergency Diesel Generator components.	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 3.2 (Continued)	Classification of Structures, Components, and Systems (Continued)	Added that ASME Section III applies to pressure containing components.	Amendment
		Replaced information related to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 3.3	Wind and Tornado Loadings	Added wind velocity information per the 2006 International Building Code.	Amendment
		Changed to reflect re-classification of Radwaste Building substructure from Seismic Category I to non-seismic.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 3.4	Water Level (Flood) Design	Changed to reflect elimination of Main Steam Isolation Valves automatic closure on high radiation in steam tunnel.	Amendment
		Changed to reflect re-classification of Radwaste Building substructure from Seismic Category I to non-seismic.	Amendment
		Changed to reflect revision of Radwaste Building, including resizing, due to process and other changes.	Amendment
		Changed as a result of Turbine Building design changes to accommodate replacement of turbine generator and related turbine cycle equipment.	Amendment
		Changed diameter, length and flooding flow rate of Reactor Service Water System piping.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 3.5	Missile Protection	Clarified that a portion of the Standby Gas Treatment System exhaust piping is not located in a tornado-resistant building.	Modification
		Replaced non-Toshiba proprietary information.	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 3.6	Protection Against Dynamic Effects Associated with the Postulated Rupture of Piping	Changed thickness of main steam tunnel concrete in specific locations based on shielding and structural requirements.	Amendment
		Deleted Leak-Before-Break evaluation procedure for postulated pipe breaks.	Amendment
		Changed to reflect medium-voltage electrical distribution system change.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 3.7	Seismic Design	Re-classified Radwaste Building substructure from Seismic Category I to non-seismic.	Amendment
		Updated specific code for analysis of non-Seismic Category I structures.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 3.8	Seismic Category I Structures	Re-classified Radwaste Building substructure from Seismic Category I to non-seismic.	Amendment
		Updated specific codes for analysis of live loads.	Amendment
		Corrected discussion concerning blowout panels and relief and release pathways associated with the steam tunnel.	Modification
		Revised materials for reactor pressure vessel pedestal and equipment and personnel tunnels.	Amendment
		Revised structural configuration of diaphragm floor seal plate.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 3.9	Mechanical Systems and Components	Changed Reactor Core Isolation Cooling System turbine-driven pump design.	Amendment
		Changed valve inservice testing summary due to elimination of Flammability Control System.	Amendment
		Changed material for in-core guide tube lower stabilizer.	Amendment
		Changed valve inservice testing summary due to change from two to three Residual Heat Removal System loops connected to the Fuel Pool Cooling and Cleanup System.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 3.9 (Continued)	Mechanical Systems and Components (Continued)	Changed valve inservice testing summary due to conceptual Reactor Service Water System design change and to reflect increased system flow and discharge pressure.	Amendment
		Corrected inconsistencies in Service Air System description.	Modification
		Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Transferred cooling load for the Containment Atmospheric Monitoring System room HVAC Emergency Cooling Water System.	Amendment
		Corrected safety class of Wetwell Rupture Disc.	Modification
		Corrected weld examination requirements.	Modification
		Corrected inconsistencies in Atmospheric Control System wide range water level instrumentation channels.	Modification
		Corrected code class for primary side of Reactor Recirculation System Heat Exchangers.	Modification
		Removed Leak-Before-Break analysis option for excluding piping from analysis for postulated pipe break.	Amendment
		Defined STP Unit 3 as the prototype ABWR for reactor internals Flow-Induced Vibration analysis.	Amendment
		Replaced non-Toshiba proprietary information.	Amendment
		Eliminated references to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 3.10	Seismic and Dynamic Qualification of Mechanical and Electrical Equipment	Eliminated reference to a specific vendor.	Amendment
Tier 2 - 3.11	Environmental Qualification of Safety-Related Mechanical and Electrical Equipment	Clarified the implementation and equivalency of the Toshiba ABWR Equipment Qualification Program.	Modification
Tier 2 - 3.12	Tunnels	No changes from the GE DCD.	—

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 3.13	Secondary Containment and Divisional Separation Zones – Barrier Considerations	Changed safety-related I&C architecture.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 3A	Seismic Soil Structure Interaction Analysis	Provided updated geotechnical site parameters for ABWR Standard Plant design.	Amendment
		Made administrative change to delete duplicate figure.	Modification
Tier 2 - 3B	Containment Hydrodynamic Loads	Corrected factor used in containment impact load analysis.	Modification
		Revised pool swell analysis using an alternate method to address changes in containment pressure response for LOCA events.	Amendment
		Changed due to Reactor Core Isolation Cooling System turbine-driven pump design change.	Amendment
		Replaced non-Toshiba proprietary information.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 3C	Computer Programs Used in the Design and Analysis of Seismic Category I Structures	Added reference to ANSYS computer code for containment analysis.	Amendment
Tier 2 - 3D	Computer Programs Used in the Design of Components, Equipment and Structures	Added a new computer code for reactor internal component analysis.	Amendment
		Eliminated reference to a specific vendor.	Amendment
Tier 2 - 3E	Not Used	Deleted in its entirety because Leak-Before-Break methodology is not used as an option for excluding piping from analysis for postulated pipe breaks.	Amendment
Tier 2 - 3F	Not Used	No changes from the GE DCD.	—
Tier 2 - 3G	Response of Structures to Containment Loads	No changes from the GE DCD.	—

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 3H	Design Details and Evaluation Results of Seismic Category I Structures	Changed due to re-classification of Radwaste Building substructure from Seismic Category I to non-seismic.	Amendment
		Changed maximum rainfall rate to reflect increased Standard Plant design rate.	Amendment
		Updated specific codes for analysis of non-Seismic Category I structures.	Amendment
		Corrected the containment liner anchor material to SA-36.	Modification
		Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Revised structural configuration of Reactor Pressure Vessel pedestal.	Amendment
		Revised Reinforced Concrete Containment Vessel liner plate material specifications.	Amendment
		Changed figure due to elimination of Flammability Control System.	Amendment
		Corrected figures associated with hydrodynamic loading analysis.	Modification
		Corrected suppression pool access tunnel elevation.	Modification
		Made administrative change(s).	Modification
Tier 2 - 3I	Equipment Qualification Environmental Design Criteria	Increased the integrated gamma radiation dose for the main steam tunnel.	Amendment
		Changed due to elimination of Flammability Control System.	Amendment
		Increased Diesel Generator engine room maximum temperature limit during Diesel Generator operation.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed water chemistry values to reflect EPRI BWR Water Chemistry Guidelines (2008 edition).	Amendment
		Changed thermodynamic environmental conditions.	Amendment
		Made administrative change(s) and resolved inconsistencies.	Modification
Tier 2 - 3J	Not Used	No changes from the GE DCD.	—

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change ¹	Category
Tier 2 - 3K	Designated NEDE-24326-1-P Material Which May Not Change Without Prior NRC Staff Approval	Corrected requirements for dynamic event aging tests.	Modification
		Made administrative change(s).	Modification
Tier 2 - 3L	Evaluation of Postulated Ruptures in High Energy Pipes	Eliminated references to a specific vendor.	Amendment
Tier 2 - 3M	Resolution of Intersystem Loss of Coolant Accident for ABWR	Changed due to design change of Liquid Radwaste Management System.	Amendment
		Changed to reflect Reactor Core Isolation Cooling System turbine-driven pump design change.	Amendment
Tier 2 - 3MA	System Evaluation for ISLOCA	Updated design information to reflect system/piping design changes related to other amendment changes.	Amendment
		Made administrative change(s) and corrected inconsistencies.	Modification
Tier 2 Chapter 4 - Reactor			
Tier 2 - 4.1	Summary Description	Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Added a new computer code for reactor internal component analysis.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 4.2	Fuel System Design	Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 4.3	Nuclear Design	Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 4.4	Thermal-Hydraulic Design	Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Added reference for BWR/6 reactor core thermal-hydraulic parameters.	Amendment
		Changed operating parameters for Reactor Internal Pumps.	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 4.5	Reactor Materials	Revised materials for the Control Rod Drive System components and reactor internals.	Amendment
		Eliminated reference to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 4.6	Functional Design of Reactivity Control System	Changed to provide testing water for Fine Motion Control Rod Drive test fixture from the Control Rod Drive Pump.	Amendment
		Clarified that the Control Rod Drive Hydraulic Subsystem supplies the purge flow for the Nuclear Boiler System instrument lines.	Modification
Tier 2 - 4A	Typical Control Rod Patterns and Associated Power Distribution for ABWR	Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
Tier 2 - 4B	Fuel Licensing Acceptance Criteria	Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
