

## **17.1 Quality Assurance During Design and Construction**

### **17.1.1 GE Quality Assurance During Design and Construction**

#### **17.1.1.1 Organization**

See Section 1 of Reference 17.1-1.

This section complies with Basic Requirement 1 and Supplement 1S-1 of ANSI/ASME NQA-1-1983.

The following additional information describes the relationship between GE and its technical associates.

GE, with the support of major technical associates, is designing the ABWR. This is a common engineering effort to design and specify systems and equipment from the standard plant through major purchasing specifications. The designs, specifications, and drawings are based upon various joint development and engineering studies performed by GE and its associates.

The lead responsibility to produce each specification and drawing is formally assigned to one design organization. However, the content of each document is reviewed and approved by GE. While all common engineering documents reflect the formal consensus of all parties, GE is responsible for the design and the supporting calculations and records for the ABWR project.

#### **17.1.1.2 Quality Assurance Program**

See Section 2 of Reference 17.1-1.

This section complies with Basic Requirement 2 and Supplements 2S-1, 2S-2, and 2S-3 of ANSI/ASME NQA-1-1983 and NQA-1a-1983 as modified by the NRC-accepted alternate positions identified in Table 2-1 of Reference 17.1-1 relating to NRC Regulatory Guides: 1.28, Revision 0; 1.58, Revision 1; and 1.146, Revision 0.

The following additional information describes the relationship between GE and its technical associates.

GE and each of its associates have their own Quality Assurance Program based on Reference 17.1-2. GE has performed a review of the QA programs of each of the associates to assure that the engineering designs and documentation produced by the associates meet the requirements of the GE quality program. These reviews found the QA programs of the technical associates to meet GE requirements and the applicable requirements of Appendix B to 10CFR50.

Agreements between GE and its associates require an annual review to assure that the quality systems are being implemented. All associates are committed to correct discrepancies noted during these reviews.

The identification of safety-related structures, systems, and components (Q list) to be controlled by the quality assurance program is shown on Table 3.2-1. Additional items will be added to Table 3.2-1, as necessary.

### **17.1.1.3 Design Control**

See Section 3 of Reference 17.1-1.

This section complies with Basic Requirement 3 and Supplement 3S-1 of ANSI/ASME NQA-1-1983 as modified by the NRC-accepted alternate position identified in Table 2-1 of Reference 17.1-1 relating to NRC Regulatory Guide 1.64, Revision 2.

The following additional information describes the relationship between GE and its technical associates.

GE and its associates control the review and approval of ABWR design documents with a procedure using the Engineering Review Memorandum (ERM). The lead design organization prepares the document and circulates it internally for engineering review, approval, and design verification. Evidence of verification is entered into design records of the responsible design organization. Each document is distributed by ERM to the design organizations of the other parties for their review and approval of technical content and design interfaces. All comments resulting from this process are resolved to the satisfaction of all parties. After resolution of all the comments, the design verification is reviewed and, when necessary, updated to assure that changes did not invalidate the original verification. After final agreement is reached, the document is finalized by the lead design organization, circulated to the other parties for their approval signatures, and then issued.

Changes to ABWR documents are also approved by GE and its associates. The changed document's revision status is advanced or a new document initiated. The new or changed document is circulated for review, verification, and approval to all parties that performed the original review, verification, and approval.

Differences between international and domestic designs are identified in a controlled list for future design action and application.

### **17.1.1.4 Procurement Document Control**

See Section 4 of Reference 17.1-1.

This section complies with Basic Requirement 4 and Supplement 4S-1 of ANSI/ASME NQA-1-1983 as modified by the NRC-accepted alternate position identified in Table 2-1 of Reference 17.1-1 relating to NRC Regulatory Guide 1.123, Revision 1.

**17.1.1.5 Instruction, Procedures, and Drawings** |

See Section 5 of Reference 17.1-1.

This section complies with Basic Requirement 5 of ANSI/ASME NQA-1-1983.

**17.1.1.6 Document Control** |

See Section 6 of Reference 17.1-1.

