

## Table of Contents

1.1	Introduction .....	1.1-1
1.2	General Plant Description .....	1.2-1
1.3	Comparison Tables .....	1.3-1
1.4	Identification of Agents and Contractors .....	1.4-1
1.5	Requirements for Further Technical Information .....	1.5-1
1.6	GE Topical Reports and Other Documents .....	1.6-1
1.7	Drawings .....	1.7-1
1.8	Conformance with Standard Review Plan and Applicability of Codes and Standards .....	1.8-1
1.8S	Site Parameters, Interface Requirements, COL License Information Items, and Conceptual Design Information .....	1.8S-1
1.9	COL License Information .....	1.9-1
1.9S	Conformance with Regulatory Criteria .....	1.9S-1
1.10S	Impacts of Construction .....	1.10S-1
1A	Response to TMI Related Matters .....	1A-1
1AA	Plant Shielding to Provide Access to Vital Areas and Protective Safety Equipment for Post-Accident Operation [II.B.2] .....	1AA-1
1B	Not Used .....	1B-1
1C	ABWR Station Blackout Considerations .....	1C-1
2.0	Site Characteristics .....	2.0-1
2.1	Limits Imposed on SRP Section II Acceptance Criteria by ABWR Standard Plant .....	2.1-1
2.0S	Site Characteristics .....	2.1S-1
2.1S	Geography and Demography .....	2.1S-1
2.2	Requirements for Determination of ABWR Site Acceptability .....	2.2-1
2.2S	Nearby Industrial, Transportation, and Military Facilities .....	2.2S-1
2.3	COL License Information .....	2.3-1
2.3S	Meteorology .....	2.3S-1
2.4S.1	Hydrologic Description .....	2.4S.1-1
2.4S.2	Floods .....	2.4S.2-1
2.4S.3	Probable Maximum Flood (PMF) on Streams and Rivers .....	2.4S.3-1
2.4S.4	Potential Dam Failures .....	2.4S.4-1
2.4S.5	Probable Maximum Surge and Seiche Flooding .....	2.4S.5-1
2.4S.6	Probable Maximum Tsunami Hazards .....	2.4S.6-1
2.4S.7	Ice Effects .....	2.4S.7-1
2.4S.8	Cooling Water Canals and Reservoirs .....	2.4S.8-1
2.4S.9	Channel Diversions .....	2.4S.9-1
2.4S.10	Flooding Protection Requirements .....	2.4S.10-1
2.4S.11	Low Water Considerations .....	2.4S.11-1
2.4S.12	Groundwater .....	2.4S.12-1
2.4S.13	Accidental Releases of Radioactive Liquid Effluents in Ground and Surface Waters .....	2.4S.13-1
2.4S.14	Technical Specifications and Emergency Operation Requirements .....	2.4S.14-1
2.5S	Geology, Seismology, and Geotechnical Engineering .....	2.5S-1
2.5S.1	Basic Geologic and Seismic Information .....	2.5S.1-1

2.5S.2	Vibratory Ground Motion .....	2.5S.2-1
2.5S.3	Surface Faulting .....	2.5S.3-1
2.5S.4	Stability of Subsurface Materials and Foundations .....	2.5S.4-1
2.5S.5	Stability of Slopes .....	2.5S.5-1
2A	Input to CRAC 2 Computer Code for Determination of ABWR Site Acceptability .....	2A-1
3.1	Conformance with NRC General Design Criteria .....	3.1-1
3.2	Classification of Structures, Components, and Systems .....	3.2-1
3.3	Wind and Tornado Loadings .....	3.3-1
3.4	Water Level (Flood) Design .....	3.4-1
3.5	Missile Protection .....	3.5-1
3.6	Protection Against Dynamic Effects Associated with the Postulated Rupture of Piping .....	3.6-1
3.7	Seismic Design .....	3.7-1
3.8	Seismic Category I Structures .....	3.8-1
3.9	Mechanical Systems and Components .....	3.9-1
3.10	Seismic and Dynamic Qualification of Mechanical and Electrical Equipment .....	3.10-1
3.11	Environmental Qualification of Safety-Related Mechanical and Electrical Equipment .....	3.11-1
3.12	Tunnels .....	3.12-1
3.12S	Piping Design Review .....	3.12S-1
3.13	Secondary Containment and Divisional Separation Zones – Barrier Considerations .....	3.13-1
3.13S	Threaded Fasteners - ASME Code Class 1, 2, and 3 .....	3.13S-1
3A	Seismic Soil Structure Interaction Analysis .....	3A-1
3B	Containment Hydrodynamic Loads .....	3B-1
3C	Computer Programs Used in the Design and Analysis of Seismic Category I Structures .....	3C-1
3D	Computer Programs Used in the Design of Components, Equipment and Structures .....	3D-1
3E	Guidelines for LBB Application .....	3E-1
3F	Not Used .....	3F-1
3G	Response of Structures to Containment Loads .....	3G-1
3H	Details and Evaluation Results of Seismic Category 1 Structures .....	3H-1
3I	Equipment Qualification Environmental Design Criteria .....	3I-1
3J	Not Used .....	3J-1
3K	Designated NEDE-24326-1-P Material Which May Not Change Without Prior NRC Staff Approval .....	3K-1
3L	Evaluation of Postulated Ruptures in High Energy Pipes .....	3L-1
3M	Resolution Of Intersystem Loss Of Coolant Accident For ABWR .....	3M-1
3MA	System Evaluation for ISLOCA .....	3MA-1
4.0	Reactor.....	4.1-1
4.1	Summary Description .....	4.1-1
4.2	Fuel System Design .....	4.2-1
4.3	Nuclear Design .....	4.3-1
4.4	Thermal–Hydraulic Design .....	4.4-1
4.5	Reactor Materials .....	4.5-1