Tier 2 - 4C	Control Rod Licensing Acceptance Criteria	Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
Tier 2 - 4D	Reference Fuel Design Compliance with Acceptance Criteria	Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
Tier 2 Chapter 5 - Reactor Coolant System and Connected Systems			
Tier 2 - 5.1	Summary Description	Changed P&IDs to reflect increased design pressure of Reactor Water Cleanup System.	Amendment
		Added a vent line from the Reactor Water Cleanup System reactor pressure vessel head-spray line to the Reactor Head Vent Line.	Amendment
		Provided limit switches for safety/relief valve position indication for direct indication of valve position.	Amendment
		Deleted leakoff lines for large remote power-operated valves located in the drywell due to packing changes.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 5.1 (Continued)	Summary Description (Continued)	Changed rated heat balance due to turbine design changes and changes in Reactor Internal Pump and Control Rod Drive purge flows.	Amendment
		Incorporated Aircraft Impact Assessment Amendment changes into P&IDs.	AIA Amendment
		Made additional design changes to Nuclear Boiler System P&ID.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 5.2	Integrity of Reactor Coolant Pressure Boundary	Removed high radiation in steam tunnel from list of variables monitored to detect leakage.	Amendment
		Added feedwater line pressure difference to list of variables monitored to detect leakage.	Amendment
		Revised Leak Detection and Isolation System instrumentation engineering diagram due to elimination of the Flammability Control System and made other diagram corrections.	Amendment
		Updated specific codes and standards.	Amendment
		Revised materials for components exposed to reactor coolant.	Amendment
		Changed Preservice and Inservice Inspection requirements for welds, reactor pressure vessel and piping in Reactor Coolant System to meet updated requirements.	Amendment
		Deleted leakoff lines for large remote power-operated valves located in the drywell and made associated test changes.	Amendment
		Changed drywell leakage rate limits.	Amendment
		Changed water chemistry values to reflect EPRI BWR Water Chemistry Guidelines (2008 edition).	Amendment
		Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Replaced non-Toshiba proprietary information.	Amendment
		Eliminated a reference to a specific vendor.	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 5.3	Reactor Vessel	Clarified description of Reactor Internal Pump motor casing to indicate that some portions have cladding.	Modification
		Clarified number of test specimens and surveillance capsule lead factor.	Modification
		Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Removed non-Toshiba proprietary references.	Amendment
		Eliminated reference to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 5.4	Component and Subsystem Design	Changed from two to three Residual Heat Removal System loops connected to the Fuel Pool Cooling and Cleanup System.	Amendment
		Changed Reactor Core Isolation Cooling System turbine-driven pump design.	Amendment
		Changed Residual Heat Removal System P&ID due to elimination of the Flammability Control System.	Amendment
		Increased the heat removal capacity of the Residual Heat Removal System heat exchangers.	Amendment
		Increased flow capacity of the two pumps and two filter-demineralizers in Reactor Water Cleanup System.	Amendment
		Revised the Reactor Internal Pump cross section illustration to show reduced size of cable box and plug-in type power connector.	Amendment
		Clarified wetwell spray cannot be operated in conjunction with the Low Pressure Flooder mode.	Modification
		Permitted fabrication of Recirculation Motor Heat Exchanger shell, tube sheet and water box using carbon steel or stainless steel.	Amendment
		Added a vent line from the Reactor Water Cleanup System reactor pressure vessel head-spray line to the Reactor Head Vent Line.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 5.4 (Continued)	Component and Subsystem Design (Continued)	Changed NPSH requirements for Residual Heat Removal and Reactor Core Isolation Cooling Pumps due to Emergency Core Cooling System strainer design changes and to comply with Revision 3 of Regulatory Guide 1.82.	Amendment
		Changed inspection and testing description of Main Steam Isolation Valves to reflect deletion of valve stem leakoff collection.	Amendment
		Changed rated steam flow through Main Steam Isolation Valves due to changes in the steam cycle design.	Amendment
		Changed the lower temperature limit for Recirculation Motor Purge water at the entrance to the Reactor Internal Pump.	Amendment
		Changed Reactor Internal Pump operating parameters.	Amendment
		Clarified that the Reactor Core Isolation Cooling System injection line stop valve cannot be functionally tested during normal plant operation.	Modification
		Made additional design changes to Reactor Recirculation System P&ID and process flow diagram.	Amendment
		Corrected description of Main Steam Isolation Valve inspection and testing to reflect change in temperature performance description for the Residual Heat Removal System following reactor shutdown.	Modification
		Eliminated reference to a specific vendor.	Amendment
		Updated applicable IEEE standard version.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 5A	Not Used	Deleted in its entirety due to changes in regulatory requirements for Preservice and Inservice Inspection.	Amendment
Tier 2 - 5B	RHR Injection Flow and Heat Capacity Analysis Outlines	Increased the heat removal capacity of the Residual Heat Removal System heat exchangers.	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change ¹	Category
Tier 2 Chapter 6 - Engineered Safety Features			
Tier 2 - 6.0	General	No changes from the GE DCD.	—
Tier 2 - 6.1	Engineered Safety Feature Materials	Changed Reactor Core Isolation Cooling Pump component materials due to change in pump-turbine design.	Amendment
Tier 2 - 6.2	Containment Systems	Updated and corrected the containment analysis.	Amendment
		Removed Isolation Signal Code for high radiation in main steam line.	Amendment
		Added feedwater line break mitigation to the design.	Amendment
		Changed tables and figures due to changes in Reactor Core Isolation Cooling System turbine-driven pump design.	Amendment
		Changed due to elimination of Flammability Control System and safety-grade monitoring of oxygen.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Corrected descriptions of primary containment penetrations and provided additional design detail.	Modification
		Changed design basis for head loss across Emergency Core Cooling System strainers to comply with Regulatory Guide 1.82, Revision 3 and changed approach for calculating strainer head loss.	Amendment
		Changed elapsed time between start of LOCA and initiation of suppression pool cooling and containment sprays.	Amendment
		Changed list of Secondary Containment penetrations due to change in HVAC Normal Cooling Water System design.	Amendment
		Corrected inconsistencies in Service Air System description.	Modification
		Added Suppression Pool Cleanliness Program.	Amendment
		Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Changed to reflect update to probabilistic risk assessment.	Amendment
		Replaced non-Toshiba proprietary information.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 6.2 (Continued)	Containment Systems (Continued)	Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Corrected tables and figures to resolve inconsistencies in Atmospheric Control System design.	Modification
		Made administrative change(s).	Modification
Tier 2 - 6.3	Emergency Core Cooling Systems	Changed from two to three Residual Heat Removal System loops connected to the Fuel Pool Cooling and Cleanup System.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed Reactor Core Isolation Cooling System turbine-driven pump design.	Amendment
		Deleted leakoff lines from large remote power-operated valves located in the drywell.	Amendment
		Changed design basis for head loss across Emergency Core Cooling System strainers to comply with Regulatory Guide 1.82, Revision 3.	Amendment
		Changed Emergency Core Cooling System strainer design.	Amendment
		Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Clarified that Emergency Core Cooling System injection valves that interface with the Reactor Coolant System cannot be individually functionally tested during normal operation.	Modification
		Updated applicable IEEE standard version.	Amendment
		Corrected High Pressure Core Flooder process flow diagram and P&ID.	Modification
		Made administrative change(s).	Modification
Tier 2 - 6.4	Habitability Systems	Changed smoke removal mode of operation for the Control Building HVAC System.	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 6.5	Fission Products Removal and Control Systems	Changed due to elimination of Flammability Control System.	Amendment
		Changed to reflect update to probabilistic risk assessment.	Amendment
		Eliminated reference to a specific vendor.	Amendment
		Changed Standby Gas Treatment System design, including instrumentation and piping design parameters, and changed automatic operation description.	Amendment
		Made additional changes and corrections to Standby Gas Treatment System P&ID.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 6.6	Preservice and Inservice Inspection and Testing of Class 2 and 3 Components and Piping	Updated the Examination Categories and Methods table to reflect changes to piping systems due to: <ul style="list-style-type: none"> • Change from two to three Residual Heat Removal System loops connected to the Fuel Pool Cooling and Cleanup System • Change in Reactor Core Isolation Cooling System turbine-driven pump design • Elimination of Flammability Control System. 	Amendment
		Removed restrictions for accessibility for Preservice and Inservice Inspection and provided requirements for program plans.	Amendment
		Updated Erosion-Corrosion Program basis.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 6.7	High Pressure Nitrogen Gas Supply System	No changes from the GE DCD.	—
Tier 2 - 6A	Regulatory Guide 1.52, Section C, Compliance Assessment	No changes from the GE DCD.	—

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 6B	SRP 6.5.1, Table 6.5.1-1 Compliance Assessment	Changed configuration of Standby Gas Treatment System instrumentation.	Amendment