This section complies with Basic Requirement 6 and Supplement 6S-1 of ANSI/ASME NQA-1-1983.

The following additional information describes the relationship between GE and its technical associates.

All ABWR documents produced by GE and its associates are entered on the GE Master Parts List (MPL) for the ABWR. These documents are under GE configuration control. Changes to these documents require verification and GE review and approval before they are entered into the GE document control system and applied to the MPL.

**17.1.1.7 Control of Purchased Material, Equipment, and Services** |

See Section 7 of Reference 17.1-1.

This section complies with Basic Requirement 7 and Supplement 7S-1 of ANSI/ASME NQA-1-1983 as modified by the NRC-accepted alternate position identified in Table 2-1 of Reference 17.1-1 relating to NRC Regulatory Guide 1.123, Revision 1.

**17.1.1.8 Identification and Control of Materials, Parts, and Components** |

See Section 8 of Reference 17.1-1.

This section complies with Basic Requirement 8 and Supplement 8S-1 of ANSI/ASME NQA-1-1983.

**17.1.1.9 Control of Special Processes** |

See Section 9 of Reference 17.1-1.

This section complies with Basic Requirement 9 and Supplement 9S-1 of ANSI/ASME NQA-1-1983.

**17.1.1.10 Inspection** |

See Section 10 of Reference 17.1-1.

This section complies with Basic Requirement 10 and Supplement 10S-1 of ANSI/ASME NQA-1-1983 and NQA-1a-1983 as modified by the NRC-accepted alternate position identified in Table 2-1 of Reference 17.1-1 relating to NRC Regulatory Guide 1.116, Revision 0-R.

**17.1.1.11 Test Control** |

See Section 11 of Reference 17.1-1.

This section complies with Basic Requirement 11 and Supplement 11S-1 of ANSI/ASME NQA-1-1983 as modified by the NRC-accepted alternate position identified in Table 2-1 of Reference 17.1-1 relating to NRC Regulatory Guide 1.116, Revision O-R.

**17.1.1.12 Control of Measuring and Test Equipment** |

See Section 12 of Reference 17.1-1.

This section complies with Basic Requirement 12 and Supplement 12S-1 of ANSI/ASME NQA-1-1983.

**17.1.1.13 Handling, Storage, and Shipping** |

See Section 13 of Reference 17.1-1.

This section complies with Basic Requirement 13 and Supplement 13S-1 of ANSI/ASME NQA-1-1983 as modified by the NRC-accepted alternate position identified in Table 2-1 of Reference 17.1-1 relating to NRC Regulatory Guide 1.38, Revision 2.

**17.1.1.14 Inspection, Test, and Operating Status** |

See Section 14 of Reference 17.1-1.

This section complies with Basic Requirement 14 of ANSI/ASME NQA-1-1983.

**17.1.1.15 Nonconforming Materials, Parts, or Components** |

See Section 15 of Reference 17.1-1.

This section complies with Basic Requirement 15 and Supplement 15S-1 of ANSI/ASME NQA-1-1983.

**17.1.1.16 Corrective Action** |

See Section 16 of Reference 17.1-1.

This section complies with Basic Requirement 16 of ANSI/ASME NQA-1-1983.

**17.1.1.17 Quality Assurance Records**

See Section 17 of Reference 17.1-1.

This section complies with Basic Requirement 17, Supplement 17S-1, of ASME NQA-1-1983 as modified by the NRC-accepted alternate position identified in Table 2-1 of Reference 17.1-1 relating to NRC Regulatory Guide 1.88, Revision 2.

**17.1.1.18 Audits**

See Section 18 of Reference 17.1-1.

This section complies with Basic Requirement 18 and Supplement 18S-1 of ANSI/ASME NQA-1-1983 and NQA-1a-1983 as modified by the NRC-accepted alternate position identified in Table 2-1 of Reference 17.1-1 relating to ANSI Standard N45.2.12—1977.

**17.1.2 Toshiba Quality Assurance During Design and Construction****17.1.2.1 Organization**

See Section 2 of Reference 17.1-3.