4.6	Functional Design of Reactivity Control System .....	4.6-1
4A	Typical Control Rod Patterns and Associated Power Distribution for ABWR .....	4A-1
4B	Fuel Licensing Acceptance Criteria .....	4B-1
4C	Control Rod Licensing Acceptance Criteria .....	4C-1
4D	Reference Fuel Design Compliance with Acceptance Criteria .....	4D-1
5.0	Reactor Coolant System and Connection Systems .....	5.1-1
5.1	Summary Description .....	5.1-1
5.2	Integrity of Reactor Coolant Pressure Boundary .....	5.2-1
5.3	Reactor Vessel .....	5.3-1
5.4	Components and Subsystem Design .....	5.4-1
5A	Method of Compliance For Regulatory Guide 1.150 .....	5A-1
5B	RHR Injection Flow And Heat Capacity Analysis Outlines .....	5B-1
6	Engineered Safety Features .....	6.0-1
6.0	General .....	6.0-1
6.1	Engineered Safety Feature Materials .....	6.1-1
6.2	Containment Systems .....	6.2-1
6.3	Emergency Core Cooling Systems .....	6.3-1
6.4	Habitability Systems .....	6.4-1
6.5	Fission Products Removal and Control Systems .....	6.5-1
6.6	Preservice and Inservice Inspection, and Testing of Class 2 and 3 Components and Piping .....	6.6-1
6.7	High Pressure Nitrogen Gas Supply System .....	6.7-1
6A	Regulatory Guide 1.52, Section C, Compliance Assessment .....	6A-1
6B	SRP 6.5.1, Table 6.5.1-1 Compliance Assessment .....	6B-1
6C	Containment Debris Protection for ECCS Strainers .....	6C-1
6D	HPCF Analysis Outlines .....	6D-1
6E	Additional Bypass Leakage Considerations .....	6E-1
7.0	Instrumentation and Control Systems .....	7.1-1
7.1	Introduction .....	7.1-1
7.1S	Instrumentation and Control Systems and Platforms .....	7.1-1
7.2	Reactor Protection (Trip) System (RPS)—Instrumentation and Controls .....	7.2-1
7.3	Engineered Safety Feature Systems, Instrumentation and Control .....	7.3-1
7.4	Systems Required for Safe Shutdown .....	7.4-1
7.5	Information Systems Important to Safety .....	7.5-1
7.6	All Other Instrumentation Systems Required for Safety .....	7.6-1
7.6S	Interlock Systems Important to Safety .....	7.6S-1
7.7	Control Systems Not Required for Safety .....	7.7-1
7.8	COL License Information .....	7.8-1
7.8S	Diverse Instrumentation and Control Systems .....	7.8S-1
7.9S	Data Communication Systems .....	7.9S-1
7A	Design Response to Appendix B, ABWR LRB Instrumentation and Controls .....	7A-1
7B	Implementation Requirements for Hardware/Software Development .....	7B-1
7C	Defense Against Common-Mode Failure in Safety-Related, Software-Based I&C Systems .....	7C-1
8.0	Electric Power .....	8.1-1
8.1	Introduction .....	8.1-1
8.2	Offsite Power Systems .....	8.2-1

