

# **Equipment Qualification Program**

**Revision 4**

**Non-Proprietary**

**July 2018**

**Copyright © 2018**

**Korea Electric Power Corporation &  
Korea Hydro & Nuclear Power Co., Ltd  
All Rights Reserved**

**REVISION HISTORY**

| Revision | Date          | Page                                           | Description                                                                                                                                                                                      |
|----------|---------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0        | November 2014 | All                                            | First Issue                                                                                                                                                                                      |
| 1        | February 2017 | Pages v, 10, 11, 12, 13, 17, 29                | Reference EQPR (environmental qualification parameters report) is deleted because the environmental parameters information is added in this report. (RAI 176-8089 Q3.11-9)                       |
|          |               | Pages 5, 24                                    | Typing errors are corrected (102Gy to 100Gy) in response to RAI 176-8089 Q3.11-9.                                                                                                                |
|          |               | Pages 10, 11, 13, 22, 23                       | Added figures are adopted as references.                                                                                                                                                         |
|          |               | Page 30                                        | Section 5.6 is revised in response to RAI 115-8066 Q3.11-3, 3.11-5, 3.11-6.                                                                                                                      |
|          |               | -                                              | Previous Table 2 is deleted in response to RAI 179-8089 Q3.11-9                                                                                                                                  |
|          |               | Table 2                                        | - Table 3 becomes Table 2 due to deletion of Table 2. -<br>- Added information regarding Room No, Required Operational Time, Designation and Classification in response to RAI 176-8089 Q3.11-9. |
|          |               | Table 3                                        | -Table 4 becomes Table 3 due to deletion of Table 2.<br>-Gamma, Beta, Neutron doses are specified in response to RAI 176-8089, Q3.11-9                                                           |
|          |               | Pages 94, 95, 97, 98, 100, 101, 102, 104       | - Pressure values are updated according to DIT-N-0007-01-001                                                                                                                                     |
|          |               | Figure 2~9                                     | Figure 2~9 is added in response to RAI 176-8089 Q3.11-9                                                                                                                                          |
|          |               | Pages iv, 138,139,141,143,145,146,149,153,156, | Revision for scope change(Safety-Related Equipment→Seismic Category I Equipment) of Seismic Qualification                                                                                        |
|          |               | Pages 138,156,159                              | Revision for addendum and change of reference                                                                                                                                                    |
|          |               | Pages 146,153                                  | Delete description of using experience data in accordance with R.G 1.100                                                                                                                         |
|          |               | Pages 162~163                                  | Revision for change and addendum of reference of anchoring component                                                                                                                             |
|          |               | Appendix A                                     | Added in response to RAI 8089, Q3.11-9                                                                                                                                                           |
|          |               | Appendix B                                     | Added in response to RAI 8089, Q3.11-9                                                                                                                                                           |
| 2        | February 2018 | Pages 9, 10                                    | Added in response to RAI 8686, Q3.11-18                                                                                                                                                          |
|          |               | Pages 34                                       | Added in response to RAI 8686, Q3.11-22                                                                                                                                                          |
|          |               | Pages 40                                       | Revised in accordance with EOC(CR-18-E-001)                                                                                                                                                      |
|          |               | Table 2                                        | Added in response to RAI 8089, Q3.11-9 Rev. 4                                                                                                                                                    |
|          |               | Table 3                                        | Added in response to RAI 8089, Q3.11-9 Rev. 4                                                                                                                                                    |
| 3        | May 2018      | Table 2                                        | Reflected for RAI RAI 8089, Q3.11-9,NRC Feedback                                                                                                                                                 |
|          |               | Page A-3, A-4                                  | Reflected for RAI RAI 8089, Q3.11-9,NRC Feedback                                                                                                                                                 |
|          |               | Page A-5                                       | Reflected for RAI RAI 8089, Q3.11-9,NRC Feedback                                                                                                                                                 |
|          |               | Page B-5                                       | Reflected for RAI RAI 8089, Q3.11-11,NRC Feedback                                                                                                                                                |
| 4        | July 2018     | Table 2 Pages 44,45 and 51                     | Reflected in accordance with EOC (CR-17-IC-164, No.40)                                                                                                                                           |

This document was prepared for the design certification application to the U.S Nuclear Regulatory Commission and contains technological information that constitutes intellectual property of Korea Hydro & Nuclear Power Co., Ltd.. Copying, using, or distributing the information in this document in whole or in part is permitted only to the U.S. Nuclear Regulatory Commission and its contractors for the purpose of reviewing design certification application materials. Other uses are strictly prohibited without the written permission of Korea Electric Power Corporation and Korea Hydro & Nuclear Power Co.,Ltd.

## **ABSTRACT**

The APR1400 Equipment Qualification Program consists of two parts which are classified into Environmental Qualification Program and Seismic Qualification Program respectively. These are discussed in separate parts.

### Part 1

This report describes the program used to meet the requirements of 10 CFR 50.49, NRC RG 1.89, NUREG-0588 Category I, IEEE Std. 323, and NUREG-0800 (SRP 3.11). The program described herein applies to Class 1E electrical equipment and safety-related active mechanical equipment important to safety for nuclear power plants committed to the above requirements. Description of the elements of the environmental qualification program, methodology, and technical bases are presented. Type test, analysis, and other methods of qualification compliant with NUREG-0588 are discussed. It is expected that this report may be referenced by license applicants for the scope and methods to be employed for qualification of Class 1E electrical equipment and safety-related active mechanical equipment.

### Part 2

This program is to establish the seismic and dynamic qualification procedure and criteria for Seismic Category I mechanical equipment, controls and instrumentation and Class 1E electrical equipment in APR1400. This program is a part of the overall APR1400 Equipment Qualification Program, hereinafter referred to as EQP. This program provides the seismic and dynamic qualification requirements and general procedures to qualify safety-related equipment in accordance with IEEE Std. 344 and NRC RG 1.100. It is expected that this report may be referenced by license applicants for the scope and methods.

**ACRONYMS AND ABBREVIATIONS**

|         |                                                       |
|---------|-------------------------------------------------------|
| AB      | auxiliary building                                    |
| ACI     | American Concrete Institute                           |
| ACU     | air cleaning unit                                     |
| A/E     | architect/engineer                                    |
| AFW     | auxiliary feedwater                                   |
| AFWP    | auxiliary feedwater pump                              |
| AFWST   | auxiliary feedwater storage tank                      |
| AHU     | air handling unit                                     |
| AISC    | American Institute of Steel Construction              |
| ANSI    | American National Standards Institute                 |
| APC     | auxiliary process cabinet                             |
| ASME    | American Society of Mechanical Engineers              |
| BAMP    | boric acid makeup pump                                |
| BAST    | boric acid storage tank                               |
| BOP     | balance of plant                                      |
| CCS     | component control system                              |
| CCW     | component cooling water                               |
| CCWPH   | component cooling water pump house                    |
| CEA     | control element assembly                              |
| CEDM    | control element drive mechanism                       |
| CFR     | code of federal regulations                           |
| CG      | center of gravity                                     |
| CIV     | containment isolation valve                           |
| CPCS    | core protection calculator system                     |
| CS      | containment spray                                     |
| DBA     | design basis accident                                 |
| DRCS    | digital rod control system                            |
| EDG     | emergency diesel generator                            |
| EDGB    | emergency diesel generator building                   |
| ENFMS   | ex-core neutron flux monitoring system                |
| EQP     | equipment qualification program                       |
| ESF-CCS | engineered safety features - component control system |
| ESR     | electro-hydraulic actuated spring return              |
| ESW     | essential service water                               |

|       |                                                   |
|-------|---------------------------------------------------|
| ESWB  | essential service water building                  |
| FMEA  | failure modes and effects analysis                |
| GDC   | general design criteria                           |
| HELB  | high-energy line break                            |
| HJTC  | heated junction thermocouple                      |
| HT    | high temperature                                  |
| HX    | heat exchanger                                    |
| ICI   | in-core instrumentation                           |
| IE    | inspection and enforcement                        |
| IEEE  | institute of electrical and electronics engineers |
| IRWST | in-containment refueling water storage tank       |
| ITP   | interface and test processor                      |
| LOCA  | loss-of-coolant accident                          |
| LT    | low temperature                                   |
| MCC   | motor control center                              |
| MCR   | main control room                                 |
| MFLB  | main feedwater line break                         |
| MI    | mineral insulated                                 |
| MMIS  | man machine interface                             |
| MSADV | main steam atmospheric dump valve                 |
| MSLB  | main steam line break                             |
| MTP   | maintenance and test panel                        |
| NR    | narrow range                                      |
| NRC   | U.S. Nuclear Regulatory Commission                |
| OBE   | operating basis earthquake                        |
| OL    | operating license                                 |
| POSRV | pilot operated safety relief valve                |
| PPS   | plant protection system                           |
| PRM   | process radiation monitor                         |
| PSR   | pneumatically actuated spring return              |
| PZR   | pressurizer                                       |
| QA    | quality assurance                                 |
| RCB   | reactor containment building                      |
| RCP   | reactor coolant pump                              |
| RDT   | reactor drain tank                                |
| RG    | regulatory guide                                  |

|       |                                                  |
|-------|--------------------------------------------------|
| RH    | relative humidity                                |
| RRS   | required response spectra                        |
| RSPT  | reed switch position transmitter                 |
| RSSH  | resin sluice supply header                       |
| RTSG  | reactor trip switchgear                          |
| RTSS  | reactor trip switchgear system                   |
| SC    | shutdown cooling                                 |
| SCS   | shutdown cooling system                          |
| SDCHX | shutdown cooling heat exchanger                  |
| SG    | steam generator                                  |
| SI    | safety injection                                 |
| SIP   | safety injection pump                            |
| SIS   | safety injection system                          |
| SIT   | safety injection tank, structural integrity test |
| S/PM  | surveillance/preventive maintenance              |
| SRP   | standard review plan                             |
| SRSS  | square root of the sum of the squares            |
| SRV   | safety relief valve                              |
| SSC   | structure, system, or component                  |
| SSE   | safe shutdown earthquake                         |
| SWGR  | switchgear                                       |
| TGB   | turbine generator building                       |
| TID   | total integrated dose                            |
| TS    | trade secret                                     |
| VCT   | volume control tank                              |
| WR    | wide range                                       |
| ZPA   | zero-period acceleration                         |

## **Part 1**

# **Environmental Qualification Program**

## **TABLE OF CONTENTS**

|          |                                  |          |
|----------|----------------------------------|----------|
| <b>1</b> | <b>INTRODUCTION.....</b>         | <b>1</b> |
| 1.1      | Objectives.....                  | 1        |
| 1.2      | Background .....                 | 1        |
| 1.3      | Criteria and Standards .....     | 2        |
| 1.4      | Summary .....                    | 2        |
| <b>2</b> | <b>DEFINITIONS.....</b>          | <b>3</b> |
| 2.1      | Abnormal Condition.....          | 3        |
| 2.2      | Accident Condition .....         | 3        |
| 2.3      | Active Components .....          | 3        |
| 2.4      | A/E.....                         | 3        |
| 2.5      | Aging .....                      | 3        |
| 2.6      | Analysis .....                   | 3        |
| 2.7      | Auditable Data.....              | 3        |
| 2.8      | Class 1E .....                   | 3        |
| 2.9      | Common-Mode Failure.....         | 3        |
| 2.10     | Components .....                 | 4        |
| 2.11     | Condition Monitoring .....       | 4        |
| 2.12     | Containment .....                | 4        |
| 2.13     | Demonstration .....              | 4        |
| 2.14     | Design Basis Accident (DBA)..... | 4        |
| 2.15     | Design Life .....                | 4        |
| 2.16     | Design Qualification .....       | 4        |
| 2.17     | Engineered Safety Features ..... | 4        |
| 2.18     | Equipment .....                  | 4        |
| 2.19     | Equipment Qualification .....    | 5        |
| 2.20     | Failure.....                     | 5        |

|          |                                                                |          |
|----------|----------------------------------------------------------------|----------|
| 2.21     | Harsh Environment.....                                         | 5        |
| 2.22     | Harsh Zone.....                                                | 5        |
| 2.23     | Installed Life .....                                           | 5        |
| 2.24     | Interface.....                                                 | 5        |
| 2.25     | Margin.....                                                    | 5        |
| 2.26     | Mild Environment.....                                          | 5        |
| 2.27     | Mild Zone .....                                                | 5        |
| 2.28     | Nuclear Generating Station .....                               | 6        |
| 2.29     | Normal Conditions.....                                         | 6        |
| 2.30     | Operating Experience.....                                      | 6        |
| 2.31     | Performance Requirements .....                                 | 6        |
| 2.32     | Qualified Life .....                                           | 6        |
| 2.33     | Sample Equipment.....                                          | 6        |
| 2.34     | Service Conditions .....                                       | 6        |
| 2.35     | Synergistic Effects.....                                       | 6        |
| 2.36     | Type Tests.....                                                | 6        |
| <b>3</b> | <b>DESCRIPTION OF ENVIRONMENTAL QUALIFICATION PROGRAM.....</b> | <b>7</b> |
| 3.1      | Scope of Supply .....                                          | 7        |
| 3.2      | Qualification Program.....                                     | 8        |
| 3.2.1    | Aging .....                                                    | 9        |
| 3.2.2    | Seismic.....                                                   | 10       |
| 3.2.3    | Environmental .....                                            | 11       |
| 3.3      | Environmental Conditions and Effects .....                     | 11       |
| 3.3.1    | Temperature.....                                               | 11       |
| 3.3.2    | Radiation .....                                                | 12       |
| 3.3.3    | Vibration .....                                                | 13       |
| 3.3.4    | Pressure .....                                                 | 13       |

|          |                                                                                                  |           |
|----------|--------------------------------------------------------------------------------------------------|-----------|
| 3.3.5    | Humidity .....                                                                                   | 14        |
| 3.3.6    | Chemical Spray .....                                                                             | 14        |
| 3.3.7    | Dust .....                                                                                       | 14        |
| 3.3.8    | Submergence .....                                                                                | 14        |
| 3.3.9    | Power Supply Voltage and Frequency Variations .....                                              | 15        |
| 3.3.10   | Other Environmental Effects .....                                                                | 15        |
| <b>4</b> | <b>EQUIPMENT QUALIFICATION REQUIREMENTS .....</b>                                                | <b>16</b> |
| 4.1      | Location .....                                                                                   | 16        |
| 4.2      | Environment .....                                                                                | 16        |
| 4.3      | Design Basis Accidents .....                                                                     | 16        |
| 4.4      | Operating Requirements .....                                                                     | 16        |
| <b>5</b> | <b>METHODS OF QUALIFICATION .....</b>                                                            | <b>17</b> |
| 5.1      | Type Testing .....                                                                               | 17        |
| 5.1.1    | Equipment Procurement Specification .....                                                        | 17        |
| 5.1.2    | Type Test Methods .....                                                                          | 17        |
| 5.1.3    | Margin .....                                                                                     | 18        |
| 5.1.4    | Test Sequence .....                                                                              | 21        |
| 5.1.5    | Type Test Report .....                                                                           | 23        |
| 5.1.6    | Environmental Test Profiles .....                                                                | 23        |
| 5.1.7    | Acceptance Criteria .....                                                                        | 23        |
| 5.1.8    | Test Anomalies .....                                                                             | 24        |
| 5.2      | Analysis .....                                                                                   | 25        |
| 5.2.1    | Analyses Based on Partial Type Test Data and Equipment-Specific Qualification Requirements ..... | 25        |
| 5.2.2    | Failure Modes and Effects Analysis .....                                                         | 26        |
| 5.3      | Operating Experience .....                                                                       | 26        |
| 5.4      | Aging .....                                                                                      | 26        |
| 5.4.1    | Aging Analysis and Conditioning .....                                                            | 27        |

|          |                                                                   |           |
|----------|-------------------------------------------------------------------|-----------|
| 5.4.2    | Periodic Replacement .....                                        | 29        |
| 5.4.3    | Surveillance/Preventative Maintenance .....                       | 30        |
| 5.5      | Conservatism of Qualification Parameters .....                    | 30        |
| 5.6      | Qualification of Safety-Related Active Mechanical Equipment ..... | 31        |
| <b>6</b> | <b>DOCUMENTATION .....</b>                                        | <b>32</b> |
| 6.1      | Equipment-Specific Qualification Documentation .....              | 32        |
| 6.1.1    | Aging Analysis Report .....                                       | 32        |
| 6.1.2    | Qualification Plan .....                                          | 32        |
| 6.1.3    | Age Conditioning Report .....                                     | 33        |
| 6.1.4    | Qualification Test Procedure .....                                | 33        |
| 6.1.5    | Qualification Test Report .....                                   | 34        |
| 6.1.6    | Operating Experience Data .....                                   | 34        |
| 6.1.7    | Equipment for Mild Environment .....                              | 35        |
| 6.2      | Equipment Categorization .....                                    | 35        |
| 6.3      | Qualification Data Summary and Evaluation .....                   | 35        |
| 6.4      | Supporting Documentation .....                                    | 36        |
| <b>7</b> | <b>QUALITY ASSURANCE .....</b>                                    | <b>37</b> |
| <b>8</b> | <b>ADMINISTRATIVE PROCEDURES .....</b>                            | <b>38</b> |
| 8.1      | Equipment Specification .....                                     | 38        |
| 8.2      | Supplier Design and Qualification Program .....                   | 38        |
| 8.3      | Qualification Task .....                                          | 38        |
| 8.4      | Qualification Documentation and Submittals .....                  | 38        |
| <b>9</b> | <b>REFERENCES .....</b>                                           | <b>39</b> |

**LIST OF TABLES**

|         |                                             |     |
|---------|---------------------------------------------|-----|
| Table 1 | Ventilation Areas .....                     | 42  |
| Table 2 | Equipment Qualification Equipment List..... | 43  |
| Table 3 | Environmental Parameters Data.....          | 94  |
| Table 4 | Containment Spray Conditions .....          | 122 |

## **LIST OF FIGURES**

|          |                                                                                               |     |
|----------|-----------------------------------------------------------------------------------------------|-----|
| Figure 1 | Design Basis Containment Atmosphere Temperature and Pressure EQ Profile<br>for Accident ..... | 123 |
| Figure 2 | Main Steam Valve Room MSLB Temperature Profile.....                                           | 124 |
| Figure 3 | Auxiliary Building HELB Temperature Profile .....                                             | 125 |
| Figure 4 | Turbine Driven AF Pump Room Temperature Profile.....                                          | 126 |
| Figure 5 | Turbine Driven AF Pump Room Vent & Main Steam Enclosures.....                                 | 127 |
| Figure 6 | HELB HVAC Duct Tray Pipe Way Temperature Profile .....                                        | 128 |
| Figure 7 | SG Blowdown Flash Tank Room Temperature Profile .....                                         | 129 |
| Figure 8 | Equipment Qualification Working Process.....                                                  | 130 |
| Figure 9 | Equipment Qualification Flow Diagram By Type of Safety-Related Equipment .....                | 131 |

## **APPENDICES**

|            |                                                                                                    |     |
|------------|----------------------------------------------------------------------------------------------------|-----|
| APPENDIX A | CALCULATUION METHOD OF DETERMINING OF NORMAL CONDITION TIDs FOR ENVIRONMENTAL QUALIFICATION.....   | A-1 |
| APPENDIX B | CALCULATION METHOD OF DETERMINING POST-ACCIDENT CONDITION TIDs FOR ENVIRONMENT QUALIFICATION ..... | B-1 |

Page intentionally blank

## **1 INTRODUCTION**

### **1.1 Objectives**

The intent of equipment environmental qualification is to demonstrate that equipment will perform the necessary safety-related functions during normal and accident conditions.

This program includes the methods used to meet the requirements of the "Category I" requirements of NUREG-0588 (Reference 9.1), the requirements of the Standard Review Plan, NUREG-0800 (SRP 3.11) (Reference 9.2), 10 CFR 50.49 (Reference 9.3), and Institute of Electrical and Electronics Engineers (IEEE) Std 323 (Reference 9.8). The methods described herein apply to Class 1E electrical equipment and safety-related active mechanical equipment important to safety for use in nuclear power plants committed to the above requirements. It is expected that this report may be referenced by license applicants for the scope and methods employed herein.

Qualification documentation will be supplied by Supplier and is described in detail in Section 6.

### **1.2 Background**

The environmental requirements to be considered in the design of safety-related equipment are embodied in 10 CFR, Appendix A to Part 50, General Design Criteria 1, 2, 4, 23, and 50. The environmental design of the safety-related equipment is verified, documented, and controlled as required by Sections III, XI, and XVII of 10 CFR 50 Appendix B.

NUREG-0588 was issued in December 1979 to promote a more orderly and systematic implementation of equipment qualification programs by the industry and to provide guidance to the U.S. Nuclear Regulatory Commission (NRC) staff for its use in ongoing licensing reviews. The positions contained in the report provide guidance on (1) how to establish environmental service conditions, (2) how to select methods that are considered appropriate for qualifying equipment in different areas of the plant, and (3) other issues such as margin, aging, and qualification documentation.

In February 1980, the NRC requested certain near-term Operating License (OL) applicants to review and evaluate the environmental qualification documentation for each item of safety-related electrical equipment and to identify the degree to which their qualification programs comply with the staff positions described in NUREG-0588. Inspection and Enforcement (IE) Bulletin 79-01B (Reference 9.28), "Environmental Qualification of Class 1E Equipment," was issued on January 14, 1980 and its supplements dated February 29, September 30, and October 24, 1980 established environmental qualification requirements for Class 1E electrical equipment in operating reactors.

A final rule on environmental qualification of electric equipment important to safety for nuclear power plants became effective on February 22, 1983. This rule, Section 50.49 of 10 CFR Part 50, specifies the requirements to be met for demonstrating the environmental qualification of electric equipment important to safety located in a harsh environment.

The qualification requirements for safety-related active mechanical equipment are principally contained in Appendices A and B of 10 CFR 50. The qualification methods defined in NUREG-0800 (SRP 3.11) can also be applied to mechanical equipment. Environmental qualification of safety-related active mechanical equipment is described in detail in Section 5.6.

### **1.3 Criteria and Standards**

The qualification program is designed to meet the requirements of the "Category I" requirements of NUREG-0588, IEEE Std. 323, and IEEE Std. 627 (Reference 9.18). IEEE Std. 323 was issued to provide guidance for demonstrating the qualifications of Class 1E equipment for nuclear generating stations. The individual supporting standards that the architect engineer (A/E) will employ, either in whole or in part, are listed in Section 9.

### **1.4 Summary**

A summary of the various sections of this program is given below:

#### Description of Environmental Qualification Program (Section 3)

The general scope of supply and the various qualification program activities are described. This program will cover safety-related electrical and active mechanical equipment including sensors, electrical penetration assemblies, cables, hydrogen and radiation monitoring systems, panels, motor control centers (MCCs), switchgear (SWGR), miscellaneous instrumentation, nuclear service valves and auxiliary equipment, and pump motors located in harsh and mild environments.

#### Equipment Qualification Requirements (Section 4)

Information will be included on the location of equipment, qualification environment, and operating requirements.

#### Methods of Qualification (Section 5)

Type tests, analysis and other methods of qualification compliant with 10 CFR 50.49, NUREG-0800 (SRP 3.11), and the "Category I" requirement of NUREG-0588, NRC Regulatory Guide (RG) 1.89 (Reference 9.22), and IEEE Std. 323 are presented. The demonstration of conservatism of the qualification parameters is described.

#### Documentation (Section 6)

This section describes the documentation required for qualification. The qualification reports and their generation are described. Documentation necessary to support the review on a particular applicant's docket will be available for audit.

#### Quality Assurance (Section 7)

The A/E's quality assurance (QA) practices and documentation requirements associated with equipment qualification activities are described.

#### Administrative Procedures (Section 8)

Supplier's participation and responsibility coupled with qualification program technical definition, management, and control are described.

## **2 DEFINITIONS**

### **2.1 Abnormal Condition**

The limiting environmental condition expected following an accident or transient that is not a normal operating condition but is not considered an accident

### **2.2 Accident Condition**

The environmental conditions expected as a direct result of an accident that requires activation of emergency safeguard systems to protect the plant combined with a single active failure

### **2.3 Active Components**

Any component characterized by a change in state, or by mechanical motion, to perform an automatic safety function such as safe shutdown of the reactor, or mitigation of the consequences of a postulated pipe break in the reactor coolant pressure boundary

### **2.4 A/E**

Architect/engineer

### **2.5 Aging**

The effects of operational, environmental, and system conditions on equipment during a period of time up to, but not including, a design basis accident or the process of simulating such an accident

### **2.6 Analysis**

A process of mathematical or other logical reasoning that leads from stated premises to a conclusion concerning specific capabilities of equipment and its adequacy for a particular application

### **2.7 Auditable Data**

Technical information that is documented and organized in a readily understandable and traceable manner and that permits independent auditing of the inferences or conclusions based on the information provided.

### **2.8 Class 1E**

The safety classification of electrical equipment and systems that are essential to emergency reactor shutdown, containment isolation, reactor core cooling, and containment and reactor heat removal, or are otherwise essential in preventing significant release of radioactive material to the environment.

### **2.9 Common-Mode Failure**

Multiple failures attributable to a common cause

**2.10 Components**

Individual items that are the integral parts of equipment and cannot be individually operability tested (e.g., seals, gaskets, resistors)

**2.11 Condition Monitoring**

Activities by which equipment condition is monitored to provide reasonable assurance that it will not degrade or age beyond the state to which it is no longer operable

**2.12 Containment**

That portion of the engineered safety features (ESF) designed to act as the principal barrier, beyond the reactor system pressure boundary, to prevent the release, even under conditions of a reactor accident, of unacceptable quantities of radioactive material beyond a controlled zone

**2.13 Demonstration**

A course of reasoning showing that a certain result is a consequence of assumed premises; an explanation or illustration, as in teaching by use of examples

**2.14 Design Basis Accident (DBA)**

Postulated abnormal accidents used in the design to establish the performance requirements of the safety-related structures, systems, and components. These events include abnormal operating occurrences and design basis accidents.

**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 ensure 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 that has a significant increase in environmental parameters (pressure, temperature, relative humidity, or chemical) due to a postulated DBA, or any area with a total integrated dose (TID) greater than 100 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 that is predicted to have 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 the 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 Class 1E equipment and another piece of equipment or device (for example, connection boxes, splices, terminal boards, electrical connections, grommets, gaskets, cables, conduits, enclosures)

**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 DBA of consequence

**2.27 Mild Zone**

An area of the plant that is predicted to have 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 that may or may not share some common auxiliaries.

**2.29 Normal Conditions**

The environmental conditions expected during normal plant operation with equipment performing its function, as required, on a continuous steady-state basis

**2.30 Operating Experience**

Accumulation of verifiable service data for conditions equivalent to those for which particular equipment is to be qualified

**2.31 Performance Requirements**

Specified range of parameters within which equipment must operate under normal and accident conditions (e.g., power, actuation time, and accuracy).

**2.32 Qualified Life**

The period of time for which satisfactory performance can be demonstrated for a specific set of service conditions. The qualified life of a particular equipment item may be changed during its installed life where justified.

**2.33 Sample Equipment**

Production equipment tested to obtain data that are valid over a range of ratings and for specific services

**2.34 Service Conditions**

Environmental, power, and signal conditions expected as a result of normal operating requirements, expected extremes (abnormal) in operating requirements, and postulated conditions appropriate for the DBAs of the stations.

**2.35 Synergistic Effects**

The effects that result from two or more stresses acting together, as distinguished from the effects of the stresses applied separately

**2.36 Type Tests**

Tests made on one or more equipment samples to verify the adequacy of the design and manufacturing processes

### 3 DESCRIPTION OF ENVIRONMENTAL QUALIFICATION PROGRAM

#### 3.1 Scope of Supply

This report addresses electrical and active mechanical equipment important to safety for nuclear power plants. This equipment is classified in four categories by 10 CFR 50.49 (b) and NUREG-0800 (SRP 3.11) as (1) safety-related electric equipment which is required to function under the postulated accident conditions, (2) non-safety-related electric equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions by safety-related equipment, (3) accident monitoring equipment, and (4) safety-related active mechanical equipment. Category (1) includes Class 1E electrical equipment, Category (2) equipment shall be selected for environmental qualification by the respective responsible system engineers based on their evaluation of the equipment's failure under postulated environmental conditions as being detrimental to satisfactory accomplishment of equipment safety functions. The Category (3) group comprises NRC RG 1.97 (Reference 9.23) accident monitoring instrumentation equipment. Category (4) is the safety-related active mechanical equipment that contains non-metallic parts/components such as seals, gaskets, and lubricants. The environmental qualification program described in this document is based on engineering principles that provide reasonable assurance these components will function properly in their environments, when required during normal operation and during and after DBAs.

For the APR1400, the scope of supply for safety-related electrical and active mechanical equipment includes the following:

- a. Load center and switchgear
- b. Motor control center
- c. DC motor control center
- d. Battery, charger, and inverter
- e. Electrical penetration assemblies
- f. Electrical cables
- g. Monitoring system and associated panels
- h. Process sensor and instrumentation
- i. Power-operated valve assemblies
- j. Check valves
- k. Safety relief valves
- l. Pumps and drives of various types
- m. Air handling unit (AHU) and cubicle coolers
- n. Air cleaning unit (ACU), fan, and duct heaters
- o. Emergency diesel generators (EDGs)

- p. Dampers
- q. Chillers

### **3.2 Qualification Program**

Applicants for operating licenses are required to demonstrate that electrical and active mechanical equipment important to safety will perform its required Class 1E functions throughout their design life under the expected normal and postulated accident conditions. Qualification programs must consider the effects of normal and accident environments, inservice and seismic vibration, radiation, temperature, pressure, chemical spray, humidity, submergence, synergistic effects, dust, as well as the natural aging process for the individual equipment.

The goal of the qualification program is to provide reasonable assurance that the specified equipment will operate within defined limits when exposed to the conditions associated with its required service environments. In order to meet this goal, the qualification program will address the following areas, as required.

- a. Performance or operating requirements for Class 1E electrical and safety-related active mechanical equipment to demonstrate qualification
- b. The environmental conditions and exposure times for which the equipment must be qualified
- c. Simulation of environments or effects to determine qualification of individual components
- d. Effects on these components of long- or short-term exposure to simulated environments
- e. Methods of observing or detecting these effects (anomalies)
- f. The methods for establishing a qualified life
- g. The required levels of documentation and quality assurance

The integration of these areas is accomplished through a series of activities that include the following:

- a. Generation of an aging analysis plan and report that define age-susceptible components of the equipment (This program also includes detailed procedures for age conditioning and defines periodic replacement intervals as required.)
- b. Generation of a qualification plan that incorporates the results of the aging analysis in defining the qualification methods and documentation activities of the qualification program
- c. Performance of the age conditioning sub-program and preparation of an age conditioning report, if required
- d. Preparation of detailed qualification test plans and procedures
- e. Performance of the qualification testing
- f. Preparation of the final qualification test report and qualification data summary form
- g. Development of the requirements for maintenance and surveillance activities

This report will address each one of the above areas as it applies to safety-related electrical and active mechanical equipment.

The qualification program is established to meet the requirements of 10 CFR 50.49, and the "Category I" requirements of NUREG-0588, NUREG-0800, NRC RG 1.89, and IEEE Std. 323. The qualification program has two approaches that are based on the equipment's location. Equipment located in a harsh environment is not treated in the same fashion as equipment located in a mild environment. Regardless of equipment location, qualification will be demonstrated based on either type testing, accelerated age conditioning, periodic replacement, surveillance/preventive maintenance (S/PM), and/or any combination thereof. The qualification methods associated with both approaches are as follows:

a. Harsh Environments

Safety-related equipment located in a harsh environment, such as in containment and in some auxiliary building areas, required to be functional during and after the DBAs will undergo an aging analysis and an accelerated aging program. Subsequent to age conditioning, the equipment will undergo type testing for the accident environment as specified in Sections 2.0, 3.0, and 4.0 of NUREG-0588 and Section 6.0 of IEEE Std. 323. Equipment subjected to a postulated harsh environment includes Class 1E transmitters, cables and connectors, some process instrumentation, electrical penetration assemblies, cubicle coolers, ACU, nuclear service valves and auxiliary equipment, radiation and hydrogen monitoring equipment, pump motors and damper.

b. Mild Environments

Safety-related equipment located in a mild environment, such as control areas and some areas in the plant, will be qualified for the normal local environment and a seismic event. An aging analysis will be performed prior to qualification type testing to determine whether or not known significant aging mechanisms exist for that equipment. The aging analysis will focus on the identification of known aging mechanisms that significantly increase the equipment susceptibility to its DBA (seismic only for mild environments). Pending the results of the aging analysis, the equipment will either require an accelerated age conditioning program, periodic part replacement program, surveillance/preventive maintenance program, or any combination thereof to demonstrate and maintain qualification status. Equipment subjected to a mild environment includes Class 1E local control panels, some process instrumentation (indicators, converters, and recorders), load center, SWGR, DC control center, MCC, battery, charger and inverter, AHU, fan and duct heaters, EDG, and miscellaneous electronic modules.

### 3.2.1 Aging

The assessment of equipment aging effects is required to determine if significant aging mechanism does exist regardless of equipment location. Thermal, radiation, humidity, cyclic operation, electromechanical, and synergistic effects will be addressed as appropriate. Where significant aging mechanisms are identified, equipment shall be preconditioned by natural or accelerated aging.

#### 3.2.1.1 Accelerated age conditioning

The accelerated age conditioning program will be conducted in accordance with Section 4.0 of NUREG-0588 and Section 6.0 of IEEE Std. 323.

The methodology used in the determination and evaluation of the equipment age-related failure modes and mechanisms will include, as appropriate, the following types of information:

- a. Arrhenius and/or activation energy data
- b. Aging acceleration rate data
- c. Failure modes and effects analysis (FMEA) data
- d. Thermal stress data
- e. Electrical stress data
- f. Electromechanical and operational cycling data
- g. Normal operating vibration data
- h. Radiation component susceptibility data
- i. Major industry known synergistic data

#### **3.2.1.2 Natural Aging**

The natural aging will be conducted in accordance with 10CFR 50.49 and Section 6.3.1.8.1 of IEEE Std. 323-2003. If naturally preconditioning the equipment to end-of-life condition is not practicable, shorter life can be designated. In this case, the equipment shall be replaced at a specified interval. Analysis is performed to verify that natural aging conditions are at least as severe as the intended service condition. In the end, qualified life is determined based on the designated life when analysis and DBA testing are successfully completed.

Natural aging can be used for type testing provided that

- a. Operating data of the equipment is available
- b. Operating and maintenance/replacement records are available
- c. Operating conditions are at least as severe as intended service condition

#### **3.2.2 Seismic**

The seismic qualification program for Class 1E equipment will be in accordance with IEEE Std. 344 (Reference 9.10).

Seismic qualification of pump motors, and nuclear service valves and auxiliary equipment, is per IEEE Std. 344.

This report does not describe seismic testing, methods, or results, other than to reference IEEE Std. 344.

The detailed seismic qualification is described in Part 2, Seismic Qualification Program.

### **3.2.3 Environmental**

Equipment will be environmentally qualified to levels at least as severe as the conditions specified in Table 3 of this report for normal and accident conditions. Environmental parameters and qualification profiles for DBAs (LOCA, MSLB, HELB) are provided in Table 3, 4 and Figure 1 to Figure 7 of this report.

### **3.3 Environmental Conditions and Effects**

The postulated environmental conditions to which safety-related equipment are exposed generally include long time periods at either moderate or low levels of temperature, pressure, humidity, and radiation, followed by, for equipment located in the containment, exposure to high levels of these same parameters for relatively short periods of time. Equipment operation under these high stress levels may be required in order to mitigate or monitor the postulated accident conditions. The level of exposure may also be affected by the location of the particular equipment.

For example, a component located in the reactor containment building may be exposed to moderate temperature, pressure, humidity, and radiation for long periods of time and then would be required to function for safety purposes under possible conditions of high temperature, pressure, humidity, radiation and chemical spray resulting from a LOCA or MSLB /MFLB.

The purpose of the qualification program is to demonstrate that equipment will perform its Class 1E function.

#### **3.3.1 Temperature**

##### **3.3.1.1 Harsh Environment**

The preferred method of establishing an environmental profile for DBA testing of safety-related equipment located in harsh environmental zone is to adhere to Category I guidelines in Sections 1.1 and 1.2 of NUREG-0588, Rev. 1 for developing a test profile that will envelop all temperature and pressure gradients for DBAs in a superheated steam/air environment. See the APR1400 containment DBA temperature and pressure profiles provided in Figure 1 to 7 of this report.

A second method of establishing a test profile is based on a thermal equivalence analysis. This method of establishing a profile will be used in lieu of the preferred method whenever the preferred method represents severe overtesting of a particular component.

##### **3.3.1.2 Thermal Equivalence Requirements**

In an accident scenario for which it is necessary to use thermal equivalence techniques, the following requirements must be met:

- a. Application of the thermal equivalence approach shall be justified for each piece of equipment, including any judgments regarding the survivability limits of the equipment.
- b. The specific heat transfer modeling of the equipment shall be described and the selection of the critical surface or surfaces shall be justified as limiting with respect to both time and location. The test results will be used to demonstrate the conservatism of the heat transfer modeling.

- c. Multiple temperature measurements of the critical surface(s) from testing shall envelop the calculated surface temperature transient(s), including the initial ramp. "Soaking" will not be permitted.
- d. A margin of at least +8 °C (+15 °F) shall be applied between the measured surface temperature and the calculated surface temperature. This margin accounts for the uncertainties associated with design, production tolerances, testing techniques, and the number of units tested. This temperature margin of +8 °C (+15 °F) is in accordance with the guideline of IEEE Std. 323.
- e. Application of the thermal equivalence approach shall be restricted to the limiting superheated steam harsh environment, based on a spectrum of break sizes.

#### **3.3.1.3 Mild Environment**

Equipment located in general plant areas outside containment that is not subjected to a DBA environment will be qualified to the normal and abnormal range of environmental conditions postulated to occur at the equipment location. Equipment that is served by safety-related support systems will be qualified per defined environmental interface requirements, to the limiting environmental conditions that are postulated for that location.

Specific environmental conditions, as described in Table 3 of this report, will be used as appropriate for environmental qualification of the equipment in mild environments.

#### **3.3.2 Radiation**

##### **3.3.2.1 Harsh and Mild Environments**

Equipment will be qualified for the types and levels of radiation associated with normal operation plus the radiation associated with the most severe DBA. These levels are defined in Table 3 of this report. If more than one type of radiation is significant, each type may be applied separately.

Equipment that is exposed to radiation greater than  $10^2$  Gy (greater than 10 Gy for electronic components such as semiconductors or electronic components containing organic material) will be irradiated to its anticipated total integrated dose (TID) prior to type testing unless it is determined by analysis supported by partial type test data, that radiation does not negatively impact the equipment's ability to perform its required function. Where analysis supported by partial type test data cannot demonstrate proper operation at the required radiation levels, type testing will be performed

Where the application of the accident dose is planned during DBA testing, it need not be included during the aging process.

Equipment will be qualified to the specific radiation environments defined in Table 3 of this report, as required.

### **3.3.2.2      Gamma**

Cobalt-60 is considered an acceptable gamma radiation source. Other sources may be found acceptable, and will be justified. Equipment will be tested to specific gamma radiation levels of the reactor containment building defined in Table 3 of this report.

### **3.3.2.3      Beta**

Equipment exposed to beta radiation will be identified and an analysis will be performed to determine if the operability of the equipment is affected by beta radiation ionization and heating effects. Qualification will be performed by test unless analysis demonstrates that the safety function will not be degraded by beta exposure. Equipment will be tested and/or analyzed to the beta radiation levels of the reactor containment building defined in Table 3 of this report. Where testing is recommended, a gamma equivalent radiation source will be used.

### **3.3.2.4      Paints/Radiation Effects**

An analysis will be performed addressing paint exposure to beta and gamma radiation, if required. Qualification of painted equipment will be performed by test, if analysis indicates that the safety function of the equipment could be impaired by paint failure due to radiation.

### **3.3.3          Vibration**

Vibration may be externally or self-induced. Safety-related piping systems (including components) are designed and observed under startup or initial service conditions to ensure that external or self-induced vibration of piping systems is in accordance with The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III. Vibration effects of components (e.g., Class 1E pump motors) are addressed by periodic measurement of vibration during inservice inspection tests of pumps in accordance with ASME Code, Section XI. For pump motors, acceptance vibration levels defined in the Hydraulic Institute Standards provide the maximum vibration levels acceptable to ensure continued qualified motor performance.

Where significant levels of continuous vibration are expected to exist during service, the effects of such vibration, either externally or self-induced, will be evaluated via surveillance, preventive maintenance, analysis, partial type testing, or any combination of the above.

### **3.3.4          Pressure**

Safety-related equipment in the APR1400 is not normally exposed to high-pressure environments. However, after/during a postulated accident, such as the LOCA or MSLB, components located in the reactor containment building may be exposed to significant external pressure from a combined steam-air mixture. Equipment will be environmentally tested to these conditions and its performance will be demonstrated during and after the test.

Refer to the containment DBA pressure profile, provided in Figure 1 of this report.

### **3.3.5 Humidity**

Safety-related equipment in APR1400 is not normally exposed to 100 percent relative humidity (RH). However, during and after a postulated accident, such as a LOCA or MSLB, components located in the reactor containment building may be exposed to 100 percent RH resulting from condensing steam. This equipment will be environmentally tested to short-term high humidity levels and its performance will be demonstrated during and after the test.

### **3.3.6 Chemical Spray**

Safety-related equipment in the APR1400 is not normally exposed to chemical spray environments. However, during and after a postulated accident, such as a LOCA or MSLB, components located in the reactor containment building may be exposed to a chemical spray by actuation of the containment spray system. Equipment will be environmentally tested to conditions at least as severe as these conditions and its performance will be demonstrated during and after the test. A single failure analysis of the spray system will be performed, as described in Subsection 5.2.2, to determine the most severe spray composition. Corrosion effects due to long-term exposure will be addressed, as appropriate.

Where qualification for chemical spray environment is required, the simulated spray will be initiated at the rate and duration shown in containment spray conditions table of this report. Typical values of chemical spray composition, concentration, and pH are defined in containment spray condition table of this report.

### **3.3.7 Dust**

Dust requirements will not be applied to indoor equipment, because indoor conditions are prevented by normal dust control in the plant ventilation systems.

Outdoor dust environments will be considered when establishing service conditions and qualification requirements. The potential effects of dust exposure will be evaluated relative to effects upon equipment safety function performance. Where dust could have a degrading effect on equipment safety function performance, it will be addressed in the qualification program through the upgrading of equipment interface requirements. The following factors will be considered as appropriate when evaluating the effects of outdoor dust.

- a. Interface requirements and limits for the environmental control systems
- b. Equipment filtering capabilities
- c. Dust density, composition, and accumulation rate
- d. Equipment using high voltages or performing electromechanical functions

### **3.3.8 Submergence**

Equipment locations and operability requirements will be reviewed to establish whether or not specific equipment could be subject to submergence during its required operating time. Flood levels both inside and outside containment will be reviewed and potential impacts on equipment qualification appropriately addressed. Where operability during submergence is required, qualification will be demonstrated by type test and/or analysis supported by partial type test data. See Subsection 5.2.1 for additional discussion.

If simulation of hydrostatic pressure is required for submergence testing, it will include the maximum vapor pressure in that environment plus margin and the pressure due to its level of submergence. The duration of the test will be as specified in equipment-specific qualification test procedures.

### **3.3.9 Power Supply Voltage and Frequency Variations**

Power supply voltage and frequency variations are addressed in several areas throughout the equipment design and verification process. During the design process, interface requirements dictate the acceptable range of power supply variation. Equipment specifications incorporate these interface requirements into the design to ensure acceptable operation within the defined ranges of power supply voltage and frequency variations. Upon equipment fabrication and completion, design verification tests are performed to demonstrate design adequacy. Class 1E pump motors are designed and qualified to operate successfully under normal operating condition at rated load with a variation in the voltage or frequency up to the following typical values:

- a.  $\pm 10$  percent of rated voltage with rated frequency
- b.  $\pm 5$  percent of rated frequency with rated voltage
- c. A combined variation in voltage and frequency of  $\pm 10$  percent of the rated values, provided the frequency variation does not exceed  $\pm 5$  percent of rated frequency

### **3.3.10 Other Environmental Effects**

- a. Heat rise due to  $I^2R$
- b. Heat rise produced by conduction
- c. Contact of component with process fluids

## **4 EQUIPMENT QUALIFICATION REQUIREMENTS**

Qualification requirements for safety-related equipment in the scope of supply are contained in the APR1400 procurement specifications. These requirements include equipment-specific DBAs, location, normal and accident environments, and operating times required under accident environments.

### **4.1 Location**

Location determines the harsh or mild environment for the equipment. Equipment located in the containment building may be exposed to a normal, moderate-temperature, and moderate-radiation environment as well as a high-temperature, high-pressure, high-radiation, high-humidity, and chemical spray accident environment, including a possible seismic event. Most equipment located outside containment would only be subjected to a possible seismic event or a limited-temperature/humidity excursion.

If it is determined that a particular piece of equipment is located in an area that exposes it to a defined environmental condition (e.g., high-energy line break [HELB], flooding, or radiation due to recirculation fluids), then these conditions will be incorporated into the qualification program.

### **4.2 Environment**

The environment to which equipment is exposed is contingent on its location as described above, as well as on the type of accident. For example, a LOCA would expose equipment to a different accident environment in the containment building than an MSLB or a seismic event. The qualification requirements will impose the worst-case environment for each component, as applicable.

### **4.3 Design Basis Accidents**

DBAs are established for each piece of equipment based on the requirements of the safety analysis. To demonstrate that the equipment is qualified to function during and/or after a DBA, it will be qualified to a simulated test environment that exceeds, with appropriate margin, the defined environmental condition associated with that accident.

### **4.4 Operating Requirements**

Operating requirements for specific equipment are established by the safety analysis of each accident. Some equipment may be required to function during and after the accident and other equipment may only be required to maintain structural integrity to avoid affecting the operation of safety equipment.

## **5 METHODS OF QUALIFICATION**

This section describes type tests, analysis, and other methods of qualification consistent with the requirements of NUREG-0588. The analysis used to establish the environmental conditions for DBAs are described. The methodology used to perform an aging analysis is also described.

The qualification methods defined in IEEE Std. 323 are used, as follows:

- a. Type testing
- b. Operating experience
- c. Analysis
- d. Combined methods

(Any combination of type testing, operating experience, and analysis)

### **5.1 Type Testing**

The goal of type testing is to demonstrate that the equipment performance meets or exceeds the requirements of equipment performance specifications under the normal, abnormal, and accident conditions specified in the APR1400 equipment procurement specifications.

Type testing is the preferred method and will be employed to the maximum extent practical. Where operating experience or analysis is used, partial type testing will be used to support assumptions made and conclusions reached.

#### **5.1.1 Equipment Procurement Specification**

Safety-related equipment specifications include a description of the equipment, the safety-related performance characteristics, design environmental conditions and, where appropriate, the effect of changes in environmental conditions upon safety-related performance characteristics. Safety-related performance characteristics will be specified with nominal, maximum, and minimum values, where applicable. Design environmental conditions are specified with normal, DBA, and post-DBA ranges or conditions, where applicable. Miscellaneous data, such as significant sequences, rate of change, and combinations of environmental conditions; operating, energy and environmental cycles; qualified life; and unusual environmental conditions are specified as required.

The environmental qualification checklists that are completed for each piece of equipment undergoing qualification will address the safety-related equipment qualification and environmental parameters. The specific equipment documentation provides the customer-specific installation requirements and the manner and frequency of maintenance requirements to maintain qualification.

