

## Response to Action Item 3-51 Section 3.11

### **RPAC Issue List Regarding APR-1400, DCD Tier 2, SECTION 3.11**

#### **Issue #1-5a (AI 3-51.20)**

FSAR Table 3.11-3 provides a list of equipment and information describing conditions where the equipment is located. It contains a column titled "Influence of Immersion (Yes/No)."

- a. It is unclear from reading the text or table if the column labeled, "Influence of Immersion (Yes/No)" is referring to radiological immersion in a liquid or gas or the effects of flooding on the specific component. Please update FSAR Section 3.11 or add a footnote to Table 3.11-3, as appropriate, to clearly indicate what the column "Influence of Immersion (Yes/No)" is referring to.

#### **Response**

The column labeled, "Influence of Immersion (Yes/No)" refers to the effects of flooding on the specific component. If the answer is "Yes", it means the specific component may be impacted by flooding. On the contrary, if "No", it means the component is not susceptible to flooding. A footnote will be added to the table to clearly indicate what "Influence of Immersion (Yes/No)" means.

#### **Impact on DCD**

The DCD Table 3.11 will be revised as shown in the Attachment.

#### **Impact on PRA**

There is no impact on the PRA.

#### **Impact on Technical Specifications**

There is no impact on the Technical Specifications.

#### **Impact on Technical/Topical/Environmental Reports**

There is no impact on the Technical /Topical, or Environmental Report.

## APR1400 DCD TIER 2

Table 3.11-3 (66 of 66)

Equipment Identification		Location		Required Operational Time	Environmental Condition <sup>(2)</sup>	Radiation Condition <sup>(6)</sup>	Influence of Immersion (Yes/No) <sup>(7)</sup>	Seismic Cat.	Remark
		Building	Category <sup>(1)</sup>						
Instrumentation and Control System (Con't)									
Various	Containment Hydrogen Concentration Monitor	AB	D	Continuous	Mild	Harsh	No	I	

(1) See Table 3.11-2 for definition of environmental categories.

(2) Equipment located within a cabinet are qualified allowing for temperature increase inside cabinet.

(3) Non-metallic parts are contained.

(4) Not qualified for accident environment.

(5) Only Channels A and B are qualified for accident environment.

(6) Radiation environmental qualification requirements for individual components are developed as discussed in Subsection 3.11.5.

Table 3.11-2 provides the worst case upper bound radiation environment in the region where the component is located.

(7) Influence of Immersion means susceptible to flooding.

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#### Issue #1-5b (AI 3-51.20)

- b. For many components, including components in the plant yard, Auxiliary Building, and Containment, this column reads “N/A.” Please indicate what a designation of “N/A” in this column means and how the designation of “N/A” differs from the designation “No.” Update the FSAR as appropriate.

#### **Response**

“N/A” stands for “Not Applicable” and when marked in each column of Table 3.11-3, it means that each equipment does not have a safety function under Design Basis Events (such as LOCA, HELB, etc.) or that the equipment is excluded from the implementation of environmental qualification since it or its parts contain no organic material, even though it may be a safety related equipment.

“No” means that the equipment is included in the implementation of EQ as a safety related item, but is not related to the issue of the specific column.

#### **Impact on DCD**

There is no impact on the DCD.

#### **Impact on PRA**

There is no impact on the PRA.

#### **Impact on Technical Specifications**

There is no impact on the Technical Specifications.

#### **Impact on Technical/Topical/Environmental Reports**

There is no impact on the Technical /Topical, or Environmental Report.

## **Response to Action Item 3-51 Section 3.11**

### **RPAC Issue List Regarding APR-1400, DCD Tier 2, SECTION 3.11**

#### **Issue #1-7 (AI 3-51.20)**

In Table 4 of APR1400-E-X-NR-14001-P the units for radiation dose are not specified. Please specify the units and update APR1400-E-X-NR-14001-P Rev. 0 accordingly.