8.3	Onsite Power Systems .....	8.3-1
8.4S	Station Blackout .....	8.4S-1
8A	Miscellaneous Electrical Systems .....	8A-1
9.0	Auxiliary Systems.....	9.1-1
9.1	Fuel Storage and Handling .....	9.1-1
9.2	Water Systems .....	9.2-1
9.3	Process Auxiliaries .....	9.3-1
9.4	Air Conditioning, Heating, Cooling and Ventilating Systems .....	9.4-1
9.5	Other Auxiliary Systems .....	9.5-1
9A	Fire Hazards Analysis .....	9A-1
9B	Summary of Analysis Supporting Fire Protection Design Requirements .....	9B-1
9C	Regulatory Guide 1.52, Section C, Compliance Assessment .....	9C-1
9D	SRP 6.5.1, Table 6.5.1-1 Compliance Assessment .....	9D-1
9E	Fire Related Administrative Controls .....	9E-1
10.0	Steam and Power Conversion System .....	10.1-1
10.1	Summary Description .....	10.1-1
10.2	Turbine Generator .....	10.2-1
10.3	Main Steam Supply System .....	10.3-1
10.4	Other Features of Steam and Power Conversion .....	10.4-1
11.0	Radioactive Waste Management .....	11.1-1
11.1	Source Terms .....	11.1-1
11.2	Liquid Waste Management System .....	11.2-1
11.3	Gaseous Waste Management System .....	11.3-1
11.4	Solid Waste Management System .....	11.4-1
11.5	Process and Effluent Radiological Monitoring and Sampling Systems .....	11.5-1
11.6	Offsite Radiological Monitoring Program .....	11.6-1
11A	Radioactive Waste Management - Additional Information .....	11A-1
12.0	Radiation Protection.....	12.1-1
12.1	Ensuring that Occupational Radiation Exposures are ALARA .....	12.1-1
12.2	Radiation Sources .....	12.2-1
12.3	Radiation Protection Design Features .....	12.3-1
12.4	Dose Assessment .....	12.4-1
12.5	Health Physics Program .....	12.5-1
12.5S	Operational Radiation Protection Program .....	12.5S-1
12A	Appendix 12A Calculation of Airborne Radionuclides .....	12A-1
13.0	Conduct of Operations .....	13.1-1
13.1	Organizational Structure of Applicant .....	13.1-1
13.2	Training .....	13.2-1
13.3	Emergency Planning .....	13.3-1
13.4	Review and Audit .....	13.4-1
13.4S	Operational Program Implementation .....	13.4S-1
13.5	Plant Procedures .....	13.5-1
13.6	Physical Security .....	13.6-1
13.7	Fitness For Duty .....	13.7-1
14.0S	Verification Programs .....	14.0S-1
14.0	Initial Test Program .....	14.1-1
14.1	Specific Information to be Included in Preliminary Safety Analysis Reports .....	14.1-1

14.1S	Specific Information to be Addressed For the Initial Plant Test Program .....	14.1S-1
14.2	Specific Information to be Included in Final Safety Analysis Reports .....	14.2-1
14.2S	Initial Plant Test Program .....	14.2S-1
14.3	Tier 1 Selection Criteria and Processes .....	14.3-1
14.3S	Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) .....	14.3S-1
15.0	Accident and Analysis .....	15.0-1
15.1	Decrease in Reactor Coolant Temperature .....	15.1-1
15.1S	Transient and Accident Classification .....	15.1S-1
15.2	Increase in Reactor Pressure .....	15.2-1
15.3	Decrease in Reactor Coolant System Flow Rate .....	15.3-1
15.4	Reactivity and Power Distribution Anomalies .....	15.4-1
15.5	Increase in Reactor Coolant Inventory .....	15.5-1
15.6	Decrease in Reactor Coolant Inventory .....	15.6-1
15.7	Radioactive Release from Subsystems and Components .....	15.7-1
15.8	Anticipated Transients Without Scram .....	15.8-1
15A	Plant Nuclear Safety Operational Analysis (NSOA) .....	15A-1
15B	Failure Modes and Effects Analysis (FMEA) .....	15B-1
15C	Not Used .....	15C-1
15D	Probability Analysis of Pressure Regulator Downscale Failure .....	15D-1
15E	ATWS Performance Evaluation .....	15E-1
15F	LOCA Inventory Curves .....	15F-1
16.0	Technical Specifications.....	16.0-1
16.1	Use and Application .....	16.1.1-1
16.2	Safety Limits (SLs).....	16.2-1
16.3	Limiting Conditions for Operation and Surveillance Requirements .....	16.3.0-1
16.4	Design Features.....	16.4-1
16.5	Administrative Controls .....	16.5-1
17	Quality Assurance .....	17.0-1
17.0	Introduction .....	17.0-1
17.1	Quality Assurance During Design and Construction .....	17.1-1
17.2	Quality Assurance During the Operations Phase .....	17.2-1
17.3	Reliability Assurance Program During Design Phase .....	17.3-1
17.4S	Reliability Assurance Program .....	17.4S-1
17.5S	Quality Assurance Program Guidance .....	17.5S-1
17.6S	Maintenance Rule Program .....	17.6S-1
18.0	Human Factors Engineering .....	18.1-1
18.1	Introduction .....	18.1-1
18.2	Design Goals and Design Bases .....	18.2-1
18.3	Planning, Development, and Design .....	18.3-1
18.4	Control Room Standard Design Features .....	18.4-1
18.5	Remote Shutdown System .....	18.5-1
18.6	Systems Integration .....	18.6-1
18.7	Detailed Design of the Operator Interface System .....	18.7-1
18.8	COL License Information .....	18.8-1
18A	Emergency Procedure Guidelines .....	18A-1
18B	Differences Between BWROG EPG Revision 4 and ABWR EPG .....	18B-1
18C	Operator Interface Equipment Characterization .....	18C-1