#### **5.1.2 Type Test Methods**

The type test demonstrates that the equipment performance characteristics meet or exceed its specified safety-related performance requirements. The type test will consist of a planned sequence of test conditions that meet or exceed the expected or specified service conditions, including margin, per IEEE Std. 323, and will take into account both normal and accident service conditions.

Prior to performing the type test, a written qualification test plan, aging analysis report, age conditioning report, and qualification test procedures are prepared in accordance with IEEE Std. 323 and NUREG-0588.

The safety-related equipment is mounted in a manner and position that simulate its in-plant installation.

The safety-related performance characteristics of the equipment are determined at the nominal controlled environmental and energy supply operating conditions. Equipment is operated at rated load conditions over the range of its input and output parameters or other safety functions.

The safety-related performance characteristics of the equipment are determined for the significant portions of the design range of each of the significant environmental parameters or each significant combination thereof.

The test is monitored using equipment that provides sufficient resolution for detecting meaningful changes in the measured variables. The test equipment is calibrated against auditable calibration standards and will have documentation to support such calibration. The monitoring of performance characteristics and environmental parameters is of sufficient frequency to provide an assured basis for evaluation of the safety-related performance characteristics of the equipment.

Performance characteristics will be monitored and recorded (as appropriate) before, during, and after type testing.

Operability status of the equipment will be monitored and recorded (as appropriate) continuously during testing. For long-term testing (longer than 1 day), monitoring at discrete intervals is performed with justification provided.

### **5.1.3 Margin**

The purpose of margin in qualification testing is to account for reasonable uncertainties while demonstrating satisfactory performance.

The qualification type testing includes provisions to verify that margin exists. In defining the type test, increasing levels of testing, number of test cycles, or test duration are considered as methods of providing reasonable assurance that adequate margin exists.

Margins provided in Section 6.3.1.6 of IEEE Std. 323 will be used as a guide. These margins will be applied in addition to any conservatism applied during derivation of local environmental conditions unless the conservatism can be quantified and shown to contain appropriate margins.

Equipment-specific qualification test procedures will define all margins and will utilize the environmental parameters of Table 3 and profiles of Figure 1 to Figure 7 of this report as service conditions.

Typical margins that are applied, as appropriate, to service conditions for type testing are as follows:

- a. Peak temperature: +8 for °C, +15 for °F (Notes 2, 3 and 4)
- b. Peak pressure: +10 percent of gauge pressure but not more than 10 psi (Notes 2 and 3)
- c. Radiation: +10 percent of accident dose (Note 5)
- d. Voltage: ±10 percent of rated value unless otherwise specified (Note 7)

- e. Frequency:  $\pm 5$  percent of rated value unless otherwise specified (Note 7)
- f. Time: +10 percent of the period of time the equipment is required to be operational following the DBA (Note 6)
- g. Vibration: +10 percent added to the acceleration of the response spectrum at the mounting point of the equipment
- h. Normal Service Condition (Note 1)

#### Notes

- 1) To be applied to equipment located in general plant areas outside containment where it is not subjected to a DBA.
- 2) To be applied only to DBA and for a minimum of 4 days following the DBA.
- 3) Margin need not be applied if double peak is used.
- 4) Under saturated steam conditions, margin on temperature shall be such that test pressure will not exceed the saturated steam pressure corresponding to peak temperature by more than 10 psi.
- 5) Additional 10 percent margin is not required if the radiation calculations are done per methods outlined in NUREG-0588, Rev. 1 or if calculated values are quantifiable margins.
- 6) See Subsections 5.1.3.1 and 5.1.3.2 of this report for detailed information.
- 7) Negative factors shall be applied if, by lowering the value of the service conditions, the severity of the test is increased.
- 8) If margins are not adequate, the report may be acceptable if justification can be made.
- 9) Other margins for unique items must be applied as called for in the applicable IEEE Standard.

#### **5.1.3.1 Time Margin**

1-hour test margin is normally included in the minimum test time requirement for the following two cases:

- a. Where equipment needs to be operational to perform its safety function for a period of time less than 1 hour (i.e., within seconds or minutes), and, once its function is complete, subsequent failures are shown not to be detrimental to plant safety.
- b. Where equipment is not required to function during a DBA but must not fail within a short period of time into the accident, and subsequent failures are also shown not to be detrimental to plant safety.

Time margins of less than 1 hour are typically included in the minimum required test time for equipment whose operability time is seconds or minutes and when severe overtesting may result by applying the 1-hour time margin.

The minimum required test time is the sum of the maximum operability time and the time margin. The maximum operability time comprises the time that the specific trip function is required for the full spectrum

of break sizes that establish the particular trip function needed and includes an additional quantity of time that accounts for calculational uncertainties. The maximum operability time is determined as follows.

Maximum operability times are obtained as a function of break area by evaluating each of the DBAs (e.g., steam line break and feedwater line break) for a full spectrum of break area. To provide reasonable assurance that these times are bounding, the initial conditions and trip setpoints that are used in these evaluations are chosen to maximize the time the equipment would be needed. For example, minimum initial containment pressure is coupled with the upper limit on the high containment pressure trip setpoint and maximum initial steam generator pressure is coupled with the lower limit on the low steam generator pressure trip setpoint. Protection system trips whose setpoints might not be reached for certain plant operating conditions will not be credited with limiting the bounding time to trip. Thus, for each DBA, this process yields a bounding time to trip as a function of break area for use in the qualification of protection system trips.

Margins are incorporated by adding a percentage increment to the bounding time to trip versus break area using the method identified in Section 6.3.1.6 of IEEE Std. 323.

#### **5.1.3.2 Unusual Time Margin**

In an accident for which it is necessary to use time margin evaluation techniques, the following requirements shall be met.

- a. Application of time margins less than 1 hour will be justified for each piece of equipment, including any judgments regarding the survivability limits of the equipment.
- b. The maximum operability time will be justified with consideration for a spectrum of breaks and the potential need for the equipment later in an accident or during recovery operations.
- c. Demonstration that failure of the equipment after performance of its safety function will neither mislead the operator to take an improper action nor be detrimental to plant safety.
- d. The margin applied to the minimum operability time, when combined with the other test margins, will account for the uncertainties associated with the equipment design, production tolerances, and test equipment inaccuracies.

The minimum time margin is determined by multiplying the maximum operability time by a time margin factor. This factor is determined by considering the margins applied to all other test parameters, along with equipment manufacturing tolerances and test sample variations. The magnitude of the factor is modified by the amount of detailed empirical information available associated with manufacturing tolerances, test sample variation, and excess margin available from other parameters.

A quantitative test profile margin comparison may demonstrate equipment qualification by addressing an excessive margin requirement (e.g., temperature or pressure) as compared to an inadequate time margin requirement.

#### 5.1.4 Test Sequence

Type tests are performed on the equipment in a specified sequence that shall be justified as the most severe for the equipment being tested. The same test samples will be exposed to the full testing sequence. For most equipment and applications, the following constitutes the most severe sequence:

- a. Inspection is performed to provide reasonable assurance that a test item has not been damaged due to handling since manufacture and to determine basic dimensions.
- b. The equipment is then operated under normal conditions to provide a functional database for comparison with performance under more highly stressed conditions. Certain measurements such as rate of change with time of a parameter may be made at this time.
- c. The equipment is operated at the extremes of performance characteristics given the equipment specifications excluding DBA and post-DBA conditions unless these data are available from other tests on identical or essentially similar equipment.
- d. Accelerated age conditioning is performed next (if required). Key measurements are made following the aging process and compared with the database of information gathered prior to aging. This comparison is performed to determine if the equipment is performing satisfactorily prior to subsequent testing and to verify the existence of potential age-related failure mechanisms. Section 5.4 provides additional discussion regarding the methods and procedures used in an accelerated age conditioning program.
- e. Normal and abnormal environmental tests such as radiation exposure, thermal aging, electromechanical cycling, and vibration aging are performed next.
- f. The equipment is subjected to simulated seismic vibration. Where it is determined that significant levels of external or internally induced vibration exist, qualification will be demonstrated based upon the methodology presented in Subsection 3.3.3.
- g. The equipment is next operated while exposed to the simulated DBA test (radiation may be excluded if incorporated during the normal aging test above). Those safety functions that must be performed during the simulated DBA are continuously monitored.
- h. The equipment is then operated while exposed to the simulated post-accident conditions (following exposure to accident conditions). Those safety functions that must be performed during this simulation are monitored. Submergence testing, if required, will be performed following DBA testing per the methodology of Subsection 3.3.8.

The temperature to which equipment is qualified when exposed to the simulated accident environment will be monitored and verified by thermocouple readings located as close as practical to the surface of the components being qualified.

Caustic spray will be incorporated during the simulated accident testing at the maximum pressure and the limiting temperature condition that would occur when the onsite spray systems actuate.

Equipment is inspected or disassembled to the extent necessary for the determination of the status and condition of the equipment, and the findings recorded.

Depending on equipment categorization (see Section 6.2) one of the following type test sequences will be used.

Equipment in category A and B:

- a. Pre-test inspection
- b. Performance testing (baseline testing)
- c. Accelerated aging (thermal, operational cycles, radiation, vibration)
- d. Performance testing
- e. Seismic testing
- f. Performance testing
- g. DBA testing
- h. Performance testing
- i. Post-test inspection

Notes

- 1) Radiation aging is to precede thermal aging if synergistic effects are not identified.
- 2) Radiation aging need not be done if it is shown that the required radiation level would not affect the equipment safety-related function.
- 3) Vibration aging may be included as part of seismic testing.

The following tests and monitoring are performed, as applicable, in addition to the sequence specified above.

- 1) Performance testing and/or monitoring of operability status during (e) and (g), to the extent practical
- 2) Submergence test following (g), if required

Equipment in category C and D:

- a. Pre-test inspection
- b. Performance testing (baseline testing)
- c. Aging
- d. Performance testing
- e. Normal and abnormal environmental testing
- f. Performance testing

- g. Seismic testing
- h. Performance testing
- i. Post-test inspection

**Notes:**

The following tests and monitoring are performed, as applicable, in addition to the sequence specified above.

- 1) Performance testing and/or monitoring of operability status during (e) and (g), to the extent practicable

The test sequence for Class 1E pump motors will utilize a similar test sequence as outlined above. The aging analysis and accelerated age conditioning procedures will use the guidelines of IEEE Std. 334 (Reference 9.9) as appropriate. All thermal and radiation age conditioning will be performed on motorettes or formettes made of the same insulating material as the actual full-scale motor that is being qualified.

**5.1.5 Type Test Report**

Type test data used to verify the qualification of the equipment will be organized in an auditable form. The type test report will be consistent with the requirements of IEEE Std. 323 and NUREG-0588.

Data for safety-related equipment will be compiled in reports prepared at the completion of the qualification program, and will be available for audit as described in Section 6.

**5.1.6 Environmental Test Profiles**

The containment DBA environmental test profile for equipment that is required to perform a safety-related function during or after a DBA is shown in Figure 1 of this report. For environmental qualification test purposes, margin including additional peak transients, as required by Section 6.3.1.2 and 6.3.1.6 of IEEE Std. 323, shall be applied to the DBA temperature and pressure profiles. Equipment will be exercised or monitored for its safety function.

**5.1.7 Acceptance Criteria**

Testing, or testing and analysis, will demonstrate that the equipment is qualified to perform its required safety function for all required service conditions with margin at the end of its qualified life.

Acceptance criteria are established prior to the start of type testing and included as part of the qualification test procedure document. The following is a list of typical acceptance criteria:

- a. Test environments are at least as severe as, and representative of, the required environmental profile.
- b. Operation of the equipment under normal environmental conditions to the extremes of performance and electrical characteristics is within the limits of accuracy required in the equipment specifications.

- c. Equipment has been aged, as appropriate, and has been exposed to the expected end-of-life radiation dose if applicable prior to DBA testing.
- d. Equipment has been subjected to seismic DBA testing.
- e. Operation of the equipment in its safety-related functions, while exposed to the DBA environment, is within the limits of accuracy required in the equipment specifications.
- f. Operation of the equipment in its safety-related functions, while exposed to the post-DBA environment, if applicable, is within the limits of accuracy required in the equipment specifications.
- g. Post-test examination of the equipment reveals no conditions that might have interfered with the ability of the equipment to perform its safety-related functions.
- h. Instrument accuracy requirements are established from the assumptions used in the particular safety analysis for which the equipment performs its safety function. These requirements are reflected in the equipment specifications, and where applicable, in the safety system setpoints. The most conservative limits on time and accuracy requirements would be used for qualification. However, it may be necessary to qualify several instruments to various levels based on the particular applications.

Equipment that is required to function for post-accident monitoring would be tested to the profile shown in Figure 1 of this report, since long-term cooling extends for at least the time period of the profile.

Documentation that the acceptance criteria were properly defined and successfully met will be recorded in the equipment-specific qualification documentation package and highlighted in the qualification data summary form.

#### **5.1.8 Test Anomalies**

In the event that anomalies are observed during qualification testing that violate defined acceptance criteria, the following actions will be taken, as appropriate, prior to further qualification testing to provide reasonable assurance of complete and satisfactory resolution:

- a. Verify operability status of monitoring and data acquisition equipment involved
- b. Re-evaluate acceptance criteria requirements, if appropriate
- c. Establish the type of failure (random or common mode)
- d. Formal notification submittal to A/E describing and evaluating the failure
- e. A/E's review and approval of recommended corrective action for continuing qualification

##### **5.1.8.1 Random Failures**

If it is determined that the failure was random, appropriate corrective action will be taken to eliminate the problem.

Replacement parts may be used to replace those that have failed. All replacement parts used will have undergone the same accelerated age conditioning and qualification testing as did the original failed part prior to continuation of the qualification program. All corrective actions taken will be documented and fully justified.

#### **5.1.8.2 Common-Mode Failures**

If it is determined that the failure was common mode, appropriate corrective action will be taken to eliminate the problem. Possible corrective action may include equipment/component redesign, part replacement, equipment relocation, additional analysis, or any combination thereof. Part replacement or redesign will be in accordance with the pre-conditioning requirements of random failures. Upon discovery of such a failure, the A/E will be notified prior to taking corrective action. All corrective actions taken will be documented and fully justified.

### **5.2 Analysis**

As stated in Section 5.1, type testing is the preferred method of qualification and will be employed to the extent practical. If analysis is chosen as the primary method for qualification, partial type test data will be provided to support the analytical assumptions and conclusions reached.

The analytical methods used for calculating and establishing pressure and temperature envelopes and radiation levels to which equipment is to be qualified will be compliant with the methods defined in NUREG-0588.

#### **5.2.1 Analyses Based on Partial Type Test Data and Equipment-Specific Qualification Requirements**

If analysis is chosen as the primary method for qualification, partial type test data will be provided to adequately demonstrate functional operability. An example demonstrating this approach is as follows:

If analysis is being used to demonstrate submergence capabilities for a particular piece of equipment, type test data on a similar unit may be employed as evidence used to demonstrate qualification for the equipment in question. A structural and functional similarity evaluation between the equipment being qualified and the similar unit will be performed to adequately demonstrate the applicability of the partial type test data.

Equipment-specific analyses may be used to justify elimination of submergence qualification if it can be shown that:

- a. The equipment safety function is completed prior to submergence.
- b. Adequate operability time margin is incorporated.
- c. Subsequent failure will not degrade other equipment.

Where type testing is the preferred method of qualification, analysis may be used to support and justify the qualification test sequence and/or test makeup. An example demonstrating this approach is as follows:

Low-level radiation qualification testing (to levels below 100 Gy or to level below 10 Gy for electronic components such as semiconductors or electronic components containing organic material) may be

deleted from the qualification type test sequence if it can be demonstrated via a radiation susceptibility analysis that low-level radiation does not impact the equipment's ability to perform its required safety function.

### **5.2.2 Failure Modes and Effects Analysis**

A single failure analysis on the containment spray system per Section 1.3 of NUREG-0588 will be performed to determine the resulting most severe chemical composition of the caustic spray. The results of this analysis will be incorporated into the qualification program. Where qualification has been completed using chemical spray composition parameters less severe than as those required by NUREG-0588, an analysis may be performed, in lieu of retesting, to demonstrate that the new, more severe chemical composition has no adverse impact on the equipment's ability to perform its safety function. Justification for analysis in lieu of retesting will be provided.

Some components of safety-related equipment do not perform a safety-related function but, due to a particular hardware configuration, must be classified as safety related.

For this type of component, an FMEA will be performed that demonstrates by analysis that failure of that component, for a defined set of worst-case failure modes, does not have a degrading impact on other interfacing safety-related components.

An evaluation will also be performed defining whether or not test circuitry should be classified as safety-related components. Test circuitry will be classified as safety-related if it could fail in a manner that results in perturbations exceeding defined acceptance criteria.

## **5.3 Operating Experience**

Performance data from equipment of similar design that has successfully operated under known service conditions may be used in qualifying other equipment to equal or less severe conditions. Applicability of these data depends on the adequacy of documentation establishing past service conditions, equipment performance, and similarity to the equipment to be qualified and upon which operating experience exists. A demonstration of required operability during applicable DBA(s) shall be included in equipment qualification programs based on operating experience, when DBA qualification is required.

## **5.4 Aging**

As stated in Subsection 3.2.1, the aging portion of the qualification program is defined based upon whether or not equipment is located in a harsh or a mild environment. Equipment located in a harsh environment will undergo an aging analysis and an accelerated age conditioning program. Equipment located in a mild environment will undergo an aging analysis that focuses on the identification of known aging mechanisms that significantly increase the equipment susceptibility to its DBA (seismic only for mild environments). If no known significant aging mechanisms are found, a surveillance/preventive maintenance (S/PM) program will be developed to monitor for degradation trends that suggest increasing seismic susceptibility. If an aging mechanism is found that is known to significantly increase the equipment's seismic susceptibility with time, then that mechanism will be analyzed to determine whether an accelerated aging program or a periodic part replacement program is appropriate.

The following subsections describe in detail the methods and documentation requirements associated with the development of an aging analysis and the resulting age conditioning program, periodic replacement program and/or the S/PM, as appropriate, to demonstrate qualification of the respective equipment or component.

#### **5.4.1 Aging Analysis and Conditioning**

For equipment located in a harsh environment, the following discussion defines the methodology for the development of an aging analysis and an accelerated age conditioning program.

This section may also be applicable for equipment and/or components located in mild environments where it has been determined that known significant aging mechanisms exist and where accelerated age conditioning is appropriate.

The following is a listing of the major efforts that are required in the performance of an aging analysis:

- a. Preparation of a complete bill of material consisting of all components, subassemblies, or assemblies (as required) of the equipment
- b. Identification of those components performing a safety-related function
- c. Analysis of those components identified in item b above for age-related failure modes and mechanisms
- d. Development of an accelerated age conditioning procedure that, when implemented, will result in the equipment being aged to a projected end-of-life condition

Thermal, radiation, low-level vibration, cyclic operation, electromechanical, and synergistic aging effects will be considered.

##### Component/Failure Matrix

For each component identified as performing a safety-related function, corresponding information, as identified in Subsection 3.2.1, will be defined in an aging analysis.

An evaluation of this information will be performed to define dominant age-related failure modes and mechanisms. An accelerated age conditioning procedure or a periodic part replacement program will be prepared based on this evaluation.

##### Qualified Life Estimation

A goal of the qualification program is to demonstrate that the equipment has a designated qualified life. If a designated qualified life is not obtainable due to material or schedule constraints, then the age analysis will establish various age conditioning procedures that define the efforts and parameters necessary to age the equipment. The selection of the lesser qualified lifetimes is partially a function of the analysis and the physical properties of the equipment. A review will next be made to select one procedure to be implemented.

If qualification is to be based on periodic replacement of a life-limiting component(s), that component(s) will specifically be identified and a periodic replacement program defined as part of the aging analysis, and included in the appropriate interface criteria.

##### Thermal Aging

Arrhenius methodology will be used to address accelerated thermal aging, where appropriate; however, if other methods are used, justification will be provided.

### Electromechanical Cyclic Aging

Electromechanical cyclic aging will be applied prior to qualification testing for the expected number of cycles plus margin under rated load.

The "cycle" and number of cycles plus margin will be defined and justified.

The cycle rate will be defined and will not result in excessive component heating beyond the manufacturer's suggested limits.

Cycling will be performed while under electrical load if so required by the aging analysis. Both current and voltage loading parameters will be specified.

The method for cycling components (e.g., electrical or mechanical actuation) will be defined.

An explicit definition of the term "cycle," as related to electromechanical cyclic operation, will be provided.

Components undergoing cycling will be mounted in a manner that simulates or is conservative with respect to actual inservice mounting.

Electromechanical components being tested will not be cleaned, calibrated, or adjusted during or after the cycling unless this action is part of the component's normal maintenance procedure and schedule. Normal maintenance procedures and schedules will be identified and included as part of the aging analysis and included in the respective interface criteria.

Acceptance criteria will be defined to establish the bases for acceptable operation for the specified number of cycles and loading.

Test measurement procedures will be defined. Test measurements will be taken and documented before, during, and after cyclic aging.

### Power On and Off Cycling

The number of power on and off cycles anticipated to occur plus margin will be defined and applied, where significant. Power on and off cycling will be considered significant when the number of cycles is large or where there are significant stresses associated with power on and off cycling. The number of power on and off cycles to be used during age conditioning will be justified.

### Radiation Aging

Radiation information and profiles used as input data to the radiation aging analysis will be in accordance with the typical radiation types, levels, and rates and in accordance with equipment-specific requirements.

All component radiation susceptibility analyses will be supported by test data.

### Electrical Energization

The effects of electrical energization during the accelerated age conditioning process will be addressed as part of the aging analysis. Electrical energization will only be applied if this analysis indicates that inclusion of this effect, during the accelerated aging process, will have a significant effect on material degradation.

### Synergistic Effects

Major industry-recognized age-related synergistic effects will be addressed in the aging analysis.

### Aging Sequence

The determination and justification of the accelerated age conditioning sequence will be defined in the aging analysis.

### Aging Rate

The basis for all thermal, radiation, electromechanical, and operational accelerated aging rates will be defined and justified in the aging analysis.

### Equipment Storage Requirements

Equipment qualification-related storage requirements will be identified within the qualification documentation. These requirements will be based on known significant storage-related aging mechanisms.

### Documentation

The results of the aging analysis will be documented and summarized in an aging analysis report. This report will contain all appropriate information used as listed in Section 6.

### Accelerated Age Conditioning

The results of the accelerated age conditioning will be presented in an age conditioning report. The accelerated age conditioning report will identify and analyze all equipment failures occurring during the accelerated age conditioning process to determine whether the failure was random or common mode.

## **5.4.2 Periodic Replacement**

As described in Section 5.4, equipment located in mild environments will either undergo an accelerated age conditioning program, periodic part replacement program, surveillance/preventive maintenance program, or any combination thereof. For such equipment, the conclusions of the aging analysis will state the recommended approach.

The aging analysis associated with mild environments will be based on the same type of input data and methodology used for harsh environment equipment. It is the correlation of these data with known significant aging mechanisms and with in-plant equipment accessibility that may result in recommendations stressing periodic part replacement. Where periodic replacement is recommended for specific components, these components will be clearly identified in the age analysis and a replacement program defined and justified.

### **5.4.3 Surveillance/Preventative Maintenance**

For mild environment equipment, if it is determined that no known aging mechanisms exist that significantly increase the equipment's susceptibility to its DBA (seismic only for mild equipment), then an S/PM program will be developed.

The purpose of the S/PM program, which includes scheduled periodic surveillance testing under normal service conditions, is to monitor for degradation trends that suggest increasing susceptibility to a possible common-mode failure due to a seismic event. The basis for the S/PM program is that for equipment located in environments that are unchanged during DBAs, having adequate capability for periodic testing and maintenance, and where no known significant age-related failure mechanisms exist, then advanced age conditioning prior to qualification type testing may not be required if justified. For equipment located in harsh environments, an S/PM program may be established, as appropriate, to provide actual inservice trending data to support the qualified life established during qualification type testing.

This program will include guidelines and schedules for calibration and preventative maintenance. The requirements for the calibration and preventative maintenance will be based upon the plant's normal inservice inspection tests and maintenance program.

The preventative maintenance will include, as appropriate:

- a. Visual inspection
- b. Mechanical inspection
- c. Electrical testing
- d. Periodic tests
- e. Failure trending
- f. Incipient failure detection

It is anticipated that most of these tests are already included in Technical Specifications requirements.

Data maintenance and storage in a central file, and evaluation activities such as the S/PM program, are the responsibility of the utility.

Because of its location, access to equipment in the containment building may be limited for surveillance/preventive maintenance or periodic calibration.

### **5.5 Conservatism of Qualification Parameters**

The levels of environmental qualification required are specified in Table 3 of this report. Accident conditions of these requirements are established based on the methods recommended by NRC RG 1.89 and NUREG-0588. Margins utilized per Section 6.3.1.6 of IEEE Std 323, Section 3 of NUREG-0588, and as described in Subsection 5.1.3 will be documented in the appropriate qualification document. Comparison of the qualification requirements to the environmental test parameters will demonstrate conservatism of the parameters. Margin identification and verification will be performed.

## 5.6 Qualification of Safety-Related Active Mechanical Equipment

Environmental qualification of mechanical equipment conforms with GDCs 1 and 4, and 10 CFR Part 50, Appendix B, Criteria III and XVII which requires:

- a) Components shall be designed to be compatible with the postulated environmental conditions including those associated with LOCAs.
- b) Qualification records shall be maintained and shall include the results of tests and material analyses.
- c) Design control measures shall be established for verifying the adequacy of design.

Mechanical equipment is principally divided into active and non-active (passive) mechanical equipment.

Environmental qualification of mechanical equipment is focused on the materials that are sensitive to environmental effects (e.g., seals, gaskets, lubricants, fluids for hydraulic systems, and diaphragms) and is limited to active mechanical equipment located in harsh environment which has mechanical moving parts to perform its safety-related function. The qualification effort requires the evaluation of all safety-related nonmetallic parts against the applicable environmental conditions.

Non-active mechanical equipment (passive mechanical equipment), whose safety function is structural integrity is designed and qualified for the appropriate temperature and pressure environment in accordance with the applicable code to which it is constructed such as ASME and Pressure Vessel Codes.

The followings shall be confirmed in implementing the environmental qualification of active mechanical equipment:

- a) To identify safety-related mechanical equipment located in harsh environment areas, including its required operating time.
- b) To identify nonmetallic subcomponents of such equipment.
- c) To identify the environmental conditions and process parameters for which this equipment must be qualified.
- d) To identify nonmetallic material capabilities.
- e) To evaluate environmental effects.

For this equipment, the service requirements and the environmental requirements are defined in the APR1400 design specification for this equipment.

The safety-related active mechanical equipment that contains non-metallic parts is also environmentally qualified in accordance with ASME Standard QME-1-2007 "Qualification of Active Mechanical Equipment." QR-B, "Guide for Qualification of Non-Metallic Parts." (Reference 9.31), as endorsed by RG 1.100, Revision 3, and is listed in Table 2 as specified by RG 1.206, Section C.I.3.11.6.

## **6 DOCUMENTATION**

This section describes qualification documentation. Qualification documentation will verify that the equipment is qualified for its application and meets its specified performance requirements. Equipment-specific documentation is described below.

### **6.1 Equipment-Specific Qualification Documentation**

In order to demonstrate that the equipment qualification program has adequately addressed all pertinent qualification requirements, the following equipment-specific qualification reports will be developed, as appropriate. The documentation will be organized in an auditable form and in accordance with the guidelines set forth in Sections 6.0 and 7.0 of IEEE Std. 323, and in Section 5.0 and Appendix E of NUREG-0588.

#### **6.1.1 Aging Analysis Report**

The aging analysis report, as described in Section 5.4, will contain the following types of information:

- a. Identification of the equipment qualified
- b. Equipment specification
- c. Qualification program
- d. Identification of any scheduled surveillance/maintenance, periodic testing, and any parts replacement required to maintain qualification
- e. The specific safety function(s), postulated failure mode, or the failure effects to be demonstrated by analysis
- f. Description of analytical methods, computer program or mathematical model used, and the method of verification
- g. Assumptions and empirically derived values used, with appropriate justification
- h. Summary of analytically established performance characteristics and their acceptability
- i. Conclusions, including limitations or qualified life or periodic surveillance/maintenance interval determination
- j. Approval signature and date

#### **6.1.2 Qualification Plan**

The qualification plan outlines the necessary testing and documentation activities required to demonstrate qualification. The qualification plan will incorporate the results obtained in the aging analysis and any previous qualification testing into the overall qualification plan. The following information will be included in the plan:

- a. Scope of responsibility

- b. Overview and objective
- c. Equipment description
- d. Test sequence and makeup (overview)
- e. Seismic and environmental test parameters
- f. Acceptance criteria (overview)
- g. Documentation submittal requirements
- h. Approval signature and date

#### **6.1.3 Age Conditioning Report**

The results of the accelerated age conditioning process will be presented in an age conditioning report either as a separate document or as part of the final qualification test report. The purpose of this report is to identify and analyze all equipment failures occurring during the accelerated age conditioning process to determine whether the failure(s) were random or common mode. Approval signature and date will be obtained.

#### **6.1.4 Qualification Test Procedure**

Detailed qualification test procedures and associated acceptance criteria will be defined prior to actual qualification testing. The following types of procedural information will be addressed, as appropriate:

- a. Overview and objective
- b. Equipment description
- c. Detailed test sequence
- d. Monitoring and operability check procedures
- e. Baseline performance test procedures
- f. Environmental and seismic test profile definition and procedures
- g. Margin verification
- h. Detailed test setup schematics and/or description
- i. Required test instrumentation and equipment
- j. Detailed acceptance criteria
- k. Equipment mounting and cable connection schematics and/or description
- l. Approval signature and date

**6.1.5 Qualification Test Report**

Upon completion of qualification testing, an equipment-specific test report will be prepared summarizing the test results, conclusions, and recommendations. The following types of information will be addressed and included, as appropriate:

- a. Identification of the equipment qualified
- b. Equipment specification
- c. Qualification program
- d. Identification of any scheduled surveillance/maintenance, periodic testing, and any parts replacement required to maintain qualification
- e. Identification of safety function(s) to be demonstrated by test data
- f. Test plan
- g. The report of test results shall include:
  - 1) Test objective
  - 2) Detailed description of test sample
  - 3) Description of test setup, instrumentation and calibration data
  - 4) Test procedure
  - 5) Summary of test data, accuracy, and anomalies
  - 6) The result of a qualification program to demonstrate that the equipment remains functional during and following a DBE as applicable.
- h. Summary and conclusions, including limitations and qualified life or periodic surveillance/maintenance interval determination
- i. Approval signature and date

**6.1.6 Operating Experience Data**

- a. Identification of equipment qualified
- b. Equipment specification
- c. Qualification program
- d. Identification of any scheduled surveillance/maintenance, periodic testing, and any parts replacement required to maintain qualification
- e. Identification of the safety function(s) to be demonstrated by operating experience

- f. Specification of the equipment for which operating experience is available
- g. Comparison of specifications and functions of equipment with operating experience and new equipment to be qualified
- h. Summary of operating experience data, including service conditions, maintenance records, and operating history.
- i. Conclusions, including limitations and qualified life or periodic surveillance/maintenance interval determination
- j. Approval signature and date

#### **6.1.7 Equipment for Mild Environment**

- a. Identification of the equipment qualified
- b. Equipment specification
- c. Identification of any scheduled surveillance/maintenance, periodic testing, and any parts replacement required to maintain qualification
- d. Identification of the equipment's safety function(s)
- e. Certificate of compliance that the equipment supplied meets the requirements of the equipment specification with approval signature and date

### **6.2 Equipment Categorization**

Per the requirements of Appendix E of NUREG-0588, the equipment is grouped into one of the following categories based on its functional requirements and location:

| <u>Category</u> | <u>Definition</u>                                                                                                                                                                            |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a.              | Equipment exposed to the harsh environments of DBAs that must function to mitigate or monitor those accidents                                                                                |
| b.              | Equipment exposed to the harsh environments of DBAs that need not function for mitigation of said accidents but must not fail in a manner detrimental to plant safety during those accidents |
| c.              | Equipment exposed to the harsh environments of DBAs that need not function during those accidents and whose failure (in any mode) is deemed not detrimental to plant safety                  |
| d.              | Equipment not exposed to the harsh environments of DBAs                                                                                                                                      |

### **6.3 Qualification Data Summary and Evaluation**

In addition to the information identified in Appendix E of NUREG-0588, the following information will be provided, as required:

- a. Discussion of how equipment qualification review was performed including consideration of quality assurance
- b. How the accident environmental profiles were developed
- c. How safety-related equipment required for accident mitigation and safe shutdown of the plant was identified

#### **6.4 Supporting Documentation**

All supporting raw test data and analyses generated during equipment qualification for the appropriate equipment-specific qualification document will be attached or the location provided.

All other publications (e.g., reports, books, and standards) used to support the qualification program will be appropriately referenced to allow data traceability.

## **7 QUALITY ASSURANCE**

Equipment qualification per this report will be in accordance with the following:

- a. All Supplier and/or test labs directly used by A/E and/or KHNP for performing safety-related qualification services will be formally reviewed for their quality assurance practices. Results of this review will be maintained.
- b. For qualification tests, A/E and/or KHNP quality control surveillance practices will be applied.
- c. A/E standard hardware procurement practices will be applied when procuring test samples.
- d. Test procedures and analyses will be prepared to ensure repeatability of the qualification test program.
- e. Qualification documentation will be reviewed in accordance with standard A/E review practices and quality assurance requirements.

## **8 ADMINISTRATIVE PROCEDURES**

### **8.1 Equipment Specification**

Performance requirements are set forth in equipment specifications that are generally prepared by the A/E. The requirements include nominal maximum and minimum values of performance parameters, and environmental conditions for normal and DBA operation. The applicable standards for qualification are referenced by the specification. The specification is included in the engineering package that is sent to prospective Suppliers for bidding.

### **8.2 Supplier Design and Qualification Program**

After the contract has been awarded, the Supplier submits his design and qualification program to the A/E for approval. The design is reviewed to ensure the equipment is capable of meeting performance and environmental requirements. The qualification program is reviewed for compliance with the requirements of the equipment specification and the referenced standards. In most cases, the qualification program is written by the qualification facility that has been retained by the Supplier.

### **8.3 Qualification Task**

Although the task of qualification is normally performed by the Supplier, the A/E follows the progress of the qualification effort and, in conjunction with the Supplier, interfaces with the qualification facility to provide reasonable assurance that the equipment will be subjected to the proper qualification environment. The Supplier is responsible for ensuring that the electrical and operational performance of the equipment meets the acceptance criteria. For the more complex tests, the A/E and KHNP may have witnesses present during testing.

### **8.4 Qualification Documentation and Submittals**

Throughout the qualification program, various defined documentation products (see Section 6) are generated. The A/E will review and approve all documentation products to provide reasonable assurance of proper program definition and control.

The aging analysis report is prepared first, defining all age conditioning results and procedures and part replacement recommendations, as appropriate. Next, the qualification plan is submitted, outlining the overall program and informing the Supplier and test lab of services to be prepared, if required. In parallel with age conditioning, detailed qualification test procedures and acceptance criteria are developed. After completion of age conditioning and test procedure development, actual qualification testing is performed.

Upon completion of qualification testing, a test report will be prepared and submitted to the A/E for approval. When the report is approved, it is maintained by the A/E as a qualification report that contains sufficient information to allow QA traceability and repeatability. Qualification documentation will be available for audit.

## 9 REFERENCES

All codes and standards shall be the edition in effect as of December 31, 2010 unless identified otherwise.

- 1 NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," Rev. 1, U.S Nuclear Regulatory Commission, November 1980.
- 2 NUREG-0800, Standard Review Plan, Section 3.11, "Environmental Qualification of Mechanical and Electrical Equipment." Rev. 3, U.S Nuclear Regulatory Commission, March 2007.
- 3 10 CFR 50.49, "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants" U.S Nuclear Regulatory Commission.
- 4 IEEE Std 98-2002, "IEEE Standard for the Preparation of Test Procedures for the Thermal Evaluation of Solid Electrical Insulating Materials," Institute of Electrical and Electronics Engineers, 2002.
- 5 IEEE Std 99-2007, "IEEE Recommended Practice for the Preparation of Test Procedures for the Thermal Evaluation of Insulation Systems for Electric Equipment," Institute of Electrical and Electronics Engineers, 2007.
- 6 IEEE Std 101-1987, "IEEE Guide for the Statistical Analysis of Thermal Life Test Data," Institute of Electrical and Electronics Engineers, 1987.
- 7 IEEE Std 317-1983(R2003), "IEEE Standard for Electric Penetration Assemblies in Containment Structures for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 1983.
- 8 IEEE Std 323-2003, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 2003.
- 9 IEEE Std 334-2006, "IEEE Standard for Qualifying Continuous Duty Class 1E Motors for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 1983.
- 10 IEEE Std 344-2004, "IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 2004.
- 11 IEEE Std 382-2006, "IEEE Standard Qualification of Actuators for Power-Operated Valve Assemblies with Safety-Related Functions for Nuclear Power Plants," Institute of Electrical and Electronics Engineers, 2006.
- 12 IEEE Std 383-2003, "IEEE Standard for Qualifying Class 1E Electric Cables and Field Splices for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 2003.

- 13 IEEE Std 420-2001, "IEEE Standard for Design and Qualification of Class 1E Control Boards, Panels, and Racks Used in Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 2001.
- 14 IEEE Std 535-1986 (R1994), "IEEE Standard for Qualification of Class 1E Lead Storage Batteries for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 1986.
- 15 IEEE Std 572-2006, "IEEE Standard for Qualification of Class 1E Connection Assemblies for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 2006.
- 16 IEEE Std 603-2009, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 2009.
- 17 IEEE Std 649-2006, "IEEE Standard for Qualifying Class 1E Motor Control Centers for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 2006.
- 18 IEEE Std 627-2010, "IEEE Standard for Qualification of Equipment used in Nuclear Facilities," Institute of Electrical and Electronics Engineers, 2010.
- 19 IEEE Std 650-2006, "IEEE Standard for Qualification of Class 1E Static Battery Chargers and Inverters for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 2006.
- 20 Regulatory Guide 1.63, "Electric Penetration Assemblies in Containment Structures for Nuclear Power Plants," U.S. Nuclear Regulatory Commission, February 1987.
- 21 Regulatory Guide 1.73, "Qualification Tests of Electric Valve Operators Installed Inside the Containment of Nuclear Power Plants," Rev.1, U.S. Nuclear Regulatory Commission, October 2013.
- 22 Regulatory Guide 1.89, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants," Rev. 1, U.S. Nuclear Regulatory Commission, June 1984
- 23 Regulatory Guide 1.97, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants," Rev. 4, U.S. Nuclear Regulatory Commission, June 2006.
- 24 Regulatory Guide 1.100, "Seismic Qualification of Electrical and Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plants," Rev. 3, U.S. Nuclear Regulatory Commission, September 2009.
- 25 Regulatory Guide 1.156, "Qualification of Connection Assemblies for Nuclear Power Plants," Rev. 1, U.S. Nuclear Regulatory Commission, July 2011.
- 26 Regulatory Guide 1.158, "Qualification of Safety-Related Lead Storage Batteries for Nuclear Power Plants," U.S. Nuclear Regulatory Commission, February 1989.

- 27 Regulatory Guide 1.211, "Qualification of Safety-Related Cables and Field Splices for Nuclear Power Plants," U.S. Nuclear Regulatory Commission, April 2009.
- 28 Bulletin 79-01B "Environmental Qualification of Class1E Equipment," U.S. Nuclear Regulatory Commission, January 1980.
- 29 EPRI NP-1588, "Research Project 890-1, Final Report, "A Review of Equipment Aging Theory and Technology," Electric Power Research Institute, September 1980.
- 30 ASME Boiler and Pressure Vessel Code, The American Society of Mechanical Engineers.
- 31 ASME QME-1-2007 "Qualification of Active Mechanical Equipment Used in Nuclear Power Plants," The American Society of Mechanical Engineers, 2007.

Table 1

**Ventilation Area**

| Area                                                    | Safety-Related | Area Temperature Alarm<br>in Control Room |
|---------------------------------------------------------|----------------|-------------------------------------------|
| Control Room Area                                       |                |                                           |
| 1. Control Room and Adjacent Offices                    | Yes            | Yes                                       |
| 2. Computer Room                                        | No             | Yes                                       |
| Auxiliary Building Clean Area                           |                |                                           |
| 1. Turbine-Driven AFWP Room                             | No             | Yes                                       |
| 2. Motor-Driven AFWP Room                               | Yes            | Yes                                       |
| 3. Essential Chiller and Pump                           | Yes            | Yes                                       |
| Auxiliary Building Controlled Area                      |                |                                           |
| 1. SC Heat Exchanger Room                               | Yes            | Yes                                       |
| 2. SI Pump Room                                         | Yes            | Yes                                       |
| 3. CS Pump Room                                         | Yes            | Yes                                       |
| 4. CS Heat Exchanger Room                               | Yes            | Yes                                       |
| 5. Penetration Room                                     | Yes            | Yes                                       |
| 6. CCW Pump Room                                        | Yes            | Yes                                       |
| Electrical Equipment Room                               |                |                                           |
| 1. Vital Instrument & Equipment                         | Yes            | Yes                                       |
| 2. Class 1E Switchgear Room                             | Yes            | Yes                                       |
| 3. Class 1E Battery Room                                | Yes            | Yes                                       |
| 4. Remote Shutdown Console Room                         | Yes            | Yes                                       |
| Fuel Handling Area                                      |                |                                           |
| 1. Spent Fuel Pool Heat Exchanger Room<br>and Pump Room | Yes            | Yes                                       |
| 2. Emergency ACU Room                                   | Yes            | Yes                                       |
| Emergency Diesel Generator Area                         | Yes            | Yes                                       |
| Containment Building                                    | No             | Yes                                       |

Table 2 (1 of 51)

Equipment Qualification Equipment List

| Tag No.                                  | Equipment Identification                                        | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|------------------------------------------|-----------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| Auxiliary Feedwater System               |                                                                 |                    |          |             |                           |                            |                             |                     |                            |              |         |                |              |
| AFW-PP01A                                | Turbine Driven Aux. Feedwater Pumps                             | ESF                | AB       | 078-A15C    | Continuous                | Harsh                      | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AFW-PP01B                                | Turbine Driven Aux. Feedwater Pumps                             | ESF                | AB       | 078-A15D    | Continuous                | Harsh                      | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AFW-PP02A                                | Motor Driven Aux. Feedwater Pumps                               | ESF                | AB       | 078-A20A    | Continuous                | Harsh                      | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AFW-PP02B                                | Motor Driven Aux. Feedwater Pumps                               | ESF                | AB       | 078-A20B    | Continuous                | Harsh                      | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AFW-V0035                                | Globe Valve and Actuator, AFW Modulating                        | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AFW-V0036                                | Globe Valve and Actuator, AFW Modulating                        | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AFW-V0037                                | Globe Valve and Actuator, AFW Modulating                        | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AFW-V0038                                | Globe Valve and Actuator, AFW Modulating                        | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AFW-V0043                                | Gate Valve and Actuator, AFW Isolation, CIV                     | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AFW-V0044                                | Gate Valve and Actuator, AFW Isolation, CIV                     | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AFW-V0045                                | Gate Valve and Actuator, AFW Isolation, CIV                     | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AFW-V0046                                | Gate Valve and Actuator, AFW Isolation, CIV                     | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| Auxiliary Feedwater Pump Turbine System  |                                                                 |                    |          |             |                           |                            |                             |                     |                            |              |         |                |              |
| AT-V0007                                 | Globe Valve and Actuator, AFW Pump Turbine Steam Line Drain     | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AT-V0008                                 | Globe Valve and Actuator, AFW Pump Turbine Steam Line Drain     | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AT-V0009                                 | Globe Valve and Actuator, AFW Pump Turbine Steam Line Isolation | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AT-V0010                                 | Globe Valve and Actuator, AFW Pump Turbine Steam Line Isolation | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| AT-LP01C                                 | AF Pump Turbine Control Panel (12)                              | ESF                | AB       | 078-A15C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| AT-LP01D                                 | AF Pump Turbine Control Panel (12)                              | ESF                | AB       | 078-A15D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| Auxiliary Feedwater Storage and Transfer |                                                                 |                    |          |             |                           |                            |                             |                     |                            |              |         |                |              |
| AX-LI003A                                | Field Indicator Device, AFWST 1 (12)                            | ESF                | AB       | 100-A07C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| AX-LI004B                                | Field Indicator Device, AFWST 2 (12)                            | ESF                | AB       | 100-A07D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| AX-LI005A                                | Field Indicator Device, AFWST 2 (12)                            | ESF                | AB       | 100-A07D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| AX-LI005C                                | Field Indicator Device, AFWST 2 (12)                            | ESF                | AB       | 100-A07D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| AX-LI005D                                | Field Indicator Device, AFWST 2 (12)                            | ESF                | AB       | 100-A07D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |

Table 2 (2 of 51)

| Tag No.                        | Equipment Identification                             | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|--------------------------------|------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| AX-LI006B                      | Field Indicator Device, AFWST 1 (12)                 | ESF                | AB       | 100-A07C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| AX-LI006C                      | Field Indicator Device, AFWST 1 (12)                 | ESF                | AB       | 100-A07C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| AX-LI006D                      | Field Indicator Device, AFWST 1 (12)                 | ESF                | AB       | 100-A07C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| Component Cooling Water System |                                                      |                    |          |             |                           |                            |                             |                     |                            |              |         |                |              |
| CC-PP03A                       | Component Cooling Water Make-up Pumps                | ESF                | AB       | 078-A29C    | Varies                    | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-PP03B                       | Component Cooling Water Make-up Pumps                | ESF                | AB       | 078-A29D    | Varies                    | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-PP01A                       | Component Cooling Water Pumps                        | ESF                | AB       | 055-A02A    | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-PP01B                       | Component Cooling Water Pumps                        | ESF                | AB       | 055-A02B    | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-PP02A                       | Component Cooling Water Pumps                        | ESF                | AB       | 055-A02C    | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-PP02B                       | Component Cooling Water Pumps                        | ESF                | AB       | 055-A02D    | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0011                       | CCW Surge Tank01A Makeup Isolation                   | ESF                | AB       | COL 3.11(7) | Varies                    | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0012                       | CCW Surge Tank01B Makeup Isolation                   | ESF                | AB       | COL 3.11(7) | Varies                    | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0021                       | CCW Heat Exchanger HE01A Outlet                      | ESF                | CCWHXB   | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0022                       | CCW Heat Exchanger HE01B Outlet                      | ESF                | CCWHXB   | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0023                       | CCW Heat Exchanger HE02A Outlet                      | ESF                | CCWHXB   | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0024                       | CCW Heat Exchanger HE02B Outlet                      | ESF                | CCWHXB   | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0025                       | CCW Heat Exchanger HE03A Outlet                      | ESF                | CCWHXB   | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0026                       | CCW Heat Exchanger HE03B Outlet                      | ESF                | CCWHXB   | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0027                       | CCW Heat Exchanger Bypass Isolation                  | ESF                | CCWHXB   | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0028                       | CCW Heat Exchanger Bypass Isolation                  | ESF                | CCWHXB   | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0031                       | CCW Heat Exchanger HE01A Outlet                      | ESF                | CCWHXB   | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0032                       | CCW Heat Exchanger HE01B Outlet                      | ESF                | CCWHXB   | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0033                       | CCW Heat Exchanger HE02A Outlet                      | ESF                | CCWHXB   | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0034                       | CCW Heat Exchanger HE02B Outlet                      | ESF                | CCWHXB   | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0035                       | CCW Heat Exchanger HE03A Outlet                      | ESF                | CCWHXB   | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0036                       | CCW Heat Exchanger HE03B Outlet                      | ESF                | CCWHXB   | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0037                       | CCW Heat Exchanger Bypass Isolation                  | ESF                | CCWHXB   | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0038                       | CCW Heat Exchanger Bypass Isolation                  | ESF                | CCWHXB   | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0097                       | Containment Spray Heat Exchanger 01A Inlet Isolation | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |
| CC-V0098                       | Containment Spray Heat Exchanger 01B Inlet Isolation | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             | ○            |

