

Enclosure 2

MFN 15-064, Revision 1

Revised GEH Response to RAI 09.05.01-1

ABWR DCD DRAFT Revision 6 Markups

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Table 1.8-20 NRC Regulatory Guides Applicable to ABWR (Continued)

RG No.	Regulatory Guide Title	Appl. Rev.	Issued Date	ABWR Applicable?	Comments
1.142	Safety-Related Concrete Structures for Nuclear Power Plants (Other Than Reactor Vessels and Containments)	1	11/81	Yes	
1.143	Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants	1	10/79	Yes	
1.144	Auditing of Quality Assurance Programs Nuclear Power Plants		Superceded		See Table 17.0-1
1.145	Atmospheric Dispersion Models for Potential Accident Consequences Assessments at Nuclear Power Plants	1	12/82	Yes	
1.146	Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants		Superceded		See Table 17.0-1
1.147	Inservice Inspection Code Case Acceptability-ASME Section XI, Division 1	8	11/90	Yes	
1.148	Functional Specifications for Active Valve Assemblies in Systems Important to Safety in Nuclear Power Plants	0	4/81	Yes	
1.149	Nuclear Power Plant Simulation Facilities for Use in Operator License Examinations	1	5/87	---	COL Applicant
1.150	Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examinations	1	2/83	Yes	
1.151	Instrument Sensing Lines	0	7/83	Yes	
[1.152	<i>Criteria for Programmable Digital Computer System Software in Safety-Related Systems of Nuclear Power Plants</i>	0	11/85	Yes] ⁽⁴⁾	
[1.153	<i>Criteria for Power, Instrumentation, and Control</i>	0	12/85	Yes] ⁽⁴⁾	
1.189	Fire Protection for Nuclear Power Plants	2	10/2009	Yes	Limited to NEI 00-01 see Table 1.8-21
	Reports for Pressurized Water Reactors				
1.155	Station Blackout	0	8/88	Yes	
1.160	Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	0	6/93	Yes	
5.1	Serial Numbering of Fuel Assemblies for Light-Water-Cooled Nuclear Power Plants	0	12/72	Yes	
5.7	Control of Personnel Access to Protected Areas, Vital Areas, and Material Access Areas	1	5/80	Yes	

Table 1.8-21 Industrial Codes and Standards* Applicable to ABWR (Continued)

Code or Standard Number	Year	Title
[H-46855B	1979	Human Engineering Requirements for Military Systems, Equipment and Facilities] ⁽⁵⁾
[HDBK-217	Latest Edition	Reliability Prediction of Electronic Equipment] ⁽³⁾
[HDBK-251	Latest Edition	Reliability/Design: Thermal Applications] ⁽³⁾
[HDBK-759A	1981	Human Factors Engineering Design for Army Material] ⁽⁵⁾
STD-282	1956	Filter Units, Protective Clothing Gas-Mask Components and Related Products: Performance-Test Methods
[STD-461C	1987	Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference] ⁽³⁾⁽⁴⁾
[STD-462	1967	Measurement of Electromagnetic Interference Characteristics] ⁽³⁾⁽⁴⁾
[STD-1472D	1989	Human Engineering Design Criteria for Military Systems, Equipment and Facilities] ⁽⁵⁾
[STD-1478	1991	Task Performance Analysis] ⁽⁵⁾
Others		
ASCE 7	1988	Minimum Design Loads for Buildings and Other Structures
ERDA 76-21	1976	Testing of Ventilation Systems, Section 9 of Industrial Ventilation Systems
[IEC 801-2	1991	Electronic Capability for Industrial-Process Measurement and Control Equipment] ⁽³⁾
NEI 00-01	May 2009	Guidance for Post Fire Safe Shutdown Circuit Analysis, Rev. 2
[IEC 880	1986	Software for Computers in the Safety Systems of Nuclear Power Stations] ⁽³⁾⁽⁴⁾
[IEC 964	1989	Design for Control Rooms of Nuclear Power Plants, Bureau Central de la Commission Electrotechnique Internationale] ⁽⁵⁾
[ISO 7498	1984	Open Systems Interconnection-Basic Reference Model, as the Data Link Layer and Physical Layer] ⁽³⁾
OSHA 1910.179	1990	Overhead and Gantry Cranes
TEMA C	1978	Standards of Tubular Exchanger Manufacturers Association
UL-44	1983	Rubber-Insulated Wires and Cables
UL-489	1991	Molded-Case Circuit Breakers and Circuit Breaker Enclosures
UL-845	1988	Standard for Safety Motor Control Centers - Low Voltage Circuit Breakers
--	--	Crane Manufacturers Association of America, Specification No. 70
--	--	Aluminum Construction Manual by Aluminum Association
NCIG-01	Rev. 2	Visual Weld Acceptance Criteria for Structural Welding at Nuclear Power Plants