18D	Emergency Procedures Guidelines—Input Data and Calculation Results .....	18D-1
18E	ABWR Human-System Interface Design Implementation Process .....	18E-1
18F	Emergency Operation Information and Controls .....	18F-1
18G	Design Development and Validation Testing .....	18G-1
18H	Supporting Analysis for Emergency Operation Information and Controls .....	18H-1
19.0	Response to Severe Accident Policy Statement.....	19.1-1
19.1	Purpose and Summary .....	19.1-1
19.1S	Additional Information to Support the COL Application .....	19.1S-1
19.2	Introduction .....	19.2-1
19.3	Internal Event Analysis .....	19.3-1
19.4	External Event Analysis and Shutdown Risk Analysis .....	19.4-1
19.4S	PRA Maintenance .....	19.4S-1
19.5	Source Term Sensitivity Studies .....	19.5-1
19.6	Measurement Against Goals .....	19.6-1
19.7	PRA as a Design Tool .....	19.7-1
19.8	Important Features Identified by the ABWR PRA .....	19.8-1
19.9	COL License Information .....	19.9-1
19.10	Assumptions and Insights Related to Systems Outside of ABWR	
	Design Certification .....	19.10-1
19.11	Human Action Overview .....	19.11-1
19.12	Input to the Reliability Assurance Program .....	19.12-1
19.13	Summary of Insights Gained from the PRA .....	19.13-1
19A	Response to CP/ML Rule 10 CFR 50.34(f) .....	19A-1
19B	Resolution of Applicable Unresolved Safety Issues and Generic Safety Issues ....	19B-1
19C	Design Considerations Reducing Sabotage Risk .....	19C-1
19D	Probabilistic Evaluations .....	19D-1
19E	Deterministic Evaluations .....	19E-1
19EA	Direct Containment Heating .....	19EA-1
19EB	Fuel Coolant Interactions .....	19EB-1
19EC	Debris Coolability and Core Concrete Interaction .....	19EC-1
19ED	Corium Shield .....	19ED-1
19EE	Suppression Pool Bypass .....	19EE-1
19F	Containment Ultimate Strength .....	19F-1
19FA	Containment Ultimate Strength .....	19FA-1
19G	Not Used .....	19G-1
19H	Seismic Capacity Analysis .....	19H-1
19I	Seismic Margins Analysis .....	19I-1
19J	Not Used .....	19J-1
19K	PRA-Based Reliability and Maintenance .....	19K-1
19L	ABWR Shutdown Risk Evaluation .....	19L-1
19M	Fire Protection Probabilistic Risk Assessment .....	19M-1
19N	Analysis of Common-Cause Failure of <del>Multiple</del> <u>Essential Communications</u>	
	Equipment .....	19N-1
19O	Not Used .....	19O-1
19P	Evaluation of Potential Modifications to the ABWR Design .....	19P-1
19Q	ABWR Shutdown Risk Assessment .....	19Q-1
19QA	Fault Trees .....	19QA-1

19QB	DHR Reliability Study .....	19QB-1
19QC	Review of Significant Shutdown Events: Electrical Power and Decay Heat Removal .... 19QC-1	
19R	Probabilistic Flooding Analysis .....	19R-1
19S	Aircraft Impact Assessment .....	19S-1
20.0	Question and Response Guide .....	20-1
21.0	Large-Scale Drawings .....	21.0-1