Table 2 (3 of 51)

| Tag No.  | Equipment Identification                            | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------|-----------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| CC-V0131 | Essential Chiller Condenser 2B Outlet Isolation     | ESF                | AB       | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0132 | Essential Chiller Condenser 2A Outlet Isolation     | ESF                | AB       | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0143 | Train A Non-Safety Load Supply Isolation            | ESF                | AB       | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0144 | Train B Non-Safety Load Supply Isolation            | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0145 | Train A Non-Safety Load Supply Isolation            | ESF                | AB       | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0146 | Train B Non-Safety Load Supply Isolation            | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0147 | Train A Non-Safety Load Return Isolation            | ESF                | AB       | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0148 | Train B Non-Safety Load Return Isolation            | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0149 | Train A Non-Safety Load Return Isolation            | ESF                | AB       | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0150 | Train B Non-Safety Load Return Isolation            | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0181 | DG C Heat Exchanger Inlet Isolation                 | ESF                | AB       | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0182 | DG D Heat Exchanger Inlet Isolation                 | ESF                | AB       | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0191 | DG A Heat Exchanger Inlet Isolation                 | ESF                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0192 | DG B Heat Exchanger Inlet Isolation                 | ESF                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0231 | RCP Cooler Supply Containment Isolation             | ESF                | AB       | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0249 | RCP Cooler Return Containment Isolation             | ESF                | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0250 | RCP Cooler Return Containment Isolation             | ESF                | AB       | COL 3.11(7) | Intermittent              | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0296 | Letdown Heat Exchanger Supply Containment Isolation | ESF                | AB       | COL 3.11(7) | Short-Term (40sec)        | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0297 | Letdown Heat Exchanger Supply Containment Isolation | ESF                | RCB      | COL 3.11(7) | Short-Term (40sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0301 | Letdown Heat Exchanger Return Containment Isolation | ESF                | RCB      | COL 3.11(7) | Short-Term (40sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0302 | Letdown Heat Exchanger Return Containment Isolation | ESF                | AB       | COL 3.11(7) | Short-Term (40sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0351 | SC Heat Exchanger 01A Inlet Isolation               | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0352 | SC Heat Exchanger 01B Inlet Isolation               | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0383 | Essential Chiller Condenser 1A Outlet Isolation     | ESF                | AB       | COL 3.11(7) | Varies                    | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0384 | Essential Chiller Condenser 1B Outlet Isolation     | ESF                | AB       | COL 3.11(7) | Varies                    | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0389 | SFP Clooing Heat Exchanger 02A Inlet Isolation      | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0390 | SFP Clooing Heat Exchanger 02B Inlet Isolation      | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0901 | Essential Chiller Condenser 1A Outlet Control       | ESF                | AB       | COL 3.11(7) | Varies                    | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |

Table 2 (4 of 51)

| Tag No.  | Equipment Identification                      | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------|-----------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| CC-V0902 | Essential Chiller Condenser 1B Outlet Control | ESF                | AB       | COL 3.11(7) | Varies                    | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0905 | Essential Chiller Condenser 2A Outlet Control | ESF                | AB       | COL 3.11(7) | Varies                    | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0906 | Essential Chiller Condenser 2B Outlet Control | ESF                | AB       | COL 3.11(7) | Varies                    | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0937 | Cross Tie Supply Header Isolation             | ESF                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0938 | Cross Tie Supply Header Isolation             | ESF                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0939 | Cross Tie Return Header Isolation             | ESF                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V0940 | Cross Tie Return Header Isolation             | ESF                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| CC-V1001 | CCW Pump01A Discharge Check                   | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1002 | CCW Pump01B Discharge Check                   | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1003 | CCW Pump02A Discharge Check                   | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1004 | CCW Pump02B Discharge Check                   | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1099 | CCW Quadrant A to RCP Common Line Check       | ESF                | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1100 | RCP Return Pressure Release Line Check        | ESF                | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1107 | CCW Surge Tank Tank01A Vacuum Relief          | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| CC-V1108 | CCW Surge Tank Tank01B Vacuum Relief          | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| CC-V1109 | N2 Supply to CCW Surge Tank01A Check          | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1110 | N2 Supply to CCW Surge Tank01B Check          | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1111 | CCW Surge Tank Tank01A Pressure Relief        | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| CC-V1112 | CCW Surge Tank Tank01B Pressure Relief        | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| CC-V1131 | CCW Pump Pump01A Recirculation Check          | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1132 | CCW Pump Pump01B Recirculation Check          | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1133 | CCW Pump Pump02A Recirculation Check          | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1134 | CCW Pump Pump02B Recirculation Check          | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1303 | CCW Makeup Pump03A Discharge Check            | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1304 | CCW Makeup Pump03B Discharge Check            | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1309 | CCW Makeup Pump03A Discharge Check            | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1310 | CCW Makeup Pump03B Discharge Check            | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1317 | Demi Water Makeup to Surge Tank01A Check      | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1318 | Demi Water Makeup to Surge Tank01B Check      | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| CC-V1319 | Demi Water Makeup to Surge Tank01A Check      | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |

Table 2 (5 of 51)

| Tag No.                            | Equipment Identification                                  | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation                  | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|------------------------------------|-----------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|------------------------------|----------------------------|--------------|---------|----------------|--------------|
| CC-V1320                           | Demi Water Makeup to Surge Tank01B Check                  | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            |         | SR             |              |
| CC-V1325                           | CCW Makeup Pump03A Recirculation Line Check               | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            |         | SR             |              |
| CC-V1326                           | CCW Makeup Pump03B Recirculation Line Check               | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            |         | SR             |              |
| CC-V1685                           | L/D Heat Exchanger Inlet Isolation 297 Bypass Check       | ESF                | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            |         | SR             |              |
| CC-V1686                           | L/D Heat Exchanger Outlet Line Pressure Release Check     | ESF                | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            |         | SR             |              |
| Condenser Vacuum System            |                                                           |                    |          |             |                           |                            |                             |                              |                            |              |         |                |              |
| CA-CA013                           | Gate Valve and Actuator, CA Isolation, CIV                | ESF                | AB       | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ                | No                         | I            | (3)     | SR             | ○            |
| Containment Spray System           |                                                           |                    |          |             |                           |                            |                             |                              |                            |              |         |                |              |
| CS-PP01A                           | Containment Spray Pump & Motor                            | ESF                | AB       | 050-A01C    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| CS-PP01B                           | Containment Spray Pump & Motor                            | ESF                | AB       | 050-A01D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| CS-V0001                           | Containment Spray Header Block                            | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| CS-V0002                           | Containment Spray Header Block                            | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| CS-V0003                           | Containment Spray Header Isolation                        | ESF                | AB       | COL 3.11(7) | Short-Term (60sec)        | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| CS-V0004                           | Containment Spray Header Isolation                        | ESF                | AB       | COL 3.11(7) | Short-Term (60sec)        | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| CS-V0005                           | CS Heat Exchanger to IRWST Isolation                      | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| CS-V0006                           | CS Heat Exchanger to IRWST Isolation                      | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| CS-V0007                           | CS Heat Exchanger to IRWST Isolation                      | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| CS-V0008                           | CS Heat Exchanger to IRWST Isolation                      | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| CS-V1001                           | CS Pump Discharge Check                                   | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            |         | SR             |              |
| CS-V1002                           | CS Pump Discharge Check                                   | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            |         | SR             |              |
| CS-V1005                           | CS Heat Exchanger Heat Exchanger01A Thermal Relief To EDT | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            | (3)     | SR             |              |
| CS-V1006                           | CS Heat Exchanger Heat Exchanger01B Thermal Relief To EDT | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            | (3)     | SR             |              |
| CS-V1007                           | Containment Isolation Check                               | ESF                | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            |         | SR             |              |
| CS-V1008                           | Containment Isolation Check                               | ESF                | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            |         | SR             |              |
| CS-V1014                           | ECSBS Spary Header Check                                  | BDBA               | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            |         | SR             |              |
| Chemical and Volume Control System |                                                           |                    |          |             |                           |                            |                             |                              |                            |              |         |                |              |
| CV-0505                            | Globe Valve and Actuator, RCP Controlled Bleedoff, CIV    | CIV                | AB       | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |

Table 2 (6 of 51)

| Tag No.                           | Equipment Identification                                            | Equipment Function        | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation                  | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-----------------------------------|---------------------------------------------------------------------|---------------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|------------------------------|----------------------------|--------------|---------|----------------|--------------|
| CV-0506                           | Globe Valve and Actuator, RCP Controlled Bleedoff, CIV              | CIV                       | RCB      | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| CV-0509                           | Gate Valve and Actuator, IRWST Makeup Line, CIV                     | CIV                       | AB       | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| CV-0515                           | Globe Valve and Actuator, Letdown Isolation                         | To isolate RCS            | RCB      | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| CV-0516                           | Globe Valve and Actuator, Letdown Isolation                         | To isolate RCS            | RCB      | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| CV-0522                           | Globe Valve and Actuator, Letdown Containment Isolation, CIV        | CIV                       | RCB      | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| CV-0523                           | Globe Valve and Actuator, Letdown Containment Isolation, CIV        | CIV                       | AB       | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| CV-0524                           | Globe Valve and Actuator, Charging Containment Isolation, CIV       | CIV                       | AB       | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| CV-0255                           | Globe Valve and Actuator, Seal Injection Containment Isolation, CIV | CIV                       | AB       | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| CV-0560                           | Globe Valve and Actuator, RDT Effluent Containment Isolation, CIV   | CIV                       | RCB      | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| CV-0561                           | Globe Valve and Actuator, RDT Effluent Containment Isolation, CIV   | CIV                       | AB       | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| CV-0580                           | Gate Valve and Actuator, RSSH to RDH Isolation, CIV                 | CIV                       | AB       | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| CV-0576                           | Globe Valve and Actuator, Charging Flow Restricting                 | To Restrict charging flow | AB       | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| CV-0577                           | Globe Valve and Actuator, Charging Flow Restricting                 | To Restrict charging flow | AB       | COL 3.11(7) | CONT                      | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| Emergency Diesel Generator System |                                                                     |                           |          |             |                           |                            |                             |                              |                            |              |         |                |              |
| DG-DG01A                          | Class 1E Diesel Generator including Engine                          | EDG                       | EDGB     | 100-H02A    | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            |         | SR             |              |
| DG-DG01B                          | Class 1E Diesel Generator including Engine                          | EDG                       | EDGB     | 100-H02B    | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            |         | SR             |              |
| DG-DG01C                          | Class 1E Diesel Generator including Engine                          | EDG                       | AB       | 100-A03C    | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            |         | SR             |              |
| DG-DG01D                          | Class 1E Diesel Generator including Engine                          | EDG                       | AB       | 100-A03D    | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            |         | SR             |              |
| DG-DP01A                          | Control Panels & Cubicles (12)                                      | EDG                       | EDGB     | 100-H01A    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC)          | No                         | I            | (3)     | SR             | ○            |
| DG-DP02A                          | Control Panels & Cubicles (12)                                      | EDG                       | EDGB     | 100-H01A    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC)          | No                         | I            | (3)     | SR             | ○            |
| DG-DP03A                          | Control Panels & Cubicles (12)                                      | EDG                       | EDGB     | 100-H01A    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC)          | No                         | I            | (3)     | SR             | ○            |
| DG-DP04A                          | Control Panels & Cubicles (12)                                      | EDG                       | EDGB     | 100-H01A    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC)          | No                         | I            | (3)     | SR             | ○            |

Table 2 (7 of 51)

| Tag No.  | Equipment Identification       | Equipment Function | Building | Room No. | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------|--------------------------------|--------------------|----------|----------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| DG-DP05A | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01A | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP06A | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01A | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP07A | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01A | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP08A | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01A | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP09A | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01A | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP10A | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01A | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP01B | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP02B | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP03B | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP04B | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP05B | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP06B | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP07B | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP08B | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP09B | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP10B | Control Panels & Cubicles (12) | EDG                | EDGB     | 100-H01B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP01C | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP02C | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP03C | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP04C | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP05C | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |

Table 2 (8 of 51)

| Tag No.  | Equipment Identification       | Equipment Function | Building | Room No. | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------|--------------------------------|--------------------|----------|----------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| DG-DP06C | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP07C | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP08C | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP09C | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP10C | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP01D | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02D | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP02D | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02D | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP03D | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02D | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP04D | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02D | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP05D | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02D | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP06D | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02D | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP07D | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02D | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP08D | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02D | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP09D | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02D | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| DG-DP10D | Control Panels & Cubicles (12) | EDG                | AB       | 100-A02D | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| LP01A    | Control Panel (12)             | EDG                | EDGB     | 100-H01A | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| LP02A    | Engine Panel (12)              | EDG                | EDGB     | 100-H02A | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| LP01B    | Control Panel (12)             | EDG                | EDGB     | 100-H01B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| LP02B    | Engine Panel (12)              | EDG                | EDGB     | 100-H02B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| LP01C    | Control Panel (12)             | EDG                | AB       | 100-A02C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| LP02C    | Engine Panel (12)              | EDG                | AB       | 100-A03C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |

Table 2 (9 of 51)

| Tag No.                                      | Equipment Identification                       | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------------------------------------------|------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| LP01D                                        | Control Panel (12)                             | EDG                | AB       | 100-A02D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| LP02D                                        | Engine Panel (12)                              | EDG                | AB       | 100-A03D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| Emergency Diesel Engine Cooling Water System |                                                |                    |          |             |                           |                            |                             |                     |                            |              |         |                |              |
| DG-V4217A                                    | 3-Way Thermostatic Control Valve               | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4217B                                    | 3-Way Thermostatic Control Valve               | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4217C                                    | 3-Way Thermostatic Control Valve               | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4217D                                    | 3-Way Thermostatic Control Valve               | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4250A                                    | 3-Way Thermostatic Control Valve               | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4250B                                    | 3-Way Thermostatic Control Valve               | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4250C                                    | 3-Way Thermostatic Control Valve               | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4250D                                    | 3-Way Thermostatic Control Valve               | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4230A                                    | Preheating HT Water Pump Inlet Isolation Valve | EDG                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4230B                                    | Preheating HT Water Pump Inlet Isolation Valve | EDG                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4230C                                    | Preheating HT Water Pump Inlet Isolation Valve | EDG                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4230D                                    | Preheating HT Water Pump Inlet Isolation Valve | EDG                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4231A                                    | HT Water Inlet Check Valve                     | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4231B                                    | HT Water Inlet Check Valve                     | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4231C                                    | HT Water Inlet Check Valve                     | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4231D                                    | HT Water Inlet Check Valve                     | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| Emergency Diesel Engine Starting Air System  |                                                |                    |          |             |                           |                            |                             |                     |                            |              |         |                |              |
| DG-V4022A                                    | Starting Air Receiver Inlet Check Valve        | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4022B                                    | Starting Air Receiver Inlet Check Valve        | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4022C                                    | Starting Air Receiver Inlet Check Valve        | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4022D                                    | Starting Air Receiver Inlet Check Valve        | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4030A                                    | Starting Air Receiver Inlet Check Valve        | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4030B                                    | Starting Air Receiver Inlet Check Valve        | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4030C                                    | Starting Air Receiver Inlet Check Valve        | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4030D                                    | Starting Air Receiver Inlet Check Valve        | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4308A                                    | Starting Air Common Header Check Valve         | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| DG-V4308B                                    | Starting Air Common Header Check Valve         | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |

Table 2 (10 of 51)

| Tag No.   | Equipment Identification                   | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-----------|--------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| DG-V4308C | Starting Air Common Header Check Valve     | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4308D | Starting Air Common Header Check Valve     | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4309A | Starting Air Common Header Check Valve     | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4309B | Starting Air Common Header Check Valve     | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4309C | Starting Air Common Header Check Valve     | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4309D | Starting Air Common Header Check Valve     | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4312A | Starting Air Common Header Check Valve     | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4312B | Starting Air Common Header Check Valve     | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4312C | Starting Air Common Header Check Valve     | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4312D | Starting Air Common Header Check Valve     | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4043A | Starting Air Common Header Check Valve     | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4043B | Starting Air Common Header Check Valve     | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4043C | Starting Air Common Header Check Valve     | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4043D | Starting Air Common Header Check Valve     | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4039A | Starting Air Outlet Regulating Globe Valve | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4039B | Starting Air Outlet Regulating Globe Valve | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4039C | Starting Air Outlet Regulating Globe Valve | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4039D | Starting Air Outlet Regulating Globe Valve | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4040A | Starting Air Outlet Regulating Globe Valve | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4040B | Starting Air Outlet Regulating Globe Valve | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4040C | Starting Air Outlet Regulating Globe Valve | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4040D | Starting Air Outlet Regulating Globe Valve | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V5023A | Starting Air Receiver Relief Valve         | EDG                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V5023B | Starting Air Receiver Relief Valve         | EDG                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V5023C | Starting Air Receiver Relief Valve         | EDG                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V5023D | Starting Air Receiver Relief Valve         | EDG                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V5031A | Starting Air Receiver Relief Valve         | EDG                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |

Table 2 (11 of 51)

| Tag No.                                 | Equipment Identification                                    | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-----------------------------------------|-------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| DG-V5031B                               | Starting Air Receiver Relief Valve                          | EDG                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V5031C                               | Starting Air Receiver Relief Valve                          | EDG                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V5031D                               | Starting Air Receiver Relief Valve                          | EDG                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4041A                               | Over Speed Air Receiver Relief Valve                        | EDG                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4041B                               | Over Speed Air Receiver Relief Valve                        | EDG                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4041C                               | Over Speed Air Receiver Relief Valve                        | EDG                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4041D                               | Over Speed Air Receiver Relief Valve                        | EDG                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4316A                               | Over Speed Air Receiver Inlet Check Valve                   | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4316B                               | Over Speed Air Receiver Inlet Check Valve                   | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4316C                               | Over Speed Air Receiver Inlet Check Valve                   | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4316D                               | Over Speed Air Receiver Inlet Check Valve                   | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| Emergency Diesel Engine Lube Oil System |                                                             |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| DG-V4114A                               | 3-Way Thermostatic Control Valve                            | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4114B                               | 3-Way Thermostatic Control Valve                            | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4114C                               | 3-Way Thermostatic Control Valve                            | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4114D                               | 3-Way Thermostatic Control Valve                            | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4111A                               | Lube Oil/Preheating Water Heat Exchanger Outlet Check Valve | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4111B                               | Lube Oil/Preheating Water Heat Exchanger Outlet Check Valve | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4111C                               | Lube Oil/Preheating Water Heat Exchanger Outlet Check Valve | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4111D                               | Lube Oil/Preheating Water Heat Exchanger Outlet Check Valve | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4059A                               | Lube Oil Regulating Gate Valve                              | EDG                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4059B                               | Lube Oil Regulating Gate Valve                              | EDG                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4059C                               | Lube Oil Regulating Gate Valve                              | EDG                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4059D                               | Lube Oil Regulating Gate Valve                              | EDG                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4140A                               | Lube Oil Pump Discharge Check Valve                         | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4140B                               | Lube Oil Pump Discharge Check Valve                         | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |

Table 2 (12 of 51)

| Tag No.                                 | Equipment Identification                        | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-----------------------------------------|-------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| DG-V4140C                               | Lube Oil Pump Discharge Check Valve             | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4140D                               | Lube Oil Pump Discharge Check Valve             | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4232A                               | Prelube Oil Pump Inlet Isolation Valve          | EDG                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4232B                               | Prelube Oil Pump Inlet Isolation Valve          | EDG                | EDGB     | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4232C                               | Prelube Oil Pump Inlet Isolation Valve          | EDG                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4232D                               | Prelube Oil Pump Inlet Isolation Valve          | EDG                | AB       | COL 3.11(7) | Short-Term                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4109A                               | Prelube Oil Engine Inlet Check Valve            | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4109B                               | Prelube Oil Engine Inlet Check Valve            | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4109C                               | Prelube Oil Engine Inlet Check Valve            | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DG-V4109D                               | Prelube Oil Engine Inlet Check Valve            | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| Emergency Diesel Engine Fuel Oil System |                                                 |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| DO-PP01A                                | Emergency Diesel Fuel Oil Transfer Pumps        | EDG                | EDGB     | 063-H02A    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-PP01B                                | Emergency Diesel Fuel Oil Transfer Pumps        | EDG                | EDGB     | 063-H02B    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-PP01C                                | Emergency Diesel Fuel Oil Transfer Pumps        | EDG                | AB       | 065-A01C    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-PP01D                                | Emergency Diesel Fuel Oil Transfer Pumps        | EDG                | AB       | 065-A01D    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-PP02A                                | Emergency Diesel Fuel Oil Transfer Pumps        | EDG                | EDGB     | 063-H02A    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-PP02B                                | Emergency Diesel Fuel Oil Transfer Pumps        | EDG                | EDGB     | 063-H02B    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-PP02C                                | Emergency Diesel Fuel Oil Transfer Pumps        | EDG                | AB       | 065-A01C    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-PP02D                                | Emergency Diesel Fuel Oil Transfer Pumps        | EDG                | AB       | 065-A01D    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-V1005A                               | Diesel Fuel Transfer Pump Discharge Check Valve | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-V1005B                               | Diesel Fuel Transfer Pump Discharge Check Valve | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-V1005C                               | Diesel Fuel Transfer Pump Discharge Check Valve | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-V1005D                               | Diesel Fuel Transfer Pump Discharge Check Valve | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-V1006A                               | Diesel Fuel Transfer Pump Discharge Check Valve | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-V1006B                               | Diesel Fuel Transfer Pump Discharge Check Valve | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-V1006C                               | Diesel Fuel Transfer Pump Discharge Check Valve | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-V1006D                               | Diesel Fuel Transfer Pump Discharge Check Valve | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-V1007A                               | Diesel Fuel Transfer Pump Discharge Check Valve | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-V1007B                               | Diesel Fuel Transfer Pump Discharge Check Valve | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-V1007C                               | Diesel Fuel Transfer Pump Discharge Check Valve | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| DO-V1007D                               | Diesel Fuel Transfer Pump Discharge Check Valve | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |

Table 2 (13 of 51)

| Tag No.                             | Equipment Identification                                       | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-------------------------------------|----------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| Spent Fuel Pool Cooling System      |                                                                |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| FC-PP01A                            | Spent Fuel Pool Cooling Pump                                   | ESF                | AB       | 100-A24A    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| FC-PP01B                            | Spent Fuel Pool Cooling Pump                                   | ESF                | AB       | 100-A32B    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| FC-V1005                            | SFP Cooling Pump01A Discharge Check                            | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| FC-V1006                            | SFP Cooling Pump01B Discharge Check                            | ESF                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| FC-V1145                            | SFP Cleanup Demineralizer Outlet Header Penetration Check      | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            |         | SR             |              |
| Main Feedwater System               |                                                                |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| FW-V0121                            | Economizer Main Feedwater Isolation Valve                      | ESF                | AB       | 137-A31C    | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| FW-V0122                            | Economizer Main Feedwater Isolation Valve                      | ESF                | AB       | 137-A31C    | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| FW-V0123                            | Economizer Main Feedwater Isolation Valve                      | ESF                | AB       | 137-A31D    | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| FW-V0124                            | Economizer Main Feedwater Isolation Valve                      | ESF                | AB       | 137-A31D    | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| FW-V0131                            | Downcomer Main Feedwater Isolation Valves                      | ESF                | AB       | 137-A31C    | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| FW-V0132                            | Downcomer Main Feedwater Isolation Valves                      | ESF                | AB       | 137-A31C    | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| FW-V0133                            | Downcomer Main Feedwater Isolation Valves                      | ESF                | AB       | 137-A31D    | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| FW-V0134                            | Downcomer Main Feedwater Isolation Valves                      | ESF                | AB       | 137-A31D    | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| FW-V0138                            | Feedwater Chemical Injection Isolation Valve                   | ESF                | AB       | COL 3.11(7) | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| FW-V0139                            | Feedwater Chemical Injection Isolation Valve                   | ESF                | AB       | COL 3.11(7) | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| Instrument Air System               |                                                                |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| IA-V0020                            | Cylinder Valve and Actuator, CIV                               | ESF                | AB       | COL 3.11(7) | Short-Term(5 Min)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             |              |
| In-Containment Water Storage System |                                                                |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| IW-V0001                            | Reactor Cavity Flooding Isolation                              | ESF                | RCB      | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0002                            | Reactor Cavity Flooding Isolation                              | ESF                | RCB      | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0003                            | Reactor Cavity Flooding Isolation                              | ESF                | RCB      | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0004                            | Reactor Cavity Flooding Isolation                              | ESF                | RCB      | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0005                            | BAMP Suction Containment Isolation                             | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0006                            | BAMP Suction Containment Isolation                             | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0010                            | IRWST Level Transmitter (LT-392D) Upper Tap Isolation          | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0011                            | IRWST Level Transmitter (LT-392D) Lower Tap Isolation          | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0012                            | HVT Wide Range Level Transmitter (LT-396D) Upper Tap Isolation | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0013                            | HVT Wide Range Level Transmitter (LT-396D) Lower Tap Isolation | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |

Table 2 (14 of 51)

| Tag No.           | Equipment Identification                                         | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-------------------|------------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| IW-V0014          | HVT Wide Range Level Transmitter (LT-397C) Upper Tap Isolation   | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0015          | HVT Wide Range Level Transmitter (LT-397C) Lower Tap Isolation   | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0016          | HVT Narrow Range Level Transmitter (LT-403A) Upper Tap Isolation | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0017          | HVT Narrow Range Level Transmitter (LT-403A) Lower Tap Isolation | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0018          | Reactor Cavity Transmitter (LT-397A) Upper Tap Isolation         | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0019          | Reactor Cavity Transmitter (LT-397A) Lower Tap Isolation         | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0020          | Reactor Cavity Transmitter (LT-398B) Upper Tap Isolation         | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0021          | Reactor Cavity Transmitter (LT-398B) Lower Tap Isolation         | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0022          | IRWST Level Transmitter (LT-393C) Upper Tap Isolation            | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0023          | IRWST Level Transmitter (LT-393C) Lower Tap Isolation            | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0024          | IRWST Level Transmitter (LT-391A) Upper Tap Isolation            | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0025          | IRWST Level Transmitter (LT-391A) Lower Tap Isolation            | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0026          | IRWST Level Transmitter (LT-390B) Upper Tap Isolation            | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0027          | IRWST Level Transmitter (LT-390B) Lower Tap Isolation            | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0028          | HVT Wide Range Level Transmitter (LT-394B) Upper Tap Isolation   | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0029          | HVT Wide Range Level Transmitter (LT-394B) Lower Tap Isolation   | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0030          | HVT Wide Range Level Transmitter (LT-395A) Upper Tap Isolation   | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0031          | HVT Wide Range Level Transmitter (LT-395A) Lower Tap Isolation   | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0032          | Reactor Cavity (LT-399C) Transmitter Upper Tap Isolation         | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0033          | Reactor Cavity (LT-399C) Transmitter Lower Tap Isolation         | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0034          | Reactor Cavity (LT-400D) Transmitter Upper Tap Isolation         | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V0035          | Reactor Cavity (LT-400D) Transmitter Lower Tap Isolation         | ESF                | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| IW-V1003          | BAMP Suction Line Pressure (Thermal) Relief                      | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| Main Steam System |                                                                  |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| MS-V0011          | Main Steam Isolation Valve                                       | ESF                | AB       | COL 3.11(7) | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0012          | Main Steam Isolation Valve                                       | ESF                | AB       | COL 3.11(7) | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0013          | Main Steam Isolation Valve                                       | ESF                | AB       | COL 3.11(7) | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0014          | Main Steam Isolation Valve                                       | ESF                | AB       | COL 3.11(7) | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0015          | Main Steam Isolation Bypass Valve                                | ESF                | AB       | COL 3.11(7) | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |

Table 2 (15 of 51)

| Tag No.  | Equipment Identification            | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------|-------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| MS-V0016 | Main Steam Isolation Bypass Valve   | ESF                | AB       | COL 3.11(7) | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0017 | Main Steam Isolation Bypass Valve   | ESF                | AB       | COL 3.11(7) | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0018 | Main Steam Isolation Bypass Valve   | ESF                | AB       | COL 3.11(7) | Short-Term(5 sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0090 | Main Steam Drip Leg Isolation Valve | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             |              |
| MS-V0091 | Main Steam Drip Leg Isolation Valve | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             |              |
| MS-V0092 | Main Steam Drip Leg Isolation Valve | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             |              |
| MS-V0093 | Main Steam Drip Leg Isolation Valve | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             |              |
| MS-V0101 | MSADV and Actuator                  | Dump               | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0102 | MSADV and Actuator                  | Dump               | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0103 | MSADV and Actuator                  | Dump               | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0104 | MSADV and Actuator                  | Dump               | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0105 | MSADV Isolation Valve and Actuator  | Isolation          | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0106 | MSADV Isolation Valve and Actuator  | Isolation          | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0107 | MSADV Isolation Valve and Actuator  | Isolation          | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V0108 | MSADV Isolation Valve and Actuator  | Isolation          | AB       | COL 3.11(7) | Varies                    | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| MS-V1301 | Main Steam Safety Valve             | Safety Valve       | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1302 | Main Steam Safety Valve             | Safety Valve       | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1303 | Main Steam Safety Valve             | Safety Valve       | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1304 | Main Steam Safety Valve             | Safety Valve       | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1305 | Main Steam Safety Valve             | Safety Valve       | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1306 | Main Steam Safety Valve             | Safety Valve       | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1307 | Main Steam Safety Valve             | Safety Valve       | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1308 | Main Steam Safety Valve             | Safety Valve       | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1309 | Main Steam Safety Valve             | Safety Valve       | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1310 | Main Steam Safety Valve             | Safety Valve       | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1311 | Main Steam Safety Valve             | Safety Valve       | AB       | 137-A31D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1312 | Main Steam Safety Valve             | Safety Valve       | AB       | 137-A31D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1313 | Main Steam Safety Valve             | Safety Valve       | AB       | 137-A31D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1314 | Main Steam Safety Valve             | Safety Valve       | AB       | 137-A31D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1315 | Main Steam Safety Valve             | Safety Valve       | AB       | 137-A31D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| MS-V1316 | Main Steam Safety Valve             | Safety Valve       | AB       | 137-A31D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |

Table 2 (16 of 51)

| Tag No.                     | Equipment Identification                                                              | Equipment Function       | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-----------------------------|---------------------------------------------------------------------------------------|--------------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| MS-V1317                    | Main Steam Safety Valve                                                               | Safety Valve             | AB       | 137-A31D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| MS-V1318                    | Main Steam Safety Valve                                                               | Safety Valve             | AB       | 137-A31D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| MS-V1319                    | Main Steam Safety Valve                                                               | Safety Valve             | AB       | 137-A31D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| MS-V1320                    | Main Steam Safety Valve                                                               | Safety Valve             | AB       | 137-A31D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| Compressed Gas System       |                                                                                       |                          |          |             |                           |                            |                             |                     |                            |              |         |                |              |
| NT-V0004                    | Nitrogen Supply to SITs and RDT CIV, Globe Valve and Actuator                         | ESF                      | AB       | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            | (3)     | SR             |              |
| Radiation Monitoring System |                                                                                       |                          |          |             |                           |                            |                             |                     |                            |              |         |                |              |
| PR-RE/RT-039A               | Containment Air Monitor (12)                                                          | Leak Detection           | AB       | 100-A22A    | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PR-RE/RT-040B               | Containment Air Monitor (12)                                                          | Leak Detection           | AB       | 100-A22A    | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PR-RE/RT-071A               | Control Room Air Intake Monitor (12)                                                  | ESF                      | AB       | 174-A05C    | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PR-RE/RT-072B               | Control Room Air Intake Monitor (12)                                                  | ESF                      | AB       | 174-A05C    | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PR-RE/RT-073A               | Control Room Air Intake Monitor (12)                                                  | ESF                      | AB       | 174-A05D    | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PR-RE/RT-074B               | Control Room Air Intake Monitor (12)                                                  | ESF                      | AB       | 174-A05D    | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PR-RE/RT-231A               | Containment Operating Area Monitor (12)                                               | ESF, Accident Monitoring | RCB      | 156-C01     | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PR-RE/RT-232B               | Containment Operating Area Monitor (12)                                               | ESF, Accident Monitoring | RCB      | 156-C01     | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PR-RE/RT-233A               | Containment Upper Operating Area Monitor (12)                                         | ESF, Accident Monitoring | RCB      | 156-C01     | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PR-RE/RT-234B               | Containment Upper Operating Area Monitor (12)                                         | ESF, Accident Monitoring | RCB      | 156-C01     | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PR-RE/RT-241                | Spent Fuel Pool Area Monitor (12)                                                     | ESF, Accident Monitoring | AB       | 156-A08B    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PR-RE/RT-242                | Spent Fuel Pool Area Monitor (12)                                                     | ESF, Accident Monitoring | AB       | 156-A08B    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| Process Sampling System     |                                                                                       |                          |          |             |                           |                            |                             |                     |                            |              |         |                |              |
| PS-V0031                    | Steam Generator 1 Sample Line from Blowdown Hot Leg CIV, Gate Valve and Actuator (12) | Accident Monitoring      | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| PS-V0032                    | Steam Generator 2 Sample Line from Blowdown Hot Leg CIV, Gate Valve and Actuator (12) | Accident Monitoring      | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| PS-V0033                    | Steam Generator 1 Sample Line from Downcomer CIV, Gate Valve and Actuator (12)        | Accident Monitoring      | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |
| PS-V0034                    | Steam Generator 2 Sample Line from Downcomer CIV, Gate Valve and Actuator(12)         | Accident Monitoring      | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            | (3)     | SR             | ○            |

Table 2 (17 of 51)

| Tag No.                 | Equipment Identification                                                            | Equipment Function      | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-------------------------|-------------------------------------------------------------------------------------|-------------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| PS-V0035                | Steam Generator 1 Sample Line from Blowdown Cold Leg CIV, Gate Valve and Actuator   | Accident Monitoring     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| PS-V0036                | Steam Generator 2 Sample Line from Blowdown Cold Leg CIV, Gate Valve and Actuator   | Accident Monitoring     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| PS-V0257                | Steam Generator 1 Primary Sample and Cooler Rack ISO Valve, Gate Valve and Actuator | Accident Monitoring     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| PS-V0258                | Steam Generator 2 Primary Sample and Cooler Rack ISO Valve, Gate Valve and Actuator | Accident Monitoring     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| Primary Sampling System |                                                                                     |                         |          |             |                           |                            |                             |               |                            |              |         |                |              |
| PX-V0001                | RCS Hotleg Loop1 Sample CIV                                                         | ESF                     | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| PX-V0002                | RCS Hotleg Loop1 SAMPLE CIV                                                         | ESF                     | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| PX-V0003                | PZR Surge Line Sample CIV                                                           | ESF                     | RCB      | COL 3.11(7) | Short-Term (15sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| PX-V0004                | PZR Surge Line Sample CIV                                                           | ESF                     | AB       | COL 3.11(7) | Short-Term (15sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| PX-V0005                | PZR Steam Space Sample CIV                                                          | ESF                     | RCB      | COL 3.11(7) | Short-Term (15sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| PX-V0006                | PZR Steam Space Sample CIV                                                          | ESF                     | AB       | COL 3.11(7) | Short-Term (15sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| PX-V0020                | SI Tanks Sample CIV                                                                 | ESF                     | AB       | COL 3.11(7) | Short-Term (15sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| PX-V0021                | SI Tanks Sample CIV                                                                 | ESF                     | RCB      | COL 3.11(7) | Short-Term (15sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| PX-V0041                | Containment Air Sample Line CIV                                                     | ESF                     | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| PX-V0042                | Containment Air Sample Line CIV                                                     | ESF                     | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| PX-V0043                | Containment Air Sample Line CIV                                                     | ESF                     | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| PX-V0053                | Sample Return To HVT                                                                | ESF                     | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| PX-V1005                | PASS Sample Return Line Check CIV                                                   | ESF                     | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            |         | SR             | ○            |
| PX-V1020                | Containment Air Sample Return Line Check CIV                                        | ESF                     | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            |         | SR             | ○            |
| Reactor Coolant System  |                                                                                     |                         |          |             |                           |                            |                             |               |                            |              |         |                |              |
| RC-V0200                | Pilot Operated Safety Relief Valve (POSRV)                                          | Overpressure Protection | RCB      | 136-C02     | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     |                | ○            |
| RC-V0201                | Pilot Operated Safety Relief Valve (POSRV)                                          | Overpressure Protection | RCB      | 136-C02     | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     |                | ○            |
| RC-V0202                | Pilot Operated Safety Relief Valve (POSRV)                                          | Overpressure Protection | RCB      | 136-C02     | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     |                | ○            |
| RC-V0203                | Pilot Operated Safety Relief Valve (POSRV)                                          | Overpressure Protection | RCB      | 136-C02     | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     |                | ○            |

Table 2 (18 of 51)

| Tag No.                 | Equipment Identification                         | Equipment Function     | Building | Room No.             | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation       | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-------------------------|--------------------------------------------------|------------------------|----------|----------------------|---------------------------|----------------------------|-----------------------------|-------------------|----------------------------|--------------|---------|----------------|--------------|
| RC-LP01A                | POSRV Master Control Cabinet (2),(12)            | POSRV Signal Interface | AB       | COL 3.11(7)          | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-LP01B                | POSRV Master Control Cabinet (2),(12)            | POSRV Signal Interface | AB       | COL 3.11(7)          | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-LP01C                | POSRV Master Control Cabinet (2),(12)            | POSRV Signal Interface | AB       | COL 3.11(7)          | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-LP01D                | POSRV Master Control Cabinet (2),(12)            | POSRV Signal Interface | AB       | COL 3.11(7)          | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| Various                 | Hydraulic Snubbers for Surge Line                | RCPB                   | RCB      | COL 3.11(7)          | short-term                | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             |              |
| Various                 | Steam Generator Supports including Snubbers      | RCPB                   | RCB      | 100-C02A<br>100-C02B | short-term                | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             |              |
| Various                 | Reactor Coolant Pump Supports including Snubbers | RCPB                   | RCB      | 100-C02A<br>100-C02B | short-term                | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             |              |
| Reactor Gas Vent System |                                                  |                        |          |                      |                           |                            |                             |                   |                            |              |         |                |              |
| RG-V0410                | PZR Gas Vent                                     | ESF                    | RCB      | COL 3.11(7)          | Varies                    | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| RG-V0411                | PZR Gas Vent                                     | ESF                    | RCB      | COL 3.11(7)          | Varies                    | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| RG-V0412                | PZR Gas Vent                                     | ESF                    | RCB      | COL 3.11(7)          | Varies                    | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| RG-V0413                | PZR Gas Vent                                     | ESF                    | RCB      | COL 3.11(7)          | Varies                    | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| RG-V0414                | RX Vessel Gas Vent                               | ESF                    | RCB      | COL 3.11(7)          | Varies                    | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| RG-V0415                | RX Vessel Gas Vent                               | ESF                    | RCB      | COL 3.11(7)          | Varies                    | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| RG-V0416                | RX Vessel Gas Vent                               | ESF                    | RCB      | COL 3.11(7)          | Varies                    | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| RG-V0417                | RX Vessel Gas Vent                               | ESF                    | RCB      | COL 3.11(7)          | Varies                    | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| RG-V0419                | Gas Vent To IRWST                                | ESF                    | RCB      | COL 3.11(7)          | Varies                    | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| RG-V0420                | Gas Vent To IRWST                                | ESF                    | RCB      | COL 3.11(7)          | Varies                    | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| RG-V1421                | RCGVS Vacuum Relief                              | ESF                    | RCB      | COL 3.11(7)          | Varies                    | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| Service Air System      |                                                  |                        |          |                      |                           |                            |                             |                   |                            |              |         |                |              |
| SA-V0001                | Cylinder Valve and Actuator, CIV                 | ESF                    | AB       | COL 3.11(7)          | Short-Term                | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            |         |                | ○            |
| S/G Blowdown System     |                                                  |                        |          |                      |                           |                            |                             |                   |                            |              |         |                |              |
| SD-V0005                | S/G-1 Blowdown Containment Isolation             | ESF                    | AB       | COL 3.11(7)          | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| SD-V0006                | S/G-2 Blowdown Containment Isolation             | ESF                    | AB       | COL 3.11(7)          | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| SD-V0007                | S/G-1 Blowdown Containment Isolation             | ESF                    | AB       | COL 3.11(7)          | Intermittent              | Mild                       | Mild                        | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| SD-V0008                | S/G-2 Blowdown Containment Isolation             | ESF                    | AB       | COL 3.11(7)          | Intermittent              | Mild                       | Mild                        | Mechanical EQ     | No                         | I            | (3)     | SR             | ○            |
| SD-V1115                | Wet Lay Up Recir Pump A Discharge Check          | ESF                    | RCB      | COL 3.11(7)          | Continuous                | Harsh                      | Harsh                       | Mechanical EQ     | No                         | I            |         | SR             |              |

Table 2 (19 of 51)

| Tag No.                 | Equipment Identification                                             | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation                  | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-------------------------|----------------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|------------------------------|----------------------------|--------------|---------|----------------|--------------|
| SD-V1116                | Wet Lay Up Recir Pump B Discharge Check                              | ESF                | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Mechanical EQ                | No                         | I            |         | SR             |              |
| Safety Injection System |                                                                      |                    |          |             |                           |                            |                             |                              |                            |              |         |                |              |
| SI-PP02A                | Safety Injection Pumps motors                                        | ESF                | AB       | 050-A03A    | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             |              |
| SI-PP02B                | Safety Injection Pumps motors                                        | ESF                | AB       | 050-A03B    | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             |              |
| SI-PP02C                | Safety Injection Pumps motors                                        | ESF                | AB       | 050-A02C    | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             |              |
| SI-PP02D                | Safety Injection Pumps motors                                        | ESF                | AB       | 050-A02D    | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             |              |
| SI-V0300                | Globe Valveand Actuator, IRWST Return Line Isolation Valves          | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0301                | Gate Valve and Actuator, IRWST Return Line Isolation Valves          | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0302                | Globe Valve and Actuator, SI Combined Miniflow Line Isolation Valves | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0303                | Globe Valve and Actuator, SI Combined Miniflow Line Isolation Valves | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0304                | Gate Valve, IRWST Isolation Valves                                   | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0305                | Gate Valve, IRWST Isolation Valves                                   | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0308                | Gate Valve, IRWST Isolation Valves                                   | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0309                | Gate Valve, IRWST Isolation Valves                                   | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0321                | Globe Valve and Actuator, SI Hot Leg Inject. Line Isol.              | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0322                | Globe Valve and Actuator, Hot Leg Check Valve Leakage Isolation      | ESF                | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0331                | Globe Valve and Actuator, SI Hot Leg Injection Line Isolation Valves | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0332                | Globe Valve and Actuator, Hot Leg Check Valve Leakage Isolation      | ESF                | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0602                | Globe Valve and Actuator, SI Low Flow Control Valves                 | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0603                | Globe Valve and Actuator, SI Low Flow Control Valves                 | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |

Table 2 (20 of 51)

| Tag No.  | Equipment Identification                                        | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation                     | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------|-----------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------------------------|----------------------------|--------------|---------|----------------|--------------|
| SI-V0604 | Gate Valve and Actuator, SI Hot Leg Isolation Valves            | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0609 | Gate Valve and Actuator, SI Hot Leg Isolation Valves            | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0605 | Globe Valve and Actuator, SIT Atmospheric Vent Isolation Valves | ESF                | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0606 | Globe Valve and Actuator, SIT Atmospheric Vent Isolation Valves | ESF                | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0607 | Globe Valve and Actuator, SIT Atmospheric Vent Isolation Valves | ESF                | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0608 | Globe Valve and Actuator, SIT Atmospheric Vent Isolation Valves | ESF                | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0611 | Globe Valve and Actuator, SIT Fill & Drain Isolation            | ESF                | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0621 | Globe Valve and Actuator, SIT Fill & Drain Isolation            | ESF                | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0631 | Globe Valve and Actuator, SIT Fill & Drain Isolation            | ESF                | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0641 | Globe Valve and Actuator, SIT Fill & Drain Isolation            | ESF                | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0613 | Globe Valve and Actuator, SIT Atmospheric Vent Isolation Valves | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0623 | Globe Valve and Actuator, SIT Atmospheric Vent Isolation Valves | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0633 | Globe Valve and Actuator, SIT Atmospheric Vent Isolation Valves | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0643 | Globe Valve and Actuator, SIT Atmospheric Vent Isolation Valves | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0614 | Gate Valve, SIT Discharge Isolation Valves                      | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ,<br>Electrical EQ | No                         | I            | (3)     | SR             | ○            |

Table 2 (21 of 51)

| Tag No.                 | Equipment Identification                                       | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation                  | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-------------------------|----------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|------------------------------|----------------------------|--------------|---------|----------------|--------------|
| SI-V0624                | Gate Valve, SIT Discharge Isolation Valves                     | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0634                | Gate Valve, SIT Discharge Isolation Valves                     | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0644                | Gate Valve, SIT Discharge Isolation Valves                     | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0616                | Globe Valve and Actuator, SI Line Isolation Valves             | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0626                | Globe Valve and Actuator, SI Line Isolation Valves             | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0636                | Globe Valve and Actuator, SI Line Isolation Valves             | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0646                | Globe Valve and Actuator, SI Line Isolation Valves             | ESF                | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0618                | Globe Valve and Actuator, Check Valve Leakoff Isolation Valves | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0628                | Globe Valve and Actuator, Check Valve Leakoff Isolation Valves | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0638                | Globe Valve and Actuator, Check Valve Leakoff Isolation Valves | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0648                | Globe Valve and Actuator, Check Valve Leakoff Isolation Valves | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0682                | Globe Valve and Actuator, SIT Fill Line Isolation              | ESF                | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| Shutdown Cooling System |                                                                |                    |          |             |                           |                            |                             |                              |                            |              |         |                |              |
| SI-PP01A                | Shutdown Cooling Pump and Motor                                | RT                 | AB       | 050-A04A    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             |              |
| SI-PP01B                | Shutdown Cooling Pump and Motor                                | RT                 | AB       | 050-A04B    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             |              |