		Changed text due to the establishment of a setpoint control program.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 6C	Containment Debris Protection for ECCS Strainers	Changed Emergency Core Cooling System strainer design.	Amendment
		Changed reference to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 6D	HPCF Analysis Outlines	Made administrative change(s).	Modification
Tier 2 - 6E	Additional Bypass Leakage Considerations	No changes from the GE DCD.	—
Tier 2 Chapter 7 - Instrumentation and Control Systems			
Tier 2 - 7.1	Introduction	Changed general functional requirements for Process Radiation Monitoring System, due to elimination of Main Steam Isolation Valve automatic closure on high radiation in steam tunnel.	Amendment
		Changed description of Containment Atmospheric Monitoring System due to the elimination of the Flammability Control System.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Updated specific codes, standards and Regulatory Guide editions.	Amendment
		Changed due to the establishment of a setpoint control program.	Amendment
		Clarified the connection between the Fine Motion Control Rod Drive Motors to a power supply from the Emergency Diesel Generators.	Modification
		Clarified as a general design function that the Startup Range Neutron Monitor and Average Power Range Monitor subsystems will provide Anticipated Transient Without Scram permissive signals to the Engineered Safety Features Logic and Control System.	Modification
		Clarified description of Alternate Rod Insertion functions.	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 7.1 (Continued)	Introduction (Continued)	Changed Reactor Building Cooling Water System automatic isolation requirements.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 7.2	Reactor Protection (Trip) System (RPS) - Instrumentation and Controls	Changed design due to elimination of Main Steam Isolation Valve automatic closure on high radiation in steam tunnel.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Updated specific codes, standards and Regulatory Guide editions.	Amendment
		Changed due to the establishment of a setpoint control program.	Amendment
		Clarified description of manual scram initiating variables.	Modification
		Clarified that content in the response to Question 420.69 in Subsection 20.3.8 is Tier 2* information.	Modification
		Clarified the independence of the Oscillating Power Range Monitor logic from the Average Power Range Monitor logic.	Modification
		Clarified and expanded discussion on conformance with regulatory requirements for the Reactor Protection System design basis.	Modification
		Updated Reactor Protection System instrumentation ranges.	Amendment
		Changed description of alternate power supply to reflect change in medium-voltage electrical distribution system.	Amendment
		Changed the requirements for operation with an isolated Main Steam Line.	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 7.3	Engineered Safety Feature Systems, Instrumentation and Control	Changed I&C design information to reflect the following design changes: <ul style="list-style-type: none"> • Elimination of Main Steam Isolation Valve automatic closure on high radiation in steam tunnel • Change from two to three Residual Heat Removal System loops connected to the Fuel Pool Cooling and Cleanup System • Change to Reactor Core Isolation Cooling System turbine-driven pump design • Elimination of the Flammability Control System. 	Amendment
		Added feedwater line differential pressure to list of input variables for the Leak Detection and Isolation System.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Updated applicable IEEE standard version.	Amendment
		Changed text to reflect the establishment of a setpoint control program.	Amendment
		Made administrative change to relocate response time information to a common location.	Modification
		Clarified that pneumatic actuation is the actuation mode for function of the automatic safety/relief valves.	Modification
		Clarified nomenclature used for vessel water level monitoring.	Modification
		Provided limit switches for safety/relief valve position indication, giving a direct indication of valve position.	Amendment
		Changed the design of the Automatic Depressurization Subsystem inhibit switches.	Amendment
		Clarified description of Residual Heat Removal Shutdown Cooling Mode valve alignment during Low-Pressure Flooder actuation and when suction is taken from the suppression pool.	Modification
		Revised Engineered Safety Features Logic and Control System mode automation logic.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 7.3 (Continued)	Engineered Safety Feature Systems, Instrumentation and Control (Continued)	Changed discussion of valve leakage monitoring due to elimination of associated valve stem leakoff lines.	Amendment
		Revised Leak Detection and Isolation System Sump Monitoring leakage alarm.	Amendment
		Changed logic and clarified interlocks associated with the Containment Spray System.	Amendment
		Changed suppression pool cooling manual initiation switch design and clarified discussion of Residual Heat Removal System Suppression Pool Cooling logic and sequencing.	Amendment
		Changed Reactor Building Cooling Water System design so that Division I, II, and III flow signals are provided to the main control room.	Amendment
		Changed testing of safety/relief solenoid valves due to improved testing capabilities.	Amendment
		Clarified the term "ATWS Permissive" with respect to Automatic Depressurization System automatic inhibition.	Modification
		Changed design to use an historian function to record discharge temperatures for safety/relief valves.	Amendment
		Clarified diverse High Pressure Core Flooder System features to mitigate common-mode failures.	Modification
		Changed Reactor Building Cooling Water System and Reactor Service Water System instrumentation and controls.	Amendment
		Clarified and corrected Standby Gas Treatment System instrumentation and controls description.	Modification
		Clarified the interlock operation for Condensate Storage Tank suction valves on receipt of High Pressure Core Flooder System or Reactor Core Isolation Cooling System initiation signals.	Modification
		Changed and clarified Reactor Building Cooling Water System isolation requirements.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 7.3 (Continued)	Engineered Safety Feature Systems, Instrumentation and Control (Continued)	Clarified that Emergency Core Cooling System sensor input signals are provided to all four electrical divisions.	Modification
		Clarified that the Reactor Core Isolation Cooling System injection line stop valve cannot be functionally tested during normal operation.	Modification
		Clarified description of Anticipated Transient Without Scram permissive.	Modification
		Corrected design information on Leak Detection and Isolation System interlock block diagram.	Modification
		Made administrative change(s).	Modification
Tier 2 - 7.4	Systems Required for Safe Shutdown	Changed text and figures due to change from two to three Residual Heat Removal System loops connected to the Fuel Pool Cooling and Cleanup System.	Amendment
		Changed text and figures due to the elimination of the Flammability Control System.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Updated applicable IEEE standard version.	Amendment
		Clarified description of Alternate Rod Insertion functions.	Modification
		Changed Residual Heat Removal System alarms.	Amendment
		Changed text and figures due to change in medium-voltage electrical distribution system.	Amendment
		Corrected statement that loss of cooling water to Residual Heat Removal Pumps will not prevent reactor shutdown cooling capability.	Modification
		Made administrative change(s).	Modification
Tier 2 - 7.5	Information Systems Important to Safety	Changed text and table due to elimination of Main Steam Isolation Valve automatic closure on high radiation in steam tunnel.	Amendment
		Changed the design and requirements of instruments used for post-accident monitoring.	Amendment
		Updated applicable IEEE standard version.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 7.5 (Continued)	Information Systems Important to Safety (Continued)	Changed safety classification of hydrogen and oxygen monitors.	Amendment
		Corrected radiation dose units.	Modification
		Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Corrected some of the radiation levels provided in the ABWR Post-Accident Monitoring variable list.	Modification
		Eliminated references to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 7.6	All Other Instrumentation Systems Required for Safety	Changed safety classification information due to elimination of Main Steam Isolation Valve automatic closure on high radiation in steam tunnel.	Amendment
		Changed safety classification information due to the elimination of the Flammability Control System.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Updated applicable IEEE standard version.	Amendment
		Changed due to the establishment of a setpoint control program.	Amendment
		Clarified that Anticipated Transients Without Scram permissive signals from Startup Range Neutron Monitor and Average Power Range Monitor subsystems are provided to the Engineered Safety Features Logic and Control System.	Modification
		Clarified the independence of the Oscillating Power Range Monitor logic from the Average Power Range Monitor logic.	Modification
		Clarified that the Suppression Pool Temperature Monitoring System is a subsystem of the Reactor Trip and Isolation System.	Modification
		Corrected inconsistencies regarding the power range for Power Range Neutron Monitor subsystem operability.	Modification
		Corrected radiation dose units.	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 7.6 (Continued)	All Other Instrumentation Systems Required for Safety (Continued)	Changed automatic trip bypass parameters for Oscillating Power Range Monitor subsystem to reflect results of stability analysis for Westinghouse Optima2 fuel.	Amendment
		Changed figure to reflect use of Westinghouse Optima2 fuel.	Amendment
		Corrected Neutron Monitoring System functions which can be performed from main control panel.	Modification
		Clarified the location of suppression pool temperature sensors in relation to the Safety/Relieve Valve quenchers.	Modification
		Deleted reference to BWR Owners' Group regarding oscillating function.	Amendment
		Corrected and clarified information in figures.	Modification