**Table 1.9-1 Summary of ABWR Standard Plant
COL License Information (Continued)**

Item No.	Subject	Subsection
9.28	Plant Security System Criteria	9.5.13.11
9.29	Not Used	9.5.13.12
9.30	Diesel Fuel Refueling Procedures	9.5.13.13
9.31	Portable and Fixed Emergency Communication Systems	9.5.13.14
9.32	Identification of Chemicals	9.5.13.15
9.33	NUREG/CR-0660 Diesel Generator Reliability Recommendations	9.5.13.16
9.34	Sound-Powered Telephone Units	9.5.13.17
9.35	Fire-Related Administrative Controls	9.5.13.18
9.36	Periodic Testing of Combustion Turbine Generator (CTG)	9.5.13.19
9.37	Operating Procedures for Station Blackout	9.5.13.20
9.38	Quality Assurance Requirements for CTG	9.5.13.21
10.1	Low Pressure Turbine Disk Fracture Toughness	10.2.5.1
10.2	Turbine Design Overspeed	10.2.5.2
9.39	Multiple Spurious Operations Evaluation	9.5.13.22
10.3	Turbine Inlet Valve Test and Inspection	10.2.5.3
10.4	Procedures to Avoid Steam Hammer and Discharge Loads	10.3.7.1
10.5	MSIV Leakage	10.3.7.2
10.6	Radiological Analysis of the TGSS Effluents	10.4.10.1
11.1	Plant-Specific Liquid Radwaste Information	11.2.5.1
11.2	Compliance With Appendix I to 10CFR50	11.3.11.1
11.3	Plant-Specific Solid Radwaste Information	11.4.3.1
11.4	Calculation of Radiation Release Rates	11.5.6.1
11.5	Compliance with the Regulatory Shielding Design Basis	11.5.6.2
11.6	Provisions for Isokinetic Sampling	11.5.6.3
11.7	Sampling of Radioactive Iodine and Particulates	11.5.6.4
11.8	Calibration Frequencies and Techniques	11.5.6.5
12.1	Regulatory Guide 8.10	12.1.4.1
12.2	Regulatory Guide 1.8	12.1.4.2
12.3	Occupational Radiation Exposure	12.1.4.3
12.4	Regulatory Guide 8.8	12.1.4.4
12.5	Compliance with 10CFR20 and 10CFR50 Appendix I	12.2.3.1
12.6	Airborne Radionuclide Concentration Calculation	12.3.7.1

plant-specific licensing. Items of interest under the administrative controls review will include but not be limited to:

- (1) Control of combustible materials such as combustible/flammable liquids and gases, fire retardant treated wood, plastic materials, and dry ion exchange resins
- (2) Transient combustible materials and general housekeeping, including health physics materials
- (3) Open-flame and hot-work permits and cutting and welding operations
- (4) Quality assurance with respect to fire protection systems components, installation, maintenance, and operation
- (5) Qualification of fire protection engineering personnel, fire brigade members, and fire protection systems maintenance and testing personnel
- (6) Instruction, training, and drills provided to fire brigade members

The COL applicant shall provide the description of these administrative controls to the NRC for review. See Subsection 9.5.13.18 for COL license information.

9.5.2 Communication Systems

9.5.1.6.5 Multiple Spurious Operations Evaluation

The COL applicant shall provide an evaluation of the ABWR's susceptibility to Multiple Spurious Operations (MSO) in accordance with the methodology contained in NEI 00-01, Guidance for Post Fire Safe Shutdown Circuit Analysis, Revision 2 and as modified by Regulatory Guide 1.189, Revision 2. The COL applicant will submit the results of this evaluation to the NRC for review. See Subsection 9.5.13.22 for COL license information.

9.5.2.1

9.5.2.1.1 Power-Actuated Paging System

The paging system is designed to provide facilities for mutual communication and simultaneous broadcasting in the related buildings of the plant.

9.5.2.1.2 Sound-Powered Telephone System

The design basis for the sound-powered telephone system is to provide communication primarily for fuel transfer, testing, calibration, maintenance and emergency conditions.

- (2) The operator can accomplish this from the main control room.
- (3) One Class 1E circuit breaker and one non-Class 1E circuit breaker exist and are functional between each of the Class 1E diesel generator buses and the CTG. (Note that only the circuit breakers for the preselected division are racked in. The remaining two divisions have their Class 1E breakers normally racked out, as shown in Figure 8.3.1.)
- (4) Each 92 days, verify the combustion turbine generator (CTG) starts and achieves steady state voltage (≥ 6210 V and ≤ 7590 V), and frequency (≥ 58.8 Hz and ≤ 61.2 Hz) within 2 minutes. Load the CTG to $\geq 90\%$ and $\leq 100\%$ of its continuous rating and operate it with this load for at least 60 minutes. All CTG starts may be preceded by an engine prelube period.
- (5) The reliability of the CTG is at least 0.95 as calculated by methods defined in NSAC 108, The Reliability of Emergency Diesel Generators at US Nuclear Power Plants.

9.5.13.20 Operating Procedures for Station Blackout

Appropriate operating procedures and personnel training shall be developed to:

- (1) Address the operation of the AAC-CTG during an SBO event
- (2) Restore other plant offsite (preferred) and onsite emergency power sources as soon as possible
- (3) Recover plant HVAC Systems as soon as possible to limit heat rises
- (4) Provide additional core, containment, and vital equipment makeup and cooling services, as necessary
- (5) Establish orderly plant safe shutdown conditions

9.5.13.21 Quality Assurance Requirements for CTG

Quality assurance standards and practices shall be developed to assure continued operational reliability of the CTG as an AAC power source for SBO events, in accordance with Regulatory Guide 1.155 and 10CFR50.63.

9.5.14 Reference

9.5.13.22 Multiple Spurious Operations Evaluation

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- 9.5-3 “Design of Smoke Control Systems for Buildings”, American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc., September 1983.
- 9.5-4 “Recommended Practice for Smoke Control Systems”, NFPA 92A, National Fire Protection Association, 1988.
- 9.5-5 Life Safety Code, NFPA 101, National Fire Protection Association.
- 9.5-6 “Reliability of Emergency Diesel Generators at U.S. Nuclear Power Plants”, Electric Power Research Institute, NSAC-108, September 1986.
- 9.5-7 Loss of All Alternating Current Power, 10CFR50.63.
- 9.5-8 Regulatory Guide 1.155—Station Blackout.
- 9.5-9 “Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors”, NUMARC-87-00.

9.5-10 “NEI 00-01, Guidance For Post Fire Safe Shutdown Circuit Analysis, Revision 2, May 2009”

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