This section complies with Basic Requirement 1 and Supplement 1S-1 of ASME NQA-1-1994.

**17.1.2.2 Quality Assurance Program**

See Section 3 of Reference 17.1-3.

This section complies with the Basic Requirement 2 and Supplements 2S-1, 2S-2, 2S-3 and 2S-4 of ASME NQA-1-1994 as modified by Appendix 1 of Reference 17.1-3.

**17.1.2.3 Design Control**

See Section 4 of Reference 17.1-3.

This section complies with Basic Requirement 3 and Supplement 3S-1 of ASME NQA-1-1994.

**17.1.2.4 Procurement Document Control**

See Section 5 of Reference 17.1-3.

This section complies with the Basic Requirement 4 and Supplement 4S-1 of ASME NQA-1-1994.

**17.1.2.5 Instructions, Procedures, and Drawings**

See Section 6 of Reference 17.1-3.

This section complies with Basic Requirement 5 of ASME NQA-1-1994.

**17.1.2.6 Document Control**

See Section 7 of Reference 17.1-3.

This section complies with Basic Requirement 6 and Supplement 6S-1 of ASME NQA-1-1994.

**17.1.2.7 Control of Purchased Material, Equipment, and Services**

See Section 8 of Reference 17.1-3.

This section complies with Basic Requirement 7 and Supplement 7S-1 of ASME NQA-1-1994.

**17.1.2.8 Identification and Control of Materials, Parts, and Components**

See Section 9 of Reference 17.1-3.

This section complies with Basic Requirement 8 and Supplement 8S-1 of ASME NQA-1-1994.

**17.1.2.9 Control of Special Processes**

See Section 10 of Reference 17.1-3.

This section complies with Basic Requirement 9 and Supplement 9S-1 of ASME NQA-1-1994.

**17.1.2.10 Inspection**

See Section 11 of Reference 17.1-3.

This section complies with Basic Requirement 10 and Supplement 10S-1 of ASME NQA-1-1994.

**17.1.2.11 Test Control**

See Section 12 of Reference 17.1-3.

This section complies with Basic Requirement 11 and Supplements 11S-1 and 11S-2 of ASME NQA-1-1994.

**17.1.2.12 Control of Measuring and Test Equipment**

See Section 13 of Reference 17.1-3.

This section complies with Basic Requirement 12 and Supplement 12S-1 of ASME NQA-1-1994 as modified by Appendix 1 of Reference 17.1-3.

**17.1.2.13 Handling, Storage, and Shipping**

See Section 14 of Reference 17.1-3.

This section complies with Basic Requirement 13 and Supplement 13S-1 of ASME NQA-1-1994.

**17.1.2.14 Inspection, Test, and Operating Status**

See Section 15 of Reference 17.1-3.

This section complies with Basic Requirement 14 of ASME NQA-1-1994.

**17.1.2.15 Nonconforming Materials, Parts, or Components**

See Section 16 of Reference 17.1-3.

This section complies with Basic Requirement 15 and Supplement 15S-1 of ASME NQA-1-1994.

**17.1.2.16 Corrective Action**

See Section 17 of Reference 17.1-3.

This section complies with Basic Requirement 16 of ASME NQA-1-1994.

**17.1.2.17 Quality Assurance Records**

See Section 18 of Reference 17.1-3.

This section complies with Basic Requirement 17 and Supplement 17S-1 of ASME NQA-1-1994.

**17.1.2.18 Audits**

See Section 19 of Reference 17.1-3.

This section complies with Basic Requirement 18 and Supplement 18S-1 of ASME NQA-1-1994.

**17.1.3 References**

- 17.1-1 “Nuclear Energy Business Operations Quality Assurance Program Description”, NEDO-11209-04A, the latest NRC accepted revision.
- 17.1-2 NEDC-32267P, “ABWR Project Application Engineering Organization and Procedures Manual”, (Proprietary), December 1993.
- 17.1-3 “Nuclear Energy QA Program Description”, Toshiba Document No. 4401-4, Revision 4.