		Made administrative change(s).	Modification
Tier 2 - 7.7	Control Systems Not Required for Safety	Changed safety-related I&C architecture.	Amendment
		Clarified that only instrument lines with condensing chambers are continuously flushed with water from the Control Rod Drive System.	Modification
		Changed design to use an historian function to record discharge temperatures for safety/relief valves.	Amendment
		Deleted feedwater turbidity monitoring/signal transmission to the main control room from list of Nuclear Boiler System instrumentation.	Amendment
		Clarified Automatic Power Regulator/Rod Control and Information System interface.	Modification
		Clarified Rod Control and Information System commands and available display information at the dedicated operator interface on the main control panel.	Modification
		Clarified and provided additional information to the design description of Rod Control and Information System.	Modification
		Clarified that the Control Rod Drive System provides for selected control rod insertion for mitigation of a loss of feedwater heating event.	Modification
		Clarified Control Rod Drive control system interfaces.	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 7.7 (Continued)	Control Systems Not Required for Safety (Continued)	Clarified Rod Withdrawal Sequence restrictions.	Modification
		Clarified the detailed design description of the reference rod pull sequence.	Modification
		Deleted specific technology for optical isolation of rod block signals.	Amendment
		Changed description and design of the Rod Control and Information System bypass capabilities.	Amendment
		Revised Rod Control and Information System operator information description and design.	Amendment
		Clarified and corrected inconsistencies in the description of the Recirculation Flow Control System logic.	Modification
		Clarified the description of the Automated Thermal Limit Monitor System.	Modification
		Clarified that redundant command signals are sent from the Recirculation Flow Control System to the Rod Control and Information System for the Alternate Rod Insertion function and the Selected Control Rod Run-in function.	Modification
		Clarified description of Automatic Traversing Incore Probe subsystem.	Modification
		Clarified and corrected description of I&C interface for Steam Bypass and Pressure Control System.	Modification
		Changed text to reflect change to medium-voltage electrical distribution system.	Amendment
		Changed text to reflect change to Reactor Internal Pump Motor-Generator set adjustable speed drives.	Amendment
		Changed figures as a result of Condensate and Feedwater System changes.	Amendment
		Updated applicable IEEE standard version and regulatory guides.	Amendment
		Changed automatic trip bypass parameters for Oscillating Power Range Monitor subsystem to reflect results of stability analysis for Westinghouse Optima2 fuel.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 7.7 (Continued)	Control Systems Not Required for Safety (Continued)	Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Clarified the detailed description of the Rod Worth Minimizer.	Modification
		Changed the calculation method for the Automated Thermal Limit Monitor algorithm.	Amendment
		Deleted low flow control valve differential pressure transmitter from list of Feedwater Control System elements.	Amendment
		Changed Recirculation Flow Control to rely on the Neutron Monitoring System to provide core flow measurements.	Amendment
		Changed operating parameters for Reactor Internal Pump.	Amendment
		Corrected statement that Standby Liquid Control System injection point is via an instrument sensing line.	Modification
		Corrected and clarified figures.	Modification
		Made administrative change(s).	Modification
Tier 2 - 7.8	COL License Information	Clarified that content in the response to Question Q420.92 in Subsection 20.3.8 is Tier 2* information.	Modification
Tier 2 - 7.9	Data Communications Systems	Added new Section 7.9 to address safety and non-safety-related data communication functions.	Amendment
Tier 2 - 7A	Design Response to Appendix B, ABWR LRB Instrumentation and Controls	Changed table due to the elimination of the Flammability Control System.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Updated specific codes, standards and Regulatory Guide editions.	Amendment
		Changed due to the establishment of a setpoint control program.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 7B	Implementation Requirements for Hardware/Software Development	No changes from the GE DCD.	—

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change ¹	Category
Tier 2 - 7C	Defense Against Common-Mode Failure in Safety-related, Software-Based I&C Systems	Changed safety-related I&C architecture.	Amendment
		Made administrative change(s).	Modification
Tier 2 Chapter 8 - Electric Power			
Tier 2 - 8.1	Introduction	Changed Class 1E I&C Power Supply System from three to four safety-related divisions.	Amendment
		Changed due to the addition of safety-related Class 1E breakers to trip Condensate Pumps in case of feedwater line break.	Amendment
		Updated specific codes, standards and Regulatory Guide editions.	Amendment
		Changed medium-voltage electrical distribution system and increased Combustion Turbine Generator rating.	Amendment
		Deleted reference to withdrawn Regulatory Guide 1.108.	Amendment
Tier 2 - 8.2	Offsite Power Systems	Changed the routing of the alternate preferred power feed to the Reactor Building.	Amendment
		Changed medium-voltage electrical distribution system.	Amendment
		Corrected Table 8.2-1 manual live bus transfers to the requirement for connections with Class 1E systems.	Modification
		Eliminated reference to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 8.3	Onsite Power Systems	Changed Class 1E I&C Power Supply System from three to four safety-related divisions.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed medium-voltage electrical distribution system.	Amendment
		Added Class 1E breakers to trip Condensate Pumps.	Amendment
		Changed tables due to elimination of Flammability Control System.	Amendment
		Deleted reference to withdrawn Regulatory Guide 1.108.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change ¹	Category
Tier 2 - 8.3 (Continued)	Onsite Power Systems (Continued)	Changed Diesel Generator load table.	Amendment
		Corrected Diesel Generator load sequence diagram major loads tables.	Modification
		Changed electrical distribution system due to changes in the design of other systems and components including the addition of Condensate Booster Pumps.	Amendment
		Replaced reference document for setpoint control program.	Amendment
		Clarified that AC Standby Lighting is provided from all three Class 1E Divisions and Fine Motion Control Rod Drive is powered from a single Class 1E Division.	Modification
		Made administrative change(s).	Modification
Tier 2 - 8A	Miscellaneous Electrical System	Added Lightning Protection System requirements.	Amendment
		Made administrative change(s).	Modification
Tier 2 Chapter 9 - Auxiliary Systems			
Tier 2 - 9.1	Fuel Storage and Handling	Updated fuel storage and handling equipment.	Amendment
		Changed from two to three Residual Heat Removal loops connected to the Fuel Pool Cooling and Cleanup System.	Amendment
		Changed to reflect use of Westinghouse Optima2 fuel.	Amendment
		Eliminated the New Fuel Storage Racks from the New Fuel Storage Vault.	Amendment
		Eliminated Auxiliary Platform.	Amendment
		Changed water chemistry values to reflect EPRI BWR Water Chemistry Guidelines (2008 edition).	Amendment
		Changed Fuel Pool Cooling and Cleanup System filter-demineralizer design.	Amendment
		Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 9.2	Water Systems	Replaced Ultimate Heat Sink conceptual information with basin-type conceptual design with associated changes to the conceptual Reactor Service Water pump house.	Amendment
		Replaced Power Cycle Heat Sink conceptual design with cooling reservoir.	Amendment
		Added interface requirements for the portion of the Reactor Water System outside of the ABWR Standard Plant scope.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed Reactor Building Cooling Water System design.	Amendment
		Changed Turbine Building Cooling Water System design.	Amendment
		Changed Reactor Service Water System design.	Amendment
		Changed HVAC Normal Cooling Water System design.	Amendment
		Changed Turbine Service Water System design.	Amendment
		Changed to reflect Turbine Island HVAC System design change.	Amendment
		Changed HVAC Normal Cooling Water System design.	Amendment
		Changed to reflect elimination of Flammability Control System.	Amendment
		Updated applicable IEEE standard version.	Amendment
		Changed to reflect the Reactor Building HVAC System design change.	Amendment
		Changed to reflect addition of Control Building Annex HVAC System.	Amendment
		Changed source of cooling for CAMS room coolers from the RCW System to the HECW System.	Amendment
		Changed the water chemistry values to reflect EPRI BWR Water Chemistry Guidelines (2008 edition).	Amendment
		Corrected inconsistent time and/or reactor coolant temperature performance description for Residual Heat Removal System following reactor shutdown.	Modification
		Made administrative change(s) and resolved inconsistent information.	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 9.3	Process Auxiliaries	Replaced carbon steel piping in the Radwaste Collection System with stainless steel.	Amendment
		Corrected inconsistencies in Service Air System description.	Modification
		Changed the Control Rod Drive System water chemistry monitoring approach.	Amendment
		Changed to reflect reanalyses for Westinghouse Optima2 fuel.	Amendment
		Changed the water chemistry values to reflect EPRI BWR Water Chemistry Guidelines (2008 edition).	Amendment
		Changed sampling system design, including sample probe configuration and materials, and sample stations and racks.	Amendment
		Changed the Oxygen Injection System.	Amendment
		Corrected inconsistent time and/or reactor coolant temperature performance description for Residual Heat Removal System following reactor shutdown.	Modification
		Changed water quality instrumentation information.	Amendment
		Corrected the maximum boron injection rate.	Modification
		Corrected inconsistencies in the Standby Liquid Control System process flow diagram and description.	Modification