Table 2 (22 of 51)

| Tag No.  | Equipment Identification                                             | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation                  | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------|----------------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|------------------------------|----------------------------|--------------|---------|----------------|--------------|
| SI-V0310 | Globe Valve and Actuator, SDCHX Outlet Flow Control Valves           | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0311 | Globe Valve and Actuator, SDCHX Outlet Flow Control Valves           | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0312 | Globe Valve and Actuator, SDCHX Bypass Flow Control Valves           | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0313 | Globe Valve and Actuator, SDCHX Bypass Flow Control Valves           | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0314 | Globe Valve and Actuator, SCS Test Return Line Isolation Valves      | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0315 | Globe Valve and Actuator, SCS Test Return Line Isolation Valves      | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0340 | Gate Valve and Actuator, SCS/CSS Pump Suction Cross Connect Valves   | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0341 | Gate Valve and Actuator, SCS/CSS Pump Discharge Cross Connect Valves | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0342 | Gate Valve and Actuator, SCS/CSS Pump Suction Cross Connect Valves   | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0343 | Gate Valve and Actuator, SCS/CSS Pump Discharge Cross Connect Valves | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0344 | Gate Valve and Actuator, SCP Suction Isolation Valves                | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0346 | Gate Valve and Actuator, SCP Suction Isolation Valves                | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0347 | Gate Valve and Actuator, CSP Suction Isolation Valves                | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0348 | CSP Suction Isolation Valves                                         | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0391 | Gate Valve and Actuator, Reactor Cavity Isolation Valves             | RT                 | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0393 | Gate Valve and Actuator, Reactor Cavity Isolation Valves             | RT                 | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0395 | Gate Valve and Actuator, Reactor Cavity Isolation Valves             | RT                 | RCB      | COL 3.11(7) | short-term                | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0600 | Globe Valve and Actuator, SCS Line Isolation Valves                  | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |

Table 2 (23 of 51)

| Tag No.                        | Equipment Identification                                       | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation                  | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|--------------------------------|----------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|------------------------------|----------------------------|--------------|---------|----------------|--------------|
| SI-V0601                       | Globe Valve and Actuator, SCS Line Isolation Valves            | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0651                       | Gate Valve and Actuator, SCS Suction Line Isolation Valves     | RT                 | RCB      | 100-C02A    | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0652                       | Gate Valve and Actuator, SCS Suction Line Isolation Valves     | RT                 | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0653                       | Gate Valve and Actuator, SCS Suction Line Isolation Valves     | RT                 | RCB      | 100-C01     | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0654                       | Gate Valve and Actuator, SCS Suction Line Isolation Valves     | RT                 | RCB      | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0655                       | Gate Valve and Actuator, SCS Suction Line Isolation Valves     | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0656                       | Gate Valve and Actuator, SCS Suction Line Isolation Valves     | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0688                       | Gate Valve and Actuator, SCS Test Return Line Isolation Valves | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0693                       | Gate Valve and Actuator, SCS Test Return Line Isolation Valves | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0690                       | Globe Valve and Actuator, SCS Warmup Line Flow Control Valves  | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| SI-V0691                       | Globe Valve and Actuator, SCS Warmup Line Flow Control Valves  | RT                 | AB       | COL 3.11(7) | Intermittent              | Harsh                      | Harsh                       | Mechanical EQ, Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| Essential Service Water System |                                                                |                    |          |             |                           |                            |                             |                              |                            |              |         |                |              |
| SX-PP01A                       | Essential Service Water Pump                                   | ESF                | ESWPB    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| SX-PP01B                       | Essential Service Water Pump                                   | ESF                | ESWPB    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| SX-PP02A                       | Essential Service Water Pump                                   | ESF                | ESWPB    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| SX-PP02B                       | Essential Service Water Pump                                   | ESF                | ESWPB    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| SX-V0045                       | ESW Pump 01A Discharge                                         | ESF                | ESWPB    | COL 3.11(7) | Varies                    | Mild                       | Mild                        | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| SX-V0046                       | ESW Pump 01B Discharge                                         | ESF                | ESWPB    | COL 3.11(7) | Varies                    | Mild                       | Mild                        | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| SX-V0047                       | ESW Pump 02A Discharge                                         | ESF                | ESWPB    | COL 3.11(7) | Varies                    | Mild                       | Mild                        | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| SX-V0048                       | ESW Pump 02B Discharge                                         | ESF                | ESWPB    | COL 3.11(7) | Varies                    | Mild                       | Mild                        | Mechanical EQ                | No                         | I            | (3)     | SR             | ○            |
| SX-V1001                       | ESW Pump 01A Discharge Check                                   | ESF                | ESWPB    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            |         | SR             |              |
| SX-V1002                       | ESW Pump 01B Discharge Check                                   | ESF                | ESWPB    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ                | No                         | I            |         | SR             |              |

Table 2 (24 of 51)

| Tag No.                             | Equipment Identification                              | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-------------------------------------|-------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| SX-V1003                            | ESW Pump 02A Discharge Check                          | ESF                | ESWPB    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| SX-V1004                            | ESW Pump 02B Discharge Check                          | ESF                | ESWPB    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| SX-V1051                            | CCW Heat Exchanger Outlet Common Header Vacuum Relief | ESF                | ESWPB    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| SX-V1052                            | CCW Heat Exchanger Outlet Common Header Vacuum Relief | ESF                | ESWPB    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| Equipment and Floor Drainage System |                                                       |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| DE-V0005                            | Containment Drain Sump Pump Discharge Line, CIV       | ESF                | RCB      | COL 3.11(7) | Short-Term (20sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| DE-V0006                            | Containment Drain Sump Pump Discharge Line, CIV       | ESF                | AB       | COL 3.11(7) | Short-Term (20sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| Gaseous Radwaste System             |                                                       |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| GW-V0001                            | Reactor Drain Tank Gas Space to GWMS CIV              | ESF                | RCB      | COL 3.11(7) | Short-Term (15sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| GW-V0002                            | Reactor Drain Tank Gas Space to GWMS CIV              | ESF                | AB       | COL 3.11(7) | Short-Term (15sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| Control Room Area HVAC System       |                                                       |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| VC-HV01A                            | Supply AHU                                            | Cooling            | AB       | 174-A24C    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-HV01B                            | Supply AHU                                            | Cooling            | AB       | 174-A24D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-HV01C                            | Supply AHU                                            | Cooling            | AB       | 174-A23C    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-HV01D                            | Supply AHU                                            | Cooling            | AB       | 174-A23D    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-AU01A                            | Emergency Makeup ACU                                  | ESF                | AB       | 174-A24C    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-AU01B                            | Emergency Makeup ACU                                  | ESF                | AB       | 174-A24D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0011A                           | Air Intake Isolation Damper (ESR)                     | ESF                | AB       | 174-A24C    | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0011B                           | Air Intake Isolation Damper (ESR)                     | ESF                | AB       | 174-A24C    | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0012A                           | Air Intake Isolation Damper (ESR)                     | ESF                | AB       | 174-A24D    | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0012B                           | Air Intake Isolation Damper (ESR)                     | ESF                | AB       | 174-A24D    | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0013A                           | AHU Inlet Isolation Damper (PSR)                      | ESF                | AB       | 174-A24C    | Short-Term (5sec)         | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0013C                           | AHU Inlet Isolation Damper (PSR)                      | ESF                | AB       | 174-A24C    | Short-Term (5sec)         | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0014B                           | AHU Inlet Isolation Damper (PSR)                      | ESF                | AB       | 174-A24D    | Short-Term (5sec)         | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0014D                           | AHU Inlet Isolation Damper (PSR)                      | ESF                | AB       | 174-A24D    | Short-Term (5sec)         | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0015A                           | AHU Inlet Isolation Damper (PSR)                      | ESF                | AB       | 174-A24C    | Short-Term (5sec)         | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0015C                           | AHU Inlet Isolation Damper (PSR)                      | ESF                | AB       | 174-A24C    | Short-Term (5sec)         | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0016B                           | AHU Inlet Isolation Damper (PSR)                      | ESF                | AB       | 174-A24D    | Short-Term (5sec)         | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0016D                           | AHU Inlet Isolation Damper (PSR)                      | ESF                | AB       | 174-A24D    | Short-Term (5sec)         | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0017A                           | ACU Inlet Isolation Damper (ESR)                      | Open               | AB       | 174-A24C    | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |

Table 2 (25 of 51)

| Tag No.                                     | Equipment Identification                  | Equipment Function | Building | Room No. | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|---------------------------------------------|-------------------------------------------|--------------------|----------|----------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| VC-Y0017C                                   | ACU Inlet Isolation Damper (ESR)          | Open               | AB       | 174-A24C | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0018B                                   | ACU Inlet Isolation Damper (ESR)          | Open               | AB       | 174-A24D | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0018D                                   | ACU Inlet Isolation Damper (ESR)          | Open               | AB       | 174-A24D | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0019A                                   | ACU Return Isolation Damper (ESR)         | Open               | AB       | 174-A24C | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0019C                                   | ACU Return Isolation Damper (ESR)         | Open               | AB       | 174-A24C | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0020B                                   | ACU Return Isolation Damper (ESR)         | Open               | AB       | 174-A24D | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0020D                                   | ACU Return Isolation Damper (ESR)         | Open               | AB       | 174-A24D | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0021A                                   | AHU Discharge Flow Control Damper (ESR)   | Modulation         | AB       | 174-A24C | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0021C                                   | AHU Discharge Flow Control Damper (ESR)   | Modulation         | AB       | 174-A23C | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0022B                                   | AHU Discharge Flow Control Damper (ESR)   | Modulation         | AB       | 174-A24D | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0022D                                   | AHU Discharge Flow Control Damper (ESR)   | Modulation         | AB       | 174-A23D | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0023A                                   | ACU Discharge Flow Control Damper (ESR)   | Modulation         | AB       | 174-A24C | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0023C                                   | ACU Discharge Flow Control Damper (ESR)   | Modulation         | AB       | 174-A24C | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0024B                                   | ACU Discharge Flow Control Damper (ESR)   | Modulation         | AB       | 174-A24D | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0024D                                   | ACU Discharge Flow Control Damper (ESR)   | Modulation         | AB       | 174-A24D | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0027                                    | Kitchen & Toilet Isolation Damper (PSR)   | ESF                | AB       | 157-A02C | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0028                                    | Kitchen & Toilet Isolation Damper (PSR)   | ESF                | AB       | 195-A09C | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0029                                    | Smoke Removal Duct Isolation Damper (PSR) | ESF                | AB       | 174-A24D | Short-Term (5sec)         | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VC-Y0030                                    | Smoke Removal Duct Isolation Damper (PSR) | ESF                | AB       | 174-A03D | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| Emergency Diesel Generator Area HVAC System |                                           |                    |          |          |                           |                            |                             |               |                            |              |         |                |              |
| VD-HV10A                                    | EDG Control Room Cubicle Cooler           | Cooling            | EDGB     | 100-H01A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-HV10B                                    | EDG Control Room Cubicle Cooler           | Cooling            | EDGB     | 100-H01B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-HV10C                                    | EDG Control Room Cubicle Cooler           | Cooling            | AB       | 100-A02C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-HV10D                                    | EDG Control Room Cubicle Cooler           | Cooling            | AB       | 100-A02D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-HV11A                                    | EDG Room Normal Supply AHU                | Cooling            | EDGB     | 135-H03A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VD-HV11B                                    | EDG Room Normal Supply AHU                | Cooling            | EDGB     | 135-H03B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VD-HV11C                                    | EDG Room Normal Supply AHU                | Cooling            | AB       | 174-A14C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VD-HV11D                                    | EDG Room Normal Supply AHU                | Cooling            | AB       | 174-A14D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VD-HV12A                                    | EDG Room Emergency Cubicle Cooler         | Cooling            | EDGB     | 100-H02A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-HV13A                                    | EDG Room Emergency Cubicle Cooler         | Cooling            | EDGB     | 100-H02A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |

Table 2 (26 of 51)

| Tag No.  | Equipment Identification                                     | Equipment Function | Building | Room No. | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------|--------------------------------------------------------------|--------------------|----------|----------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| VD-HV12B | EDG Room Emergency Cubicle Cooler                            | Cooling            | EDGB     | 100-H02B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-HV13B | EDG Room Emergency Cubicle Cooler                            | Cooling            | EDGB     | 100-H02B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-HV12C | EDG Room Emergency Cubicle Cooler                            | Cooling            | AB       | 100-A03C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-HV13C | EDG Room Emergency Cubicle Cooler                            | Cooling            | AB       | 100-A03C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-HV12D | EDG Room Emergency Cubicle Cooler                            | Cooling            | AB       | 100-A03D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-HV13D | EDG Room Emergency Cubicle Cooler                            | Cooling            | AB       | 100-A03D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH02A | EDG Room Exhaust Fan                                         | Ventilation        | EDGB     | 100-H02A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH02B | EDG Room Exhaust Fan                                         | Ventilation        | EDGB     | 100-H02B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH02C | EDG Room Exhaust Fan                                         | Ventilation        | AB       | 174-A01C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH02D | EDG Room Exhaust Fan                                         | Ventilation        | AB       | 174-A01D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH05A | Diesel Fuel Oil Storage Tank Room Supply Fan                 | Ventilation        | EDGB     | 063-H02A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH05B | Diesel Fuel Oil Storage Tank Room Supply Fan                 | Ventilation        | EDGB     | 063-H02B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH05C | Diesel Fuel Oil Storage Tank Room Supply Fan                 | Ventilation        | AB       | 065-A01C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH05D | Diesel Fuel Oil Storage Tank Room Supply Fan                 | Ventilation        | AB       | 065-A01D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH06A | Diesel Fuel Oil Storage Tank Room Exhaust Fan                | Ventilation        | EDGB     | 063-H02A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH06B | Diesel Fuel Oil Storage Tank Room Exhaust Fan                | Ventilation        | EDGB     | 063-H02A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH06C | Diesel Fuel Oil Storage Tank Room Exhaust Fan                | Ventilation        | AB       | 065-A01C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH06D | Diesel Fuel Oil Storage Tank Room Exhaust Fan                | Ventilation        | AB       | 065-A01D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH07A | Diesel Fuel Oil Day Tank & L.O. Makeup Tank Room Exhaust Fan | Ventilation        | EDGB     | 100-H02A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH07B | Diesel Fuel Oil Day Tank & L.O. Makeup Tank Room Exhaust Fan | Ventilation        | EDGB     | 100-H02B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH07C | Diesel Fuel Oil Day Tank & L.O. Makeup Tank Room Exhaust Fan | Ventilation        | AB       | 120-A04C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-AH07D | Diesel Fuel Oil Day Tank & L.O. Makeup Tank Room Exhaust Fan | Ventilation        | AB       | 120-A04D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VD-HC01A | EDG Room Electric Duct Heater                                | Heating            | EDGB     | 100-H02A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VD-HC01B | EDG Room Electric Duct Heater                                | Heating            | EDGB     | 100-H02B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VD-HC02A | Diesel Fuel Oil Storage Tank Room Electric Duct Heater       | Heating            | EDGB     | 063-H02A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VD-HC02B | Diesel Fuel Oil Storage Tank Room Electric Duct Heater       | Heating            | EDGB     | 063-H02B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VD-HC02C | Diesel Fuel Oil Storage Tank Room Electric Duct Heater       | Heating            | AB       | 065-A01C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VD-HC02D | Diesel Fuel Oil Storage Tank Room Electric Duct Heater       | Heating            | AB       | 065-A01D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |

Table 2 (27 of 51)

| Tag No.                                        | Equipment Identification                     | Equipment Function | Building | Room No. | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|------------------------------------------------|----------------------------------------------|--------------------|----------|----------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| Electrical and I&C Equipment Areas HVAC System |                                              |                    |          |          |                           |                            |                             |               |                            |              |         |                |              |
| VE-HV01A                                       | Class 1E Switchgear 01C Room Cubicle Cooler  | Cooling            | AB       | 078-A02C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV01B                                       | Class 1E Switchgear 01D Room Cubicle Cooler  | Cooling            | AB       | 078-A02D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV02A                                       | Class 1E Load Center 01C Room Cubicle Cooler | Cooling            | AB       | 078-A03C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV02B                                       | Class 1E Load Center 01D Room Cubicle Cooler | Cooling            | AB       | 078-A03D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV03A                                       | Train - A DC&IP Equip. Room Cubicle Cooler   | Cooling            | AB       | 078-A56A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV03B                                       | Train - B DC&IP Equip. Room Cubicle Cooler   | Cooling            | AB       | 078-A56B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV04A                                       | Train - C DC&IP Equip. Room Cubicle Cooler   | Cooling            | AB       | 078-A05C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV04B                                       | Train - D DC&IP Equip. Room Cubicle Cooler   | Cooling            | AB       | 078-A05D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV06A                                       | 480V Class 1E MCC 01A Room Cubicle Cooler    | Cooling            | AB       | 100-A12A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV06B                                       | 480V Class 1E MCC 01B Room Cubicle Cooler    | Cooling            | AB       | 100-A12B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV07A                                       | Class 1E Switchgear 01A Room Cubicle Cooler  | Cooling            | AB       | 078-A25A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV07B                                       | Class 1E Switchgear 01B Room Cubicle Cooler  | Cooling            | AB       | 078-A25B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV08B                                       | Swing Load Center Room Cubicle Cooler        | Cooling            | AB       | 078-A58B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV09A                                       | Electrical Penetration Room C Cubicle Cooler | Cooling            | AB       | 120-A09C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV09B                                       | Electrical Penetration Room D Cubicle Cooler | Cooling            | AB       | 120-A09D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV10A                                       | 480V Class 1E MCC 03C Room Cubicle Cooler    | Cooling            | AB       | 137-A10C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV10B                                       | 480V Class 1E MCC 03D Room Cubicle Cooler    | Cooling            | AB       | 137-A10D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV11A                                       | Electrical Penetration Room Cubicle Cooler   | Cooling            | AB       | 137-A11C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV11B                                       | Electrical Penetration Room Cubicle Cooler   | Cooling            | AB       | 137-A11D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV12A                                       | Penetration. Mux Room A Cubicle Cooler       | Cooling            | AB       | 137-A17A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV12B                                       | Penetration Mux Room B Cubicle Cooler        | Cooling            | AB       | 137-A17B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV13A                                       | Electrical Penetration Room Cubicle Cooler   | Cooling            | AB       | 137-A18A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV13B                                       | Electrical Penetration Room Cubicle Cooler   | Cooling            | AB       | 137-A18B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV14A                                       | 480V Class 1E MCC 03A Room Cubicle Cooler    | Cooling            | AB       | 137-A23A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV14B                                       | 480V Class 1E MCC 03B Room Cubicle Cooler    | Cooling            | AB       | 120-A15B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV15A                                       | 480V Class 1E MCC 04A Room Cubicle Cooler    | Cooling            | AB       | 137-A15A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV15B                                       | 480V Class 1E MCC 04B Room Cubicle Cooler    | Cooling            | AB       | 137-A15B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV16A                                       | I&C Equipment Room Cubicle Cooler            | Cooling            | AB       | 157-A25C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV16B                                       | I&C Equipment Room Cubicle Cooler            | Cooling            | AB       | 157-A01D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV17A                                       | I&C Equipment Room Cubicle Cooler            | Cooling            | AB       | 157-A19C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |

Table 2 (28 of 51)

| Tag No.  | Equipment Identification                            | Equipment Function | Building | Room No. | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------|-----------------------------------------------------|--------------------|----------|----------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| VE-HV17B | I&C Equipment Room Cubicle Cooler                   | Cooling            | AB       | 157-19D  | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV18A | Remote Shutdown Room Cubicle Cooler                 | Cooling            | AB       | 137-A43D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HV18B | Remote Shutdown Room Cubicle Cooler                 | Cooling            | AB       | 137-A43D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-AH20A | Train - A Battery Room Supply Fan                   | Ventilation        | AB       | 100-A11A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-AH20B | Train - B Battery Room Supply Fan                   | Ventilation        | AB       | 100-A11B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-AH20C | Train - C Battery Room Supply Fan                   | Ventilation        | AB       | 078-A06C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-AH20D | Train - D Battery Room Supply Fan                   | Ventilation        | AB       | 078-A06D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-AH21A | Train - A Battery Room Exhaust Fan                  | Ventilation        | AB       | 078-A11C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-AH21B | Train - B Battery Room Exhaust Fan                  | Ventilation        | AB       | 100-A11B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-AH21C | Train - C Battery Room Exhaust Fan                  | Ventilation        | AB       | 078-A11C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-AH21D | Train - D Battery Room Exhaust Fan                  | Ventilation        | AB       | 078-A11D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-AH22A | Remote Shutdown Room Supply Fan                     | Ventilation        | AB       | 137-A43D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-AH22B | Remote Shutdown Room Supply Fan                     | Ventilation        | AB       | 137-A43D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-AH23A | Remote Shutdown Room Exhaust Fan                    | Ventilation        | AB       | 137-A43D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-AH23B | Remote Shutdown Room Exhaust Fan                    | Ventilation        | AB       | 137-A43D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VE-HC01A | Train - A Battery Room Electrical Duct Heater       | Heating            | AB       | 100-A11A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC01B | Train - B Battery Room Electrical Duct Heater       | Heating            | AB       | 100-A11B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC01C | Train - C Battery Room Electrical Duct Heater       | Heating            | AB       | 078-A06C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC01D | Train - D Battery Room Electrical Duct Heater       | Heating            | AB       | 078-A07D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC02A | Class 1E Switchgear 01A Room Electrical Duct Heater | Heating            | AB       | 078-A25A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC02B | Class 1E Switchgear 01B Room Electrical Duct Heater | Heating            | AB       | 078-A25B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC03A | Remote Shutdown Room Electrical Duct Heater         | Heating            | AB       | 137-A43D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC03B | Remote Shutdown Room Electrical Duct Heater         | Heating            | AB       | 137-A43D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC04A | I&C Equipment Room Electrical Duct Heater           | Heating            | AB       | 157-A25C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC04B | I&C Equipment Room Electrical Duct Heater           | Heating            | AB       | 157-A01D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC05C | I&C Equipment Room Electrical Duct Heater           | Heating            | AB       | 157-A19C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC05D | I&C Equipment Room Electrical Duct Heater           | Heating            | AB       | 157-A19D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC06A | Elect Penetration A Room Electrical Duct Heater     | Heating            | AB       | 137-A18A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC06B | Elect Penetration B Room Electrical Duct Heater     | Heating            | AB       | 137-A18B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC07A | 480V Class 1E MCC 03A Room Elec. Duct Heater        | Heating            | AB       | 137-A23A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC07B | 480V Class 1E MCC 03B Room Elec. Duct Heater        | Heating            | AB       | 120-A15B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |

Table 2 (29 of 51)

| Tag No.                                        | Equipment Identification                              | Equipment Function | Building | Room No. | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|------------------------------------------------|-------------------------------------------------------|--------------------|----------|----------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| VE-HC08A                                       | 480V Class 1E 04A MCC 04A Room Elec. Duct Heater      | Heating            | AB       | 137-A15A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC09A                                       | Penetration Mux A Room Electrical Duct Heater         | Heating            | AB       | 137-A17A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC09B                                       | Penetration Mux B Room Electrical Duct Heater         | Heating            | AB       | 137-A17B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| VE-HC10B                                       | Swing Load Center Room Electrical Duct Heater         | Heating            | AB       | 078-A58B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             | ○            |
| Fuel Handling Area HVAC System                 |                                                       |                    |          |          |                           |                            |                             |               |                            |              |         |                |              |
| VF-AU02A                                       | Emergency Exhaust ACU                                 | ESF                | FHA      | 120-A24A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VF-AU02B                                       | Emergency Exhaust ACU                                 | ESF                | FHA      | 120-A25A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VF-HV02A                                       | SFP HX Room Cubicle Cooler                            | Cooling            | FHA      | 100-A24A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VF-HV02B                                       | SFP HX Room Cubicle Cooler                            | Cooling            | FHA      | 100-A32B | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VF-Y0001A                                      | Air Intake Isolation Damper (PSR)                     | ESF                | FHA      | 100-A36B | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VF-Y0002B                                      | Air Intake Isolation Damper (PSR)                     | ESF                | FHA      | 100-A36B | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VF-Y0003A                                      | Normal Exhaust ACU Isolation Damper (PSR)             | ESF                | FHA      | 100-A38A | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VF-Y0004B                                      | Normal Exhaust ACU Isolation Damper (PSR)             | ESF                | FHA      | 100-A38A | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VF-Y0005A                                      | Emergency Exhaust ACU Isolation Damper (ESR)          | Open               | FHA      | 137-A25A | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VF-Y0006B                                      | Emergency Exhaust ACU Isolation Damper (ESR)          | Open               | FHA      | 120-A24A | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VF-Y0007A                                      | Emergency Exhaust Flow Control Damper (ESR)           | Modulation         | FHA      | 137-A25A | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VF-Y0008B                                      | Emergency Exhaust Flow Control Damper (ESR)           | Modulation         | FHA      | 120-A24A | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| Auxiliary Building Controlled Area HVAC System |                                                       |                    |          |          |                           |                            |                             |               |                            |              |         |                |              |
| VK-AU01A                                       | Aux. Bldg Controlled Area I Emergency Exhaust ACU     | ESF                | AB       | 120-A21A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-AU01C                                       | Aux. Bldg Controlled Area I Emergency Exhaust ACU     | ESF                | AB       | 120-A32A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-AU01B                                       | Aux. Bldg Controlled Area II Emergency Exhaust ACU    | ESF                | AB       | 120-A29B | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-AU01D                                       | Aux. Bldg Controlled Area II Emergency Exhaust ACU    | ESF                | AB       | 120-A30B | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-HV10A                                       | CS Pump & Miniflow Heat Exchanger Room Cubicle Cooler | Cooling            | AB       | 050-A01C | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV10B                                       | CS Pump & Miniflow Heat Exchanger Room Cubicle Cooler | Cooling            | AB       | 050-A01D | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV11A                                       | SI Pump Room Cubicle Cooler                           | Cooling            | AB       | 050-A02C | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV11B                                       | SI Pump Room Cubicle Cooler                           | Cooling            | AB       | 050-A02D | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV12A                                       | SI Pump Room Cubicle Cooler                           | Cooling            | AB       | 050-A03A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV12B                                       | SI Pump Room Cubicle Cooler                           | Cooling            | AB       | 050-A03B | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV13A                                       | CCW Pump Room Cubicle Cooler                          | Cooling            | AB       | 055-A02A | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV13B                                       | CCW Pump Room Cubicle Cooler                          | Cooling            | AB       | 055-A02B | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |

Table 2 (30 of 51)

| Tag No.   | Equipment Identification                                                  | Equipment Function | Building | Room No. | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-----------|---------------------------------------------------------------------------|--------------------|----------|----------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| VK-HV14A  | CCW Pump Room Cubicle Cooler                                              | Cooling            | AB       | 055-A02C | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV14B  | CCW Pump Room Cubicle Cooler                                              | Cooling            | AB       | 055-A02D | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV15A  | CS Heat Exchanger Room Cubicle Cooler                                     | Cooling            | AB       | 055-A01C | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV15B  | CS Heat Exchanger Room Cubicle Cooler                                     | Cooling            | AB       | 055-A01D | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV16A  | SC Pump & Miniflow Heat Exchanger Room Cubicle Cooler                     | Cooling            | AB       | 050-A04A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV16B  | SC Pump & Miniflow Heat Exchanger Room Cubicle Cooler                     | Cooling            | AB       | 050-A04B | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV17A  | SC Heat Exchanger Room Cubicle Cooler                                     | Cooling            | AB       | 055-A30A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV17B  | SC Heat Exchanger Room Cubicle Cooler                                     | Cooling            | AB       | 055-A30B | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV18A  | Charging Pump Room Cubicle Cooler                                         | Cooling            | AB       | 055-A42A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV18B  | Charging Pump Room Cubicle Cooler                                         | Cooling            | AB       | 055-A55B | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV19A  | Mechanical Penetration Room Cubicle Cooler                                | Cooling            | AB       | 100-A13A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV19B  | Mechanical Penetration Room Cubicle Cooler                                | Cooling            | AB       | 100-A13B | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV20A  | Mechanical Penetration Room Cubicle Cooler                                | Cooling            | AB       | 120-A16A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV20B  | Mechanical Penetration Room Cubicle Cooler                                | Cooling            | AB       | 120-A16B | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV21B  | Aux. Charging Pump Room Cubicle Cooler                                    | Cooling            | AB       | 055-A54B | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV22A  | Aux. Bldg Controlled Area Emergency Exhaust ACU Room Cubicle Cooler       | Cooling            | AB       | 120-A21A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV22B  | Aux. Bldg Controlled Area Emergency Exhaust ACU Room Cubicle Cooler       | Cooling            | AB       | 120-A29B | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV23A  | Aux. Bldg Controlled Area Emergency Exhaust ACU Room Cubicle Cooler       | Cooling            | AB       | 120-A32A | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-HV23B  | Aux. Bldg Controlled Area Emergency Exhaust ACU Room Cubicle Cooler       | Cooling            | AB       | 120-A30B | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VK-Y0001A | Aux. Bldg Controlled Area Emergency Exhaust ACU Flow Control Damper (ESR) | Modulation         | AB       | 120-A21A | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             |              |
| VK-Y0001B | Aux. Bldg Controlled Area Emergency Exhaust ACU Flow Control Damper (ESR) | Modulation         | AB       | 120-A29B | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0001C | Aux. Bldg Controlled Area Emergency Exhaust ACU Flow Control Damper (ESR) | Modulation         | AB       | 120-A32A | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0001D | Aux. Bldg Controlled Area Emergency Exhaust ACU Flow Control Damper (ESR) | Modulation         | AB       | 120-A30B | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0002A | Aux. Bldg Controlled Area Emergency Exhaust ACU Isolation Damper (ESR)    | Open               | AB       | 120-A32A | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0002B | Aux. Bldg Controlled Area Emergency Exhaust ACU Isolation Damper (ESR)    | Open               | AB       | 120-A29B | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |

Table 2 (31 of 51)

| Tag No.                                   | Equipment Identification                                                      | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-------------------------------------------|-------------------------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| VK-Y0002C                                 | Aux. Bldg Controlled Area Emergency Exhaust ACU Isolation Damper (ESR)        | Open               | AB       | 120-A21A    | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0002D                                 | Aux. Bldg Controlled Area Emergency Exhaust ACU Isolation Damper (ESR)        | Open               | AB       | 120-A30B    | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0017A                                 | Aux. Bldg Controlled Area Supply AHU Outlet Isolation Damper (PSR)            | ESF                | AB       | 100-A20A    | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0018A                                 | Aux. Bldg Controlled Area Supply AHU Outlet Isolation Damper (PSR)            | ESF                | AB       | 137-A29B    | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0019B                                 | Aux. Bldg Controlled Area Supply AHU Outlet Isolation Damper (PSR)            | ESF                | AB       | 100-A20A    | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0020B                                 | Aux. Bldg Controlled Area Supply AHU Outlet Isolation Damper (PSR)            | ESF                | AB       | 137-A29B    | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0021A                                 | Aux. Bldg Controlled Area Normal Exhaust ACU Inlet Isolation Damper (PSR)     | ESF                | AB       | 156-A14A    | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0022A                                 | Aux. Bldg Controlled Area Normal Exhaust ACU Inlet Isolation Damper (PSR)     | ESF                | AB       | 195-A08B    | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0023B                                 | Aux. Bldg Controlled Area Normal Exhaust ACU Inlet Isolation Damper (PSR)     | ESF                | AB       | 156-A14A    | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0024B                                 | Aux. Bldg Controlled Area Normal Exhaust ACU Inlet Isolation Damper (PSR)     | ESF                | AB       | COL 3.11(7) | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0050A                                 | Post Accident Sample Room Isolation Damper (PSR)                              | Open               | AB       | 055-A22A    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0050B                                 | Post Accident Sample Room Isolation Damper (PSR)                              | Open               | AB       | 055-A22B    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0050C                                 | Post Accident Sample Room Isolation Damper (PSR)                              | Open               | AB       | 055-A22A    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VK-Y0050D                                 | Post Accident Sample Room Isolation Damper (PSR)                              | Open               | AB       | 055-A22B    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| Auxiliary Building Clean Area HVAC System |                                                                               |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| VO-HV31A                                  | Essential Chiller Room Cubicle Cooler                                         | Cooling            | AB       | 078-A11C    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VO-HV31B                                  | Essential Chiller Room Cubicle Cooler                                         | Cooling            | AB       | 078-A12D    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VO-HV32A                                  | Essential Chiller Room Cubicle Cooler                                         | Cooling            | AB       | 078-A12C    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VO-HV32B                                  | Essential Chiller Room Cubicle Cooler                                         | Cooling            | AB       | 078-A11D    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VO-HV33A                                  | Motor- Driven AFW Pump Room Cubicle Cooler                                    | Cooling            | AB       | 078-A20A    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| VO-HV33B                                  | Motor- Driven AFW Pump Room Cubicle Cooler                                    | Cooling            | AB       | 078-A20B    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| Reactor Containment Purge System          |                                                                               |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| VQ-V0012                                  | High Volume Containment Purge System Supply CIV, Butterfly Valve and Actuator | ESF                | RCB      | 156-C01     | Short-Term (5sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VQ-V0011                                  | High Volume Containment Purge System Supply CIV, Butterfly Valve and Actuator | ESF                | AB       | 174-A16B    | Short-Term (5sec)         | Mild                       | Mild                        | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VQ-V0013                                  | High Volume Containment Purge System Exhaust CIV, Butterfly Valve Actuator    | ESF                | RCB      | 156-C01     | Short-Term (5sec)         | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |

Table 2 (32 of 51)

| Tag No.                        | Equipment Identification                                                     | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|--------------------------------|------------------------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| VQ-V0014                       | High Volume Containment Purge System Exhaust CIV, Butterfly Valve Actuator   | ESF                | AB       | 174-A16B    | Short-Term (5sec)         | Mild                       | Mild                        | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| VQ-V0031                       | Low Volume Containment Purge System Supply CIV, Butterfly Valve and Actuator | ESF                | AB       | 174-A16B    | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VQ-V0032                       | Low Volume Containment Purge System Supply CIV, Butterfly Valve and Actuator | ESF                | RCB      | 156-C01     | Short-Term (5sec)         | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VQ-V0033                       | Low Volume Cont. Purge System Exhaust CIV, Butterfly Valve and Actuator      | ESF                | RCB      | 156-C01     | Short-Term (5sec)         | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| VQ-V0034                       | Low Volume Cont. Purge System Exhaust CIV, Butterfly Valve and Actuator      | ESF                | AB       | 174-A16B    | Short-Term (5sec)         | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| Hydrogen Monitoring System     |                                                                              |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| Various                        | Hydrogen Analyzers                                                           | ESF                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         |                |              |
| Plant Chilled Water System     |                                                                              |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| WI-V013                        | PCW Supply to Containment Ventilation Units CIV, Gate Valve and Actuator     | ESF                | AB       | 100-A16C    | Short-Term (60sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| WI-V014                        | PCW Supply to Containment Ventilation Units CIV, Check Valve                 | Relief             | RCB      | 114-C01A    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| WI-V015                        | PCW Return from Containment Ventilation Units CIV, Gate Valve and Actuator   | ESF                | RCB      | 114-C01A    | Short-Term (60sec)        | Harsh                      | Harsh                       | Electrical EQ | No                         | I            | (3)     | SR             | ○            |
| WI-V012                        | PCW Return from Containment Ventilation Units CIV, Gate Valve and Actuator   | ESF                | AB       | 100-A16C    | Short-Term (60sec)        | Harsh                      | Harsh                       | Mechanical EQ | No                         | I            | (3)     | SR             | ○            |
| Essential Chilled Water System |                                                                              |                    |          |             |                           |                            |                             |               |                            |              |         |                |              |
| WO-CH01A                       | Essential Chiller                                                            | Cooling            | AB       | 078-A11C    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| WO-CH01B                       | Essential Chiller                                                            | Cooling            | AB       | 078-A11D    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| WO-CH02A                       | Essential Chiller                                                            | Cooling            | AB       | 078-A12C    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| WO-CH02B                       | Essential Chiller                                                            | Cooling            | AB       | 078-A12D    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            |         | SR             |              |
| WO-PP01A                       | Essential Chilled Water Pump                                                 | Cooling            | AB       | 078-A11C    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| WO-PP01B                       | Essential Chilled Water Pump                                                 | Cooling            | AB       | 078-A11D    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| WO-PP02A                       | Essential Chilled Water Pump                                                 | Cooling            | AB       | 078-A12C    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| WO-PP02B                       | Essential Chilled Water Pump                                                 | Cooling            | AB       | 078-A12D    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| WO-PP03A                       | Essential Chilled Water Make-up Pump                                         | Cooling            | AB       | 120-A10C    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| WO-PP03B                       | Essential Chilled Water Make-up Pump                                         | Cooling            | AB       | 120-A10D    | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| WO-V1001A                      | ECW Compression Tank Relief valve                                            | Relief             | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |
| WO-V1001B                      | ECW Compression Tank Relief valve                                            | Relief             | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Mechanical EQ | No                         | I            | (3)     | SR             |              |

Table 2 (33 of 51)

| Tag No.         | Equipment Identification                             | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-----------------|------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| WO-V0906A       | Control Room Supply AHU Chilled Water 3-Way Valve    | Cooling            | AB       | 174-A24C    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| WO-V0906B       | Control Room Supply AHU Chilled Water 3-Way Valve    | Cooling            | AB       | 174-A24D    | Continuous                | Harsh                      | Harsh                       | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| WO-V0906C       | Control Room Supply AHU Chilled Water 3-Way Valve    | Cooling            | AB       | 174-A23C    | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| WO-V0906D       | Control Room Supply AHU Chilled Water 3-Way Valve    | Cooling            | AB       | 174-A23D    | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| WO-V0917A       | EDG Room Normal Supply AHU Chilled Water 3-Way Valve | Cooling            | AB       | 174-A14C    | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| WO-V0917B       | EDG Room Normal Supply AHU Chilled Water 3-Way Valve | Cooling            | AB       | 174-A14D    | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| WO-V0918A       | EDG Room Normal Supply AHU Chilled Water 3-Way Valve | Cooling            | AB       | 135-H03A    | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| WO-V0918B       | EDG Room Normal Supply AHU Chilled Water 3-Way Valve | Cooling            | AB       | 135-H03B    | Continuous                | Mild                       | Mild                        | Mechanical EQ       | No                         | I            | (3)     | SR             |              |
| WO-LP01A        | Essential Chilled Water System Control Panel (12)    | Control            | AB       | 078-A11C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| WO-LP01B        | Essential Chilled Water System Control Panel (12)    | Control            | AB       | 078-A11D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| WO-LP01C        | Essential Chilled Water System Control Panel (12)    | Control            | AB       | 078-A12C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| WO-LP01D        | Essential Chilled Water System Control Panel (12)    | Control            | AB       | 078-A12D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| WO-LI003C       | Field Indicator Device (12)                          | Cooling            | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| WO-LI003D       | Field Indicator Device (12)                          | Cooling            | AB       | 174-A06D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| Electric System |                                                      |                    |          |             |                           |                            |                             |                     |                            |              |         |                |              |
| PF-SW01A        | 4.16kV Metal Clad Switchgear                         | Power Supply (PS)  | AB       | 078-A25A    | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| PF-SW01B        | 4.16kV Metal Clad Switchgear                         | Power Supply (PS)  | AB       | 078-A25B    | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| PF-SW01C        | 4.16kV Metal Clad Switchgear                         | Power Supply (PS)  | AB       | 078-A02C    | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| PF-SW01D        | 4.16kV Metal Clad Switchgear                         | Power Supply (PS)  | AB       | 078-A02D    | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| PG-LC01A        | 480V Load Center                                     | Power Supply (PS)  | AB       | 078-A25A    | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| PG-LC01B        | 480V Load Center                                     | Power Supply (PS)  | AB       | 078-A25B    | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| PG -LC01C       | 480V Load Center                                     | Power Supply (PS)  | AB       | 078-A03C    | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| PG -LC01D       | 480V Load Center                                     | Power Supply (PS)  | AB       | 078-A03D    | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| PG -LC02        | 480V Load Center                                     | Power Supply (PS)  | AB       | 078-A58B    | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| PH-MC01A        | 480V Motor Control Center                            | Power Supply (PS)  | AB       | 100-A12A    | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |

Table 2 (34 of 51)

| Tag No.   | Equipment Identification  | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-----------|---------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| PH -MC02A | 480V Motor Control Center | Power Supply (PS)  | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC03A | 480V Motor Control Center | Power Supply (PS)  | AB       | 137-A23A    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC04A | 480V Motor Control Center | Power Supply (PS)  | AB       | 137-A15A    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC05A | 480V Motor Control Center | Power Supply (PS)  | AB       | 100-H01A    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC01B | 480V Motor Control Center | Power Supply (PS)  | AB       | 100-A12B    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC02B | 480V Motor Control Center | Power Supply (PS)  | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC03B | 480V Motor Control Center | Power Supply (PS)  | AB       | 120-A15B    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC04B | 480V Motor Control Center | Power Supply (PS)  | AB       | 137-A15B    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC05B | 480V Motor Control Center | Power Supply (PS)  | AB       | 100-H01B    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC01C | 480V Motor Control Center | Power Supply (PS)  | AB       | 078-A03C    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC02C | 480V Motor Control Center | Power Supply (PS)  | AB       | 078-A03C    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC03C | 480V Motor Control Center | Power Supply (PS)  | AB       | 137-A10C    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC04C | 480V Motor Control Center | Power Supply (PS)  | AB       | 100-A02C    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC01D | 480V Motor Control Center | Power Supply (PS)  | AB       | 078-A03D    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC02D | 480V Motor Control Center | Power Supply (PS)  | AB       | 078-A03D    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC03D | 480V Motor Control Center | Power Supply (PS)  | AB       | 137-A10D    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| PH -MC04D | 480V Motor Control Center | Power Supply (PS)  | AB       | 100-A02D    | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| RC-SQ01A  | Local Starter             | Power Supply (PS)  | AB       | 137A18A     | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| RC-SQ01B  | Local Starter             | Power Supply (PS)  | AB       | 137A18B     | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| RC-SQ01C  | Local Starter             | Power Supply (PS)  | AB       | 120A09C     | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| RC-SQ01D  | Local Starter             | Power Supply (PS)  | AB       | 120A09D     | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| RC-SQ02A  | Local Starter             | Power Supply (PS)  | AB       | 137A18A     | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| RC-SQ02B  | Local Starter             | Power Supply (PS)  | AB       | 137A18B     | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| RC-SQ02C  | Local Starter             | Power Supply (PS)  | AB       | 120A09C     | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| RC-SQ02D  | Local Starter             | Power Supply (PS)  | AB       | 120A09D     | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| RC-SQ03C  | Local Starter             | Power Supply (PS)  | AB       | 120A09C     | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| RC-SQ03D  | Local Starter             | Power Supply (PS)  | AB       | 120A09D     | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| SI-SQ01C  | Local Starter             | Power Supply (PS)  | AB       | 120A09C     | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |

Table 2 (35 of 51)

| Tag No.  | Equipment Identification              | Equipment Function | Building | Room No. | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------|---------------------------------------|--------------------|----------|----------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| SI-SQ01D | Local Starter                         | Power Supply (PS)  | AB       | 120A09D  | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| SI-SQ02C | Local Starter                         | Power Supply (PS)  | AB       | 100A22A  | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| SI-SQ02D | Local Starter                         | Power Supply (PS)  | AB       | 120A15B  | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| IW-SQ01C | Local Starter                         | Power Supply (PS)  | AB       | 120A09C  | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| IW-SQ01D | Local Starter                         | Power Supply (PS)  | AB       | 120A09D  | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| IW-SQ02C | Local Starter                         | Power Supply (PS)  | AB       | 120A09C  | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| IW-SQ02D | Local Starter                         | Power Supply (PS)  | AB       | 120A09D  | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| CV-SQ01B | Local Starter                         | Power Supply (PS)  | AB       | 137A18B  | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| VK-SQ01  | Local Starter                         | Power Supply (PS)  | AB       | 055A50B  | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| Various  | Local Control Station                 | Power Supply (PS)  | AB       | Various  | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-BT01A | 125Vdc Battery with Rack              | Power Supply (PS)  | AB       | 100-A11A | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-BT01B | 125Vdc Battery with Rack              | Power Supply (PS)  | AB       | 100-A11B | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-BT01C | 125Vdc Battery with Rack              | Power Supply (PS)  | AB       | 078-A07C | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-BT01D | 125Vdc Battery with Rack              | Power Supply (PS)  | AB       | 078-A07D | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-BC01A | 480Vac/125Vdc Battery Charger         | Power Supply (PS)  | AB       | 078-A56A | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-BC01B | 480Vac/125Vdc Battery Charger         | Power Supply (PS)  | AB       | 078-A56B | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-BC01C | 480Vac/125Vdc Battery Charger         | Power Supply (PS)  | AB       | 078-A05C | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-BC01D | 480Vac/125Vdc Battery Charger         | Power Supply (PS)  | AB       | 078-A05D | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-BC02A | 480Vac/125Vdc Standby Battery Charger | Power Supply (PS)  | AB       | 078-A56A | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-BC02B | 480Vac/125Vdc Standby Battery Charger | Power Supply (PS)  | AB       | 078-A56B | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-BC02C | 480Vac/125Vdc Standby Battery Charger | Power Supply (PS)  | AB       | 078-A05C | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-BC02D | 480Vac/125Vdc Standby Battery Charger | Power Supply (PS)  | AB       | 078-A05D | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-MC01A | 125Vdc Control Center                 | Power Supply (PS)  | AB       | 078-A56A | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-MC01B | 125Vdc Control Center                 | Power Supply (PS)  | AB       | 078-A56B | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-MC01C | 125Vdc Control Center                 | Power Supply (PS)  | AB       | 078-A05C | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DC-MC01D | 125Vdc Control Center                 | Power Supply (PS)  | AB       | 078-A05D | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| IP-TR01A | 480Vac/120Vac Regulating Transformer  | Power Supply (PS)  | AB       | 078-A56A | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| IP-TR01B | 480Vac/120Vac Regulating Transformer  | Power Supply (PS)  | AB       | 078-A56B | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| IP-TR01C | 480Vac/120Vac Regulating Transformer  | Power Supply (PS)  | AB       | 078-A05C | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| IP-TR01D | 480Vac/120Vac Regulating Transformer  | Power Supply (PS)  | AB       | 078-A05D | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| IP-IN01A | 125Vdc/120Vac Inverter                | Power Supply (PS)  | AB       | 078-A56A | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |

Table 2 (36 of 51)

| Tag No.                            | Equipment Identification                                        | Equipment Function | Building | Room No.                 | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|------------------------------------|-----------------------------------------------------------------|--------------------|----------|--------------------------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| IP-IN01B                           | 125Vdc/120Vac Inverter                                          | Power Supply (PS)  | AB       | 078-A56B                 | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| IP-IN01C                           | 125Vdc/120Vac Inverter                                          | Power Supply (PS)  | AB       | 078-A05C                 | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| IP-IN01D                           | 125Vdc/120Vac Inverter                                          | Power Supply (PS)  | AB       | 078-A05D                 | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| SI-SQ02C                           | 125Vdc Local Starter                                            | Power Supply (PS)  | AB       | 100-A22A                 | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| SI-SQ02D                           | 125Vdc Local Starter                                            | Power Supply (PS)  | AB       | 120-A15B                 | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| AF-SQ01C                           | 125Vdc Local Starter                                            | Power Supply (PS)  | AB       | 120-A09C                 | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| AF-SQ01D                           | 125Vdc Local Starter                                            | Power Supply (PS)  | AB       | 120-A09D                 | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             | ○            |
| Various                            | Electrical Penetration Assemblies - Medium Voltage Power        | Power Supply (PS)  | RCB      | 136-C01A,B               | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             |              |
| Various                            | Electrical Penetration Assemblies - Low Voltage Power & Control | Power Supply (PS)  | RCB      | 136-C01A,B<br>114-C01A,B | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             |              |
| Various                            | Electrical Penetration Assemblies – Low Voltage Instrumentation | Power Supply (PS)  | RCB      | 136-C01A,B<br>114-C01A,B | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             |              |
| Various                            | Electrical Conductor Sealing Assemblies                         | Power Supply (PS)  | RCB      | Various                  | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | 5kV Power Cables                                                | Power Supply (PS)  | Various  | Various                  | Continuous                | Mild/Harsh                 | Mild/Harsh                  | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | 600V Power Cables                                               | Power Supply (PS)  | Various  | Various                  | Continuous                | Mild/Harsh                 | Mild/Harsh                  | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | 600V Control Cables                                             | Various            | Various  | Various                  | Continuous                | Mild/Harsh                 | Mild/Harsh                  | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | 600V Instrumentation Cables                                     | Various            | Various  | Various                  | Continuous                | Mild/Harsh                 | Mild/Harsh                  | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | Thermocouple Extension Cables                                   | Various            | Various  | Various                  | Continuous                | Mild/Harsh                 | Mild/Harsh                  | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | Coaxial Cables                                                  | Various            | Various  | Various                  | Continuous                | Mild/Harsh                 | Mild/Harsh                  | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | RSPT Type I & II Cable Assemblies                               | RT                 | RCB      | Various                  | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | ICI Cable Assemblies                                            | PAM                | RCB      | Various                  | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | HJTC Cable Assemblies                                           | PAM                | RCB      | Various                  | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | RSPT Type I, II Cable                                           | RT                 | RCB      | Various                  | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | Reed Switch Position Transmitter                                | RT                 | RCB      | Various                  | Continuous                | Mild                       | Mild                        | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | HJTC MI Cables & Connectors                                     | PAM                | RCB      | Various                  | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | HJTC Probe                                                      | PAM                | RCB      | Various                  | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | ICI MI Cable & Connectors                                       | PAM                | RCB      | Various                  | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             |              |
| N/A(10)                            | ICI Assembly                                                    | PAM                | RCB      | Various                  | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             |              |
| Instrumentation and Control System |                                                                 |                    |          |                          |                           |                            |                             |                     |                            |              |         |                |              |
| AFW-FT-0047A                       | AFW Flow Transmitter, Channel A (12)                            | Aux. Feedwater     | AB       | COL 3.11(7)              | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-FT-0048B                       | AFW Flow Transmitter, Channel B (12)                            | Aux. Feedwater     | AB       | COL 3.11(7)              | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |

Table 2 (37 of 51)

| Tag No.      | Equipment Identification                                       | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|--------------|----------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| AFW-FT-0049C | AFW Flow Transmitter, Channel C (12)                           | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-FT-0050D | AFW Flow Transmitter, Channel D (12)                           | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-TE-0053A | AFW Line Back Leakage Temp. Element, Ch. A                     | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             | ○            |
| AFW-TE-0054B | AFW Line Back Leakage Temp. Element, Ch. B                     | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             | ○            |
| AFW-TE-0053C | AFW Line Back Leakage Temp. Element, Ch. C                     | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             | ○            |
| AFW-TE-0054D | AFW Line Back Leakage Temp. Element, Ch. D                     | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ       | No                         | I            |         | SR             | ○            |
| AFW-PT-0005A | AFW Pump Suction Pressure Transmitter, Channel A (12)          | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-PT-0006B | AFW Pump Suction Pressure Transmitter, Channel A (12)          | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-PT-0007C | AFW Pump Suction Pressure Transmitter, Channel A (12)          | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-PT-0008D | AFW Pump Suction Pressure Transmitter, Channel A (12)          | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-PT-0023A | AFW Pump Discharge Pressure Transmitter, Channel A (12)        | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-PT-0024B | AFW Pump Discharge Pressure Transmitter, Channel B (12)        | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-PT-0025C | AFW Pump Discharge Pressure Transmitter, Channel C (12)        | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-PT-0026D | AFW Pump Discharge Pressure Transmitter, Channel D (12)        | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-Z-0035A  | AFW Flow Modulating Valve Position Transmitter, Channel A (12) | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-Z-0036B  | AFW Flow Modulating Valve Position Transmitter, Channel B (12) | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-Z-0037C  | AFW Flow Modulating Valve Position Transmitter, Channel C (12) | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AFW-Z-0038D  | AFW Flow Modulating Valve Position Transmitter, Channel D (12) | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AT-LT-0003C  | AFW Turbine Steam Drip Leg Level Transmitter, Channel C (12)   | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AT-LT-0004D  | AFW Turbine Steam Drip Leg Level, Channel D (12)               | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AT-PT-0013C  | AFW Turbine Inlet Steam Pressure Transmitter, Channel C (12)   | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AT-PT-0014D  | AFW Turbine Inlet Steam Pressure Transmitter, Channel D (12)   | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AT-S(3)035C  | AFW Pump Turbine Speed Transmitter, Channel C (12)             | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AT-S(3)036D  | AFW Pump Turbine Speed Transmitter, Channel D (12)             | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AX-LT-0003A  | AFWST 1 Level Transmitter Channel A (12)                       | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| AX-LT-0004B  | AFWST 2 Level Transmitter, Channel B (12)                      | Aux. Feedwater     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |

Table 2 (38 of 51)

| Tag No.     | Equipment Identification                              | Equipment Function                            | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation          | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-------------|-------------------------------------------------------|-----------------------------------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|----------------------|----------------------------|--------------|---------|----------------|--------------|
| AX-LT-0005A | AFWST 2 Level Transmitter, Channel A (12)             | Aux. Feedwater                                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| AX-LT-0005C | AFWST 2 Level Transmitter, Channel C (12)             | Aux. Feedwater                                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| AX-LT-0005D | AFWST 2 Level Transmitter, Channel D (12)             | Aux. Feedwater                                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| AX-LT-0006B | AFWST 1 Level Transmitter Channel B (12)              | Aux. Feedwater                                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| AX-LT-0006C | AFWST 1 Level Transmitter, Channel C (12)             | Aux. Feedwater                                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| AX-LT-0006D | AFWST 1 Level Transmitter, Channel D (12)             | Aux. Feedwater                                | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC)Q | No                         | I            |         | SR             | ○            |
| CC-FT-0071A | CCW Flow Transmitter, Channel A (12)                  | Component Cooling WTR.                        | CCWPH    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| CC-FT-0071B | CCW Flow Transmitter, Channel B (12)                  | Component Cooling WTR.                        | CCWPH    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| CC-TE-069A  | CCW Temperature Element, Channel A                    | Component Cooling WTR.                        | CCWPH    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ        | No                         | I            |         | SR             | ○            |
| CC-TE-070B  | CCW Temperature Element, Channel B                    | Component Cooling WTR.                        | CCWPH    | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ        | No                         | I            |         | SR             | ○            |
| CE-SW-01A   | RTSS Cabinet (2), Channel A (12)                      | RT                                            | AB       | 137-A36C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| CE-SW-01B   | RTSS Cabinet (2), Channel B (12)                      | RT                                            | AB       | 137-A38C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| CE-SW-01C   | RTSS Cabinet (2), Channel C (12)                      | RT                                            | AB       | 137-A35C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| CE-SW-01D   | RTSS Cabinet (2), Channel D (12)                      | RT                                            | AB       | 137-A37C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| CM-LP01A    | Containment Hydrogen Analyzer Cabinet (2) (12)        | Containment Hydrogen Concentration Monitoring | AB       | 120-A20A    | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| CM-LP01B    | Containment Hydrogen Analyzer Cabinet (2) (12)        | Containment Hydrogen Concentration Monitoring | AB       | 120-A36B    | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| CM-LP02A    | Containment Hydrogen Analyzer Cabinet (2) (12)        | Containment Hydrogen Concentration Monitoring | AB       | 137-A17A    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| CM-LP02B    | Containment Hydrogen Analyzer Cabinet (2) (12)        | Containment Hydrogen Concentration Monitoring | AB       | 137-A17B    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC)  | No                         | I            |         | SR             | ○            |
| CM-PT-351A  | Containment Pressure Protective (NR) Transmitter (12) | RT/ESF                                        | AB       | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC    | No                         | I            |         | SR             | ○            |
| CM-PT-351B  | Containment Pressure Protective (NR) Transmitter (12) | RT/ESF                                        | AB       | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC    | No                         | I            |         | SR             | ○            |
| CM-PT-351C  | Containment Pressure Protective (NR) Transmitter (12) | RT/ESF                                        | AB       | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC    | No                         | I            |         | SR             | ○            |

Table 2 (39 of 51)

| Tag No.         | Equipment Identification                              | Equipment Function  | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation        | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-----------------|-------------------------------------------------------|---------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|--------------------|----------------------------|--------------|---------|----------------|--------------|
| CM-PT-351D      | Containment Pressure Protective (NR) Transmitter (12) | RT/ESF              | AB       | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC  | No                         | I            |         | SR             | ○            |
| CM-PT-352A      | Cont. Pressure Protective (WR) Transmitter (12)       | RT/ESF/ PAM         | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC  | No                         | I            |         | SR             | ○            |
| CM-PT-352B      | Cont. Pressure Protective (WR) Transmitter (12)       | RT/ESF/ PAM         | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC  | No                         | I            |         | SR             | ○            |
| CM-PT-352C      | Cont. Pressure Protective (WR) Transmitter (12)       | RT/ESF              | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC  | No                         | I            |         | SR             | ○            |
| CM-PT-352D      | Cont. Pressure Protective (WR) Transmitter (12)       | RT/ESF              | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC  | No                         | I            |         | SR             | ○            |
| CM-TE-031A      | Containment Temperature Element (12)                  | Accident Monitoring | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC  | No                         | I            |         | SR             | ○            |
| CM-LT-027A      | CONTAINMENT WATER LEVEL (12)                          | Accident Monitoring | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC  | No                         | I            |         | SR             | ○            |
| CM-LT-028B      | CONTAINMENT WATER LEVEL (12)                          | Accident Monitoring | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC  | No                         | I            |         | SR             | ○            |
| CS-FT-338C      | Containment Spray Pump Flow Transmitter (12)          | Accident Monitoring | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC  | No                         | I            |         | SR             | ○            |
| CS-FT-348D      | Containment Spray Pump Flow Transmitter (12)          | Accident Monitoring | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMCQ | No                         | I            |         | SR             | ○            |
| CS-TE-071C      | Containment Spray Temperature Element, HX             | Containment Spray   | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ      | No                         | I            |         | SR             | ○            |
| CS-TE-072D      | Containment Spray Temperature Element, HX             | Containment Spray   | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ      | No                         | I            |         | SR             | ○            |
| DG-LI'(3)001A   | HT Water Expansion Tank Level Indicator               | EDG                 | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ      | No                         | I            |         | SR             | ○            |
| DG-LI'(3)001B   | HT Water Expansion Tank Level Indicator               | EDG                 | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ      | No                         | I            |         | SR             | ○            |
| DG-LI'(3)001C   | HT Water Expansion Tank Level Indicator               | EDG                 | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ      | No                         | I            |         | SR             | ○            |
| DG-LI'(3)001D   | HT Water Expansion Tank Level Indicator               | EDG                 | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ      | No                         | I            |         | SR             | ○            |
| DG-LI'(3)010A   | LT Water Expansion Tank Level Indicator               | EDG                 | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ      | No                         | I            |         | SR             | ○            |
| DG-LI'(3)010B   | LT Water Expansion Tank Level Indicator               | EDG                 | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ      | No                         | I            |         | SR             | ○            |
| DG-LI'(3)010C   | LT Water Expansion Tank Level Indicator               | EDG                 | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ      | No                         | I            |         | SR             | ○            |
| DG-LI'(3)010D   | LT Water Expansion Tank Level Indicator               | EDG                 | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ      | No                         | I            |         | SR             | ○            |
| DG-LS'(3)001A01 | HT Water Expansion Tank Level Switch Low              | EDG                 | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ      | No                         | I            |         | SR             | ○            |
| DG-LS'(3)001B01 | HT Water Expansion Tank Level Switch Low              | EDG                 | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ      | No                         | I            |         | SR             | ○            |
| DG-LS'(3)001C01 | HT Water Expansion Tank Level Switch Low              | EDG                 | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ      | No                         | I            |         | SR             | ○            |
| DG-LS'(3)001D01 | HT Water Expansion Tank Level Switch Low              | EDG                 | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ      | No                         | I            |         | SR             | ○            |

Table 2 (40 of 51)

| Tag No.        | Equipment Identification                                          | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------------|-------------------------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| DG-LS(3)001A02 | HT Water Expansion Tank Level Switch High                         | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-LS(3)001B02 | HT Water Expansion Tank Level Switch High                         | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-LS(3)001C02 | HT Water Expansion Tank Level Switch High                         | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-LS(3)001D02 | HT Water Expansion Tank Level Switch High                         | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-LS(3)010A01 | LT Water Expansion Tank Level Switch Low                          | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-LS(3)010B01 | LT Water Expansion Tank Level Switch Low                          | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-LS(3)010C01 | LT Water Expansion Tank Level Switch Low                          | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-LS(3)010D01 | LT Water Expansion Tank Level Switch Low                          | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-LS(3)010A02 | LT Water Expansion Tank Level Switch High                         | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-LS(3)010B02 | LT Water Expansion Tank Level Switch High                         | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-LS(3)010C02 | LT Water Expansion Tank Level Switch High                         | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-LS(3)010D02 | LT Water Expansion Tank Level Switch High                         | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)086A   | Over Speed Air Receiver Pressure Indicator Low                    | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)086B   | Over Speed Air Receiver Pressure Indicator Low                    | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)086C   | Over Speed Air Receiver Pressure Indicator Low                    | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)086D   | Over Speed Air Receiver Pressure Indicator Low                    | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)142A   | Lube Oil/Preheating Water Heat Exchanger Inlet Pressure Indicator | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)142B   | Lube Oil/Preheating Water Heat Exchanger Inlet Pressure Indicator | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)142C   | Lube Oil/Preheating Water Heat Exchanger Inlet Pressure Indicator | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)142D   | Lube Oil/Preheating Water Heat Exchanger Inlet Pressure Indicator | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)176A   | Starting Air Receiver Pressure Indicator                          | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)176B   | Starting Air Receiver Pressure Indicator                          | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)176C   | Starting Air Receiver Pressure Indicator                          | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)176D   | Starting Air Receiver Pressure Indicator                          | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)177A   | Starting Air Receiver Pressure Indicator                          | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |

Table 2 (41 of 51)

| Tag No.      | Equipment Identification                  | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|--------------|-------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| DG-PI(3)177B | Starting Air Receiver Pressure Indicator  | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PI(3)177C | Starting Air Receiver Pressure Indicator  | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PI(3)177D | Starting Air Receiver Pressure Indicator  | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)041A | Engine Inlet Lube Oil Pressure Switch Low | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)041B | Engine Inlet Lube Oil Pressure Switch Low | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)041C | Engine Inlet Lube Oil Pressure Switch Low | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)041D | Engine Inlet Lube Oil Pressure Switch Low | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)042A | Engine Inlet Lube Oil Pressure Switch Low | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)042B | Engine Inlet Lube Oil Pressure Switch Low | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)042C | Engine Inlet Lube Oil Pressure Switch Low | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)042D | Engine Inlet Lube Oil Pressure Switch Low | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)046A | Engine Inlet Lube Oil Pressure Switch Low | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)046B | Engine Inlet Lube Oil Pressure Switch Low | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)046C | Engine Inlet Lube Oil Pressure Switch Low | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)046D | Engine Inlet Lube Oil Pressure Switch Low | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)047A | Engine Inlet Lube Oil Pressure Switch Low | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)047B | Engine Inlet Lube Oil Pressure Switch Low | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)047C | Engine Inlet Lube Oil Pressure Switch Low | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)047D | Engine Inlet Lube Oil Pressure Switch Low | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)060A | Crankcase Gas Pressure Measurement Low    | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)060B | Crankcase Gas Pressure Measurement Low    | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)060C | Crankcase Gas Pressure Measurement Low    | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)060D | Crankcase Gas Pressure Measurement Low    | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)182A | Starting Air Receiver Pressure Switch Low | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)182B | Starting Air Receiver Pressure Switch Low | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)182C | Starting Air Receiver Pressure Switch Low | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |

Table 2 (42 of 51)

| Tag No.      | Equipment Identification                          | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|--------------|---------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| DG-PS(3)182D | Starting Air Receiver Pressure Switch Low         | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)183A | Starting Air Receiver Pressure Switch Low         | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)183B | Starting Air Receiver Pressure Switch Low         | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)183C | Starting Air Receiver Pressure Switch Low         | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PS(3)183D | Starting Air Receiver Pressure Switch Low         | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)110A | LT Water Pump Discharge Pressure Transmitter      | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)110B | LT Water Pump Discharge Pressure Transmitter      | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)110C | LT Water Pump Discharge Pressure Transmitter      | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-PT(3)110D | LT Water Pump Discharge Pressure Transmitter      | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)004A | HT Water Pump Suction Temperature Transmitter     | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)004B | HT Water Pump Suction Temperature Transmitter     | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)004C | HT Water Pump Suction Temperature Transmitter     | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)004D | HT Water Pump Suction Temperature Transmitter     | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)007A | HT Water Outlet Temperature Transmitter           | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)007B | HT Water Outlet Temperature Transmitter           | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)007C | HT Water Outlet Temperature Transmitter           | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)007D | HT Water Outlet Temperature Transmitter           | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)008A | HT Water Outlet Temperature Transmitter           | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)008B | HT Water Outlet Temperature Transmitter           | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)008C | HT Water Outlet Temperature Transmitter           | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)008D | HT Water Outlet Temperature Transmitter           | EDG                | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)044A | Lube Oil Engine Inlet Temperature Transmitter Low | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |
| DG-TT(3)044B | Lube Oil Engine Inlet Temperature Transmitter Low | EDG                | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ | No                         | I            |         | SR             | ○            |

Table 2 (43 of 51)

| Tag No.      | Equipment Identification                           | Equipment Function  | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation       | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|--------------|----------------------------------------------------|---------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|-------------------|----------------------------|--------------|---------|----------------|--------------|
| DG-TT(3)044C | Lube Oil Engine Inlet Temperature Transmitter Low  | EDG                 | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ     | No                         | I            |         | SR             | ○            |
| DG-TT(3)044D | Lube Oil Engine Inlet Temperature Transmitter Low  | EDG                 | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ     | No                         | I            |         | SR             | ○            |
| DG-TT(3)045A | Lube Oil Engine Inlet Temperature Transmitter High | EDG                 | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ     | No                         | I            |         | SR             | ○            |
| DG-TT(3)045B | Lube Oil Engine Inlet Temperature Transmitter High | EDG                 | EDGB     | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ     | No                         | I            |         | SR             | ○            |
| DG-TT(3)045C | Lube Oil Engine Inlet Temperature Transmitter High | EDG                 | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ     | No                         | I            |         | SR             | ○            |
| DG-TT(3)045D | Lube Oil Engine Inlet Temperature Transmitter High | EDG                 | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ     | No                         | I            |         | SR             | ○            |
| IW-TE-350    | IRWST Temperature Element                          | Accident Monitoring | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ     | No                         | I            |         | SR             | ○            |
| IW-TE- 351   | IRWST Temperature Element                          | Accident Monitoring | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ     | No                         | I            |         | SR             | ○            |
| IW-LT-390B   | IRWST LEVEL                                        | Accident Monitoring | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ     | No                         | I            |         | SR             | ○            |
| IW-LT-391A   | IRWST LEVEL                                        | Accident Monitoring | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ     | No                         | I            |         | SR             | ○            |
| MS-PT-1013A  | SG 1 Pressure Transmitter (12)                     | RT/ESF/PAM          | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| MS-PT-1013B  | SG 1 Pressure Transmitter (12)                     | RT/ESF/PAM          | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| MS-PT-1013C  | SG 1 Pressure Transmitter (12)                     | RT/ESF              | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| MS-PT-1013D  | SG 1 Pressure Transmitter (12)                     | RT/ESF              | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| MS-PT-1023A  | SG 2 Pressure Transmitter (12)                     | RT/ESF/PAM          | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| MS-PT-1023B  | SG 2 Pressure Transmitter (12)                     | RT/ESF/PAM          | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| MS-PT-1023C  | SG 2 Pressure Transmitter (12)                     | RT/ESF              | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| MS-PT-1023D  | SG 2 Pressure Transmitter (12)                     | RT/ESF              | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| NR-RW-001A   | ENFMS Safety Channel Detector, Channel A (12)      | RT/PAM              | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            | —       | SR             |              |
| NR-RW-001B   | ENFMS Safety Channel Detector, Channel B (12)      | RT/PAM              | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            | —       | SR             |              |
| NR-RW-001C   | ENFMS Safety Channel Detector, Channel C (12)      | RT                  | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            | —       | SR             |              |
| NR-RW-001D   | ENFMS Safety Channel Detector, Channel D (12)      | RT                  | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            | —       | SR             |              |

Table 2 (44 of 51)

| Tag No.  | Equipment Identification                              | Equipment Function                                            | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|----------|-------------------------------------------------------|---------------------------------------------------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| PA-PA03A | ESF-CCS GC Cabinet (2) (12)                           | ESF                                                           | AB       | 157-A25C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PA-PA03B | ESF-CCS GC Cabinet (2) (12)                           | ESF                                                           | AB       | 157-A01D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PA-PA03C | ESF-CCS GC Cabinet (2) (12)                           | ESF                                                           | AB       | 157-A19C    | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PA-PA03D | ESF-CCS GC Cabinet (2) (12)                           | ESF                                                           | AB       | 157-A19D    | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PA-PA04A | MTP/ITP Cabinet (2), Channel A (12)                   | RT/ESF Test and Maintenance                                   | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA04B | MTP/ITP Cabinet (2), Channel B (12)                   | RT/ESF Test and Maintenance                                   | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA04C | MTP/ITP Cabinet (2), Channel C (12)                   | RT/ESF Test and Maintenance                                   | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA04D | MTP/ITP Cabinet (2), Channel D (12)                   | RT/ESF Test and Maintenance                                   | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA06C | ESF-CCS LC Cabinet (2) (12)                           | ESF                                                           | AB       | 157-A19C    | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PA-PA06D | ESF-CCS LC Cabinet (2) (12)                           | ESF                                                           | AB       | 157-A19D    | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PA-PA14A | PPS Cabinet (2), Channel A (12)                       | RT/ESF                                                        | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA14B | PPS Cabinet (2), Channel B (12)                       | RT/ESF                                                        | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA14C | PPS Cabinet (2), Channel C (12)                       | RT/ESF                                                        | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA14D | PPS Cabinet (2), Channel D (12)                       | RT/ESF                                                        | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA15A | CPCS Cabinet (2), Channel A (12)                      | RT                                                            | AB       | COL 3.11(7) | Short-term                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA15B | CPCS Cabinet (2), Channel B (12)                      | RT                                                            | AB       | COL 3.11(7) | Short-term                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA15C | CPCS Cabinet (2), Channel C (12)                      | RT                                                            | AB       | COL 3.11(7) | Short-term                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA15D | CPCS Cabinet (2), Channel D (12)                      | RT                                                            | AB       | COL 3.11(7) | Short-term                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA16A | QIAS-P Cabinet (2) , Channel A (12)                   | PAM                                                           | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA16B | QIAS-P Cabinet (2) , Channel B (12)                   | PAM                                                           | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA18A | APC Cabinet (2), Channel A (12)                       | SIGNAL SPLITTING                                              | CR       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA18B | APC Cabinet (2), Channel B (12)                       | SIGNAL SPLITTING                                              | CR       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA18C | APC Cabinet (2), Channel C (12)                       | SIGNAL SPLITTING                                              | CR       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA18D | APC Cabinet (2), Channel D (12)                       | SIGNAL SPLITTING                                              | CR       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA29C | DRCS Remote I/O Cabinet (2) (Associated Circuit) (12) | Isolating non-safety I&C equipment from safety I&C equipment. | AB       | 157A19C     | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            | (8)     | NSR            | ○            |

Table 2 (45 of 51)

| Tag No.   | Equipment Identification                              | Equipment Function                                            | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-----------|-------------------------------------------------------|---------------------------------------------------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| PA-PA29D  | DRCS Remote I/O Cabinet (2) (Associated Circuit) (12) | Isolating non-safety I&C equipment from safety I&C equipment. | AB       | 157A19D     | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            | (8)     | NSR            | ○            |
| PA-PA47A  | BOP Radiation Monitoring Cabinet (2) (12)             | ESF, AMI                                                      | AB       | 157-A01D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PA-PA47B  | BOP Radiation Monitoring Cabinet (2) (12)             | ESF, AMI                                                      | AB       | 157-A25C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PA-PA48A  | ENFMS Cabinet (2), Channel A (12)                     | RT/PAM                                                        | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA48B  | ENFMS Cabinet (2), Channel B (12)                     | RT/PAM                                                        | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA48C  | ENFMS Cabinet (2), Channel C (12)                     | PAM                                                           | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PA-PA48D  | ENFMS Cabinet (2), Channel D (12)                     | PAM                                                           | AB       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PE-LX01A  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A25A    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE-LX01B  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A25B    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE-LX01C  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A03C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE-LX01D  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A03D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE-LX02A  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A25A    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE-LX02B  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A25B    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE-LX02C  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A03C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE-LX02D  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A03D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE-LX03A  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A25A    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE-LX03B  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A25B    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE-LX03C  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A02C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE-LX03D  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A02D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE-LX04A  | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A25A    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX04B | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 078-A25B    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX04C | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 137-A10C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX04D | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 137-A10D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX05A | ESF-CCS LC Cabinet (2), (12)                          | ESF                                                           | AB       | 137-A17A    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |

Table 2 (46 of 51)

| Tag No.   | Equipment Identification     | Equipment Function                  | Building | Room No. | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-----------|------------------------------|-------------------------------------|----------|----------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| PE -LX05B | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A17B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX05C | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A10C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX05D | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A10D | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX06B | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 078-A25B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX07A | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A17A | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX07B | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 120-A15B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX08A | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A15A | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX08B | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 120-A15B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX09A | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A15A | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX09B | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A15B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX10A | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A17A | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX10B | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A15B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX11A | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A17A | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX11B | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A17B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX12A | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A17A | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX12B | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A17B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PE -LX13B | ESF-CCS LC Cabinet (2), (12) | ESF                                 | AB       | 137-A17B | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| PM-PM01   | MCR RO Console , (12)        | Plant Status Monitoring and Control | AB       | 157-A12C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (7)     | SR             | ○            |
| PM -PM02  | MCR TO/EO Console , (12)     | Plant Status Monitoring and Control | AB       | 157-A12C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (7)     | SR             | ○            |
| PM -PM03  | MCR SS Console, (12)         | Plant Status Monitoring and Control | AB       | 157-A12C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (7)     | SR             | ○            |
| PM -PM04  | MCR STA Console, (12)        | Plant Status Monitoring and Control | AB       | 157-A12C | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (7)     | SR             | ○            |

Table 2 (47 of 51)

| Tag No.     | Equipment Identification                                 | Equipment Function                  | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-------------|----------------------------------------------------------|-------------------------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| PM -PM05    | MCR Safety Console (12)                                  | Plant Status Monitoring and Control | AB       | 157-A12C    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (7)     | SR             | ○            |
| PM-UC-19    | PPS/CPCS/ESF-CCS Operator Module, Channel A (12)         | PPS Monitoring                      | AB       | 157-A12C    | Continuous                | Mild                       | Mild                        | Electrical EQ, EMC  | No                         | I            |         | SR             | ○            |
| PM-UC-20    | PPS/CPCS/ESF-CCS Operator Module, Channel B (12)         | PPS Monitoring                      | AB       | 157-A12C    | Continuous                | Mild                       | Mild                        | Electrical EQ, EMC  | No                         | I            |         | SR             | ○            |
| PM-UC-21    | PPS/CPCS/ESF-CCS Operator Module, Channel C (12)         | PPS Monitoring                      | AB       | 157-A12C    | Continuous                | Mild                       | Mild                        | Electrical EQ, EMC  | No                         | I            |         | SR             | ○            |
| PM-UC-22    | PPS/CPCS/ESF-CCS Operator Module, Channel D (12)         | PPS Monitoring                      | AB       | 157-A12C    | Continuous                | Mild                       | Mild                        | Electrical EQ, EMC  | No                         | I            |         | SR             | ○            |
| PM-UC'(3)9  | QIAS-P Display, Channel A (12)                           | PAM                                 | CR       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| PM-UC-40    | QIAS-P Display, Channel B (12)                           | PAM                                 | CR       | COL 3.11(7) | Continuous                | Mild                       | Mild                        | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PDT-115A | SG 1 Differential Pressure Differential Transmitter (12) | RT                                  | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PDT-115B | SG 1 Differential Pressure Differential Transmitter (12) | RT                                  | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PDT-115C | SG 1 Differential Pressure Differential Transmitter (12) | RT                                  | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PDT-115D | SG 1 Differential Pressure Differential Transmitter (12) | RT                                  | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PDT-125A | SG 2 Differential Pressure Differential Transmitter (12) | RT                                  | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PDT-125B | SG 2 Differential Pressure Differential Transmitter (12) | RT                                  | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PDT-125C | SG 2 Differential Pressure Differential Transmitter (12) | RT                                  | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PDT-125D | SG 2 Differential Pressure Differential Transmitter (12) | RT                                  | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PT-102A  | Pressurizer Pressure Transmitter (12)                    | RT/ESF/PAM                          | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PT-102B  | Pressurizer Pressure Transmitter (12)                    | RT/ESF/PAM                          | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PT-102C  | Pressurizer Pressure Transmitter (12)                    | RT/ESF                              | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PT-102D  | Pressurizer Pressure Transmitter (12)                    | RT/ESF                              | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PT-103A  | Pressurizer Pressure Transmitter (12)                    | SI/SCS Valve Control                | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PT-104B  | Pressurizer Pressure Transmitter (12)                    | SI/SCS Valve Control                | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PT-105C  | Pressurizer Pressure Transmitter (12)                    | SI/SCS Valve Control                | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PT-106D  | Pressurizer Pressure Transmitter (12)                    | SI/SCS Valve Control                | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PT-190A  | RCS Pressure (Cold Leg-Pump Discharge)Transmitter 12)    | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-PT-190B  | RCS Pressure (Cold Leg-Pump Discharge)Transmitter (12)   | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             |              |

Table 2 (48 of 51)

| Tag No.    | Equipment Identification      | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation   | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|------------|-------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------|----------------------------|--------------|---------|----------------|--------------|
| RC-SE-113A | RCP 1A Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-113B | RCP 1A Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-113C | RCP 1A Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-113D | RCP 1A Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-123A | RCP 1B Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-123B | RCP 1B Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-123C | RCP 1B Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-123D | RCP 1B Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-133A | RCP 2A Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-133B | RCP 2A Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-133C | RCP 2A Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-133D | RCP 2A Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-123A | RCP 1B Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-123B | RCP 1B Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-123C | RCP 1B Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-123D | RCP 1B Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-133A | RCP 2A Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-133B | RCP 2A Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-133C | RCP 2A Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-133D | RCP 2A Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-143A | RCP 2B Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-143B | RCP 2B Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-143C | RCP 2B Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-SE-143D | RCP 2B Speed Sensor and Cable | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-ST-113A | RCP 1A Speed Transmitter      | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-ST-113B | RCP 1A Speed Transmitter      | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-ST-113C | RCP 1A Speed Transmitter      | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-ST-113D | RCP 1A Speed Transmitter      | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-ST-123A | RCP 1B Speed Transmitter      | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |
| RC-ST-123B | RCP 1B Speed Transmitter      | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ | No                         | I            |         | SR             |              |

Table 2 (49 of 51)

| Tag No.    | Equipment Identification                         | Equipment Function | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation       | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|------------|--------------------------------------------------|--------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|-------------------|----------------------------|--------------|---------|----------------|--------------|
| RC-ST-123C | RCP 1B Speed Transmitter                         | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ     | No                         | I            |         | SR             |              |
| RC-ST-123D | RCP 1B Speed Transmitter                         | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ     | No                         | I            |         | SR             |              |
| RC-ST-133A | RCP 2A Speed Transmitter                         | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ     | No                         | I            |         | SR             |              |
| RC-ST-133B | RCP 2A Speed Transmitter                         | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ     | No                         | I            |         | SR             |              |
| RC-ST-133C | RCP 2A Speed Transmitter                         | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ     | No                         | I            |         | SR             |              |
| RC-ST-133D | RCP 2A Speed Transmitter                         | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ     | No                         | I            |         | SR             |              |
| RC-ST-143A | RCP 2B Speed Transmitter                         | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ     | No                         | I            |         | SR             |              |
| RC-ST-143B | RCP 2B Speed Transmitter                         | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ     | No                         | I            |         | SR             |              |
| RC-ST-143C | RCP 2B Speed Transmitter                         | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ     | No                         | I            |         | SR             |              |
| RC-ST-143D | RCP 2B Speed Transmitter                         | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ     | No                         | I            |         | SR             |              |
| RC-TE-112A | RCS, Hot Leg Temperature (NR) Element (5), (12)  | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-112B | RCS, Hot Leg Temperature (NR) Element (12)       | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-112C | RCS, Hot Leg Temperature (NR) Element (12)       | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-112D | RCS, Hot Leg Temperature (NR) Element (12)       | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-113A | RCS, Hot Leg Temperature (NR) Element (5),(12)   | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-113B | RCS, Hot Leg Temperature (NR) Element (12)       | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-113C | RCS, Hot Leg Temperature (NR) Element (12)       | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-113D | RCS, Hot Leg Temperature (NR) Element (12)       | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-122A | RCS, Cold Leg Temperature (NR) Element (5), (12) | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-122B | RCS, Cold Leg Temperature (NR) Element (12)      | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-122C | RCS, Cold Leg Temperature (NR) Element (12)      | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-122D | RCS, Cold Leg Temperature (NR) Element (12)      | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-123A | RCS, Cold Leg Temperature (NR) Element (5), (12) | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-123B | RCS, Cold Leg Temperature (NR) Element (12)      | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |
| RC-TE-123C | RCS, Cold Leg Temperature (NR) Element (12)      | RT                 | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC | No                         | I            |         | SR             | ○            |

Table 2 (50 of 51)

| Tag No.     | Equipment Identification                          | Equipment Function                  | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|-------------|---------------------------------------------------|-------------------------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| RC-TE-123D  | RCS, Cold Leg Temperature (NR) Element (12)       | RT                                  | RCB      | COL 3.11(7) | Short-Term                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-TE-132A  | RCS, Hot Leg Temperature Element (12)             | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-TE-132B  | RCS, Hot Leg Temperature Element (12)             | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-TE-133A  | RCS, Hot Leg Temperature Element (12)             | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-TE-133B  | RCS, Hot Leg Temperature Element (12)             | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-TE-142A  | RCS, Cold Leg Temperature Element (12)            | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-TE-142B  | RCS, Cold Leg Temperature Element (12)            | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-TE-143A  | RCS, Cold Leg Temperature Element (12)            | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| RC-TE-143B  | RCS, Cold Leg Temperature Element (12)            | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ (EMC) | No                         | I            |         | SR             | ○            |
| RS-RU01     | Remote Shutdown Console (12)                      | Plant Status Monitoring and Control | AB       | 137-A06D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (7)     | SR             | ○            |
| SI-FT-302A  | SCS Flow Transmitter (12)                         | PAM                                 | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-FT-305B  | SCS Flow Transmitter (12)                         | PAM                                 | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-FT-311D  | SIS Flow Transmitter (12)                         | PAM                                 | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-FT'(3)1B | SIS Flow Transmitter (12)                         | PAM                                 | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-FT- 321B | SIS Flow Transmitter (12)                         | PAM                                 | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-FT-341A  | SIS Flow Transmitter (12)                         | PAM                                 | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-FT-390D  | Hot Leg Injection Flow Transmitter (12)           | PAM                                 | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-FT-391C  | Hot Leg Injection Flow Transmitter (12)           | PAM                                 | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-PT-311D  | SI Tank Pressure Transmitter (12)                 | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-PT- 321B | SI Tank Pressure Transmitter (12)                 | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-PT-331C  | SI Tank Pressure Transmitter (12)                 | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-PT-341A  | SI Tank Pressure Transmitter (12)                 | PAM                                 | RCB      | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-TE-300A  | SDCHX 1 Inlet and Outlet Temperature Element (12) | SDC                                 | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-TE-301A  | SDCHX 1 Inlet and Outlet Temperature Element (12) | SDC                                 | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-TE-302A  | SDCHX Outlet Temperature Element (12)             | SDC                                 | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |

Table 2 (51 of 51)

| Tag No.    | Equipment Identification                          | Equipment Function      | Building | Room No.    | Required Operational Time | Environmental Condition(1) | Radiation Condition (4),(6) | Designation         | Influence of Immersion(11) | Seismic Cat. | Remarks | Classification | HF Sensitive |
|------------|---------------------------------------------------|-------------------------|----------|-------------|---------------------------|----------------------------|-----------------------------|---------------------|----------------------------|--------------|---------|----------------|--------------|
| SI-TE-303B | SDCHX 2 Inlet and Outlet Temperature Element (12) | SDC                     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-TE-304B | SDCHX 2 Inlet and Outlet Temperature Element (12) | SDC                     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| SI-TE-305B | SDCHX Outlet Temperature Element (12)             | SDC                     | AB       | COL 3.11(7) | Continuous                | Harsh                      | Harsh                       | Electrical EQ/EMC   | No                         | I            |         | SR             | ○            |
| QN-PA17N   | QIAS-N Cabinet (2), (12)                          | Plant Status Monitoring | AB       | 137-A10D    | Continuous                | Mild                       | Mild                        | Electrical EQ (EMC) | No                         | I            | (8)     | NSR            | ○            |

- (1) See Table 3 for definition of environmental categories.
- (2) Equipment located within a cabinet (2) is qualified allowing for temperature increase inside cabinet (2).
- (3) Non-metallic consumable parts (as O-Ring, Packing and Gasket) are contained.
- (4) Radiation environmental qualification requirements for individual components are developed as discussed in Subsection 3.11.5.
- (5) Only Channels A and B are qualified for accident environment.
- (6) Table 3 provides the worst case upper bound radiation environment in the region where the component is located.
- (7) RO, and TO/EO consoles include ESF-CCS soft control modules (ESCMs) which are Class 1E devices. SS and STA consoles include ESCMs which are Class 1E devices and QIAS-N FPDs which are Non-Class 1E devices. Safety Console includes Class 1E and Non-Class 1E devices. Class 1E devices are QIAS-P FPD, operator modules, Class 1E switches, ESCM. Non-Class 1E devices are QIAS-N FPDs. Remote shutdown console includes ESCMs which are Class 1E devices and QIAS-N FPDs which are Non-Class 1E devices.
- (8) QIAS-N Cabinet (2) and DRCS Remote I/O cabinets are designed by the associated circuit in accordnace with the IEEE Std.384, since it performs a non-safety function, but the hardware is qualified.
- (9) Piping design determines room number that valves or other equipment will be installed in and is applied to graded approach. Therefore, room number specified in the "E" column will be defined after piping design is completed. COL applicant will provide information on the room numbers.
- (10) For cables or cable assemblies which do not have tag number due to being supplied as bulk, “N/A” will be specified in the Column labeled “Tag No”
- (11) Influence of Immersion means susceptible to flooding
- (12) Equipment contains electronic components such as semi-conductors or organic materials. It will be designated as H(Harsh) in the Designation if it is located in a Room with TID greater than 10 Gy.

Table 3 (1 of 28)

**Environmental Parameters Data**

| Bldg. | Room No. | Identification                    | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |       |
|-------|----------|-----------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|-------|
|       |          |                                   |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         | Total |
|       |          |                                   |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |       |
| AB    | 049-A01C | ELEVATOR HOISTWAY                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 049-A01D | ELEVATOR HOISTWAY                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 049-A02A | ELEVATOR HOISTWAY                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 049-A02B | ELEVATOR HOISTWAY                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 050-A01C | CS PUMP & MINIFLOW HX RM          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 050-A01D | CS PUMP & MINIFLOW HX RM          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 050-A02C | SI PUMP RM                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 050-A02D | SI PUMP RM                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 050-A03A | SI PUMP RM                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 050-A03B | SI PUMP RM                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 050-A04A | SC PUMP & MINIFLOW HX RM          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 050-A04B | SC PUMP & MINIFLOW HX RM          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A01C | CS HX RM                          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A01D | CS HX RM                          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A02A | CCW PUMP RM                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A02B | CCW PUMP RM                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A02C | CCW PUMP RM                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A02D | CCW PUMP RM                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A03C | CENTRAL WATER CHILLER RM          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A03D | CENTRAL WATER CHILLER RM          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A04C | SEISMIC CAT. I FIRE WATER TANK RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A04D | SEISMIC CAT. I FIRE WATER TANK RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A05C | STAIR                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A05D | STAIR                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A07C | GENERAL ACCESS AREA               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A07D | GENERAL ACCESS AREA               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A08C | FLOOR DRAIN SUMP PUMP RM          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 055-A08D | FLOOR DRAIN SUMP PUMP RM          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |

TS

Table 3 (2 of 28)

| Bldg. | Room No. | Identification               | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                              |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                              |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 055-A10C | TENDON GALLERY ENTRANCE AREA | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A11D | STORAGE                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A14C | PIPE CHASE & VALVE RM        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A14D | PIPE CHASE & VALVE RM        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A18A | PIPE CHASE & VALVE RM        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A18B | PIPE CHASE & VALVE RM        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A19A | GENERAL ACCESS AREA          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A19B | GENERAL ACCESS AREA          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A20A | STAIR                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A20B | STAIR                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A21A | PIPE CHASE & VALVE RM        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A21B | PIPE CHASE & VALVE RM        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A22A | PIPE CHASE                   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A22B | PIPE CHASE                   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A30A | SC HX RM                     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A30B | SC HX RM                     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A31B | CHEMICAL DRAIN SUMP PUMP RM  | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A33A | EQUIP. DRAIN SUMP PUMP RM    | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A33B | EQUIP. DRAIN SUMP PUMP RM    | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A34A | FLOOR DRAIN SUMP PUMP RM     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A34B | FLOOR DRAIN SUMP PUMP RM     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A35A | GENERAL ACCESS AREA          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A36A | CVCS CHEMICAL ADD PACKAGE RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A38A | BORONOMETER RM               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A39A | PROCESS RAD MONITOR RM       | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A42A | CHARGING PUMP RM             | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A43A | CHARGING PUMP MINIFLOW HX RM | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A44A | SECONDARY SAMPLE PUMP RM     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A45A | PIPE CHASE                   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A46B | CONDENSATE RETURN UNIT RM    | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (3 of 28)

| Bldg. | Room No. | Identification                        | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|---------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                       |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                       |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 055-A47B | PRI. OFF-GAS SAMPLE PUMP RM           | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A48B | POST ACCIDENT SAMPLE RM               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A49B | POST ACCIDENT SAMPLE CONTROL PANEL RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A50B | GENERAL ACCESS AREA                   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A51B | EQUIP. DRAIN TANK RM                  | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A52B | RD PUMP RM                            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A53B | RD PUMP RM                            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A54B | AUX. CHARGING PUMP RM                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A55B | CHARGING PUMP RM                      | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A56A | VALVE RM                              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A56B | VALVE RM                              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A57C | PIPING & CABLE AREA                   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A57D | PIPING & CABLE AREA                   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A58A | PIPE CHASE                            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A59A | VALVE RM                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A60A | ELEV. HALL                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A60B | ELEV. HALL                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A61C | ELEV. HALL                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A61D | ELEV. HALL                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A62A | CHASE                                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 055-A62B | CHASE                                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 065-A01C | DIESEL FUEL OIL STORAGE TANK RM       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 065-A01D | DIESEL FUEL OIL STORAGE TANK RM       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 068-A01A | VALVE HANDLING AREA                   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 068-A05A | HVAC CHASE                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 068-A06A | GAS STRIPPER RM                       | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 068-A07A | HOT PIPE WAY                          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 068-A08B | HOT PIPE WAY                          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 068-A09B | VALVE RM                              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (4 of 28)

| Bldg. | Room No. | Identification                      | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|-------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                     |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                     |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 068-A10A | FILTER & DEMIN. VALVE AREA          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 068-A11A | FILTER & DEMIN. VALVE AREA          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 068-A12A | FILTER & DEMIN. VALVE AREA          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 068-A13A | ELEV. HALL                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A01A | REACTOR DRAIN FILTER PIT            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A02A | SFP CLEAN-UP FILTER PIT             | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A03A | SFP DEMIN FILTER PIT                | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A04A | SFP CLEAN-UP FILTER PIT             | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A05A | SFP DEMIN FILTER PIT                | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A06A | PURIFICATION FILTER PIT             | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A07A | REACTOR MAKE-UP WATER<br>FILTER PIT | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A08A | PURIFICATION FILTER PIT             | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A09A | SGBD FILTER PIT                     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A10A | SEAL INJECTION FILTER PIT           | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A11A | SGBD FILTER PIT                     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A12A | SEAL INJECTION FILTER PIT           | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A13A | SGBD FILTER PIT                     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A14A | BORIC ACID FILTER PIT               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 077-A15A | FILTER CARTRIDGE STORAGE            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A01C | PNS SWGR RM                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A01D | PNS SWGR RM                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A02C | CLASS 1E SWGR O1C RM                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A02D | CLASS 1E SWGR O1D RM                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A03C | CLASS 1E LOAD CENTER O1C<br>RM      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A03D | CLASS 1E LOAD CENTER O1D<br>RM      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A04C | MISC. ELECTRICAL EQUIP. RM          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A04D | MISC. ELECTRICAL EQUIP. RM          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A05C | TRAIN-C DC & 1P EQUIP. RM           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A05D | TRAIN-D DC & 1P EQUIP. RM           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A06C | N1E BATTERY RM                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (5 of 28)

| Bldg. | Room No. | Identification                                 | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|------------------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                                |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                                |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 078-A06D | NIE BATTERY RM                                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A07C | TRAIN-C BATTERY RM                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A07D | TRAIN-D BATTERY RM                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A09C | HVAC CHASE                                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A09D | HVAC CHASE                                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A10C | GENERAL ACCESS AREA                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A10D | GENERAL ACCESS AREA                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A11C | ESSENTIAL CHILLER RM                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A11D | ESSENTIAL CHILLER RM                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A12C | ESSENTIAL WATER CHILLER RM                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A12D | ESSENTIAL WATER CHILLER RM                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A13D | DUCT RM                                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A14C | BUTTRESS OPNG                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A15C | TURBINE DRIVEN AUX. FEEDWATER (AFW) PUMP RM    | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A15D | TURBINE DRIVEN AUX. FEEDWATER (AFW) PUMP RM    | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A16C | HVAC CHASE                                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A16D | HVAC CHASE                                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A17C | TURBINE DRIVEN AUX. FEEDWATER (AFW) PUMP VENT. | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A17D | TURBINE DRIVEN AUX. FEEDWATER (AFW) PUMP VENT. | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A19A | CORRIDOR                                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A19B | CORRIDOR                                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A20A | MOTOR DRIVEN AUX. FEEDWATER PUMP RM            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A20B | MOTOR DRIVEN AUX. FEEDWATER PUMP RM            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A21A | PIPE CHASE                                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A21B | PIPE CHASE                                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A23A | BUTTRESS OPNG                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A23B | BUTTRESS OPNG                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A25A | CLASS 1E SWITCHGEAR 01A RM                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A25B | CLASS 1E SWITCHGEAR 01B RM                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A29C | CCW MAKEUP PUMP RM                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