#### **Response**

The unit for radiation dose is “Gray”. Table 4 in Technical Report APR1400-E-X-NR-14001-P Rev. 0 will be updated to reflect the units for radiation dose.

#### **Impact on DCD**

There is no impact on the DCD.

#### **Impact on PRA**

There is no impact on the PRA.

#### **Impact on Technical Specifications**

There is no impact on the Technical Specifications.

#### **Impact on Technical/Topical/Environmental Reports**

Table 4 of APR1400-E-X-NR-14001-P will be revised as shown in the Attachment. Though only the first page of the table is included, the column heading will be changed for all pages.

Table 4 (1 of 27)

Environmental Parameters Data

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## **Response to Action Item 3-51 Section 3.11**

### **RPAC Issue List Regarding APR-1400, DCD Tier 2, SECTION 3.11**

#### **Issue #1-8 (AI 3-51.20)**

Section 2.21 of APR1400-E-X-NR-14001-P indicates that for non-electronic equipment areas with a TID greater than 102 Gy are considered a harsh environment. However, FSAR Section 3.11.1.1 indicates that greater than 100 Gy TID represents a harsh environment. Please correct this inconsistency.

#### **Response**

The specification of 102 Gy in Technical Report APR1400-E-X-NR-14001-P is a typographical error. Technical Report will be modified to have 10<sup>2</sup> Gy or 100 Gy.

#### **Impact on DCD**

There is no impact on the DCD.

#### **Impact on PRA**

There is no impact on the PRA.

#### **Impact on Technical Specifications**

There is no impact on the Technical Specifications.

#### **Impact on Technical/Topical/Environmental Reports**

Section 2.21 of Technical Report APR1400-E-X-NR-14001-P will be revised as shown in the Attachment.

## EQUIPMENT QUALIFICATION PROGRAM

APR1400-E-X-NR-14001-P Rev. 0

- 2.15. Design Life - The time during which satisfactory performance can be expected for a specific set of service conditions.
- 2.16. Design Qualification - The generation and maintenance of evidence to demonstrate that equipment can perform within its specification requirements.
- 2.17. Engineered Safety Features - Features of a unit other than reactor trip or those used only for normal operation, that are provided to prevent, limit, or mitigate the release of radioactive material.
- 2.18. Equipment - An assembly of components designed and manufactured to perform specific functions.
- 2.19. Equipment Qualification - The generation and maintenance of auditable evidence to assure that the equipment will operate on demand to meet the performance requirements under applicable service conditions.
- 2.20. Failure - The loss of ability to perform a required service function by a component, equipment, or system.
- 2.21. Harsh Environment - Any area which experiences a significant increase in environmental parameters (pressure, temperature, relative humidity, or chemical) due to a postulated DBE, or any area with a total integrated dose (TID) greater than 10<sup>2</sup> Gy (greater than 10 Gy for electronic components such as semiconductors or electronic components containing organic material).
- 2.22. Harsh Zone - An area of the plant which is predicted to experience the conditions of a harsh environment.
- 2.23. Installed Life - The interval from installation to removal, during which the equipment or component may be subject to design service conditions and system demands. (Note: Equipment may have an installed life of designated life of the plant with certain components changed periodically; thus, the installed life of the components would be less than designated life of the plant.)
- 2.24. Interface - A junction or junctions between a Class 1E equipment and another equipment or device (Examples: connection boxes, splices, terminal boards, electrical connections, grommets, gaskets, cables, conduits, enclosures, etc.).
- 2.25. Margin - The difference between the most severe specified service conditions and the conditions used during equipment qualification type testing.
- 2.26. Mild Environment - An environment expected as a result of normal service conditions and extremes (abnormal) in service conditions where seismic is the only design basis event (DBE) of consequence.
- 2.27. Mild Zone - An area of the plant which is predicted to experience the conditions of a mild environment.
- 2.28. Nuclear Generating Station - A plant wherein electrical energy is produced from nuclear energy by means of suitable apparatus. The station may consist of one or more units which may or may not share some common auxiliaries.