		Made administrative change(s).	Modification
Tier 2 - 9.4	Air Conditioning, Heating, Cooling and Ventilating Systems	Changed Turbine Island HVAC System design to accommodate change to the Turbine Building and related systems.	Amendment
		Changed Turbine Building HVAC System design parameters, instrumentation and controls and heating coils.	Amendment
		Changed the summer and winter design conditions for the Radwaste Building HVAC System.	Amendment
		Changed HVAC Normal Cooling Water System cooling coil outlet temperature and water flow rate.	Amendment
		Changed Control Building HVAC System design.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 9.4 (Continued)	Air Conditioning, Heating, Cooling and Ventilating Systems (Continued)	Changed smoke removal mode of operation for the Control Building HVAC System.	Amendment
		Changed Service Building HVAC System design.	Amendment
		Changed Radwaste Building HVAC System design.	Amendment
		Added Control Building Annex HVAC System.	Amendment
		Changed the Reactor Building HVAC System design to: <ul style="list-style-type: none"> • Ensure consistency with Tier 1 description of tornado dampers • Reflect change to Diesel Generator Room temperature limit • Reflect change to non-safety-related HVAC System summer and winter design conditions • Change cooling water supply to the Containment Atmospheric Monitoring and Standby Gas Treatment System • Reflect elimination of the Flammability Control System. 	Amendment
		Revised configuration of Reactor Building Secondary Containment HVAC System.	Amendment
		Corrected inconsistent maximum average and local drywell temperature in design basis for Drywell Cooling System.	Modification
Tier 2 - 9.5	Other Auxiliary Systems	Made administrative change(s).	Modification
		Changed safety-related I&C architecture.	Amendment
		Changed to reflect Turbine Building design change.	Amendment
		Changed to reflect medium-voltage electrical distribution system design change and increased Combustion Turbine Generator capacity.	Amendment
		Changed Control Building HVAC System operation for smoke removal mode.	Amendment
		Deleted reference to withdrawn Regulatory Guide 1.108.	Amendment
		Clarified the performance, test requirements, and descriptive information for lower drywell flooders fusible plug valves.	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 9.5 (Continued)	Other Auxiliary Systems (Continued)	Changed design and description of the non-safety Motor-Generator set equipment that provides power to Reactor Internal Pumps.	Amendment
		Changed high ceiling lamps from mercury vapor to high pressure sodium.	Amendment
		Changed to reflect relocation of Diesel Fuel Oil Storage Tanks to underground concrete vaults and changed design of connections, associated piping and pumps.	Amendment
		Changed list of combustible materials due to replacement of fuel oil-heated House Boiler with electrically-heated boiler.	Amendment
		Provided requirement to evaluate single and multiple spurious operations that could affect post-fire safe shutdown.	Amendment
		Required COL applicant to develop severe weather guidelines consistent with NUMARC 87-00.	Amendment
		Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Clarified description of tie-in point for Alternate Feedwater Injection System.	Modification
		Corrected inconsistent Combustion Turbine Generator steady-state voltage regulation limits.	Modification
		Made administrative change(s) and corrected inconsistencies.	Modification
Tier 2 - 9A	Fire Hazards Analysis	Changed table to reflect change from two to three Residual Heat Removal loops connected to the Fuel Pool Cooling and Cleanup System.	Amendment
		Changed analysis to reflect Reactor Core Isolated Cooling turbine-driven pump design change.	Amendment
		Changed analysis to reflect elimination of the Flammability Control System.	Amendment
		Changed safety-related I&C architecture.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 9A (Continued)	Fire Hazards Analysis (Continued)	Changed to reflect relocation of two Reactor Internal Pump motor generator sets and associated support components to a new Control Building Annex.	Amendment
		Changed analysis due to Turbine Building design change.	Amendment
		Changed fire protection drawings due to change in the dimensions and layout of the Radwaste Building.	Amendment
		Changed analysis to reflect replacement of fuel oil-heated boiler with electrically-heated boiler.	Amendment
		Incorporated changes for Process and Effluent Radiation Monitoring and Sampling System detailed design and specific equipment.	Amendment
		Changed equipment database to reflect change in medium-voltage electrical distribution system design.	Amendment
		Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Made administrative change(s).	Modification
Tier 2 - 9B	Summary of Analysis Supporting Fire Protection Design Requirements	Changed safety-related I&C architecture.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 9C	Regulatory Guide 1.52, Section C, Compliance Assessment	Updated applicable IEEE standard version.	Amendment
Tier 2 - 9D	SRP 6.5.1, Table 6.5.1-1 Compliance Assessment	Changed due to Control Room Habitability Area HVAC System filter train design changes.	Amendment
Tier 2 Chapter 10 - Steam and Power Conversion System			
Tier 2 - 10.1	Summary Description	Changed design of turbine and Main Steam System.	Amendment
		Changed conceptual design of Standard Plant Main Condenser and Standard Plant Circulating Water System.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 10.1 (Continued)	Summary Description (Continued)	Changed design of Condensate and Feedwater System including addition of Condensate Booster Pumps.	Amendment
		Changed description of inlet pressure at the turbine main steam valves.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Increased heat removal capacity and flow of Turbine Building Cooling Water System.	Amendment
		Changed steam cycle diagram.	Amendment
		Changed rated and Valves-Wide-Open heat balances due to new turbine design and changes in the steam cycle design, Reactor Internal Pump and Control Rod Drive System purge flows.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 10.2	Turbine Generator	Changed built-up turbine rotor design to monoblock rotor design.	Amendment
		Changed design of turbine and Main Steam System.	Amendment
		Implemented digital turbine controls.	Amendment
		Added Class 1E breakers to trip Condensate Pumps in Turbine Building.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 10.3	Main Steam Supply System	Changed design of turbine and Main Steam System.	Amendment
		Added non-safety-related Gland Seal Evaporator to Turbine Gland Seal System to supply sealing steam to main turbine shaft seal glands and various turbine valve stems.	Amendment
		Clarified that Main Steam System also serves as main steam leakage path to contain radioactive steam.	Modification
		Revised design of Main Condenser Evacuation System.	Amendment
		Added restrictions for continued operation with an isolated main steam line.	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change ¹	Category
Tier 2 - 10.4	Other Features of Steam and Power Conversion System	Removed Offgas Recombiner Condenser from list of equipment cooled by condensate.	Amendment
		Added non-safety-related Gland Seal Evaporator to Turbine Gland Seal System to supply sealing steam to main turbine shaft seal glands and various turbine valve stems.	Amendment
		Revised design of Main Condenser Evacuation System.	Amendment
		Changed design of Condensate and Feedwater System including addition of Condensate Booster Pumps.	Amendment
		Eliminated reference to a specific vendor.	Amendment
		Changed Turbine Building design to accommodate replacement of turbine generator and related turbine cycle equipment.	Amendment
		Changed conceptual design of Standard Plant Main Condenser and Standard Plant Circulating Water System.	Amendment
		Changed load rejection capability.	Amendment
		Corrected inconsistent information in Turbine Bypass Hydraulic Control figure.	Modification
		Changed conceptual design of Power Cycle Heat Sink.	Amendment
		Deleted feedwater turbidity monitoring from Condensate Purification System instrumentation.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed Condensate Purification System design.	Amendment
		Made administrative change(s).	Modification
Tier 2 Chapter 11 - Radioactive Waste Management			
Tier 2 - 11.1	Source Terms	Changed steam flow rate in source term adjustment table due to revised steam cycle design.	Amendment
		Corrected concentration of Ni-63 activation product in reactor water.	Modification
		Eliminated reference to a specific vendor.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 11.2	Liquid Waste Management System	Changed design of Liquid Waste Management System to incorporate mobile technology, and to delete forced-circulation concentrator system.	Amendment
Tier 2 - 11.3	Gaseous Waste Management System	Changed design of Gaseous Waste Management System.	Amendment
		Changed to reflect Main Condenser Evacuation System design change.	Amendment
		Changed Offgas System cooling water supply source to Turbine Building cooling water.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 11.4	Solid Waste Management System	Changed design of Solid Waste Management System.	Amendment
Tier 2 - 11.5	Process and Effluent Radiological Monitoring and Sampling Systems	Changed Process and Effluent Radiation Monitoring and Sampling System detailed design and specific equipment.	Amendment
		Deleted main steam tunnel area radiation monitoring from list of radiation monitors used for safety and protection and added it to list of radiation monitors used for plant operation.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed setpoint information due to Offsite Dose Calculation Manual.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 11.6	Offsite Radiological Monitoring Program	No changes from the GE DCD.	—
Tier 2 - 11A	Not Used	Deleted in its entirety; content from this appendix has been revised and relocated to Tier 2 Section 11.2 and Tier 2 Section 11.4.	Amendment
Tier 2 Chapter 12 - Radiation Protection			
Tier 2 - 12.1	Ensuring that Occupational Radiation Exposures are ALARA	No changes from the GE DCD.	—

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 12.2	Radiation Sources	Revised to reflect design change of Liquid Waste Management System.	Amendment