TS

Table 3 (6 of 28)

| Bldg. | Room No. | Identification                       | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|--------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                      |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                      |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 078-A31A | GENERAL ACCESS AREA                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A32A | SPENT FUEL POOL CLEAN-UP DEMIN. RM   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A33A | SG BLOWDOWN DEMIN. RM                | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A34A | PRE-HOLDUP ION EXCH. RM              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A35A | PURIFIC. ION EXCH. RM                | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A36A | BORIC ACID ION EXCH. RM              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A37A | DEBORATING ION EXCH. RM              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A38A | SFP CLEAN-UP PUMP RM                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A39A | GAS STRIPPER EFFLUENT RAD MONITOR RM | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A40B | BORIC ACID CONC. RM                  | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A41B | SG WET LAYUP RECIRC. PUMP RM         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A42B | HELB AREA AHU RM                     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A43B | HELB AREA ACU RM                     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A44B | GENERAL ACCESS AREA                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A47B | ELECTRICAL EQUIPMENT RM              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A49B | RMW PUMP RM                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A50B | HOLDUP PUMP RM                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A51B | BORIC ACID MAKEUP PUMP RM            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A52C | 480V N1E MCC RM                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A52D | 480V N1E MCC RM                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A53C | 480V N1E LOAD CENTER RM              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A53D | 480V N1E LOAD CENTER RM              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A54A | ELEV. HALL                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A54B | ELEV. HALL                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A55C | ELEV. HALL                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A55D | ELEV. HALL                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A56A | TRAIN-A DC & IP EQUIP. RM            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A56B | TRAIN-B DC & IP EQUIP. RM            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A57C | PIPING & CABLE AREA                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A57D | PIPING & CABLE AREA                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (7 of 28)

| Bldg. | Room No. | Identification              | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|-----------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                             |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                             |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 078-A58B | SWING LOAD CENTER RM        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 078-A59D | CCW MAKE UP PUMP RM         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 086-A01A | FILTER AREA                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A01C | EXHAUST SILENCER RM         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A01D | EXHAUST SILENCER RM         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A02C | DG CONTROL PANEL RM         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A02D | DG CONTROL PANEL RM         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A03C | DIESEL GENERATOR RM         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A03D | DIESEL GENERATOR RM         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A04C | CABLE ACCESS AREA           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A04D | CABLE ACCESS AREA           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A05C | ELECTRICAL EQUIPMENT RM     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A05D | ELECTRICAL EQUIPMENT RM     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A06C | GENERAL ACCESS AREA         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A06D | GENERAL ACCESS AREA         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A07C | AUX. FEEDWATER(AFW) TANK    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A07D | AUX. FEEDWATER(AFW) TANK    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A08C | NON-1E DC & IP EQUIP. RM    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A08D | NON-1E DC & IP EQUIP. RM    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A09C | TENDON ACCESS RM            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A10A | GENERAL ACCESS AREA         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A10B | GENERAL ACCESS AREA         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A11A | TRAIN-A BATTERY RM          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A11B | TRAIN-B BATTERY RM          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A12A | 480V CLASS 1E MCC 01A RM    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A12B | 480V CLASS 1E MCC 01B RM    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A13A | MECHANICAL PENETRATION RM   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A13B | MECHANICAL PENETRATION RM   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A14A | PERSONNEL AIR LOCK ENTRANCE | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A15C | PIPE CHASE                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (8 of 28)

| Bldg. | Room No. | Identification                                 | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|------------------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                                |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                                |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 100-A15D | PIPE CHASE                                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A16C | PIPE CHASE                                     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A16D | PIPE CHASE                                     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A17A | CHASE                                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A17B | CHASE                                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A18A | MUX N1 RM                                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A18B | MUX N2 RM                                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A19C | VESTIBULE                                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A19D | VESTIBULE                                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A20A | GENERAL ACCESS AREA                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A21A | NEW RESIN STORAGE RM                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A22A | GENERAL ACCESS AREA                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A23A | AUX BLDG. CONTROLLED<br>AREA (I) SUPPLY AHU RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A24A | SFP COOLING HX RM                              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A25A | VOLUME CONTROL TANK RM                         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A26A | VALVE RM                                       | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A27B | STORAGE                                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A28B | HELB PIPE & HVAC CHASE                         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A29B | PIPE & HVAC CHASE                              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A30B | STORAGE                                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A31B | POOL LEAK DETECTION AREA                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A32B | SFP COOLING HX RM                              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A33B | HELB HVAC VENT CHASE                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A35B | LOADING & UNLOADING AREA                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A36B | FUEL HANDLING AREA SUPPLY<br>AHU RM            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A37B | GENERAL ACCESS AREA                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A38A | FUEL HANDLING AREA<br>NORMAL EXHAUST ACU RM    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A39A | HVAC VENT CHASE                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (9 of 28)

| Bldg. | Room No. | Identification                  | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|---------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                 |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                 |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 100-A39B | HVAC VENT CHASE                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A42C | D/G OIL STORAGE ACCESS          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A42D | D/G OIL STORAGE ACCESS          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A43C | D/G OIL STORAGE ENTRANCE        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A43D | D/G OIL STORAGE ENTRANCE        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A44D | VESTIBULE                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A45A | ELEV. HALL                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A45B | ELEV. HALL                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A46C | ELEV. HALL                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 100-A46D | ELEV. HALL                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 109-A01C | AIR INTAKE RM                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 109-A01D | AIR INTAKE RM                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 111-A01B | CASK LOADING PIT                | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 114-A01B | SPENT FUEL POOL                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 117-A01A | BORIC ACID BATCH TANK ROOM      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 117-A02A | HELB HVAC DUCT TRAY PIPE WAY    | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 119-A01B | REFUELING CANAL                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 119-A02B | CASK DECON. PIT                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A01C | PIPING CABLE AREA               | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A01D | PIPING CABLE AREA               | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A02C | LUBE OIL MAKE-UP TANK RM        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A02D | LUBE OIL MAKE-UP TANK RM        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A03C | DIESEL FUEL OIL DAY TANK RM     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A03D | DIESEL FUEL OIL DAY TANK RM     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A04C | LT & HT WATER EXPANSION TANK RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A04D | LT & HT WATER EXPANSION TANK RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A05C | ELECTRICAL EQUIP. RM            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A05D | ELECTRICAL EQUIP. RM            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A07C | GENERAL ACCESS AREA             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A07D | GENERAL ACCESS AREA             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (10 of 28)

| Bldg. | Room No. | Identification                                        | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|-------------------------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                                       |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                                       |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 120-A08C | 480V N1E MCC RM                                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A08D | 480V N1E MCC RM                                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A09C | ELECTRICAL PENETRATION RM(C)                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A09D | ELECTRICAL PENETRATION RM(D)                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A10C | ECW MAKE-UP PUMP RM                                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A10D | ECW MAKE-UP PUMP RM                                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A11A | GENERAL ACCESS AREA                                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A11B | GENERAL ACCESS AREA                                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A13B | STAIR                                                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A14A | SG BLOWDOWN REGEN HX RM                               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A15B | 480V CLASS 1E MCC 03B RM                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A16A | MECHANICAL PENETRATION RM                             | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A16B | MECHANICAL PENETRATION RM                             | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A17A | STAIR                                                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A18A | LX PANEL RM                                           |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A18C | LX PANEL RM                                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A18D | LX PANEL RM                                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A20A | GENERAL ACCESS AREA                                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A21A | AUX. BLDG. CONTROLLED AREA(I) EMER. EXHAUST ACU RM-1  | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A22C | VESTIBULE                                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A22D | VESTIBULE                                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A23A | VALVE RM                                              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A24A | FUEL HANDLING AREA EMER. EXHAUST ACU RM               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A25A | HVAC CHASE                                            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A29B | AUX. BLDG. CONTROLLED AREA(II) EMER. EXHAUST ACU RM   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A30B | AUX. BLDG. CONTROLLED AREA(II) EMER. EXHAUST ACU RM-2 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A31B | GENERAL ACCESS AREA                                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (11 of 28)

| Bldg. | Room No. | Identification                                     | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|----------------------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                                    |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                                    |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 120-A32A | AUX. BLDG. CONTROLLED AREA(I) EMER. EXHAUST ACU RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A33A | ELEV. HALL                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A33B | ELEV. HALL                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A34C | ELEV. HALL                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A34D | ELEV. HALL                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A35B | BATTERY RM                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A36B | HYDROGEN ANALYZER RM                               | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 120-A37B | ACCESS AREA                                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 123-A01C | D/G RM NORMAL SUPPLY RM                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 123-A01D | D/G RM NORMAL SUPPLY RM                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 127-A01C | DIESEL VENT STACK                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 127-A01D | DIESEL VENT STACK                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A01C | CABLE SPREADING AREA                               | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A01D | CABLE SPREADING AREA                               | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A02C | ELECTRICAL EQUIP. RM                               | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A02D | ELECTRICAL EQUIP. RM                               | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A03C | CEDM M/G SET RM                                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A04C | CEDM POWER CONT. CABINET RM                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A05D | PCS RM                                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A06D | REMOTE SHUT DOWN RM                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A07D | VESTIBULE                                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A08D | STAIR                                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A09C | GENERAL ACCESS AREA                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A09D | GENERAL ACCESS AREA                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A10C | 480V CLASS 1E MCC 03C RM                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A10D | 480V CLASS 1E MCC 03D RM                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A11C | ELECTRICAL PENETRATION RM(C)                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A11D | ELECTRICAL PENETRATION RM(D)                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A12D | MUX N2 RM                                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A13B | GENERAL ACCESS AREA                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (12 of 28)

| Bldg. | Room No. | Identification                              | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|---------------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                             |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                             |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 137-A14B | 480V N1E MCC 18N RM                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A15A | 480V CLASS 1E MCC 04A RM                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A15B | 480V CLASS 1E MCC 04B RM                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A16A | ELEV. HALL                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A16B | ELEV. HALL                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A17A | PENETRATION MUX A RM                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A17B | PENETRATION MUX B RM                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A18A | ELECTRICAL PENETRATION RM(A)                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A18B | ELECTRICAL PENETRATION RM(B)                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A19A | SG BLOWDOWN FLASH TANK RM                   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A20A | GENERAL ACCESS AREA                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A21A | ELECTRICAL EQUIP. RM                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A22A | ELECTRICAL EQUIP. RM                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A23A | 480V CLASS 1E MCC 03A RM                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A24B | 480V N1E MCC 17N RM                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A25A | FUEL HANDLING AREA EMER. EXHAUST ACU RM     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A27B | STORAGE RM                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A28B | AUX BLDG. CONTROLLED AREA(II) SUPPLY AHU RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A29B | GENERAL ACCESS AREA                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A30C | MAIN STEAM ENCLOSURE                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A30D | MAIN STEAM ENCLOSURE                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A31C | MAIN STEAM VALVE ROOM                       | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A31D | MAIN STEAM VALVE ROOM                       | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A32B | PIPE CHASE                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A35C | REACTOR TRIP SWGR RM                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A36C | REACTOR TRIP SWGR RM                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A37C | REACTOR TRIP SWGR RM                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A38C | REACTOR TRIP SWGR RM                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (13 of 28)

| Bldg. | Room No. | Identification                                     | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|----------------------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                                    |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                                    |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 137-A39A | GENERAL ACCESS AREA                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A40B | TRANSFER TUBE INSPECTION AREA                      | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A41A | REMOTE CONTROL CONSOLE RM                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A42A | VESTIBULE                                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-A43D | HVAC RM                                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-44C  | ELEV. HALL                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 137-44D  | ELEV. HALL                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 139-A01B | NEW FUEL STORAGE AREA                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A01B | SST RM                                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A02B | HOT TOOL CRIB                                      | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A04B | CONTAINMENT ENTRANCE AREA                          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A05B | GENERAL ACCESS AREA                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A08B | NEW FUEL CONTAINER LAYDOWN & INSPECTION AREA       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A10A | EQUIPMENT HATCH ACCESS RM                          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A13A | ELEV. HALL                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A13B | ELEV. HALL                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A14A | AUX BLDG. CONTROLLED AREA(I) NORMAL EXHAUST ACU RM | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A15B | PIPE CHASE                                         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A16A | SIS FILLING TANK RM                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A17A | CHASE                                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 156-A17B | CHASE                                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 157-A01D | I & C EQUIPMENT RM                                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 157-A02C | TSC OFFICE                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 157-A03C | MEN'S TOILET                                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 157-A04C | LOCKER RM                                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 157-A05C | WOMEN'S TOILET                                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 157-A06D | VESTIBULE                                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 157-A07C | STORAGE                                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 157-A08D | COMPUTER RM PACU RM                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (14 of 28)

| Bldg. | Room No. | Identification                                      | H/M<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |       |
|-------|----------|-----------------------------------------------------|------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|-------|
|       |          |                                                     |            | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         | Total |
|       |          |                                                     |            |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |       |
| AB    | 157-A09C | MEETING RM                                          | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A10C | KITCHEN & DINING RM                                 | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A12C | MAIN CONTROL RM                                     | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A13C | VESTIBULE                                           | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A13D | VESTIBULE                                           | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A14D | COMPUTER RM                                         | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A15D | COMPUTER RM OFFICE                                  | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A16C | CORRIDOR                                            | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A16D | CORRIDOR                                            | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A17C | CORRIDOR                                            | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A18C | CLEAN AGENT RM                                      | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A19C | I & C EQUIP. RM                                     | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A19D | I & C EQUIP. RM                                     | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A20C | I & C EQUIP. RM                                     | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A20D | I & C EQUIP. RM                                     | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A21D | INSTRUMENT MAINTENANCE SHOP                         | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A22D | GUEST RM                                            | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A23D | AEB RM                                              | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A24C | SHOWER RM                                           | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A25C | I & C EQUIP. RM                                     | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A26C | SERVICE RM                                          | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A27C | GENERAL ACCESS AREA                                 | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A27D | GENERAL ACCESS AREA                                 | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A28D | BREATHING AIR RACK                                  | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A29C | TSC EQUIP. REPAIR & MAINT RM                        | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 157-A30C | TSC RECORD STORAGE RM                               | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 170-A01A | ELEV. MACHINE RM                                    | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 174-A01C | EDG RM NORMAL EXHAUST FAN RM                        | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 174-A01D | EDG RM NORMAL EXHAUST FAN RM                        | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 174-A02C | ESSENTIAL CHILLED WATER COMPRESSION TANK RM         | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 174-A03C | CCW SURGE TANK RM                                   | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 174-A03D | CCW SURGE TANK RM                                   | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 174-A05C | 480V N1E MCC RM                                     | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 174-A05D | ELECTRICAL EQUIP. RM                                | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |
| AB    | 174-A06D | ESSENTIAL/CENTRAL CHILLED WATER COMPRESSION TANK RM | M          |                 |          |                  |          |                       |          |                    |      |         |          |      |         |       |

TS

Table 3 (15 of 28)

| Bldg. | Room No. | Identification                           | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|------------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                          |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                          |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 174-A12C | GENERAL ACCESS AREA                      |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A12D | GENERAL ACCESS AREA                      |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A13C | 480V N1E MCC RM                          |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A13D | 480V N1E MCC RM                          |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A14C | EDG RM NORMAL SUPPLY AHU RM              |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A14D | EDG RM NORMAL SUPPLY AHU RM              |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A15B | CONTAINMENT HIGH/LOW VOLUME PURGE ACU RM |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A16B | CONTAINMENT HIGH VOLUME PURGE AHU RM     |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A17B | ELEV. HALL                               |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A18C | ELEV. HALL                               |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A18D | ELEV. HALL                               |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A19C | ACCESS RM                                |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A19D | ACCESS RM                                |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A22B | HVAC CHASE                               |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A23C | CONTROL RM AREA SUPPLY AHUS RM           |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A23D | CONTROL RM AREA SUPPLY AHUS RM           |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A24C | CONTROL RM AREA SUPPLY AHU/ACU RM        |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A24D | CONTROL RM AREA SUPPLY AHU/ACU RM        |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A25B | HVAC AREA                                |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A25C | HVAC AREA                                |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A26C | VESTIBULE                                |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 174-A26D | VESTIBULE                                |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 175-A01C | MSIV RM SUPPLY AHU RM                    |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 175-A01D | MSIV RM SUPPLY AHU RM                    |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A01C | ELEV. HALL                               |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A01D | ELEV. HALL                               |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A02C | AUX. BLDG. CLEAN AREA SUPPLY AHUS RM     |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A02D | AUX. BLDG. CLEAN AREA SUPPLY AHUS RM     |             |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (16 of 28)

| Bldg. | Room No. | Identification                                              | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|-------------------------------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                                             |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                                             |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| AB    | 195-A04C | DIESEL VENT STACK                                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A04D | DIESEL VENT STACK                                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A05C | 480V N1E LOADCENTER RM                                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A05D | 480V N1E LOADCENTER RM                                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A06C | HVAC VENT RM                                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A06D | HVAC VENT RM                                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A07B | ELEV. HALL                                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A08B | AUX. BLDG. CONTROLLED<br>AREA (II) NORMAL EXHAUST<br>ACU RM | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A09C | HVAC EXHAUST PENT HOUSE                                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 195-A10D | SMOKE FAN RM                                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 215-A02B | ELEVATOR MACHINE RM                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 216-A01C | ELEVATOR MACHINE RM                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| AB    | 216-A01D | ELEVATOR MACHINE RM                                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 055-C01  | TENDON GALLERY                                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 069-C01  | ICI CAVITY                                                  | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 078-C01  | REACTOR CAVITY                                              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 080-C01  | HOLD-UP VOLUME TANK                                         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 081-C01  | IRWST                                                       | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 089-C01  | CORE DEBRIS CHAMBER                                         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 089-C02  | REACTOR CAVITY ACCESS<br>AREA                               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 100-C01  | CONTAINMENT ANNULUS<br>AREA                                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 100-C02A | STEAM GENERATOR CAVITY                                      | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 100-C02B | STEAM GENERATOR CAVITY                                      | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 100-C03  | REACTOR DRAIN TANK RM                                       | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 100-C04  | LETDOWN HX RM                                               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 100-C05  | ELEV. HOISTWAY                                              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 106-C01  | UGS LAYDOWN AREA                                            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 114-C01A | CONTAINMENT ANNULUS<br>AREA                                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 114-C01B | CONTAINMENT ANNULUS<br>AREA                                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 114-C02  | CSB LAYDOWN AREA                                            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

Table 3 (17 of 28)

Table 3 (17 of 28)

| Bldg. | Room No. | Identification                   | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|----------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                  |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                  |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| RCB   | 115-C01  | VALVE RM                         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 115-C02  | VALVE RM                         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 115-C03  | VALVE RM                         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 128-C01  | REGENERATIVE HX RM               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 130-C01  | REFUELING POOL AREA              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 136-C01A | CONTAINMENT ANNULUS AREA         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 136-C01B | CONTAINMENT ANNULUS AREA         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 136-C02  | PRESSURIZER CAVITY               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 156-C01  | OPERATING AREA                   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| RCB   | 173-C01  | ELEV. MACHINE RM                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 063-H01  | STAIR                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 063-H02A | DIESEL FUEL OIL TRANSFER PUMP RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 063-H02B | DIESEL FUEL OIL TRANSFER PUMP RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 063-H03A | DIESEL FUEL OIL STORAGE TANK RM  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 063-H03B | DIESEL FUEL OIL STORAGE TANK RM  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H01A | D/G CONTROL RM                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H01B | D/G CONTROL RM                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H02A | EMER. D/G RM                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H02B | EMER. D/G RM                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H03  | ELECTRICAL EQUIP. RM             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H04A | AIR INTAKE SHAFT                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H04B | AIR INTAKE SHAFT                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H05A | AIR EXHAUST SHAFT                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H05B | AIR EXHAUST SHAFT                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H06A | VALVE ROOM                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H06B | VALVE ROOM                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H07A | STAIR                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 100-H07B | STAIR                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 121-H01A | LUBE OIL MAKEUP TANK RM          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

TS

Table 3 (18 of 28)

| Bldg. | Room No. | Identification                      | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|-------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                     |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                     |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| EDGB  | 121-H01B | LUBE OIL MAKEUP TANK RM             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 121-H02A | DIESEL FUEL OIL DAY TANK RM         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 121-H02B | DIESEL FUEL OIL DAY TANK RM         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 135-H01A | D/G EXHAUST SILENCER RM             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 135-H01B | D/G EXHAUST SILENCER RM             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 135-H02A | AIR INTAKE FILTER RM                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 135-H02B | AIR INTAKE FILTER RM                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 135-H03A | EDG RM NOR. SUPPLY AHU RM           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| EDGB  | 135-H03B | EDG RM NOR. SUPPLY AHU RM           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 057-P01  | ELEV. HOISTWAY                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 062-P01  | CONTAMINATED CLOTHING STORAGE       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 062-P02  | MASK DECONTAMINATION RM             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P01  | HOT PIPE CHASE                      | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P02  | GRS HEADER DRAIN TANK RM            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P03  | VALVE RM                            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P04  | GRS INLET SKID RM                   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P05  | S.R.L.T STORAGE TANK RM             | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P06  | FUTURE USE AREA                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P07  | VALVE RM                            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P08  | LOW ACTIVITY SPENT RESIN TANK RM    | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P10  | HOT TOOL RM                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P12  | LRS SEAL WATER RECYCLE EQUIPMENT RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P13  | HOT PIPE CHASE                      | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P14  | HOT TOOL RM                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P16  | CORRIDOR                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P17  | HVAC CHASE                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P18  | STAIR                               | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P19  | ELECT. RISER                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P20  | HVAC CHASE                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

TS

Table 3 (19 of 28)

| Bldg. | Room No. | Identification                                  | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|-------------------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                                 |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                                 |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| CPB   | 063-P21  | EQUIP. WASTE PUMP RM                            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P22  | EQUIP. WASTE PUMP RM                            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P23  | EQUIP. WASTE TANK RM                            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P24  | EQUIP. WASTE TANK RM                            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P25  | FLOOR DRAIN PUMP RM                             | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P26  | NORMAL SUMP PUMP RM                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P27  | CHEMICAL WASTE PUMP RM                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P28  | FLOOR DRAIN TANK RM                             | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P29  | FLOOR DRAIN TANK RM                             | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P30  | CHEMICAL WASTE TANK RM                          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P31  | CHEMICAL WASTE TANK RM                          | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P32  | DETERGENT WASTE TANK & PUMP RM                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P33  | SAMPLING RM                                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P34  | L.R.S. CONTROL PANEL RM                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P36  | DWS DRAIN SUMP PUMP RM                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P37  | MONITOR TANK RM                                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P38  | PSS-SOLIDIFICATION & DRUM CONVEYOR RM           | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P39  | SPENT RESIN LONG TERM STORAGE TANK SUMP PUMP RM | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P40  | CONCENTRATE PUMP RM                             | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P41  | CONCENTRATE HOLDING TANK RM                     | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P42  | RO FEED PUMP RM                                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P43  | IX FEED PUMP RM                                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P44  | IX FEED TANK RM                                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P45  | HOT TOOL RM                                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P46  | CORRIDOR                                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P47  | CTS-HEPA VACUUM SKID RM                         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P48  | CTS-DRYER SKID RM                               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P49  | CTS-VACUUM SKID RM                              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

TS

Table 3 (20 of 28)

| Bldg. | Room No. | Identification                    | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|-----------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                   |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                   |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| CPB   | 063-P50  | HVAC CHASE                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P51  | STAIR                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P52  | CHEMICAL DRAIN SUMP PUMP RM       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P53  | CORRIDOR                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P54  | MONITOR TANK PUMP RM              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P55  | CABLE TRAY & PIPE CHASE           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P56  | DROP AREA                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P57  | SORTING RM                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P59  | NON-CONTAMINATED CLOTHING STORAGE | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P60  | LAUNDRY OFFICE                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P61  | LAUNDRY STORAGE                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P62  | STORAGE                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P63  | TELECOM CLOSET                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P64  | CORRIDOR                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P65  | ELECT. RISER                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P66  | STAIR                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P67  | ISOTOPIC STORAGE                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P68  | TLD & FILM STORAGE                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P69  | FOREMEN'S OFFICE                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P70  | CONTAMINATED ELECTRIC EQUIP. RM   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P71  | CONTAMINATED INSTRUMENT REPAIR RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P72  | CALIB. OFFICE                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P73  | INSTRUMENT CALIB. FACILITY        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P74  | COUNTING RM                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P75  | COUNTING OFFICE                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P76  | STAIR                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P77  | HVAC CHASE                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P78  | PIPE CHASE                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P79  | PIPE CHASE                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 063-P80  | PIPE CHASE                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

TS

Table 3 (21 of 28)

| Bldg. | Room No. | Identification                  | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|---------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                 |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                 |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| CPB   | 077-P01  | HOT PIPE WAY                    | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 079-P01  | ELEV. HOISTWAY                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 079-P02  | ELEV. HOISTWAY                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P01  | WASTE GAS DRYER SKID RM         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P02  | WASTE GAS DRYER SKID RM         | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P03  | VALVE RM                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P04  | CHARCOAL GUARD BED RM           | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P05  | ELECT. RISER                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P06  | VALVE RM                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P07  | VALVE RM                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P08  | VALVE RM                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P09  | WASTE SHREDDER RM               | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P11  | SORTING RM                      | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P12  | DROP AREA (CLEAN)               | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P13  | CLEAN WASTE STORAGE             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P14  | CORRIDOR                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P15  | VALVE RM                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P16  | VALVE RM                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P17  | VALVE RM                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P18  | DROP AREA(POTENTIAL)            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P19  | POTENTIAL CLEAN WASTE STORAGE   | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P20  | VALVE RM                        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P21  | CHARCOAL GUARD BED RM           | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P24  | DAW DRYER & DEWATERING EQUIP.RM | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P26  | DROP AREA(HOT)                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P30  | HOT TOOL RM                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P31  | PRIMARY SAMPLING RM             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P32  | PRIMARY SAMPLING SINK RM        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P33  | HOT TOOL RM                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P35  | STORAGE                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

TS

Table 3 (22 of 28)

| Bldg. | Room No. | Identification                     | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                    |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                    |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| CPB   | 085-P36  | SAMPLE COUNTING RM                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P37  | RADIOCHEMISTRY LAB                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P38  | BALANCE RM                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P39  | LAB SERVICE VALVE STATION          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P40  | LAB OPERATOR'S OFFICE              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P41  | COMPOUND BLDG. SUMP PUMP RM        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P42  | IX MODULE RM                       | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P43  | IX MODULE RM                       | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P44  | RO FEED TANK RM                    | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P45  | DRUM REMOVAL CHASE                 | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P46  | MF MEMBRANE MODULE RM              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P47  | MF MEMBRANE MODULE RM              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P48  | RO MEMBRANE MODULE & VALVE SKID RM | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P50  | SAMPLE CHILLER RM                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P51  | SECONDARY SAMPLING RM              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P52  | BALANCE RM                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P53  | LAB STORAGE                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P54  | TURBINE GENERATOR BLDG. LAB        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P55  | LAB OFFICE                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P57  | LUBE OIL LAB                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P58  | CORRIDOR                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P59  | TELECOM CLOSET                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 085-P61  | ELECT. RISER                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 096-P01  | CHARCOAL DELAY BED RM              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 096-P02  | CHARCOAL DELAY BED RM              | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P01  | CHEMICAL STORAGE AREA              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P02  | GRS EQUIP. REMOVAL AREA            | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P03  | HOT TOOL RM                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P04  | WELDING RM                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P05  | HOT INSTRUMENT RM                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

TS

Table 3 (23 of 28)

| Bldg. | Room No. | Identification                 | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|--------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| CPB   | 100-P06  | HOT MACHINE SHOP               | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P07  | FUTURE EXTENSION AREA          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P08  | TRUCK BAY                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P09  | WASTE DRUM STORAGE AREA        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P10  | SPENT FILTER DRUM STORAGE AREA | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P12  | PIPING OPEN'G AREA             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P13  | PIPING OPEN'G AREA             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P14  | CORRIDOR                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P15  | HOT TOOL RM                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P17  | FLAMMABLE GAS STORAGE          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P18  | NONFLAMMABLE GAS STORAGE       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P19  | VESTIBULE                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P20  | CONFERENCE RM                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P21  | MEN'S LOCKER RM                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P06  | HOT MACHINE SHOP               | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P07  | FUTURE EXTENSION AREA          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P08  | TRUCK BAY                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P09  | WASTE DRUM STORAGE AREA        | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P10  | SPENT FILTER DRUM STORAGE AREA | H           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P12  | PIPING OPEN'G AREA             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P13  | PIPING OPEN'G AREA             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P14  | CORRIDOR                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P15  | HOT TOOL RM                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P17  | FLAMMABLE GAS STORAGE          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P18  | NONFLAMMABLE GAS STORAGE       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P19  | VESTIBULE                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P20  | CONFERENCE RM                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P21  | MEN'S LOCKER RM                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P38  | MEN'S TOILET                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P39  | WOMEN'S TOILET                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

TS

Table 3 (24 of 28)

| Bldg. | Room No. | Identification                           | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|------------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                          |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                          |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| CPB   | 100-P40  | VESTIBULE                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P41  | LOBBY                                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P42  | O.S.C. AREA                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P43  | HEALTH PHYSICS STORAGE                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P44  | WATER HEATER TANK RM                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P45  | MEN'S TOILET                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P46  | MEN'S SHOWER RM                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P47  | DRYING AREA                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P48  | CORRIDOR                                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P49  | TELECOM CLOSET                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P50  | VESTIBULE                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P51  | WOMEN'S SHOWER RM                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P52  | DRYING AREA                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P53  | WOMEN'S TOILET                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P54  | CORRIDOR                                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P55  | CORRIDOR                                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P56  | LAUNDRY AREA                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P57  | ELECT. RISER                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P58  | ELECT. RISER                             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P59  | DAW STORAGE RM                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P60  | WASTE DRUM TRANSF. RM                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P61  | VIP LOCKER RM                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P62  | TOILET                                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 100-P63  | SHOWER RM                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P01  | GASEOUS RADWASTE SAMPLE CONTROL PANEL RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P02  | GASEOUS RADWASTE SAMPLE VALVE RACK RM    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P03  | GRS EXHAUST RAD MONITOR RM               | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P04  | CHARCOAL DELAY BED REMOVAL AREA          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P05  | HOT TOOL RM                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

TS

Table 3 (25 of 28)

| Bldg. | Room No. | Identification                  | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|---------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                 |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                 |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| CPB   | 120-P06  | HOT TOOL RM                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P07  | CORRIDOR                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P08  | GASEOUS RADWASTE ACCESS AREA    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P09  | ELECTRICAL EQUIPMENT RM         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P10  | BATTERY RM                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P11  | COMPOUND BLDG. WATER CHILLER RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P12  | COMPOUND BLDG. WATER CHILLER RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P13  | STORAGE                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P15  | STORAGE                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P16  | CONTROLLED AREA SUPPLY AHU RM   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P20  | ELECTRICAL EQUIP. RM            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P21  | CCS CABINET RM                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P22  | STORAGE                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P23  | CONTROL RM                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P24  | STORAGE                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P25  | ELECTRICAL EQUIP. RM            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P27  | CORRIDOR                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P28  | TELECOM CLOSET                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P29  | ELECT. RISER                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P30  | ELEC. REPAIR OFFICE             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P31  | ELEC. EQUIPMENT REPAIR RM       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P32  | SERVICE & STORAGE AREA          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 120-P33  | HVAC CHASE                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P01  | ELEV. MACHINE RM                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P02  | EMERGENCY EXHAUST ACU RM        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P03  | CORRIDOR                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P04  | TELE-COMMUNICATION EQUIP. RM    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P06  | NORMAL EXHAUST ACU RM           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P07  | INSTRUMENT REPAIR OFFICE        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P08  | COMMUNICATION MAINTENANCE RM    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

TS

Table 3 (26 of 28)

| Bldg. | Room No. | Identification                            | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|-------------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                           |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                           |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| CPB   | 139-P09  | MEN'S TOILET                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P10  | WOMEN'S TOILET                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P11  | TELECOM CLOSET                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P12  | ELECT. RISER                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P13  | CORRIDOR                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P14  | HVAC CHASE                                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P15  | INSTRUMENT REPAIR RM                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P16  | CLEAN AREA SUPPLY AHU RM                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P17  | COMMUNICATION POWER SUPPLY RM             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P18  | AIR INTAKE PENTHOUSE                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 139-P19  | SRS CTS CHILLER SKID RM                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 157-P01  | CORRIDOR                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 157-P02  | WOMEN'S TOILET                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 157-P03  | MEN'S TOILET                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 157-P04  | LOBBY                                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 157-P05  | HVAC EQUIP. RM                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 157-P08  | STORAGE                                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 157-P09  | OPERATOR WAITING RM                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 157-P10  | REST AREA                                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 163-P01  | AIR EXHAUST PENTHOUSE                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 174-P01  | ELEV. MACHINE RM                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| CPB   | 174-P02  | CHILLED WATER COMPRESSION TANK RM         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 050-T01  | CONDENSATE PUMP PIT AREA                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 055-T01  | CONDENSER PIT AREA                        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 060-T01  | CONDENSATE OVERFLOW STORAGE SUMP PIT AREA | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 067-T01  | ELEV. HOISTWAY                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 067-T02  | UNDERGROUND COMMON TUNNEL                 | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 072-T01  | CHEMICAL HANDLING RM                      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 072-T02  | LUBE OIL STORAGE                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

TS

Table 3 (27 of 28)

| Bldg. | Room No. | Identification                          | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|-----------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                         |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                         |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| TGB   | 072-T03  | MAIN TURBINE LUBE OIL<br>CONDITIONER RM | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 073-T01  | STAIR                                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 073-T02  | TURBINE GEN. BLDG.<br>BASEMENT FL       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 073-T03  | CONDENSATE POLISHING<br>AREA            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 073-T05  | CONDENSATE POLISHING<br>CONTROL RM      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 073-T06  | CAUSTIC/ACID DAY TANK &<br>PUMP RM      | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 073-T07  | STAIR                                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 073-T08  | STAIR                                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 073-T10  | STAIR                                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 073-T11  | SWITCHGEAR AREA                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 100-T01  | TURBINE GEN. BLDG. GROUND<br>FL         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 100-T02  | MUX CABINET RM                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 100-T03  | MECHANICAL REPAIR RM                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 100-T04  | TOILET                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 100-T05  | OPERATORS WAITING RM                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 100-T11  | TURBINE LUBE OIL<br>RESERVOIR RM        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 100-T12  | MUX CABINET RM                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 100-T15  | SWITCHGEAR RM                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 100-T17  | BATTERY RM                              | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 100-T20  | TOILET                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 100-T21  | INSTRUMENT REPAIR OFFICE                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 100-T22  | INSTRUMENT REPAIR SHOP                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 112-T01  | EXCITATION CONTROL<br>CUBICLE RM        | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 122-T01  | SWITCHGEAR RM                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 122-T02  | AHU RM                                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 122-T03  | GENERAL TOOL RM &<br>WAREHOUSE          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 122-T04  | ELECTRICAL REPAIR OFFICE                | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 122-T05  | ELECTRICAL REPAIR SHOP                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 122-T07  | ACCESS AISLE                            | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

TS

Table 3 (28 of 28)

| Bldg. | Room No. | Identification                     | H/M.<br>(4) | Pressure (psig) |          | Temperature (°F) |          | Relative Humidity (%) |          | Radiation TID (Gy) |      |         |          |      |         |  | Total |
|-------|----------|------------------------------------|-------------|-----------------|----------|------------------|----------|-----------------------|----------|--------------------|------|---------|----------|------|---------|--|-------|
|       |          |                                    |             | Normal          | Accident | Normal           | Accident | Normal                | Accident | Normal             |      |         | Accident |      |         |  |       |
|       |          |                                    |             |                 |          |                  |          |                       |          | Gamma              | Beta | Neutron | Gamma    | Beta | Neutron |  |       |
| TGB   | 122-T08  | MAIN STEAM PIPING AREA             | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T01  | TURBINE GEN. BLDG.<br>OPERATING FL | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T02  | CLEAN WORKING RM                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T03  | REPAIR TOOL RM                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T04  | SPECIAL TOOL RM                    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T05  | OPERATOR'S OFFICE                  | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T06  | SHOWER RM                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T07  | JANITOR RM                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T08  | WOMEN'S TOILET                     | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T09  | MEN'S TOILET                       | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T10  | ELECTRIC WATER HEATER RM           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T11  | CONTROL PANEL RM                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T12  | PIPE CHASE                         | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T13  | LOCKER RM                          | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 136-T14  | CORRIDOR                           | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 170-T01  | TBN. GEN. BLDG. DEAERATOR<br>FL    | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |
| TGB   | 187-T01  | ELEV. MACHINE RM                   | M           |                 |          |                  |          |                       |          |                    |      |         |          |      |         |  |       |

**TS**

- 1) Beta or gamma dose is negligible when compared to total doses, or there is no source term in this area.
- 2) Neutrons are not present except for the areas nearby reactor vessel during normal operations.
- 3) There occurs no neutron during accident operations.
- 4) Harsh and Mild designation varies depending on the type of equipment to be located in Room No.  
Any area with total integrated dose (TID) greater than 10 Gy for electronic components such as semi-conductors or electronic components containing organic material will be designated as H (Harsh).

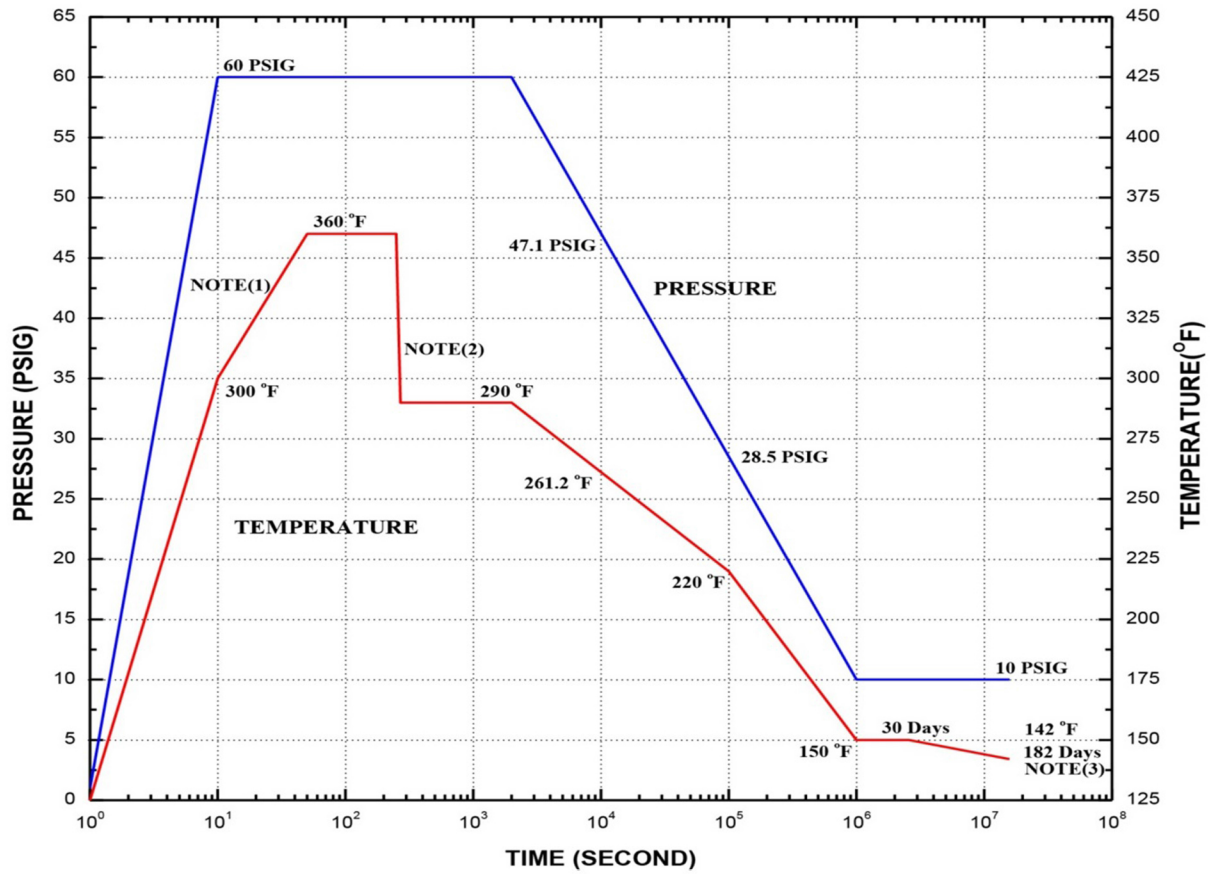
Table 4

Containment Spray Conditions

| Phase<br>Parameter        | Short Term<br>(Accident Initiation-up to 4 hours)                                     | Long Term<br>(4 hours-up to 30 days)                                                                                                             |
|---------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Chemistry                 | 4,400 ppm Boron as $H_3BO_3$<br>0-50 ppm Hydrazine as $N_2H_4$<br>$4 \leq pH \leq 10$ | 4,400 ppm Boron as $H_3BO_3$<br>0-50 ppm Hydrazine as $N_2H_4$<br>$7.0 \leq pH \leq 8.5$<br>Using Tri-sodium Phosphate<br>as the Buffering Agent |
| Spray Density<br>(Note 1) | $\geq 0.57 \text{ gpm/ft}^2$                                                          | $\geq 0.57 \text{ gpm/ft}^2$                                                                                                                     |
| Spray Temp.<br>(Note 2)   | Variable                                                                              |                                                                                                                                                  |

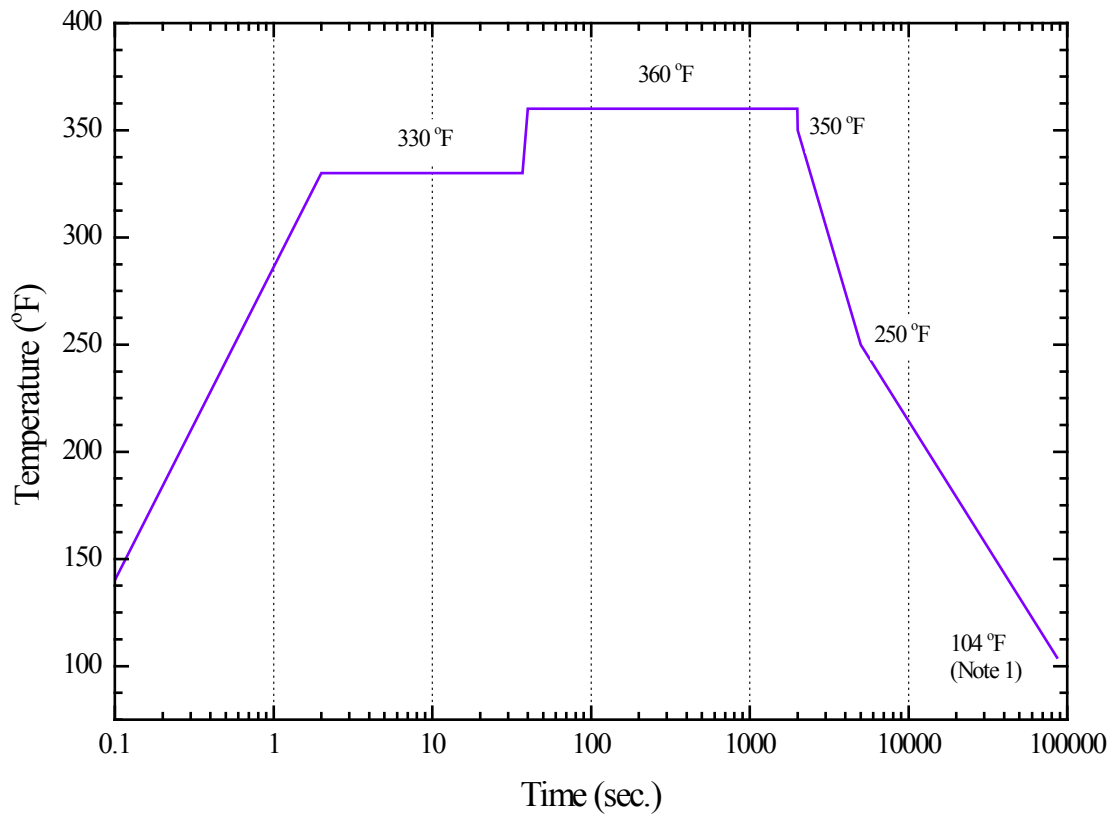
## Notes:

1. Spray density is based on 5,000 (gpm/train) over 150 (ft) diameter containment. The pressure and temperature profiles are controlled by continuous operation of spray system up to 30 days.
2. The minimum spray droplet temperature is greater than 50 °F, and the maximum spray temperature can be varied depending on the temperature of IRWST water that supplies to spray nozzle.



- (1) Pressure and temperature are increasing within 10 seconds from 0 psig and 49 °C (120 °F), respectively.
- (2) Rapid drop within 20 seconds at 250 seconds
- (3) After 182 days, pressure and temperature can be extended up to 1 year with the same values.

