

### **3.11 Environmental Qualification of Safety-Related Mechanical and Electrical Equipment**

The information in this section of the reference ABWR DCD, including all subsections, is incorporated by reference with the following departure and supplements.

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#### **3.11.6 COL License Information**

##### **3.11.6.1 Environmental Qualification Document (EQD)**

The following standard supplement addresses COL License Information Item 3.40.

The EQD will be prepared summarizing the qualification results for all safety-related electrical and mechanical equipment located in harsh environments. The EQD will include the following:

- (1) The test environmental parameters and the methodology used to qualify the equipment located in mild and harsh environments will be identified.
- (2) A summary of environmental conditions and qualified conditions for the safety-related equipment located in a harsh environment zone will be presented in the system component evaluation work sheets.

The EQD will be available for NRC review as part of the ITAAC for basic configuration of systems, as provided in the reference ABWR DCD Tier 1 Section 1.2.

There are no harsh environments outside the scope of the certified ABWR design. Therefore, no additional site-specific equipment needs inclusion in the EQD.

##### **3.11.6.2 Environmental Qualification Records**

The following standard supplement addresses COL License Information Item 3.41.

The results of the qualification tests for safety-related electrical equipment will be recorded and maintained in accordance with the requirements of 10 CFR 50.49(b). The records will be available for NRC review as part of the ITAAC for basic configuration of systems, as provided in the reference ABWR DCD Tier 1 Section 1.2.

##### **3.11.6.3 Surveillance, Maintenance and Experience Information**

The following standard supplement addresses COL License Information Item 3.42.

The equipment certificates of qualification compliance will be required. A surveillance and maintenance program will be developed to ensure equipment operability during its designed life. More detail about surveillance program is in Chapter 16, Technical Specification. More detail about the maintenance program is in Chapter 17.06S as per 10 CFR 50.65.

A list of non-safety-related control systems subject to adverse environments will be evaluated for the safety implications as identified in IE Information Notice 79-22,

Qualification of Control Systems. These are design related considerations that will be factored into the detailed design. The records of evaluation will be available for NRC review as part of the ITAAC for basic configuration of systems, as provided in the reference ABWR DCD Tier 1 Section 1.2.

Issues related to equipment wetting and flooding above the flood level as identified in IE Information Notice 89-63, Possible Submergence of Electrical Circuits Located Above the Flood Level Because of Water Intrusion and Lack of Drainage, are design related considerations that will be factored into the detailed design. The records of evaluation will be available for NRC review as part of the ITAAC for basic configuration of systems, as provided in the reference ABWR DCD Tier 1 Section 1.2.

### **3.11.6S Qualification of Mechanical Equipment**

To respond to RG 1.206 the following supplemental information is being provided. The process for determining the suitability of environmentally sensitive soft parts in mechanical equipment has been established for all commodities and sub-components of mechanical equipment that perform a safety-related function by adherence to the requirements of NEDE-24326-1-P "General Electric Environmental Qualification Program." This specification invokes the requirements of the applicable IEEE standards (e.g. 323 and 344), which will ensure that any elastomer, seal or lubricant used in mechanical equipment will be capable of performing the respective safety function under the environmental conditions to which it is subjected.

As stated in DCD Chapter 3.11.1, safety-related mechanical equipment are defined and specified in DCD Chapter 3.2. Specifically, for mechanical components, the requirements of DCD Chapter 3.9 ensure that any safety-related function is capable of being performed, including passive functions such as pressure boundary integrity. The documentation requirements of DCD Chapter 3.2.6 and 10CFR50 Appendix B ensure that the materials used will be capable of performing the safety-related functions defined for mechanical equipment and components. These requirements ensure that the constituent parts of a safety-related assembly or component is capable of performing its required function during normal, abnormal, test, design basis accident and post-accident environmental conditions.

### **3.11.7 Operational Information**

The following site-specific supplement provides an operational program description of the STP 3 & 4 Environmental Qualification (EQ) Program.

The EQ Program for STP 1 & 2 has been reviewed and approved by the NRC (NUREG-0781 Supplement 4) and has been fully implemented. The EQ Program for STP 3 & 4 will be consistent with the STP 1 & 2 Program, taking into consideration the appropriate differences between the existing and new units. The EQ Program prescribes the methodology for performing activities required to establish, maintain, and document the environmental qualification of safety-related equipment as defined in Subsection 3.11.1.

The programs for preventive maintenance, surveillance, and periodic testing provide for replacement of parts and equipment prior to the end of qualified life. This ensures that all equipment covered by the EQ Program will be operable and qualified throughout the life of the plant.

The EQ Program establishes organizational responsibilities for various activities such as design changes, procurement, work control, and maintenance and prescribes procedural controls for evaluating changes, preparing documentation, maintaining databases, calculating qualified life of components, performing various technical evaluations, and reviewing equipment purchase specifications.

### 3.11.8 ~~3.11.7~~ References

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- 3.11-1 Code of Federal Regulations, Title 10, Chapter I, Part 50, Paragraph 50.49, Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plant.
- 3.11-2 [*“General Electric Environmental Qualification Program”, NEDE-24326-1-P, Proprietary Document, January 1983.*]<sup>\*</sup>
- 3.11-3 Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment, NUREG-0588.

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<sup>\*</sup> See Section 3.10 and Appendix 3K. This reference is same as Reference 3.9-6 (Subsection 3.9.8).