		Revised to reflect design change of Solid Waste Management System.	Amendment
		Deleted Leak-Before-Break as basis for sump detection and alarm.	Amendment
		Changed description due to reclassification of Radwaste Building substructure from Seismic Category I to non-seismic.	Amendment
		Changed filter/demineralizer accumulated sources to reflect flow capacity increase of filter demineralizers in Reactor Water Cleanup System.	Amendment
		Changed room dimensions and shield thickness requirements due to revised arrangement of some sources in Radwaste Building.	Amendment
		Clarified that gamma ray source energy spectra table information is not to be used for detailed analysis.	Modification
		Changed radiation source information to reflect Offgas System design change.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 12.3	Radiation Protection Design Features	Changed material specification for stainless steel to allow a graded approach to reduce cobalt in components exposed to reactor coolant.	Amendment
		Corrected discussion concerning blowout panels for steam tunnel.	Modification
		Changed text to reflect revision from Uniform Building Code Seismic Standards to International Building Code Seismic Standards for Turbine Building.	Amendment
		Changed radiation zone maps and monitor location information to reflect Turbine Building design change.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Added Area Radiation Monitors in Reactor Building.	Amendment
		Added Area Radiation Monitor calibration discussion.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 12.3 (Continued)	Radiation Protection Design Features (Continued)	Changed radiation zone maps to reflect elimination of Flammability Control System.	Amendment
		Changed radiation zone maps and monitor location information to reflect Radwaste Building design change.	Amendment
		Added discussion of ABWR radiation protection design features to minimize contamination.	Amendment
		Changed text to reflect elimination of New Fuel Storage Racks from New Fuel Storage Vault.	Amendment
		Deleted statement that whenever possible, operation of the pumps and associated valving for radioactive systems is accomplished remotely.	Amendment
		Made administrative change(s) including change to radiation dose units for monitoring channels.	Modification
Tier 2 - 12.4	Dose Assessment	Revised to reflect design change of Liquid Waste Management System including change in total projected annual radiation exposure.	Amendment
		Changed due to revision of fuel storage and handling equipment.	Amendment
		Replaced non-Toshiba proprietary information.	Amendment
		Made administrative changes including change to radiation dose units.	Modification
Tier 2 - 12.5	Health Physics Program	No changes from the GE DCD.	—
Tier 2 - 12A	Calculation of Airborne Radionuclides	Made administrative change(s).	Modification
Tier 2 Chapter 13 - Conduct of Operations			
Tier 2 - 13.1	Organizational Structure of Applicant	No changes from the GE DCD.	—
Tier 2 - 13.2	Training	No changes from the GE DCD.	—
Tier 2 - 13.3	Emergency Planning	Made administrative change(s).	Modification
Tier 2 - 13.4	Review and Audit	Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 13.5	Plant Procedures	Eliminated Hydrogen Recombiners from list of systems in scope of the plant Operating Procedure Development Plan.	Amendment
		Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
Tier 2 - 13.6	Physical Security	No changes from the GE DCD.	—
Tier 2 Chapter 14 - Initial Test Program			
Tier 2 - 14.1	Specific Information to be Included in Preliminary Safety Analysis Reports	No changes from the GE DCD.	—
Tier 2 - 14.2	Specific Information to be Included in Final Safety Analysis Reports	<p>Changed test description to reflect other design changes in the renewal DCD, including:</p> <ul style="list-style-type: none"> • Change to Reactor Core Isolation Cooling System turbine-driven pump design • Elimination of Flammability Control System • Change to safety-related I&C architecture • Change to the test fixture used for Fine Motion Control Rod Drive friction testing • Change to medium-voltage electrical distribution system • Change to fuel storage and handling equipment • Change to turbine design • Change to the Liquid Waste Management System • Change to the Solid Waste Management System • Change to the Ultimate Heat Sink conceptual design • Change to strainer pluggage requirement for Residual Heat Removal and High Pressure Core Flooder Pump tests • Change to Main Turbine Digital Control System • Change to Reactor Water Cleanup System design. 	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 14.2 (Continued)	Specific Information to be Included in Final Safety Analysis Reports (Continued)	Stated that preoperational tests for Reactor Water Chemistry Control Systems that are not placed in service during the initial operating period may be delayed.	Amendment
		Added discussion of testing for first of a kind systems.	Amendment
		Added table comparing ITAAC testing requirements with preoperational test descriptions.	Amendment
		Updated reference for withdrawn Regulatory Guide 1.108.	Amendment
		Deleted requirement for performing Control Rod Drive friction testing at rated pressure and temperature.	Amendment
		Eliminated references to a specific vendor.	Amendment
		Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Made administrative change(s).	Modification
Tier 2 - 14.3	Tier 1 Selection Criteria and Processes	Clarified that the section contents are historical and are not updated in the renewal.	Modification
Tier 2 Chapter 15 - Accident and Analysis			
Tier 2 - 15.0	Accident and Analysis	Changed to reflect use of Westinghouse Optima2 fuel, including: <ul style="list-style-type: none"> • Use of different computer codes and evaluation models • Revised analysis input parameters, initial conditions, results and resulting limiting events • Added consideration of possible use of partial arc turbine control. 	Amendment
		Eliminated references to a specific vendor.	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 15.1	Decrease in Reactor Coolant Temperature	Changed to reflect use of Westinghouse Optima2 fuel, including: <ul style="list-style-type: none"> • Updated evaluation models and computer codes • Revised analysis input parameters, initial conditions, sequence of events. 	Amendment
		Made administrative change(s).	Modification
Tier 2 - 15.2	Increase in Reactor Pressure	Changed to reflect use of Westinghouse Optima2 fuel, including: <ul style="list-style-type: none"> • Use of different computer codes/evaluation models • Revised analysis input parameters, initial conditions, sequence of events and results • Added corresponding COL license information items. 	Amendment
		Deleted high steam tunnel radiation as a cause for Main Steam Isolation Valve closure.	Amendment
		Changed description to reflect change in medium-voltage electrical distribution system.	Amendment
		Corrected inconsistent time and/or reactor coolant temperature performance description for Residual Heat Removal System following reactor shutdown.	Modification
		Made administrative change(s).	Modification
Tier 2 - 15.3	Decrease in Reactor Coolant System Flow Rate	Changed to reflect use of Westinghouse Optima2 fuel, including: <ul style="list-style-type: none"> • Use of different computer codes/evaluation models • Revised analysis input parameters, initial conditions, sequence of events, and results. 	Amendment
		Made administrative change(s).	Modification
Tier 2 - 15.4	Reactivity and Power Distribution Anomalies	Changed to reflect use of Westinghouse Optima2 fuel, including: <ul style="list-style-type: none"> • Use of different computer codes/evaluation models • Revised analysis input parameters, initial conditions, sequence of events and results • Changed the approach for misloaded fuel bundles. 	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 15.4 (Continued)	Reactivity and Power Distribution Anomalies (Continued)	Changed Reactor Internal Pump minimum speed.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 15.5	Increase in Reactor Coolant Inventory	Changed to reflect use of Westinghouse Optima2 fuel, including: <ul style="list-style-type: none"> • Use of different computer codes/evaluation models • Revised sequence of events and analysis results. 	Amendment
Tier 2 - 15.6	Decrease in Reactor Coolant Inventory	Stated that the results reported for breaks inside containment are valid for Westinghouse Optima2 fuel.	Amendment
		Corrected inconsistent mass of fluid released into the Reactor Building for small line break event.	Modification
		Corrected thyroid dose results for cleanup water line break event.	Modification
		Eliminated reference to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 15.7	Radioactive Release from Subsystems and Components	Stated that the analyses in this section remain valid for Optima2 fuel and for other changes.	Amendment
		Changed description to reflect re-classification of the Radwaste Building substructure from Seismic Category I to non-seismic.	Amendment
		Changed description to reflect changes in Gaseous Waste Management System.	Amendment
		Changed description to reflect changes in Liquid Waste Management System.	Amendment
		Corrected statement implying bundle drop analyses credited energy absorption for striking an unchanneled bundle.	Modification
		Made administrative change(s).	Modification
Tier 2 - 15.8	Anticipated Transients Without Scram (ATWS)	Updated discussion of 10 CFR 50.62 and SRP requirements.	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 15.9	Boiling Water Reactor Stability	Added this section to address stability of the ABWR in regard to GDCs 10 and 12. Some of this information was previously in Sections 4.4 and 7.6.	Amendment
Tier 2 - 15A	Plant Nuclear Safety Operational Analysis (NSOA)	Reclassified inadvertent safety/relief valve opening and increased cooling during Residual Heat Removal shutdown cooling as moderate frequency events.	Amendment
		Combined misplaced and misoriented fuel bundle events.	Amendment
		Revised figure due to elimination of Flammability Control System.	Amendment
		Replaced the Automated Rod Block Monitoring System with the Automated Thermal Limit Monitoring System.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 15B	Failure Modes and Effects Analysis (FMEA)	Changed safety-related I&C architecture.	Amendment