Figure 1 Design Basis Containment Atmosphere Temperature and Pressure EQ Profile for Accident

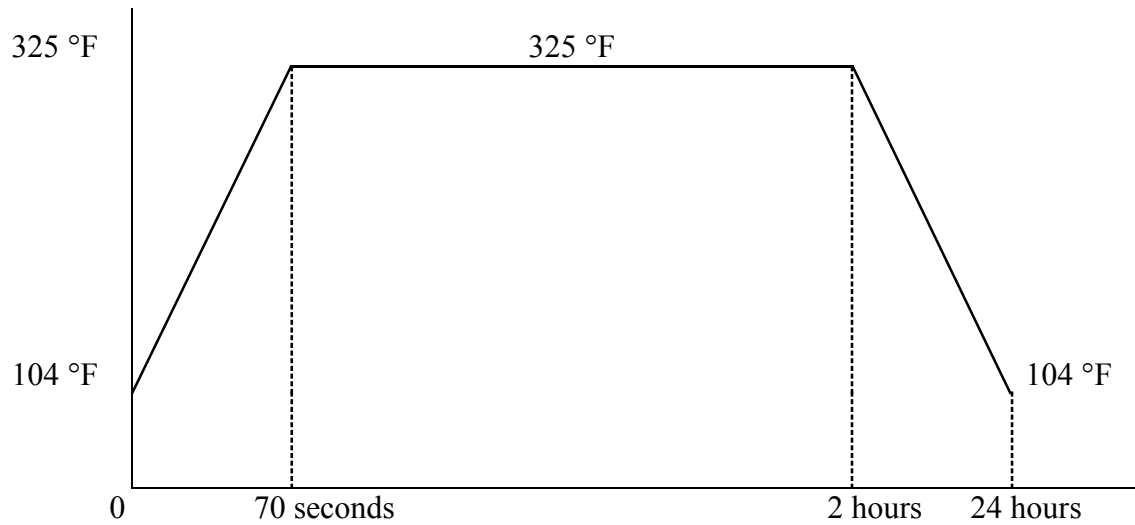


|             |     |     |     |     |     |       |       |       |        |
|-------------|-----|-----|-----|-----|-----|-------|-------|-------|--------|
| Time (sec.) | 0   | 0.1 | 2.0 | 37  | 40  | 1,990 | 2,000 | 5,000 | 86,400 |
| Temp. (°F)  | 104 | 140 | 330 | 330 | 360 | 360   | 350   | 250   | 104    |

Note:

1. Temperature is decreasing up to 104°F at 86,400 seconds. (24 hours)

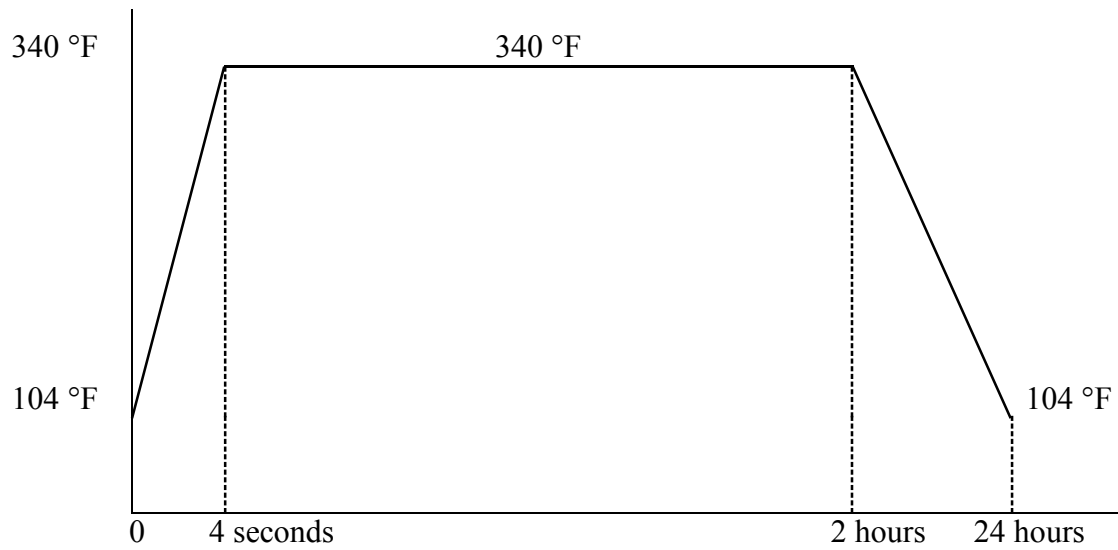
Figure 2 Main Steam Valve Room MSLB Temperature Profile



Note:

1. Temperature profile above applies to the following zones: 055-A46B, 068-A06A, 078-A40B, 078-A42B, and 078-A43B

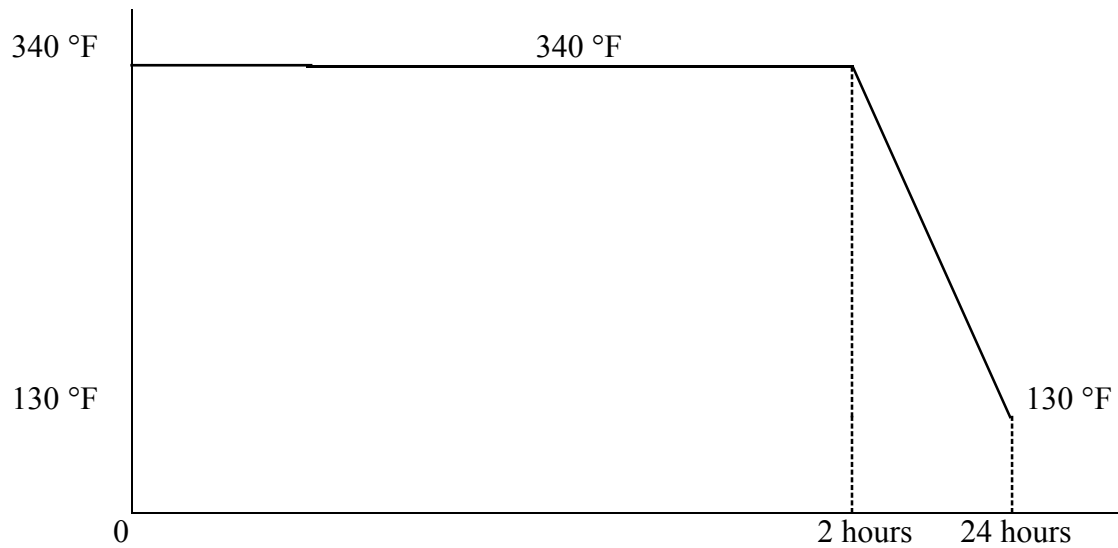
Figure 3 Auxiliary Building HELB Temperature Profile



Note:

1. Temperature profile above applies to the following zones: 078-A15C/D

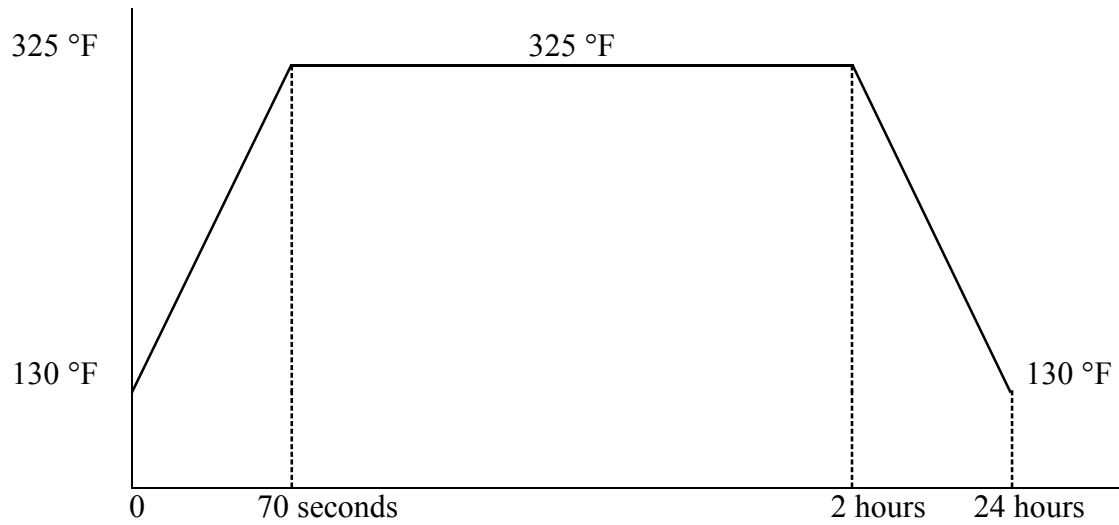
Figure 4 Turbine Driven AF Pump Room Temperature Profile



Note:

1. Temperature profile above applies to the following zones: 078-A17C/D, and 137-A30C/D

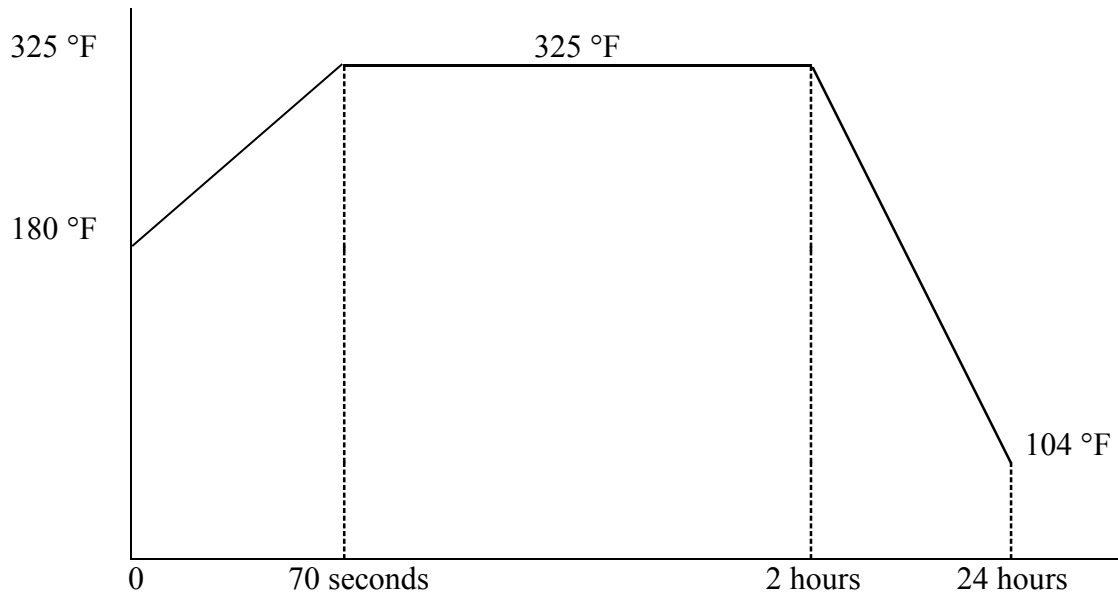
Figure 5 Turbine Driven AF Pump Room Vent & Main Steam Enclosures  
Temperature Profile



Note:

1. Temperature profile above applies to the following zones: 100-A28B, and 117-A02A

Figure 6 HELB HVAC Duct Tray Pipe Way Temperature Profile



Note:

1. Temperature profile above applies to the following zones: 120-A14A and 137-A19A

Figure 7 SG Blowdown Flash Tank Room Temperature Profile

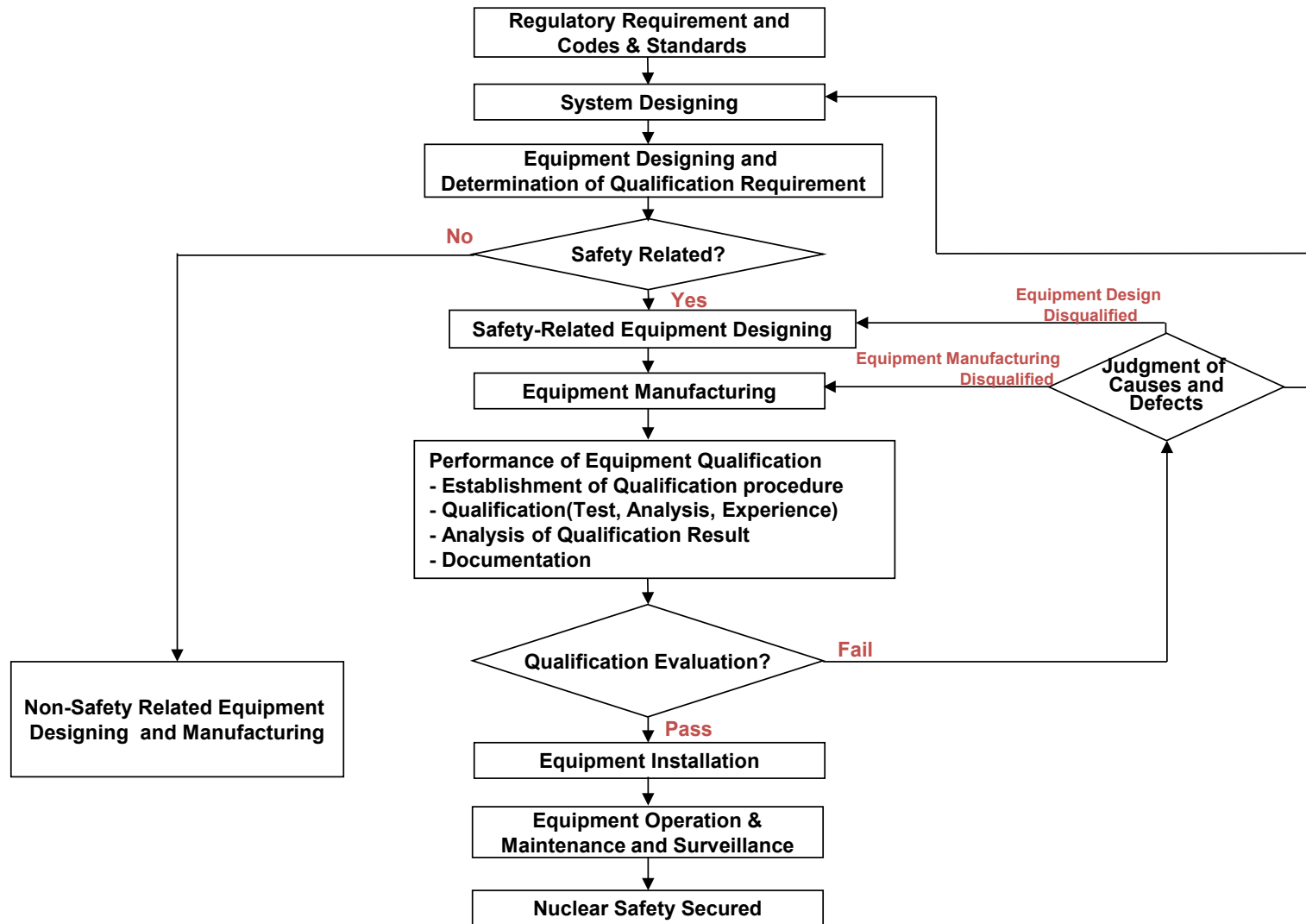


Figure 8 Equipment Qualification Working Process

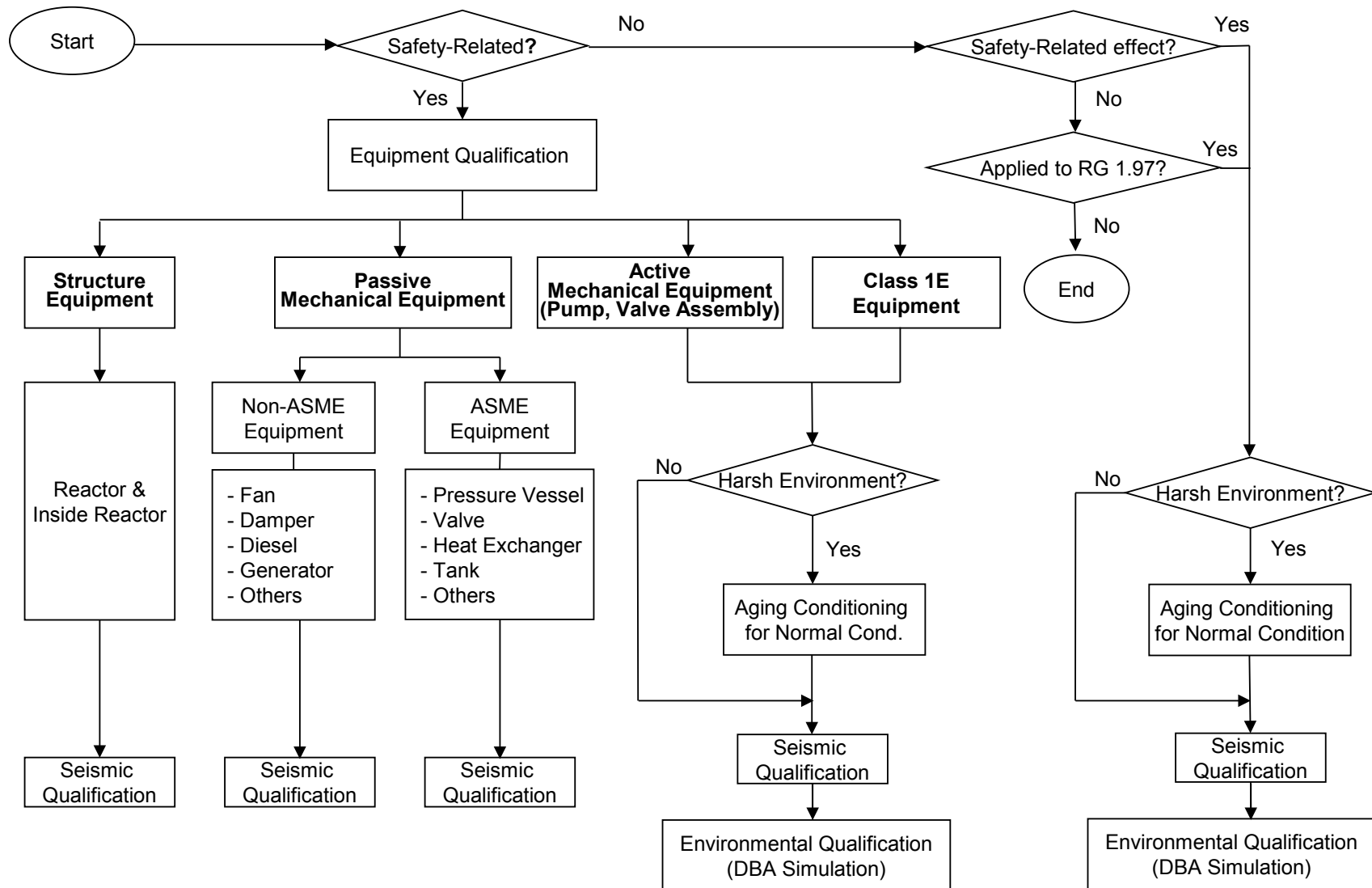


Figure 9 Equipment Qualification Flow Diagram By Type of Safety-Related Equipment

## **Part 2**

# **Seismic Qualification Program**

## **TABLE OF CONTENTS**

|          |                                        |            |
|----------|----------------------------------------|------------|
| <b>1</b> | <b>OBJECTIVES .....</b>                | <b>139</b> |
| 1.1      | CRITERIA AND STANDARDS.....            | 139        |
| 1.2      | SUMMARY .....                          | 139        |
| <b>2</b> | <b>DEFINITIONS.....</b>                | <b>140</b> |
| 2.1      | Safe Shutdown Earthquake (SSE).....    | 140        |
| 2.2      | Operating Basis Earthquake (OBE) ..... | 140        |
| 2.3      | Safety-Related Equipment .....         | 140        |
| 2.3.1    | Active Equipment .....                 | 140        |
| 2.3.2    | Passive Equipment.....                 | 140        |
| 2.4      | Seismic Loads .....                    | 141        |
| 2.5      | Floor Acceleration .....               | 141        |
| 2.6      | Response Spectrum.....                 | 141        |
| 2.6.1    | Floor Response Spectrum .....          | 141        |
| 2.6.2    | Test Response Spectrum.....            | 141        |
| 2.7      | Dynamic Characteristics.....           | 141        |
| 2.7.1    | Natural Frequencies .....              | 141        |
| 2.7.2    | Mode Shapes .....                      | 141        |
| 2.7.3    | Damping .....                          | 142        |
| 2.8      | Resonance .....                        | 142        |
| 2.9      | Mathematical Model .....               | 142        |
| 2.10     | Dynamic Analysis .....                 | 142        |
| 2.11     | Static (Coefficient) Analysis.....     | 142        |
| 2.12     | Supporting Tests .....                 | 142        |
| 2.13     | Qualification Tests.....               | 142        |
| 2.14     | Device.....                            | 142        |

|          |                                                                                     |            |
|----------|-------------------------------------------------------------------------------------|------------|
| 2.15     | Assembly .....                                                                      | 142        |
| 2.16     | Failure .....                                                                       | 143        |
| 2.17     | Malfunction .....                                                                   | 143        |
| <b>3</b> | <b>SCOPE OF EQUIPMENT SEISMIC AND DYNAMIC QUALIFICATION.....</b>                    | <b>144</b> |
| 3.1      | SEISMIC CATEGORY I EQUIPMENT .....                                                  | 144        |
| 3.2      | SEISMIC CATEGORY II EQUIPMENT .....                                                 | 144        |
| <b>4</b> | <b>SEISMIC QUALIFICATION REQUIREMENTS .....</b>                                     | <b>146</b> |
| <b>5</b> | <b>QUALIFICATION PROGRAMS .....</b>                                                 | <b>147</b> |
| 5.1      | QUALIFICATION BY TESTING ONLY .....                                                 | 147        |
| 5.2      | QUALIFICATION BY THE USE OF EXPERIENCE DATA .....                                   | 147        |
| 5.3      | QUALIFICATION BY SUPPORTING TESTS AND ANALYTICAL CALCULATIONS<br>(COMBINATION)..... | 147        |
| 5.4      | SUPPORTING TESTS SUPPLEMENTED WITH QUALIFICATION TESTS.....                         | 148        |
| 5.5      | SUPPORTING ANALYSIS AND QUALIFICATION TESTS.....                                    | 148        |
| 5.6      | SUPPORTING TESTS .....                                                              | 148        |
| 5.6.1    | Dynamic Supporting Tests .....                                                      | 148        |
| 5.6.2    | Static Supporting Tests .....                                                       | 149        |
| 5.7      | QUALIFICATION TESTS .....                                                           | 149        |
| 5.7.1    | Dynamic Input .....                                                                 | 149        |
| 5.7.2    | Mounting.....                                                                       | 150        |
| 5.7.3    | Nozzle Loads.....                                                                   | 150        |
| 5.7.4    | Other Loads.....                                                                    | 150        |
| 5.7.5    | Basis of Acceptability .....                                                        | 150        |
| 5.8      | ANALYTICAL TECHNIQUES.....                                                          | 150        |
| 5.9      | SUPPORTING CALCULATIONS FOR QUALIFICATION TESTS.....                                | 150        |
| 5.10     | ANALYTICAL QUALIFICATION.....                                                       | 150        |
| 5.10.1   | Rigid Equipment and Rigid Supports.....                                             | 151        |

|          |                                                                                             |            |
|----------|---------------------------------------------------------------------------------------------|------------|
| 5.10.2   | Rigid Equipment and Flexible Support .....                                                  | 151        |
| 5.10.3   | Flexible Equipment .....                                                                    | 151        |
| 5.10.4   | Equipment Supplied with Attached Piping.....                                                | 152        |
| 5.10.5   | Equipment Supported by Different Buildings or Different Elevations within the Same Building | 152        |
| 5.11     | COMBINATIONS OF PLANT CONDITIONS, SERVICE LEVELS, AND LOADINGS .....                        | 152        |
| 5.11.1   | Service/Design Limits .....                                                                 | 152        |
| 5.11.2   | Dynamic Loads .....                                                                         | 153        |
| 5.11.3   | Nozzle Loads .....                                                                          | 153        |
| 5.11.4   | Operating Loads .....                                                                       | 153        |
| 5.11.5   | Methods of Analysis.....                                                                    | 153        |
| 5.11.5.2 | Dynamic Analysis.....                                                                       | 153        |
| 5.11.6   | Basis of Acceptability.....                                                                 | 154        |
| 5.12     | EXPERIENCE DATA.....                                                                        | 154        |
| 5.13     | OPERABILITY OF ACTIVE EQUIPMENT .....                                                       | 154        |
| 5.13.1   | Electrical and Instrumentation .....                                                        | 154        |
| 5.13.2   | Mechanical Equipment .....                                                                  | 155        |
| 5.13.3   | Mechanical Drive Turbines .....                                                             | 156        |
| 5.13.4   | Fans .....                                                                                  | 156        |
| 5.13.5   | Diesel Engine.....                                                                          | 156        |
| 5.14     | BUILDING STRUCTURE LOADS.....                                                               | 156        |
| <b>6</b> | <b>DOCUMENTATION.....</b>                                                                   | <b>157</b> |
| 6.1      | FORMAT OF THE DYNAMIC QUALIFICATION REPORTS .....                                           | 157        |
| <b>7</b> | <b>REFERENCES .....</b>                                                                     | <b>160</b> |

**LIST OF TABLES**

|         |                                                             |     |
|---------|-------------------------------------------------------------|-----|
| Table 1 | Stress Limits for Equipment and Supports .....              | 161 |
| Table 2 | Stress Limits for Bolting to Steel Building Structure ..... | 162 |
| Table 3 | Strength Limits for Anchoring to Building Structure .....   | 163 |

## **LIST OF FIGURES**

|          |                                                                      |     |
|----------|----------------------------------------------------------------------|-----|
| Figure 1 | Typical Examples of Equipment Attachments to Building Structure..... | 165 |
|----------|----------------------------------------------------------------------|-----|

Page intentionally blank

## **1 OBJECTIVES**

Seismic qualification is a means to verify the electrical and active mechanical equipment can meet its performance requirements during and following one safe shutdown earthquake (SSE) preceded by a number of operating basis earthquakes (OBEs). This program establishes the seismic and dynamic qualification procedures and criteria for Seismic Category I equipment in APR1400. This program is part of the overall APR1400 Equipment Qualification Program (EQP). This program provides the seismic and dynamic qualification requirements and general procedures to qualify electrical and mechanical equipment in accordance with NRC RG 1.100 (References 7.1 and 7.5) and IEEE Std 344. It is expected that this report may be referenced by license applicants for the scope and methods employed herein.

### **1.1 CRITERIA AND STANDARDS**

The seismic requirements to be considered in the design of all the Seismic Category I equipment are embodied in Title 10 Code of Federal Regulations (10 CFR), Appendix A to Part 50, General Design Criterion 3.

The qualification program is designed to meet the requirements of SRP 3.10 (Reference 7.3), NRC RG 1.100, IEEE Std 344, and IEEE Std 627. IEEE Std 344 was issued to provide guidance for demonstrating the seismic qualifications of Class 1E equipment for nuclear generating stations. The individual supporting standards that the A/E will employ, either in whole or in part, are listed in Section 7.

### **1.2 SUMMARY**

A summary of the various sections of this program is given below:

#### Scope of Equipment Seismic and Dynamic Qualification (Section 3)

The general scope of supply and the various qualification program activities are described. This program will cover Seismic Category I equipment in harsh and mild environments.

#### Seismic Qualification Requirements (Section 4)

The methods required in performing seismic qualification are presented.

#### Qualification Programs (Section 5)

Information is provided for the detailed seismic qualification methods to be employed in compliance with NRC RG 1.100, IEEE Std 344, and ASME QME-1 (Reference 7.6) requirements. Demonstration of the conservatism of the qualification parameters is described.

#### Documentation (Section 6)

This section describes the documentation required for qualification. The qualification reports and their generation are described. Documentation necessary to support the review of a particular applicant's docket will be available for audit.

## **2 DEFINITIONS**

### **2.1 Safe Shutdown Earthquake (SSE)**

An earthquake that is based upon an evaluation of the maximum earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material. It is that earthquake that produces the maximum vibratory ground motion for which certain structures, systems, and components are designed to remain functional.

### **2.2 Operating Basis Earthquake (OBE)**

An earthquake that could reasonably be expected to occur at the plant site during the operating life of the plant considering the regional and local geology and seismology and specific characteristics of local subsurface material. It is that earthquake that produces the vibratory ground motion for which those features of the nuclear power plant necessary for continued operation without undue risk to the health and safety of the public, are designed to remain functional.

### **2.3 Safety-Related Equipment**

Safety-related equipment is the equipment necessary to provide reasonable assurance of:

- a. The integrity of the reactor coolant pressure boundary,
- b. The capability to shut down the reactor and maintain it in a safe shutdown condition, or
- c. The capability to prevent or mitigate the consequences of accidents that could result in potential off-site exposures in excess of the limits stated in 10 CFR 100.

Electrical equipment falling in this category is called Class 1E equipment.

All safety-related equipment shall be either active or passive.

#### **2.3.1 Active Equipment**

Equipment containing moving parts, which in order to accomplish its function, must undergo mechanical movement of those parts, or must prevent a movement of those parts to ensure that the equipment will remain in its last position.

#### **2.3.2 Passive Equipment**

Equipment that must maintain its pressure boundary and/or structural integrity, but not necessarily perform mechanical motion or have certain deflection limits, during the course of accomplishing a system safety function.

Any equipment that is not designated as safety-related but could degrade the integrity of a safety-related component shall be treated the same as passive equipment.

## **2.4 Seismic Loads**

The additional loads that may be imposed on the equipment due to the occurrence of an earthquake.

## **2.5 Floor Acceleration**

The maximum acceleration of a particular building floor (or equipment mounting) resulting from a given dynamic excitation applied to the building. The maximum floor acceleration can be obtained from the floor response spectrum as the acceleration at high frequencies (the flat portion of the response spectrum curve) and sometimes referred to as the zero-period acceleration (ZPA).

## **2.6 Response Spectrum**

A plot of maximum responses of a family of idealized single-degree-of-freedom linear-elastic oscillators subjected to transient vibratory base input motion. Each damping value produces a different response spectrum.

### **2.6.1 Floor Response Spectrum**

The response spectrum for which the transient base excitation is the floor motion rather than the ground motion. The response spectra at the elevations where the equipment will be located are included with the purchase specification and are called required response spectra (RRS).

### **2.6.2 Test Response Spectrum**

The response spectrum resulting from the actual motion of the shake table for specified damping values. They may be derived by analytical techniques or by using spectrum analysis equipment (i.e., real-time analyzer).

## **2.7 Dynamic Characteristics**

The characteristics that are needed to determine the dynamic behavior of the equipment due to any forcing function. These characteristics are as follows.

### **2.7.1 Natural Frequencies**

Free vibration frequencies of the system.

### **2.7.2 Mode Shapes**

The vibrational shape of the system when vibrating at one of its natural frequencies. Each natural frequency has a different mode shape.

**2.7.3 Damping**

An energy dissipation mechanism that reduces the amplification and broadens the vibratory response in the region of resonance. Damping is usually expressed as a percentage of critical damping. Critical damping is defined as the least amount of viscous damping that causes a single-degree-of-freedom system to return to its original position without oscillation after initial disturbance.

**2.8 Resonance**

The condition that exists when the equipment has the same predominant period as does the applied forcing function.

**2.9 Mathematical Model**

The idealization of a component, structure, or piece of equipment as an assemblage of linear systems suitable for detailed dynamic analyses.

**2.10 Dynamic Analysis**

An analysis procedure for multi-degree-of-freedom systems in which the responses are obtained for each normal mode and then combined to predict the true response and the associated stress and deflection due to any forcing function.

**2.11 Static (Coefficient) Analysis**

An analysis that evaluates the stresses and deflections due to equivalent steady state forces acting through the center of gravity of the equipment. These forces shall be chosen conservatively such that it results in stresses and deflections higher than those predicted by dynamic analyses.

**2.12 Supporting Tests**

Tests that are conducted to determine the properties and characteristics of the equipment and to provide data needed for the analysis or qualification tests. These tests are either dynamic or static.

**2.13 Qualification Tests**

Tests that are conducted to prove that the equipment shall perform its safety function or design-intended function when subjected to the loading combinations associated with different postulated plant conditions.

**2.14 Device**

An item of electric equipment that is used in connection with, or as an auxiliary to, other pieces of equipment.

**2.15 Assembly**

Two or more devices (or elements) sharing a common mounting or supporting structure.

**2.16 Failure**

The condition in which a piece of equipment can no longer perform its intended safety function.

**2.17 Malfunction**

Improper performance of mechanical or electrical equipment.

### 3 SCOPE OF EQUIPMENT SEISMIC AND DYNAMIC QUALIFICATION

#### 3.1 SEISMIC CATEGORY I EQUIPMENT

Seismic Category I equipment is required to be seismically and dynamically qualified by demonstrating that its structural integrity and safety function during and after a postulated earthquake in conjunction with the full range of applicable normal and accident loads and conditions.

Seismic Category I equipment requiring qualification in accordance with the APR1400 EQP is described as follows:

- a. Equipment associated with systems that are essential to emergency reactor shutdown, containment isolation, reactor core cooling, and containment reactor heat removal
- b. Equipment and systems used to power, control, or monitor other structures, systems, and components (SSCs) important to safety
- c. Equipment essential to preventing significant release of radioactive material to the environment
- d. Instrumentation (including accident and post-accident monitoring) needed to assess plant and environmental conditions during and after an accident, as described in NRC RG 1.97, "Criteria for Accident Monitoring Instrumentation for Nuclear Power Plants"

The equipment seismic qualification program criteria define specific technical requirements for seismic and dynamic qualification of seismic category I, safety-related mechanical equipment (excluding piping), and seismic category I (Class 1E) electrical and instrumentation equipment, including associated supports and mountings. The program includes qualification of category I tanks and reservoirs for hydrodynamic seismic loads, where applicable. All such equipment that is required to perform functionally or maintain its structural integrity, as described above, is subject to rigorous seismic/dynamic qualification.

Some non-safety-related equipment are identified to meet seismic Category I requirements in Table 3 of Part 1 of this report. These equipment shall be capable of providing their intended function and maintaining structural integrity in accordance with specific design requirement. It should be noted that detailed criteria for functionality testing and inspection of mechanical and electrical equipment (e.g., performance tests, hydrostatic tests, and leakage tests) are not within the scope of the equipment seismic qualification program.

#### 3.2 SEISMIC CATEGORY II EQUIPMENT

The equipment seismic qualification program criteria also define technical requirements for seismic and dynamic qualification of equipment important to safety whose failure could prevent satisfactory accomplishment of one or more of the safety-related functions.

This includes seismic Category II equipment, defined as that equipment which performs non-safety-related functions, and whose continued function is not required, but whose structural or functional failure or interaction could degrade the function or integrity of a seismic Category I SSC to an unacceptable level, or could result in incapacitating injury to occupants of the control room.

Therefore, seismic Category II equipment can be seismically qualified by demonstrating that it retains its position sufficiently in an SSE that it will not cause unacceptable structural interaction with or failure of

seismic Category I SSCs. For fluid systems, this requires an appropriate level of pressure boundary integrity to prevent seismically induced flooding that may cause adverse effects on safety-related SSCs.

In cases where it is not possible or practical to isolate the seismic Category I equipment, non-seismic equipment that is adjacent to seismic Category I equipment is classified as seismic Category II and analyzed and supported so that an SSE accident does not cause an unacceptable interaction with the seismic Category I equipment.

#### **4 SEISMIC QUALIFICATION REQUIREMENTS**

The dynamic qualification of Seismic Category I equipment is achieved by providing reasonable assurance of its structural integrity and verifying the operability of active equipment when subjected to equivalent conditions that would be present during the postulated plant conditions. The following qualification programs are required:

- a. Qualification by tests only
- b. Qualification by analytical methods only
- c. Qualification by the use of experience data (An experience-based qualification is not used for any equipment until it is endorsed by NRC R.G.1.100)
- d. Qualification by any combination of supporting tests, supporting calculations, qualification tests, analytical calculations and experience.

Regardless of the equipment qualification programs chosen, the conditions and requirements for those portions of the program are stated in the following sections and shall be met.

## **5 QUALIFICATION PROGRAMS**

Many factors control the design of a qualification program. If qualification is to be achieved by analysis only, all assumptions used in the analysis shall be given and justified. If testing alone is used for qualification, all applicable loads shall be simulated during the test unless it can be shown that the simultaneous application of certain loads is not necessary for providing reasonable assurance of the equipment's safety function or design-intended function.

### **5.1 QUALIFICATION BY TESTING ONLY**

Qualification by testing only is recommended when the following conditions are fulfilled:

- a. The test machine is capable of producing the required motion in accordance with the conditions stated in Section 5.7 of this program.
- b. The applicable loads are of a simple nature or it is possible to simulate them.
- c. The test table allows the simulation of actual mounting.
- d. It is possible to monitor the functional capability of active equipment during the test.
- e. The structural configuration of the equipment is extremely complex and beyond the capability of mathematical modeling techniques.
- f. The response of the equipment is expected to be extremely nonlinear.
- g. Qualification by analytical methods only. Analytical calculations only may be used as a qualification method in the following cases:
  - 1) When maintaining the structural integrity is an assurance for the safety function or design-intended function
  - 2) When the equipment is structurally simple
  - 3) When the response of the equipment is linear or is a simple nonlinear behavior
  - 4) When the effects of attached components and the superposition of load conditions are too complex for testing

### **5.2 QUALIFICATION BY THE USE OF EXPERIENCE DATA**

An experience-based qualification is not used for any equipment until it is endorsed by NRC R.G.1.100.

### **5.3 QUALIFICATION BY SUPPORTING TESTS AND ANALYTICAL CALCULATIONS (COMBINATION)**

Supporting tests may be used to determine:

- a. Deflection limits within which operability is maintained

- b. Dynamic parameters needed for constructing or verifying mathematical models
- c. Damping values
- d. Assumptions to be used in the analysis
- e. The amount of nonlinearity involved

Supporting tests may be static or dynamic. The dynamic test may be conducted using shake tables or single-point exciters.

After collecting the required information from supporting tests, analytical techniques may be used to show that the structural integrity and/or operability of equipment is maintained without undertaking a complete test program. It must be noted that without performing some supporting tests, analytical calculations alone provide weak evidence for assuring operability.

#### **5.4 SUPPORTING TESTS SUPPLEMENTED WITH QUALIFICATION TESTS**

Supporting tests for these programs may be used to obtain the following types of information:

- a. Natural frequencies
- b. Amount of cross-coupling
- c. Significance of simultaneous application of all applicable loads and possibility of decoupling them without affecting the reliability of the equipment

Such supporting tests may simplify the qualification tests as they may permit justification for single-axis excitation, the use of a less complex waveform to simulate the forcing function, and a reduced number of loading conditions.

#### **5.5 SUPPORTING ANALYSIS AND QUALIFICATION TESTS**

This approach may be used for qualification of complex and simple assemblies such as control boards, switchgear assemblies, vertical pumps and motors, and diesel-generator units. An analysis approach may be used to determine the overall equipment integrity and response at the subassembly or component locations and the subassemblies may be tested to the response levels that are predicted analytically.

#### **5.6 SUPPORTING TESTS**

Supporting tests may be either dynamic or static in nature.

##### **5.6.1 Dynamic Supporting Tests**

In dynamic supporting tests, the equipment may be excited by using a shake table, or single-point exciters applied at a sufficient number of points to simulate the forcing function. The excitations shall be of sufficient strength to excite all significant modes of the equipment. Typical data obtained from such tests are:

- a. Dynamic characteristics of the equipment (e.g., natural frequencies, mode shapes, and damping factors)
- b. Cross-coupling effects (i.e., the response in any direction due to the excitation in any other direction in situations where installing accelerometers in some locations is impractical, cross-coupling may be estimated based on the response of the available accelerometer locations.)
- c. The significance of the response of the equipment to vibratory motion to determine the necessity of combining equipment nozzle loads with other dynamic loads

### **5.6.2 Static Supporting Tests**

Static supporting tests are conducted by applying static forces on the equipment. Typical data obtained from these tests are:

- a. Static deflections and flexibility parameters that are needed for constructing a mathematical model
- b. Distortion in the equipment casing due to nozzle loads, and the deformation limits within which the equipment would maintain its functionality

## **5.7 QUALIFICATION TESTS**

Active equipment shall be tested under operating conditions in accordance with the requirements of NRC RG 1.100 and IEEE Std. 344. Equivalent operating loads shall be simulated to act on passive equipment, but the equipment itself need not be under an operating condition. The following requirements are conditions for a proper qualification test and shall be fulfilled:

### **5.7.1 Dynamic Input**

The input for dynamic testing shall be determined from the floor motion and shall be modified, as necessary, by the test procedure and setup. The input for dynamic testing shall include non-seismic vibratory loads as well as seismic loads.

When single-axis excitation is used, cross-coupling shall be considered as follows:

- a. When performing the supporting tests, the extent of the response in any other direction shall be determined. To explain, let  $r_{ij}$  be the ratio of the response in the  $j$  direction to the excitation in the  $i$  direction, and determine  $r_{xy}$ ,  $r_{xz}$ ,  $r_{yx}$ ,  $r_{yz}$ ,  $r_{zx}$ , and  $r_{zy}$ . Where  $x$ ,  $y$ ,  $z$  are the three principal directions of the equipment or any other set of orthogonal axes that may produce a higher response.
- b. The dynamic coefficients to be used in qualification tests shall be based on the values obtained from the design response spectrum increased by the cross-coupling factors,  $r_{ij}$ , obtained from the supporting tests or estimated by other acceptable means.

**5.7.2 Mounting**

The equipment shall be mounted to simulate the recommended service mounting. If this cannot be done, the effect of the actual supporting structure shall be considered in determining the input motion.

**5.7.3 Nozzle Loads**

The expected (or calculated) piping reaction loads on the equipment shall be used in the qualification.

**5.7.4 Other Loads**

Any other loads that may act on the equipment (mechanical, electrical, or instrument) during the postulated dynamic event shall be simulated during the test, unless the supporting tests (or calculations) show that they are insignificant.

**5.7.5 Basis of Acceptability**

Inspection shall be made by the test conductor to provide reasonable assurance that no structural damage has occurred. For active equipment, sufficient monitoring devices shall be used to evaluate the performance of the tested equipment during the test. The equipment shall demonstrate its ability to perform its intended function when subjected to all applicable loads. A test report, which includes all test data, results and conclusions, shall be submitted to the combined license applicant for review. A suggested format for the test report is presented in Section 6. It is recommended that the Supplier follow the outline of Section 6 for documenting the dynamic testing. This will facilitate the review of the material in the report and support its completeness.

**5.8 ANALYTICAL TECHNIQUES**

Analytical calculations may be used for one of three purposes:

- a. To develop supporting data for performing qualification tests
- b. To qualify the equipment using the data obtained from supporting tests
- c. To qualify the equipment without tests

**5.9 SUPPORTING CALCULATIONS FOR QUALIFICATION TESTS**

Calculations may be used to evaluate the effect of the floor motion on the base of the equipment. This would be in such cases as a device installed in a panel or cabinet, equipment mounted on a complex structure, a valve mounted on a piping system. Calculations may also be used to justify reducing the requirements for qualification testing.

**5.10 ANALYTICAL QUALIFICATION**

The methods to be used for qualification, by calculations only or by calculations based on supporting test results, are stated in this section. These methods will depend on the type of equipment and supporting

structure. The following defines some of the possible cases and associated analytical methods that may be used in each case.

#### **5.10.1 Rigid Equipment and Rigid Supports**

- a. The equipment, as well as its supports, can be considered rigid if it can be shown that its fundamental natural frequency does not fall in the frequency range below the high-frequency asymptote (ZPA) of the RRS.
- b. For rigid equipment supported by a rigid structure (including any in-place supporting steel provided by the combined license applicant), the equipment motion shall be the same as the floor motion without amplification. The horizontal and vertical dynamic accelerations shall be taken as the ZPA from the floor response spectrum for the elevation at which the equipment is located, as provided by the combined license applicant.
- c. The acceleration values obtained shall be used to perform a static analysis as described in Subsection 5.11.5 of this report.

#### **5.10.2 Rigid Equipment and Flexible Support**

- a. In cases where the equipment itself is a rigid body but its supporting system is flexible (including any in-place steel or concrete provided by the combined license applicant, the overall system may be idealized as a single-degree-of-freedom system consisting of an equivalent mass and spring system.
- b. In cases where the equipment and support systems' natural frequency falls in the frequency range below the high-frequency asymptote (ZPA), the system shall be remodeled using a multi-degree-of-freedom idealization. A dynamic analysis shall be performed using an appropriate damping factor. If the natural frequency is greater than or equal to the ZPA, a static analysis shall be performed using the acceleration value corresponding to the ZPA of the RRS. A conservative static analysis may use the peak acceleration from the RRS.
- c. The selection of damping values to be used with the response spectrum curves in determining the acceleration is a significant factor. Unless any specific value is given for analysis, damping factors of 2 percent for Upset/Service Level B and 3 percent for Emergency/Faulted/Service Levels C and D shall be accepted. Higher damping values may be accepted only if they can be justified.

#### **5.10.3 Flexible Equipment**

- a. In cases where the equipment cannot be considered as a rigid body and where the equipment cannot be modeled as a single-degree-of-freedom system, it shall be modeled as a multi-degree-of-freedom system.
- b. A dynamic analysis shall be performed and the natural frequencies, mode shapes, and modal participation factors for each mode shall be computed.
- c. Finally, by combining all the significant modes, the resultant stresses and deflections shall be determined using a detailed (modal) dynamic analysis method.

**5.10.4 Equipment Supplied with Attached Piping**

- a. For equipment supplied with attached piping, due to construction requirements, the Supplier shall perform an analysis for the attached piping as well as the equipment.
- b. The analysis shall satisfy the piping design criteria specified in each procurement specification.
- c. The procedure for analysis shall be determined according to the situation. If the equipment is attached to the floor, then the equipment shall be analyzed first to determine the input to the piping. However, if the equipment is attached to the piping only (pipe-mounted), the piping analysis shall yield the loads to be used in the analysis of the equipment.

**5.10.5 Equipment Supported by Different Buildings or Different Elevations within the Same Building**

- a. This is usually the case for piping; heating, ventilation, and air conditioning (HVAC) ducts; and cable trays.
- b. Stresses resulting from relative displacements at various support locations for systems identified above shall be superimposed on the stresses produced in the system due to inertia effects.
- c. Additional restraints, supports, or other means shall be employed to limit or reduce the high response loads.

**5.11 COMBINATIONS OF PLANT CONDITIONS, SERVICE LEVELS, AND LOADINGS**

The loading combinations are defined in accordance with different real and postulated plant conditions and equipment service levels for ASME Boiler and Pressure Vessel Code, Section III components. These plant conditions and equipment service levels shall be classified as stated in the ASME Section III, Division 1. The same concept of plant conditions and equipment service levels shall be applied on all mechanical and electrical equipment, as well as controls and instrumentation. However, if the stresses and deflections of the more severe loading condition or service level meet the design limits of the less severe loading condition or service level, it may not be required to check the additional loading conditions and service levels. The loading combinations for the same plant condition / service level shall depend on whether the equipment is a pressure-retaining (fluid system component) or a non-pressure-retaining (non-fluid system) component. In addition, the design stress limits shall depend on whether the equipment is classified as active or passive.

**5.11.1 Service/Design Limits**

Unless otherwise stated in procurement specification, there shall be no deflection limits required for passive equipment. However, for active equipment, the deflection limits shall be those maximum deflections that would not impair the operability of the equipment. These limits shall be determined from supporting tests. Engineering judgment shall only be accepted in simple and clear cases. The stress limits for ASME III and non-ASME equipment and supports are summarized in Table 1.

### **5.11.2 Dynamic Loads**

The dynamic loads shall be obtained, in the horizontal and vertical directions, from the corresponding response spectra provided by the combined license applicant for the two postulated accidents, upset and emergency conditions. The horizontal dynamic loads shall be applied in the two horizontal principal directions simultaneously along with the vertical dynamic loads.

### **5.11.3 Nozzle Loads**

The procurement specification will specify the nozzle loads that shall be used in the qualification.

### **5.11.4 Operating Loads**

Operating loads include all loads resulting from the operation of the equipment, such as torque due to rotating parts and vibratory loads due to eccentricities.

### **5.11.5 Methods of Analysis**

Acceptable analytical procedures for the various conditions are described in the following subsections.

#### **5.11.5.1 Static (Coefficient) Analysis**

If it can be shown that the equipment and its support are rigid, a static analysis may be performed to determine the stresses and deflections due to dynamic loads. In this case, the dynamic forces shall be determined by multiplying the mass of the subassembly or parts of the equipment by the maximum floor dynamic acceleration at the base of the equipment (ZPA from the response spectra). If the fundamental natural frequency is not known, a static analysis using 1.5 times the maximum peak of the applicable floor response spectra is acceptable. These forces shall be applied through the center of gravity of the subassembly or the part of the equipment. The stresses resulting from each force (in each of the three directions) shall be combined by taking the square root of the sum of the squares (SRSS) to yield the dynamic stresses. The dynamic deflections (deflections due to dynamic loads) shall be calculated in the same manner. These dynamic stresses and deflections shall be added to all stresses and deflections resulting from all applicable loads to obtain the final resultant stresses and deflections, which shall be compared with the design limits stated in Subsection 5.11. Furthermore, deflections are verified to provide reasonable assurance of operability.

#### **5.11.5.2 Dynamic Analysis**

When acceptable justification for static (coefficient) analysis cannot be provided, a dynamic analysis shall be required, and unless a conservative factor is used to account for the participation of higher modes, a detailed dynamic analysis shall be performed. A mathematical model may be constructed to represent the dynamic behavior of the equipment. The model can be analyzed using the response spectrum modal analysis or time-history (modal or step-by-step) analysis. The maximum inertia forces at each mass point, from each mode, shall be applied at that point to calculate the modal stresses and modal deflections. The various modal contributions shall be combined by taking the SRSS of the individual modal stresses or deflections. Closely spaced modes shall be combined by using an approach from NRC RG 1.92, "Combining Modal Responses and Spatial Components in Seismic Response Analysis" (Reference 7.2). The stresses and deflections resulting from each of the three directions shall be combined by taking the

SRSS to obtain the dynamic stresses and deflections. These dynamic stresses and deflections shall be added to all stresses and deflections resulting from all applicable loads and then compared with the design limits stated in Subsection 5.11.

#### **5.11.6 Basis of Acceptability**

The resultant stresses and deflections due to all loads included in the loading combinations stated in the procurement specification shall be within the design limits stated also in the procurement specification. Any deviation from these criteria shall be justified and the calculations shall show that the structural integrity of equipment, as well as the operability of active equipment, is maintained when subjected to the specified loading combinations. The Supplier shall submit to the combined license applicant a report that includes the data, calculations, results, and conclusions of the analysis. A suggested form for the report is presented in Section 5.14.

### **5.12 EXPERIENCE DATA**

An experience-based qualification is not used for any equipment until it is endorsed by NRC R.G.1.100.