		Clarified that the Control Rod Drive System provides purge flow for nuclear boiler instrument lines.	Modification
		Eliminated reference to a specific vendor.	Amendment
		Corrected Class 1E classification for control rod separation indication and alarm.	Modification
		Made administrative change(s).	Modification
Tier 2 - 15C	Not Used	No changes from the GE DCD.	—
Tier 2 - 15D	Probability Analysis of Pressure Regulator Downscale Failure	Made administrative change(s).	Modification
Tier 2 - 15E	ATWS Performance Evaluation	Changed safety-related I&C architecture.	Amendment
		Changed to reflect use of Westinghouse Optima2 fuel, including: <ul style="list-style-type: none"> • Use of different computer codes/evaluation models • Revised analysis input parameters, initial conditions, sequence of events, and results. 	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 15E (Continued)	ATWS Performance Evaluation (Continued)	Clarified "ATWS Permissive" with respect to Automatic Depressurization System automatic inhibition.	Modification
		Corrected Reactor Pressure Vessel peak pressure performance requirement.	Modification
		Corrected Anticipated Transient Without Scram mitigation logic figure for Standby Liquid Control/feedwater runback.	Modification
		Made administrative change(s).	Modification
Tier 2 - 15F	LOCA Inventory Curves	No changes from the GE DCD.	—
Tier 2 Chapter 16 - Technical Specifications			
Tier 2 - 16.0	Technical Specifications	Made administrative change(s).	Modification
Tier 2 Chapter 16 Technical Specifications	1.0 Use and Application 2.0 Safety Limits (SLs) 3.0 Limiting Condition for Operation (LCO) and Surveillance Requirement (SR) Applicability 4.0 Design Features 5.0 Administrative Controls	<ul style="list-style-type: none"> • Changed Technical Specifications to reflect design changes in the renewal DCD • Changed intent for specific Technical Specifications • Made editorial and administrative changes. All changes to Technical Specification are categorized as Amendments.	Amendment
Tier 2 Chapter 17 - Quality Assurance			
Tier 2 - 17.0	Introduction	Added description of Toshiba Quality Assurance program.	Amendment
Tier 2 - 17.1	Quality Assurance During Design and Construction	Added description of Toshiba Quality Assurance during design and construction.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 17.2	Quality Assurance During the Operations Phase	No changes from the GE DCD.	—

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change ¹	Category
Tier 2 - 17.3	Reliability Assurance Program During Design Phase	Revised COL license information requirements for the Design Reliability Assurance Program and the Operational Reliability Assurance Program.	Amendment
		Eliminated references to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 Chapter 18 - Human Factors Engineering			
Tier 2 - 18.1	Introduction	No changes from the GE DCD.	—
Tier 2 - 18.2	Design Goals and Design Bases	No changes from the GE DCD.	—
Tier 2 - 18.3	Planning, Development, and Design	No changes from the GE DCD.	—
Tier 2 - 18.4	Control Room Standard Design Features	Changed safety-related I&C architecture.	Amendment
		Added wetwell pressure parameter to large display panel in control room.	Amendment
		Relocated controls and displays required for synchronization of main generator.	Amendment
Tier 2 - 18.5	Remote Shutdown System	No changes from the GE DCD.	—
Tier 2 - 18.6	Systems Integration	Changed safety-related I&C architecture.	Amendment
Tier 2 - 18.7	Detailed Design of the Operator Interface System	No changes from the GE DCD.	—
Tier 2 - 18.8	COL License Information	Changed safety-related I&C architecture.	Amendment
Tier 2 - 18A	Emergency Procedure Guidelines	Changed due to elimination of Flammability Control System.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 18B	Differences Between BWROG EPG Revision 4 and ABWR EPG	Changed due to elimination of Flammability Control System.	Amendment
Tier 2 - 18C	Operator Interface Equipment Characterization	Changed safety-related I&C architecture.	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 18D	Emergency Procedures Guidelines—Input Data and Calculation Results	No changes from the GE DCD.	—
Tier 2 - 18E	ABWR Human-System Interface Design Implementation Process	Changed safety-related I&C architecture.	Amendment
		Deleted citation to military standard.	Amendment
		Eliminated reference to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 18F	Emergency Operation Information and Controls	Changed inventory tables of controls, displays and alarms due to: <ul style="list-style-type: none"> • Elimination of Main Steam Isolation Valves automatic closure on high radiation in steam tunnel • Change to Condensate and Feedwater System design including addition of Condensate Booster Pumps and fourth Feedwater Pump • Elimination of Flammability Control System. 	Amendment
		Corrected reference to Level 8 trip for Condensate Pumps.	Modification
		Made administrative change(s).	Modification
Tier 2 - 18G	Design Development and Validation Testing	No changes from the GE DCD.	—
Tier 2 - 18H	Supporting Analysis for Emergency Operation Information and Controls	Replaced non-Toshiba proprietary information with updated supporting analysis for Emergency Operation Information and Controls. The updated analysis includes the following design changes: <ul style="list-style-type: none"> • Elimination of Main Steam Isolation Valves automatic closure on high radiation in steam tunnel • Change to Condensate and Feedwater System design including addition of Condensate Booster Pumps and fourth Feedwater Pump • Elimination of Flammability Control System. 	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 Chapter 19 - Response to Severe Accident Policy Statement			
Tier 2 - 19.1	Purpose and Summary	Changed to reflect update to probability risk assessment.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed to reflect addition of Condensate Booster Pumps.	Amendment
		Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Made administrative change(s).	
Tier 2 - 19.2	Introduction	Changed to reflect update to probabilistic risk assessment.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19.3	Internal Event Analysis	Changed to reflect update to probabilistic risk assessment.	Amendment
		Changed to reflect addition of Condensate Booster Pumps.	Amendment
		Eliminated reference to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19.4	External Event Analysis and Shutdown Risk Analysis	Changed to reflect update to probabilistic risk assessment.	Amendment
		Revised to reflect reclassification of Radwaste Building substructure from Seismic Category I to non-seismic.	Amendment
		Changed Control Building internal flooding analysis discussion to reflect change in conceptual design of Ultimate Heat Sink and Reactor Service Water pump house, including removal of vacuum breaker valves on Reactor Service Water piping.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19.5	Source Term Sensitivity Studies	Deleted discussion of sensitivity study regarding Containment Over-Pressure System because Containment Over-Pressure System is an established design feature included in the probabilistic risk assessment update.	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 19.6	Measurement Against Goals	Changed to reflect update to probabilistic risk assessment.	Amendment
		Changed nuclear steam supply system vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19.7	PRA as a Design Tool	Changed to reflect update to probabilistic risk assessment.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed Fine Motion Control Rod Drive brake test interval.	Amendment
		Changed discussion to reflect change in conceptual design of Ultimate Heat Sink and Reactor Service Water pump house including removal of vacuum breaker valves on Reactor Service Water piping.	Amendment
		Changed to reflect plant medium voltage electrical system design change.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19.8	Important Features Identified by the ABWR PRA	Changed to reflect update to probabilistic risk assessment.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed to reflect change in conceptual design of Ultimate Heat Sink and Reactor Service Water pump house including removal of vacuum breaker valves on Reactor Service Water piping.	Amendment
		Changed maximum length of Reactor Service Water piping between Reactor Service Water isolation valves at pump house and Control Building.	Amendment
		Revised to reflect Ultimate Heat Sink conceptual design change.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19.9	COL License Information	Changed to reflect update to probabilistic risk assessment.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed to reflect change in conceptual design of Ultimate Heat Sink and Reactor Service Water pump house including removal of vacuum breaker valves on Reactor Service Water piping.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 19.9 (Continued)	COL License Information (Continued)	Revised to reflect Reactor Core Isolation Cooling System turbine-driven pump design change.	Amendment
		Changed to reflect addition of Condensate Booster Pumps.	Amendment
		Changed maximum length of Reactor Service Water piping between Reactor Service Water isolation valves at pump house and Control Building.	Amendment
		Clarified guidance for severe external flooding procedures regarding placement of sandbags.	Modification
		Made administrative change(s).	Modification
Tier 2 - 19.10	Assumptions and Insights Related to Systems Outside of ABWR Design Certification	Changed to reflect update to probabilistic risk assessment.	Amendment
Tier 2 - 19.11	Human Action Overview	Changed to reflect update to probabilistic risk assessment.	Amendment
Tier 2 - 19.12	Input to the Reliability Assurance Program	No changes from the GE DCD.	—
Tier 2 - 19.13	Summary of Insights Gained from the PRA	Revised to reflect changes to Reactor Core Isolation Cooling System turbine-driven pump design.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19A	Response to CP/ML Rule 10 CFR 50.34(f)	Changed to reflect elimination of Flammability Control System.	Amendment
		Added description to demonstrate Toshiba compliance with NRC Quality Assurance program requirements.	Amendment
		Eliminated reference to a specific vendor.	Amendment
Tier 2 - 19B	Resolution of Applicable Unresolved Safety Issues and Generic Safety Issues	Revised section to reflect status of Unresolved Safety Issues and Generic Safety Issues, including addition of new issues, as of six months before docket date of renewal application (December 2010).	Amendment
		Changed to reflect update to probabilistic risk assessment.	Amendment
		Changed to reflect elimination of Flammability Control System.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 19B (Continued)	Resolution of Applicable Unresolved Safety Issues and Generic Safety Issues (Continued)	Changed to reflect deletion of Leak-Before-Break method as a means of evaluating pipe break.	Amendment
		Revised to reflect medium-voltage electrical distribution system change.	Amendment
		Discussed operator response to reactor overfill events and stated that plant procedures and training are to be developed by COL applicant.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Updated applicable IEEE standard version.	Amendment
		Stated that fiber optic cable is to be used for Class 1E isolation.	Amendment
		Changed to reflect changes to Reactor Building Secondary Containment HVAC System design.	Amendment
		Deleted statement that there are no safety-related components in the Turbine Building due to addition of Class 1E breakers for Condensate Pump trip.	Amendment
		Required COL applicant to confirm sabotage resistance.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19C	Design Considerations Reducing Sabotage Risk	No changes from the GE DCD.	—
Tier 2 - 19D	Probabilistic Evaluations	Changed to reflect update to probabilistic risk assessment.	Amendment
Tier 2 - 19E	Deterministic Evaluations	Changed to reflect update to probabilistic risk assessment.	Amendment
		Changed due to elimination of Flammability Control System.	Amendment
		Clarified discussion of lower drywell flooders fusible plugs.	Modification
		Eliminated reference to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19EA	Direct Containment Heating	Changed to reflect update to probabilistic risk assessment.	Amendment
		Eliminated reference to a specific vendor.	Amendment
		Made administrative change(s).	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 19EB	Fuel Coolant Interactions	Corrected dimensional information and nomenclature in figure.	Modification
Tier 2 - 19EC	Debris Coolability and Core Concrete Interaction	Changed to reflect update to probabilistic risk assessment.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19ED	Corium Shield	No changes from the GE DCD.	—
Tier 2 - 19EE	Suppression Pool Bypass	Changed to reflect update to probabilistic risk assessment.	Amendment
Tier 2 - 19F	Containment Ultimate Strength	No changes from the GE DCD.	—
Tier 2 - 19FA	Containment Ultimate Strength	Changed to reflect update to probabilistic risk assessment.	Amendment
Tier 2 - 19G	Not Used	No changes from the GE DCD.	—
Tier 2 - 19H	Seismic Capacity Analysis	Changed to reflect update to probabilistic risk assessment.	Amendment
		Revised to reflect reclassification of Radwaste Building substructure from Seismic Category I to non-seismic.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19I	Seismic Margins Analysis	Changed to reflect update to probabilistic risk assessment.	Amendment
		Corrected statement that Atmospheric Control System crosstie valves are motor-operated and adjusted seismic margins analysis requirements accordingly.	Modification
Tier 2 - 19J	Not Used	No changes from the GE DCD.	—
Tier 2 - 19K	PRA-Based Reliability and Maintenance	Changed to reflect update to probabilistic risk assessment.	Amendment
		Revised to reflect Reactor Core Isolation Cooling System turbine-driven pump design change.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed to reflect change in conceptual design of Ultimate Heat Sink and Reactor Service Water pump house, including removal of vacuum breaker valves on Reactor Service Water piping.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 19K (Continued)	PRA-Based Reliability and Maintenance (Continued)	Corrected description of earthquake level in table.	Modification
		Deleted circuit breakers for Circulating Water System pumps trip from list of important Structures, Systems and Components for flooding analysis.	Amendment
Tier 2 - 19L	ABWR Shutdown Risk Evaluation	Changed to reflect update to probabilistic risk assessment.	Amendment
		Revised to reflect change from two to three Residual Heat Removal System loops connected to the Fuel Pool Cooling and Cleanup System.	Amendment
		Corrected inconsistent time and/or reactor coolant temperature performance description for Residual Heat Removal System following reactor shutdown.	Modification
		Revised due to change in Condensate and Feedwater System design including addition of Condensate Booster Pumps.	Amendment
		Revised to reflect increased flow capacity of pumps in Reactor Water Cleanup System.	Amendment
		Eliminated reference to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19M	Fire Protection Probabilistic Risk Assessment	Replaced in its entirety to reflect updated ABWR fire probabilistic risk assessment using NUREG/CR-6850 PRA methodology.	Amendment
Tier 2 - 19N	Analysis of Common-Cause Failure of Essential Communications Equipment	Changed safety-related I&C architecture.	Amendment
		Changed to reflect update to probabilistic risk assessment.	Amendment
		Made administrative changes, including cross-reference to a COL licensing information item.	Modification
Tier 2 - 19O	Not Used	Corrected appendix number and page number (from "190" to "19O").	Modification
Tier 2 - 19P	Not Used	Made administrative change to remove reference to ABWR Technical Support Document from this appendix; therefore Appendix 19P has been marked "Not Used."	Modification

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 - 19Q	ABWR Shutdown Risk Assessment	Changed to reflect update to probabilistic risk assessment.	Amendment
		Revised to reflect change from two to three Residual Heat Removal System loops connected to the Fuel Pool Cooling and Cleanup System.	Amendment
		Changed safety-related I&C architecture.	Amendment
		Changed to reflect change in conceptual design of Ultimate Heat Sink and Reactor Service Water pump house including removal of vacuum breaker valves on Reactor Service Water piping.	Amendment
		Revised discussion on flooding protection features.	Amendment
		Revised to reflect design change to Condensate and Feedwater System including addition of Condensate Booster Pumps and fourth Feedwater Pump.	Amendment
		Revised to reflect increased flow capacity of pumps in Reactor Water Cleanup System.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19QA	Fault Trees	Changed to reflect update to probabilistic risk assessment.	Amendment
Tier 2 - 19QB	DHR Reliability Study	Changed to reflect update to probabilistic risk assessment.	Amendment
		Revised to reflect increased flow capacity of pumps in Reactor Water Cleanup System.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19QC	Review of Significant Shutdown Events: Electrical Power and Decay Heat Removal	Added discussion of shutdown operating experience from EPRI TR-1003113.	Amendment
		Changed safety-related I&C architecture.	Amendment
Tier 2 - 19R	Probabilistic Flooding Analysis	Changed to reflect update to probabilistic risk assessment.	Amendment
		Revised flooding discussion to reflect change in Turbine Building design.	Amendment
		Changed to reflect change in conceptual design of Ultimate Heat Sink and Reactor Service Water pump house including removal of vacuum breaker valves on Reactor Service Water piping.	Amendment

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change ¹	Category
Tier 2 - 19R (Continued)	Probabilistic Flooding Analysis (Continued)	Revised to reflect conceptual design change of Standard Plant Main Condenser and Standard Plant Circulating Water System.	Amendment
		Revised flow rates for pumps in table.	Amendment
		Revised table to reflect change in Turbine Service Water System design.	Amendment
		Replaced security-related figures with cross-references to other figures.	Amendment
		Revised to reflect change in piping length and diameter of Reactor Service Water System.	Amendment
		Revised to reflect addition of Class 1E breakers in Turbine Building for Condensate Pump trip.	Amendment
		Eliminated reference to a specific vendor.	Amendment
		Made administrative change(s).	Modification
Tier 2 - 19S	Not Used	Inserted new Appendix 19S as “Not Used.” The contents of 19S of the Aircraft Impact Assessment Amendment are moved to 19T to avoid confusion with the “S” used by COL applicants for “Supplemental” information.	—
Tier 2 - 19T	Aircraft Impact Assessment	Incorporated changes to address Aircraft Impact Assessment Amendment.	AIA Amendment
		Made administrative change(s).	Modification
Tier 2 Chapter 20 - Question and Response Guide			
Tier 2 - 20.0	Question and Response Guide	Clarified that content of Chapter 20 is historical.	Modification
Tier 2 - 20.1	Question Index	No changes from the GE DCD.	—
Tier 2 - 20.2	Questions	No changes from the GE DCD.	—
Tier 2 - 20.3	Questions/Responses	Made administrative change(s) to figure titles.	Modification
Tier 2 - 20.4	References	No changes from the GE DCD.	—
Tier 2 - 20A	ODYNA/REDYA	No changes from the GE DCD.	—
Tier 2 - 20B	Equipment Data Base	No changes from the GE DCD.	—

**Table 1D-1 Summary of Changes Incorporated in the ABWR Design Control Document RS-5146900
Revision 1 (Continued)**

Tier - Section	Section Title	Description of Change¹	Category
Tier 2 Chapter 21 - Engineering Drawings			
Tier 2 - 21.0	Engineering Drawings	Made administrative changes to update the List of Figures for Chapter 21 in its entirety.	Modification
		Changed, added and deleted specific figures based on changes described and categorized above in Tier 2 Chapters 1 through 20.	—

Note 1:

This table lists and categorizes changes made in Toshiba Corporation's Design Control Document (Toshiba document number RS-5146900, Revision 1) for the renewal of the ABWR design certification. All changes listed are relative to the design control document incorporated by reference in the ABWR design certification rule in 10 CFR Part 52, Appendix A. 10 CFR Part 52, Appendix A identifies the design control document for the certified design as GE Nuclear Energy's "ABWR Design Control Document, Revision 4, March 1997" and also defines that version of the design control document as the "GE DCD." Accordingly, Table 1D-1 also uses the term "GE DCD" to refer to the baseline DCD against which Toshiba made changes.