#### Similarity

Qualification by the use of experience data shall be based on the concept of dynamic similarity for excitation, physical system, dynamic response, and operability as follows:

- a. Similarity of excitation exists, such as spectral characteristics, duration, directions of excitation axes, and location of measurement, for the motions relative to the equipment mounting.
- b. Similarity of the equipment configuration shall be established.
- c. A physical system dynamic response can be described through the same quantities as those applied to excitation or through a physical system description.

The experience data shall provide documented evidence to support the demonstration of proper operability.

### **5.13 OPERABILITY OF ACTIVE EQUIPMENT**

The methods and guidance in ASME QME-1 including Appendix QRA, with exceptions provided in NRC RG 1.100, are used for seismic qualification of active mechanical equipment. The seismic and dynamic testing portion of the qualification program is performed in a sequence consistent with the requirements of Section 6 of IEEE Std. 323-2003 (Reference 7.4).

The operability of all active equipment before, during, and after (if required) DBAs, including seismic, shall be proven by test and/or analysis, and the test or analysis report shall be provided as part of the dynamic qualification report.

#### **5.13.1 Electrical and Instrumentation**

The qualification test methods described in Section 5.7 of this program to prove the operability of active electrical and instrumentation equipment shall be employed.

**5.13.2 Mechanical Equipment**

For mechanical equipment, the operability by analysis and/or tests shall be proven as follows:

a. Pumps

A static deflection analysis and/or test for the shaft and rotor (if applicable) should be performed under design basis loading, including the maximum allowable nozzle loads specified in the procurement specification. The deflection shall be less than the allowable/recommended deflection by the Supplier.

b. Valves

The operability requirements stated in Reference 7.6 shall be followed by the Supplier and are considered part of this report.

c. Acceptable Methods to Prove Valve Operability

The following are the acceptable methods that can be applied by the Supplier to demonstrate valve operability:

1) Manual Valves

Active manual valves are those that should be opened, or closed, after DBA. In this case, Supplier shall prove by analysis and/or test that the valve moving parts (e.g., stem, disc) are not permanently damaged due to DBA along with the maximum operating and nozzle loads.

2) Check Valves

The integrity of the valve and its parts, including disc, disc support, hinge, hinge-pin, hinge-arm, and seat shall be proven by test and/or analysis. The valve has to undergo in-shop hydrostatic tests. Impact loading may or may not be of concern, depending on the design and flow condition of the check valve. Supplier should demonstrate that the impact of valve's disc does not damage its seat or other parts of the valve.

The valve's operability verification document should address by test and/or analysis all possible worst loading conditions on the valve during and after seismic events, including any applicable impact loading.

3) Other Active Valves

All other active valves (except manual and check valves) should be subjected to the following tests and/or analyses to demonstrate operability:

Backseat and main seat leakage, and disc hydrostatic tests that verify the functionality of the valve within the specified time limits, when subjected to the design differential pressure and design basis loads. Three full-stroke operations, as a minimum, are required.

Test and/or analysis should be performed for static equivalent seismic loads applied at the center of gravity (CG) of the valve's extended structure.

### **5.13.3 Mechanical Drive Turbines**

The operability of the mechanical drive turbine should focus primarily on the operability of auxiliary active components (valves, pumps, instruments) associated with or mounted on the turbine. The operability should be performed by analysis and/or test.

### **5.13.4 Fans**

The operability of fans by performing an analysis and/or test to determine the shaft and bearing deflections when the fan is subjected to the external design basis loads shall be demonstrated. The clearance between the shaft and bearing as a result of these loads shall be smaller than the recommended clearance.

### **5.13.5 Diesel Engine**

For the operability of the diesel engine and its auxiliary active components (valves, pumps, instruments), the methods described in NRC RG 1.9 (Reference 7.9) and IEEE Std 387 (Reference 7.8) shall be applied.

## **5.14 BUILDING STRUCTURE LOADS**

Regardless of the qualification method(s) used, all the loads transmitted to the building structure shall be provided. The following loads shall be included in the calculations and the results for each shall be given separately:

- a. Dead load
- b. Operating loads
- c. Nozzle loads (if applicable)
- d. Pressure and thermal loads (if applicable)
- e. Additional loads due to dynamic excitations (if applicable)
- f. Any other loads that may be transmitted to the foundation during the dynamic event

The detailed load and stress calculation of mounting connection shall be included in the building structure load summary.

When the purchase specification requires the Supplier to design the mounting connection to the building structure, calculations may be included in the building structure load summary. If these calculations are provided as a separate document, they shall be referenced in the building structure load summary. Tables 2 and 3 indicate load combinations and stress limits and strength limits for the design of bolted and anchor bolted connections to the building structure.

## **6 DOCUMENTATION**

The dynamic qualification documentation shall include all the information stated in Section 6.1 in an auditable form.

### **6.1 FORMAT OF THE DYNAMIC QUALIFICATION REPORTS**

The dynamic qualification reports shall include both information suggested below and in IEEE 344 Section 11.3., and should present a clear, logical explanation of how the data have been used to achieve qualification.

#### Title Page

The following information should be shown on the title page:

- a. Buyer
- b. Supplier and Equipment Name
- c. Specification Number
- d. Revision Number
- e. Date
- f. Equipment Tag No.

#### I – General

This section shall include a description of the equipment, its function(s), and the qualification program used to verify the safety function(s) or design-intended function(s). In addition, the following information shall be provided:

- a. Project and the Buyer Names
- b. Specification and Purchase Order Numbers
- c. Equipment Name and Number
- d. Organization(s) performing qualification program
- e. Similarity analysis showing the similarity between the equipment being qualified and the equipment purchased from Supplier.

#### II – Data and Assumptions

- a. Testing Section

The following data shall be included:

- 1) Type of testing machine
- 2) Loads considered and attempts made to idealize them during the test
- 3) Methods used to simulate the supporting structure
- 4) Position and orientation of setting equipment
- 5) Steps taken to monitor the function of equipment during the test and tentative accelerometer locations (photographs are recommended)
- 6) Means of generating test response spectra (if applicable)
- 7) Calibration dates and results for all instruments used in the dynamic test
- 8) Approved test plan

b. Analytical Section

The following data shall be presented:

- 1) Loads considered
- 2) Damping values used in the analysis
- 3) Codes and standards used as bases for the analysis
- 4) Assumptions made for idealizing boundary conditions, converting the load criteria to actual loads used for calculations, and converting the design criteria to actual stress, deformation, and stability limits.
- 5) A list of the computer programs used in the analysis and the documentation, which establish the validity of any computer program used, if not available in the public domain.
- 6) Input and output data of the computer program to verify the loading criteria and analysis result.

### III – Qualification Procedure

- a. Testing Section: State type of test, waveform, frequency range, acceleration levels, axes of excitation, phase between inputs, equipment mounting details during testing, and any other data to completely describe the input motion and show how it is applied.
- b. Analytical Section: State the method used in the analysis, analytical equations, and their derivation from basic principles. The calculations should be mentioned, if any.

### IV – Results

- a. Testing Section: This section shall include the measurements obtained from the test and their interpretations. Findings and observations from monitoring the function of the equipment and/or

inspection shall be presented. The generated test response spectra curves superimposed on the required response spectra curve shall be shown in this section, when applicable. All results should be presented in either numerical or graphical form.

- b. Analytical Section: Show actual design calculations and sketches for the mathematical models, including numbering used for the node points and numbers. If possible, show loads, resultant forces, moments, stresses, and deformation on the mathematical model of the equipment.
- c. For Active Equipment: Demonstrate the method used and results of equipment operability during and/or after DBAs, as required in the procurement specification.

#### V – Conclusions

Give a brief summary of the results obtained from the qualification program. A concise statement of the conclusion reached, which should satisfy the qualification requirements, shall be stated in this section.

#### VI – Drawings

Submit design drawings of the equipment and its supports. All necessary dimensions shall be shown on these drawings.

## **7 REFERENCES**

All codes and standards shall be the edition in effect as of December 31, 2010 unless identified otherwise.

- 1 Regulatory Guide 1.100, "Seismic Qualification of Electrical and Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plants," Rev. 3, U.S. Nuclear Regulatory Commission, September 2009
- 2 Regulatory Guide 1.92, "Combining Modal Responses and Spatial Components in Seismic Response Analysis," Rev. 2, U.S. Nuclear Regulatory Commission, July 2006
- 3 NUREG-0800, Standard Review Plan, Section 3.10, "Seismic and Dynamic Qualification of Mechanical and Electrical Equipment." Rev. 3, U.S. Nuclear Regulatory Commission, March 2007
- 4 IEEE Std. 323-2003, "IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 2003
- 5 IEEE Std. 344-2004, "IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 2004
- 6 ASME QME-1-2007 "Qualification of Active Mechanical Equipment Used in Nuclear Power Plants," The American Society of Mechanical Engineers, 2007
- 7 Generic Letter 89-10, "Safety-Related MOV Testing and Surveillance," U.S. Nuclear Regulatory Commission, June 28, 1989
- 8 IEEE Std. 387-1995, "IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Suppliers for Nuclear Power Generating Stations," Institute of Electrical and Electronics Engineers, 1995
- 9 Regulatory Guide 1.9, "Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants," Rev. 4, U.S. Nuclear Regulatory Commission, June 2007
- 10 ACI 349-01, "Code Requirements for Nuclear Safety-Related Concrete Structures (ACI 349-01) and Commentary," American Concrete Institute, February 2001
- 11 ANSI/AISC N690 – 1994 including Supplement 2(2004), "Specification for the Design, Fabrication and Erection of Steel Safety-Related Structures for Nuclear Facilities," American National Standard Institute / American Institute of Steel Construction, 1994 & 2004
- 12 Regulatory Guide 1.199, "Anchoring Components and Structural Supports in Concrete", U.S. Nuclear Regulatory Commission, November 2003

**Table 1 Stress Limits for Equipment and Supports**  
**(Excluding Items Associated with Building Structure – See Figure 1)**

| Plant Operating Condition | Loading Combination                                                                                                                                                  | Stress Limits for ASME Section III Equipment and Supports (Use Appropriate Class and Subsections) |                                     | Stress Limits for Non-ASME Section III Equipment and Supports <sup>4)</sup>                                                                                               |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           |                                                                                                                                                                      | Active Equipment                                                                                  | Passive Equipment                   |                                                                                                                                                                           |
| Normal                    | Dead Loads<br>+ Pressure Loads<br>+ Thermal Expansion Loads<br>+ Equip. Operation Loads <sup>1)</sup>                                                                | Service Limit A                                                                                   | Service Limit A                     | AISC N690-94 Section Q1.5                                                                                                                                                 |
| Upset                     | Dead Loads<br>+ Pressure Loads<br>+ Thermal Expansion Loads<br>+ Equip. Operation Loads <sup>1)</sup><br>+ Upset Condition Dynamic Loads <sup>2)</sup>               | Service Limit B <sup>6)</sup>                                                                     | Service Limit B                     | * AISC N690-94 Section Q1.5                                                                                                                                               |
| Emergency and Faulted     | Dead Loads<br>+ Pressure Loads<br>+ Thermal Expansion Loads<br>+ Equip. Operation Loads <sup>1)</sup><br>+ Emergency / Faulted Condition Dynamic Loads <sup>3)</sup> | Service Limit B <sup>6)</sup>                                                                     | Service Limit C and D, respectively | * AISC N690-94 Section Q1.5 multiplied by 1.6 but not to exceed 0.95F <sub>y</sub> for tension; and multiplied by 1.4 but not to exceed 0.95 F <sub>y</sub> /√3 for shear |

\* For active components, shaft (rotor) deflection analysis shall be performed for verifying operability.

**Table 2 Stress Limits for Bolting to Steel Building Structure<sup>7)</sup>**  
**(Independent of Equipment Classification)**

| <b>Plant<br/>Operating<br/>Condition</b> | <b>Loading Combination</b>                                                                                                                                              | <b>Stress Limits</b>                                                                                                               |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Normal                                   | Dead Loads<br>+ Pressure Loads<br>+ Thermal Expansion Loads<br>+ Equip. Operation Loads <sup>1)</sup>                                                                   | AISC N690-94 Section<br>Q1.5/Q1.6/ Q1.16/Q1.23                                                                                     |
| Upset                                    | Dead Loads<br>+ Pressure Loads<br>+ Thermal Expansion Loads<br>+ Equip. Operation Loads <sup>1)</sup><br>+ Upset Condition Dynamic Loads <sup>2)</sup>                  | AISC N690-94 Section<br>Q1.5/Q1.6/ Q1.16/Q1.23                                                                                     |
| Emergency and Faulted                    | Dead Loads<br>+ Pressure Loads<br>+ Thermal Expansion Loads<br>+ Equip. Operation Loads <sup>1)</sup><br>+ Emergency / Faulted Condition Dynamic<br>Loads <sup>3)</sup> | AISC N690-94 Section<br>Q1.5/Q1.6/ Q1.16/Q1.23<br>multiplied by 1.6 and 1.4 for<br>tension and shear stress limits<br>respectively |

**Table 3 Strength Limits for Anchoring to Building Structure<sup>7)</sup> (1 of 2)**  
**(Independent of Equipment Classification)**

| Table Plant<br>Operating<br>Condition | Loading Combination                                                                                                                                                                                | Strength Limits per<br>ACI 349-01<br>Appendix B <sup>8)</sup> (Reference 7.10 and 7.12)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Normal                                | (0.9) Dead Loads <sup>5)</sup><br>+ (1.7) Pressure Loads<br>+ (1.3) Thermal Expansion Loads<br>+ (1.4) Equip. Operation Loads <sup>1)</sup>                                                        | <p>Tensile Strength<br/> <math>\phi_n N_s = \phi_n A_{se} f_{ut} \geq N_u</math><br/> where, <math>f_{ut}</math> shall not be taken greater than <math>1.9 f_y</math> or 125,000 psi.</p> <p>Shear Strength<br/> <math>\phi_s V_s = \phi_s (0.6) A_{se} f_{ut} \geq V_u</math><br/> where, <math>f_{ut}</math> shall not be taken greater than <math>1.9 f_y</math> or 125,000 psi.</p> <p>Tension / Shear Interaction<br/> <math display="block">\frac{N_u}{\phi_n \cdot N_s} + \frac{V_u}{\phi_s \cdot V_s} \leq 1.2</math> where,<br/> <math>\phi_n = 0.80</math>, <math>\phi_s = 0.75</math></p> <p>Note)</p> <p>The tensile &amp; shear stress area for anchor shall be taken as<br/> <math display="block">A_{se} = 0.7854 \left[ D - \frac{0.9743}{n} \right]^2</math> where,<br/> D: Major thread diameter<br/> n: Number of threads per inch</p> <p>Minimum center-to-center spacing<br/> For untorqued anchors: <math>4d_o</math><br/> For torqued anchors: <math>6d_o</math><br/> Maximum anchor diameter<br/> Anchor diameter(<math>d_o</math>) <math>\leq 2</math> in</p> |
| Upset                                 | (0.9) Dead Loads <sup>5)</sup><br>+ (1.7) Pressure Loads<br>+ (1.3) Thermal Expansion Loads<br>+ (1.4) Equip. Operation Loads <sup>1)</sup><br>+ (1.7) Upset Condition Dynamic Loads <sup>2)</sup> | <p>where,<br/> <math>d_o</math>: Outside diameter of anchor<br/> If the concrete strength of the equipment foundation, as designed by A/E, does not meet the anchor bolt ductile failure requirements of ACI 349-01, Appendix B, Vendor shall modify anchor bolt details including bolt diameter, number of bolts, bolt material, and bolt arrangement as recommended by A/E.</p> <p>See ACI 349-01, Appendix B for explanation of nomenclature shown in this table.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

**Table 3 (2 of 2)**

| <b>Plant Operating Condition</b> | <b>Loading Combination</b>                                                                                                                                                                         | <b>Strength Limits per ACI 349-01 Appendix B<sup>8)</sup></b> |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Emergency and Faulted            | (0.9) Dead Loads<br>+ (1.0) Pressure Loads<br>+ (1.0) Thermal Expansion Loads<br>+ (1.0) Equip. Operation Loads <sup>1)</sup><br>+ (1.0) Emergency / faulted Condition Dynamic Loads <sup>3)</sup> |                                                               |

**Notes:**

- 1) Equipment operating loads are those loads associated with the operation of the equipment being qualified. Equipment operating loads include but are not limited to:
  - a) Piping nozzle reactions
  - b) Motor startup and running torque
  - c) Valve seating torque and/or thrust
  - d) Thrust load on fans and pumps
- 2) Upset condition dynamic loads include the postulated dynamic loads as identified in the purchase specification.
- 3) Faulted condition dynamic loads include the safe shutdown earthquake plus other postulated dynamic loads as identified in the purchase specification.
- 4) Weld allowable stresses shall be per AISC N690-94 Q1.5.3 for Normal and Upset Load Cases. For Emergency and Faulted Load Cases, the allowable stresses per AISC N690-94, Table Q1.5.3 may be increased by 1.6 but shall not exceed 0.95 F<sub>y</sub> for tension and by 1.4 but shall not exceed 0.95 F<sub>y</sub>/√3 for shear.
- 5) When calculating the overturning moments induced from eccentricity between weight center and anchor group center, the load factor of dead load shall be 1.4 instead of 0.9.  
  
When calculating the horizontal forces and overturning moments induced from seismic condition, the load factor of dead load shall be 1.4 instead of 0.9.
- 6) For active components, shaft (rotor) deflection analysis shall be performed for verifying operability.
- 7) Building structure; refer to A/E-designed components (see Figure 1).
- 8) Strength limits follow the conditions set forth in Regulatory Guide 1.199.

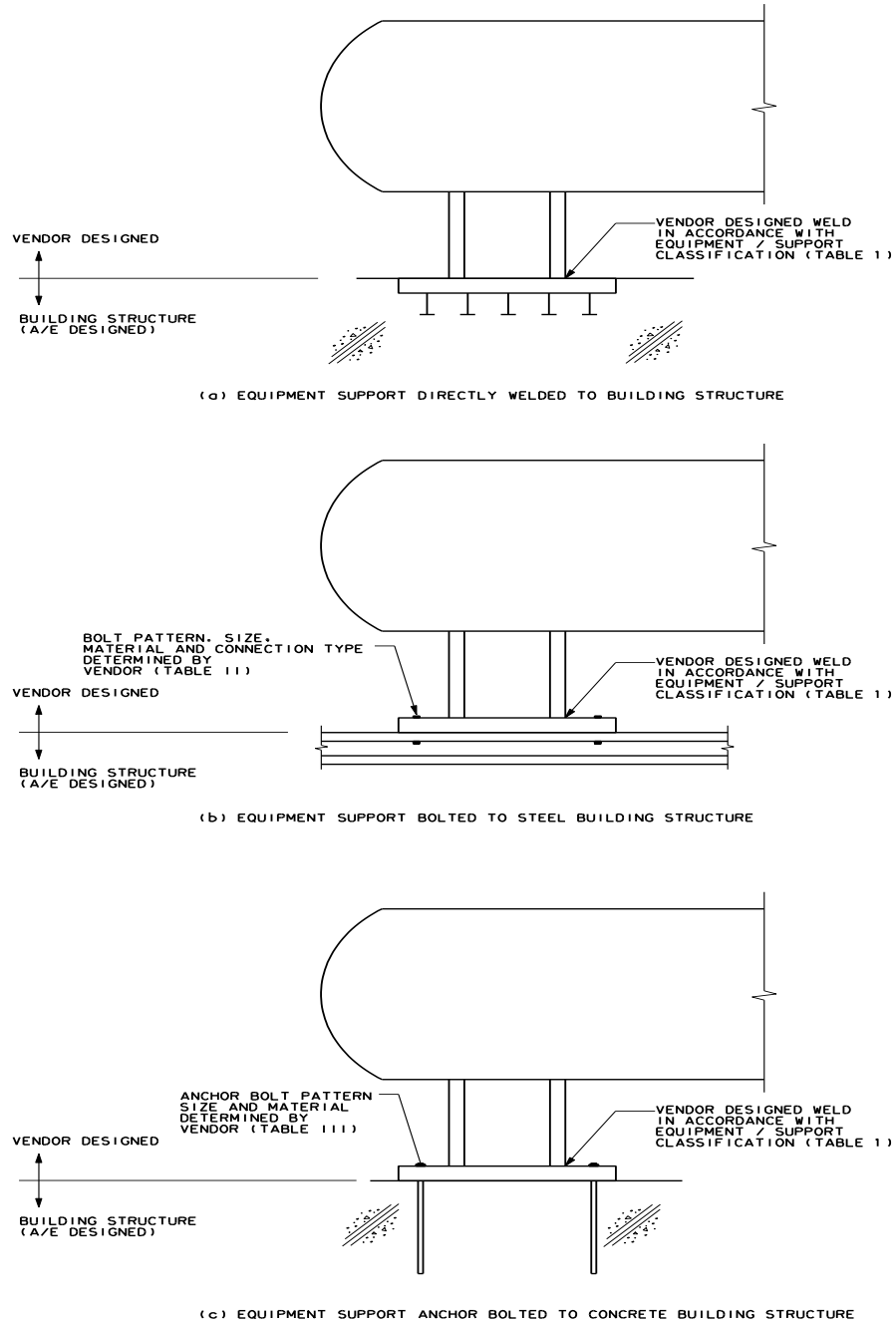


Figure 10 Typical Examples of Equipment Attachments to Building Structure

## APPENDIX A CALCULATION METHOD OF DETERMINING OF NORMAL CONDITION TIDs FOR ENVIRONMENTAL QUALIFICATION

The total integrated dose (TID) used for environmental qualification is determined by summing the cumulative doses received during normal operation for 60 years and the 1 year post-accident doses. This appendix illustrates the methods to determine the normal operation TID values over the installed life of the components/equipment. The methods to calculate the post-accident TID are presented in Appendix B.

A simplified flow chart for calculating the normal TID values is presented in Figure A-1. As shown in Figure A-1, the following three dose contributing factors are considered for the determination of the normal TIDs:

- a. Direct doses from target radiation source inside the room,
- b. Indirect doses from surrounding radioactive equipment rooms, and
- c. Doses from airborne radioactivity (also identified as submersion radiation) from equipment leakage in the target source room.

### A.1. Input Parameters and Assumptions

The major input parameters and assumptions used for the normal TID calculations are as follows:

- a. 'Direct Dose' is defined as doses directly received from radioactive sources in the target areas and 'Indirect Dose' as doses received from radioactive sources located in surrounding areas which are separated by shielding structures from the target source equipment.
- b. The dose rates during normal operation are determined based on 1% fuel defect as specified in RG 1.89, Appendix D.
- c. For fuel transfer tube and cask loading pit, the TID values are calculated based on the refueling duration of 40 months which is calculated assuming one month of refueling period per fuel cycle of 18 months for 60 years, since the source terms in those areas are present only during the refueling period.
- d. A capacity factor of 1.0 is conservatively applied for all equipment.
- e. Dose rates are calculated at 1-foot away from equipment surface for direct dose calculations, and at 1-inch away from the inside of the shield wall for indirect dose calculations.
- f. A 20% margin is added to the direct doses to consider dose contributions from the surrounding areas. If the 20% margin is not bounding the all dose contributions from the adjacent sources, the actual dose rates from the adjacent sources are added to the direct doses.
- g. Doses from gammas are only considered except for the reactor areas based on the followings:
  - 1) Neutrons are not present except for the areas nearby reactor vessel during normal operations.

- 2) Beta rays are negligible, since they have the relatively very short range shielded by external structure cable insulation/jacketing.
- h. Airborne activity is calculated using the following parameters:
  - 1) Leakage rates from valves and flanges associated with the components in each cubicle, assuming simultaneous leakages from all valves and flanges;
  - 2) Fraction of the leakage that becomes airborne (Partition Factor);
  - 3) Room volumes for the corresponding components;
  - 4) HVAC exhaust air flow rate
- i. Any reduction effect including radioactive decay is not considered for entire lifetime of 60 years
- j. In accordance with RG 1.89, an additional margin of 10% is added to the normal TID for consideration of the uncertainty of the test.

## A.2. Calculation Methods

The TID from direct doses are calculated using Microshield computer codes. The methods to calculate the dose rates are same as those used to determine the radiation zones and the required minimum shield thicknesses provided in Section 12.3 except that the source terms used in this equipment qualification assume 1% fuel defect.

Contributions of the indirect doses from the adjacent areas are typically bounded by a margin of 20% of the direct doses. For the cases where the direct dose contributions are greater than 20%, the actually calculated doses are added to the direct doses to estimate the total doses.

The following equation is used to calculate the TID for the cases where the indirect dose contributions are bounded by 20% of the direct doses.

$$TID_{DI} = 5.26E + 05 \times D_{equip} \times 1.2, \quad (\text{Eq. 1a})$$

where,  $TID_{DI}$  = Total integrate dose from direct and indirect radiation [Gy]

$5.26E05$  = Total time exposed to normal operation (= 60 years) [hr]

$D_{equip}$  = Direct dose rate at 1 foot away from the equipment surface [ $\text{Gy} \cdot \text{hr}^{-1}$ ]

When the dose contributions from adjacent sources exceed the 20% of the direct doses, the actual indirect doses are added to the direct doses as follows:

$$TID_{DI} = 5.26E + 05 \times \left( D_{equip} + \sum_i D_{sur,i} \right), \quad (\text{Eq. 1b})$$

where,  $D_{sur,i}$  = Indirect dose rate at 1 inch away from shield wall against room I [ $\text{Gy} \cdot \text{hr}^{-1}$ ]

Submersion doses from the airborne radioactivity due to leakage are calculated using the following equation stipulated in RG 1.183, C. Regulatory Position, Section 2.8:

$$TID_{Sub} = GF \cdot \sum_i C_{A,i} \cdot DCF_{ext,i} \quad (\text{Eq. 2})$$

where,  $TID_{Sub}$  = Total integrated dose from Submersion [Gy]

$V$  = Volume of the room [ $m^3$ ]

$C_{A,i}$  = Time-integrated airborne activity of isotope I [ $(Bq \cdot sec) \cdot m^{-3}$ ]

$DCF_{ext,i}$  = Semi-infinite external effective dose conversion factor for isotope i [ $Sv \cdot m^3(Bq \cdot sec)^{-1}$ ]

$GF$  = Geometry correction factor, ( $= 8.525E-04 \cdot V^{0.338}$ )

To calculate the equilibrium airborne radioactivity concentration in the Equation 3 above, the following equation is used as given in the DCD Section 12.2.2:

$$C_A = \frac{C \cdot L \cdot P}{7.48 (\lambda \cdot V + F)}, \quad (\text{Eq. 3})$$

where,  $C_A$  = the airborne concentration in component room [ $Bq \cdot cm^{-3}$ ]

$C$  = Fluid concentration in equipment/components [ $Bq \cdot cm^{-3}$ ]

$L$  = Leak rate from postulated leakages from valves and flanges associated with the component, [gpm]

$P$  = Fraction of the leaked activity that becomes airborne (Partition Factor)

$\lambda$  = Decay constant [ $min^{-1}$ ]

$V$  = Volume of the enclosed room [ $ft^3$ ]

$F$  = HVAC Air exhaust flow rate [cfm]

7.48 = Conversion Constant (7.48 gal/ $ft^3$ )

The TID values are then calculated considering the additional 10% margin as follows:

$$TID = (TID_{DI} + TID_{Sub}) \times 1.1 \quad (\text{Eq. 4}).$$

On the other hand, the TID values for the rooms (or areas) without radiation sources in the radiologically controlled area (i.e., general access area, rooms such as storage area and hot tool area) are calculated as following:

$$TID = 5.26E + 05 \times D_{upper,i} \times 1.1 \times 1.2 \quad (\text{Eq. 5}).$$

where,  $TID$  = Total integrate dose [Gy]  
5.26E05 = Total time exposed to normal operation (= 60 years) [hr]  
 $D_{upper,i}$  = Upper dose rate in radiation zone i [ $Gy \cdot hr^{-1}$ ]  
1.1 = 10% margin for uncertainty  
1.2 = Additional 20% margin

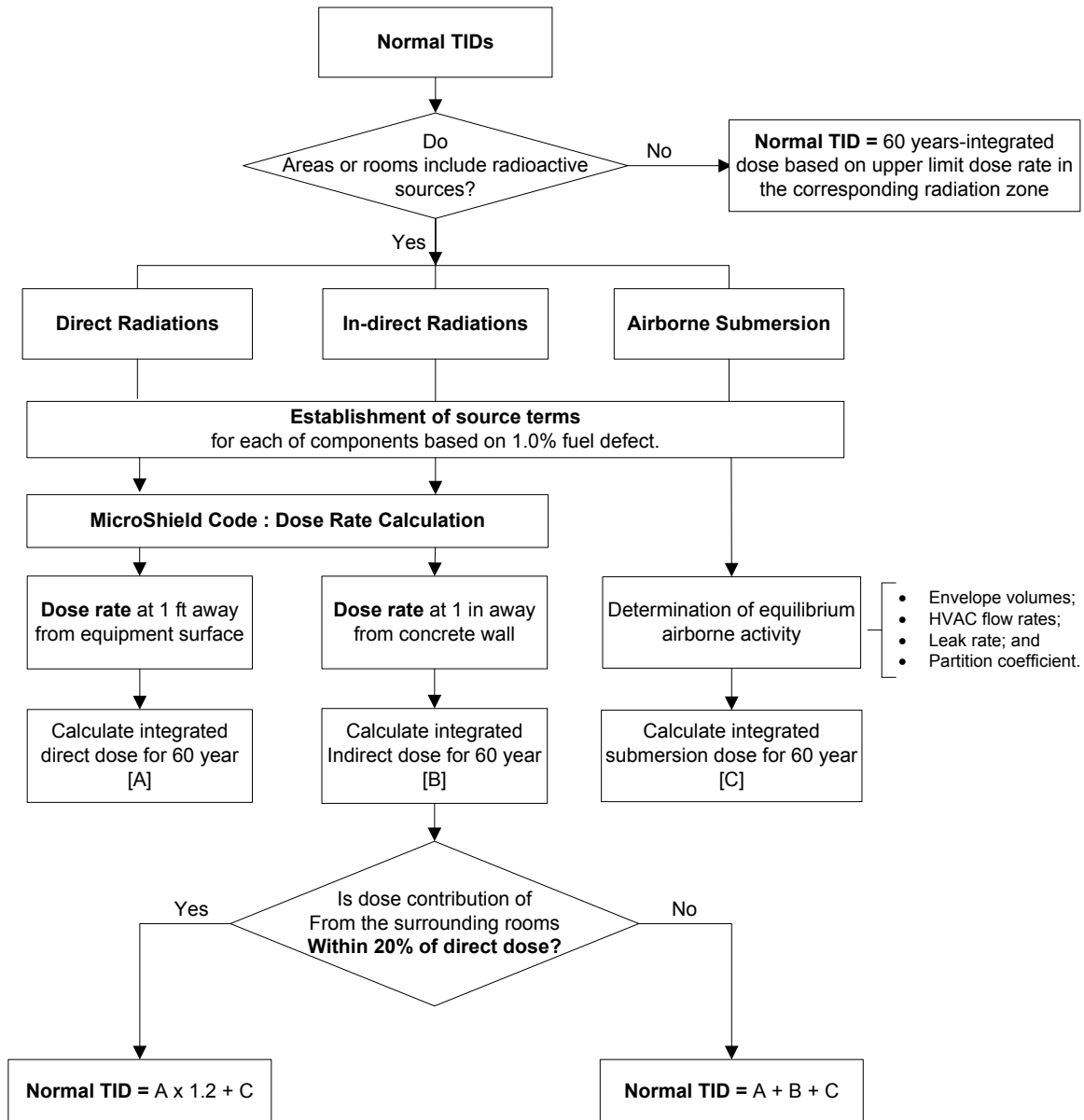


Figure A-1 A Simplified Flowchart for Calculating the Normal TIDs for Equipment Qualification

## APPENDIX B CALCULATION METHOD OF DETERMINING POST-ACCIDENT CONDITION TID<sub>s</sub> FOR ENVIRONMENT QUALIFICATION

The appendix illustrates the methods, calculation models, inputs and assumptions for the determination of accident TIDs. A simplified flow chart for calculating the general TID for systems and components inside and outside the containment is presented in Figure B-1.

In general the method, including the structure of the computer model, for calculating the TIDs is based on the RUNT-G and ISOSHL D computer codes, which determines the post-DBA radioactive source terms and the corresponding accident TID values. The ISOSHL D computer code is incorporated into the RUNT-G code to run as one computer program. The integrated RUNT-G and ISOSHL D computer model is used for the determination of TIDs for systems that re-circulate containment sump water outside the containment, AB controlled area emergency exhaust air cleaning units (ABCAEEACUs) and emergency control room ventilation system filter media, and for the inclusion of the airborne activity associated with leakage from recirculation systems and containment leakage following a LOCA.

### B.1. TIDs inside containment

#### B.1.1. Input parameters and assumption

TIDs for environmental qualification of mechanical and electrical components important to safety under the post-accident radiological environment inside the containment, which include the CS/SC, SI systems, accident radiation monitors, etc., are calculated for one (1) year following a LOCA event. The input parameters, assumptions, and evaluation model for running the RUNT-G code are described below.

- a. Released Source Term: The source terms of two release phases (gap and early in-vessel release) as described in RG 1.183 are considered as the effective source terms for post-accident equipment qualification analysis. The core inventory release fractions for each radionuclide group at the gap release and early in-vessel release phases for the LOCA are listed in DCD Table 15.6.5-13. Iodines in the forms of elemental, particulate and organic iodine in the containment atmosphere are assumed to be 4.85%, 95%, and 0.15%, respectively. With the exception of elemental and organic iodine and noble gases, the fission products are assumed to be in particulate form as specified in RG 1.183, Appendix A, Section 2. The maximum core inventory of the APR1400 is shown in Table 15A-1. The source term activities for gap release and early in-vessel release are separately calculated for all radionuclide groups.
- b. Containment Data (extracted from DCD):
  - 1) Free volume =  $3.128 \times 10^6 \text{ ft}^3$
  - 2) Internal radius = 75 ft
  - 3) Effective height =  $3.128 \times 10^6 / (\pi \times 75^2) = 177.0 \text{ ft}$
  - 4) Sprayed region =  $2.346 \times 10^6 \text{ ft}^3$  assuming 75% of containment free volume
- c. Surface Area: Total surface area available to be deposited on the walls of containment is assumed to be the same as that inside containment (700,963 ft<sup>2</sup>). Of this area, the surface area of containment wall and operating floor is  $9.05 \times 10^4 \text{ ft}^2$ .

- d. Containment Leakage: No leakage from the reactor containment building to the environment is assumed in order to maximize the TIDs inside containment.
- e. Containment Spray: According to RG 1.183 guidance, the airborne radioactivity in the containment may be removed by natural deposition and the containment spray system. Their removal rates are a function of time after accident, which is described in Subsection 15.6.5.5.1.1.
- f. IRWST Volume: The minimum volume of water sources in containment is  $8.6 \times 10^4 \text{ ft}^3$  ( $2.44 \times 10^9 \text{ cm}^3$ ).
- g. IRWST Source term: The initial source term in the IRWST except for noble gases consists of 40% of halogens in the core inventory, 30% of alkali metal, and fractions of other fission products which are addressed in detail in Table 15.6.5-13.
- h. Radioactive Decay: The effect of radioactive decay during holdup in the containment is included.

### B.1.2. Calculation Method and Model

The radioactive nuclides released from the core escape from the reactor coolant pressure boundary (RCPB) into the containment during a LOCA, are dispersed throughout the containment. This analysis consists of two steps; the first is to determine the activity distribution as a function of time, and the second is to determine the dose contribution from each source to each dose point.

As illustrated in Figure B-3, the activity distribution, or the locations inside containment at which the dose rate is calculated are as follows:

- a. Center of Containment Atmosphere (X1)
- b. Containment Wall Surface (X2)
- c. Bottom of Containment (Radioactivity in sump water contributes to the exposure rate at the location in containment air space through the concrete shield) (X3)
- d. Center of Containment IRWST Sump (X4)

And the radioactive source terms that contribute to radiation exposure at any location are as follows:

- a. Airborne Fission Products in Containment Atmosphere
- b. Deposited Fission Products on Containment Wall
- c. Fission Products in IRWST Sump Water

Airborne nuclides in containment are readily absorbed by the spray droplets and thereby removed from the containment atmosphere. The aerosol removal by containment spray, natural deposition, and radioactive decay are considered. The dose rate in containment due to radioactive airborne is calculated by the RUNT-G code. As described above, the following three (3) processes would affect the airborne activity:

- a. Radioactive decay and sub-sequent daughter products are calculated in the RUNT-G model;

- b. Removal by the containment spray system; and
- c. Plate-out on walls and other surface inside containment by natural deposition.

Depending on the above locations, X1, X2, X3, and X4, the resultant TIDs assigned to specific components or equipment are determined for the bounding analysis as follows:

- a. Components located below elevation 100' = TIDs at X4 location,
- b. Components located above elevation 100' = Maximum gamma TID + Maximum beta TID at any location.

As shown in Figure B-2 below, the RUNT-G model is developed to simulate the removal of the radioactivity in the containment atmosphere, in the IRWST sump, and on containment walls after the LOCA event.

TIDs for the concentrations of radionuclides at different locations inside containment are determined using the ISOSHL D computer code, which is incorporated in RUNT-G. As illustrated in Figure 3, the containment and the IRWST are modeled as a right cylinder with a free volume of  $3.128 \times 10^6 \text{ ft}^3$  ( $8.86 \times 10^{10} \text{ cm}^3$ ) with an inner radius of 75 ft, and a right cylinder with a volume of  $8.61 \times 10^4 \text{ ft}^3$  ( $2.44 \times 10^9 \text{ cm}^3$ ) and effective height of cylinder of 4.87 ft, respectively. The radioactive materials released in the containment and IRWST sump are assumed to be uniformly distributed throughout the containment atmosphere and the IRWST sump.

Radioactive source terms on the containment wall surface are calculated using the removal rate by natural deposition. The removal by natural deposition consists of gravity settling, thermophoresis, diffusiophoresis, and turbulent diffusion, of which the most dominant process is the removal by gravity settling. The radionuclides deposited on the containment wall and operating floor area are assumed to contribute to the dose at the center of containment. For calculating the dose rate at the center of containment (i.e., dose point of X1), the plate-out of concrete walls is modeled as a point source with a total activity equal to the total activity plate-out on the walls. For the dose rate on the concrete wall, the dose contribution of the plate-out radionuclides is determined by modeling the source as a large disk with a radius of  $2.70 \times 10^3 \text{ cm}$ . The dose point is set 1.0 cm away from the wall to avoid the singularity at  $X = 0$ .

Table 1 indicates the main input parameters of the ISOSHL D code.

## **B.2. TIDs in ESF system areas in auxiliary building (outside the containment)**

There are two systems, the safety injection system (SIS)/shutdown cooling system (SCS), and the containment spray system (CSS) that re-circulate containment sump water outside of containment during a design basis accident. The analysis of accident TIDs for these systems is discussed below, including the input parameters, assumptions, methods, and models.

The SIS/SCS and the CSS are part of the ESF systems used for mitigation of a LOCA. TIDs for the cubicles containing the ESF components/equipment and from the rooms adjacent to the components are calculated based on the post-LOCA environment. The input parameters, the assumptions, and the evaluation model for running the RUNT-G code are described below.

**B.2.1. Input parameters and Assumptions**

- a. Source Term: Source terms for the systems that re-circulate containment sump water outside the containment are based on the source terms that are used for equipment qualification inside containment. Please refer to item B.1.1 above.
- b. Radioactive decay and subsequent daughters: The effect of radioactive decay with subsequent daughter products during holdup in the containment is included for a duration of 1 year.
- c. Containment Leakage: The containment leak rate is the design-basis leak rate specified in the Technical Specifications. For the first 24 hours following a LOCA, the leak rate is assumed to be 0.1 vol.%/day of containment volume and the leak rate is assumed to be 0.05 vol.%/day thereafter.
- d. Containment Spray: According to RG 1.183 guidance, the airborne radioactivity in the containment is removed by natural deposition and the containment spray system. Their removal rates are a function of time after accident, which is described in DCD Subsection 15.6.5.5.1.1.
- e. Atmospheric Dispersion ( $\chi/Q$ ): The relative concentration of the plume is given by the following equation (Ref.1):

$$\chi/Q = (U \cdot C \cdot A)^{-1} \quad (\text{Eq.1})$$

Where,  $U$  = Wind speed (1 m/sec)

$C$  = Building wake factor (= 0.5)

$A$  = Cross section area of containment

- f. ABCAEES Envelope Areas: Following the LOCA, the engineered safety feature actuation signal (ESFAS) actuates the auxiliary building controlled area emergency exhaust system (ABCAEES). The radioactive source leaked from ESF system (i.e., SI/CS systems) recirculation loop flashes to SI/CS component rooms. The source terms in the ESF systems areas are released to the environment through the ABCAEES, which ventilates the auxiliary building controlled areas I and II including the SC/CS heat exchanger room, component cooling water (CCW) pump room, SI pump room, SC/CS pump and mini-flow heat exchanger room, mechanical penetration room, charging pump room, and auxiliary charging pump room. The other areas outside the ABCAEES are not considered in this analysis. All components in those areas such as valves in the post-accident sampling system, which are non-safety related, are infrequently operated and have a relatively small leakage.

For simplification of the RUNT-G model, the auxiliary building controlled areas I and II are assumed to be one area having a volume of  $4.97 \times 10^5 \text{ ft}^3$  ( $1.40 \times 10^{10} \text{ cm}^3$ ), which consists of  $2.50 \times 10^5 \text{ ft}^3$  ( $7.08 \times 10^{10} \text{ cm}^3$ ) and  $2.47 \times 10^5 \text{ ft}^3$  ( $6.99 \times 10^9 \text{ cm}^3$ ) for auxiliary building controlled areas I and II, respectively. For conservative TIDs calculation of the HVAC system components, these areas are assumed to be ventilated by one of the two air cleanup units (ACUs) in each HVAC line of the ABCAEES. The flow rates through such ACUs are summed to be 6,000 cfm ( $1.02 \times 10^4 \text{ m}^3/\text{hr}$ ).

The filter efficiency of the ABCAEES for all species of radioactive nuclides except for noble gases is assumed to be 100% according to the guidance of RG1.89, Appendix I.

- g. IRWST Source term: The initial source term in the IRWST consists of 40% of halogens in the core inventory, 30% of alkali metal, and small fractions of other fission products.
- h. ESF Components Leakage: For the equipment qualification, the maximum anticipated leakage rate through all ESF system components containing the IRWST water source term (i.e., SI/SC/CS components) is calculated to be  $0.285 \text{ ft}^3/\text{hr}$  ( $8.07 \times 10^3 \text{ cm}^3/\text{hr}$ ), based on the leakage rates from each valve and pump in the SI/SC/CS systems and the number of the corresponding components (i.e., valves, and pumps) that are conservatively determined:

- 1) Maximum anticipated leakage rate

- $4 \text{ cm}^3$  per cm-hour for all valves including check valves
- $50 \text{ cm}^3$  per hour for centrifugal pumps (mechanical seal) excepting SI pumps
- $1,000 \text{ cm}^3$  per hour for SI or CS pumps

- 2) Number of components

- 251 for valves (= 211 for SI system + 40 for CS system)
- 3 for pumps (= 2 for SI system + 1 for CS system)

In accordance with this RG 1.183 guidance, the ESF leakage of  $0.285 \text{ ft}^3/\text{hr}$  is doubled to the modeled value of  $0.57 \text{ ft}^3/\text{hr}$  ( $1.61 \times 10^3 \text{ cm}^3/\text{hr}$ ). It should be noted that the design basis ESF leakage allowed for the radiological consequence analysis in DCD Chapter 15 is  $0.668 \text{ ft}^3/\text{hr}$  ( $1.89 \times 10^3 \text{ cm}^3/\text{hr}$ ) which is doubled to  $1.34 \text{ ft}^3/\text{hr}$  ( $3.78 \times 10^3 \text{ cm}^3/\text{hr}$ ) per RG 1.183.

- i. Partition Coefficient: When a portion of radionuclides in the leakage from SI/SC/CS equipment becomes airborne in the auxiliary building and subsequently enters into the ABCAEES, the assumed partition coefficient for each isotope group is as follows (based on the RG 1.183 guidance):

- 1) Noble gas: 1.0
- 2) Halogen: 0.1
- 3) Others nuclides: 0.01 (assumed in order to be conservative)

- j. IRWST Volume: The minimum volume of water sources in containment is  $8.6 \times 10^4 \text{ ft}^3$  ( $2.44 \times 10^9 \text{ cm}^3$ ).

- k. Concrete Structure and Geometry:

- 1) The inside radius of the containment building is  $75 \text{ ft}$  ( $2.29 \times 10^3 \text{ cm}$ ).
- 2) The containment wall is surrounded with  $\frac{1}{4}$  in ( $6.35 \times 10^{-1} \text{ cm}$ ) steel liner and  $4.5 \text{ ft}$  ( $1.37 \times 10^2 \text{ cm}$ ) concrete.
- 3) The containment free volume is assumed to be  $3.13 \times 10^6 \text{ ft}^3$  ( $8.86 \times 10^{10} \text{ cm}^3$ ).

- 4) All structures and equipment inside containment are ignored as shielding materials.
  - 5) The containment steel liner is modeled as iron with a density of  $7.86 \text{ g/cm}^3$ .
  - 6) The density of the concrete wall is  $2.242 \text{ g/cm}^3$ .
  - 7) For the direct dose calculation from airborne radioactivity in containment, the containment is modeled as a right cylinder which has the same internal radius and volume as the assumed free volume as illustrated in Figure B-3.
- I. SI/SC/CS Piping geometry: All the actual pipe sizes in each cubicle containing the SI/SC/CS components where schedule 40S steel pipe is assumed are taken into account.

### **B.2.2. Calculation Method and Model**

The integrated RUNT-G and ISOSHLD computer model is used to determine the individual doses that contribute to the overall TIDs.

#### **B.2.2.1 Airbone Activity inside the Auxiliary Building and Filter Loading Dose due to Containment Leakage**

As shown in Figure B-4 below, the RUNT-G model is developed to simulate the time-dependent leakage from containment, the dispersion in the atmosphere, and the intake to the auxiliary building.

This model is subdivided into three types as gaseous (includes noble gas & organic halogen), elemental and particulate halogen. For the first 24 hrs following a LOCA, the leak rate is assumed to be 0.1 %/day of containment volume and the leak rate is assumed to be 0.05 %/day thereafter (i.e., paths of  $L_{23}$  and  $L_{34}$ ). After the onset of the LOCA event, the wash-out phenomena by containment spray and natural deposition are taken into consideration as the leakage from BARRIER 1 to the sump (i.e., path of  $L_{28}$ ). These phenomena are only applicable to non-noble gases. The atmospheric dispersion and determination of the intake activity of the ABCAEES are calculated by using the fraction factor on FILTER 1, which is equal to the multiplication product ( $1.90 \times 10^{-3}$ ) of ( $X/Q$  (relative concentration of the plume,  $6.725 \times 10^{-4} \text{ sec/m}^3$ )  $\times W$  (ABCAEES intake flow rate,  $1.02 \times 10^4 \text{ m}^3/\text{hr}$ ) and a conversion factor of 1 hour to 3600 seconds). The leak rate from containment is multiplied by the fraction factor to produce radioactivity taken into the auxiliary building via the ABCAEES. Therefore, BARRIER 2 means airborne radioactivity inside the auxiliary building. The release rate to the atmosphere through the auxiliary building (i.e., paths of  $L_{45}$  and  $L_{55}$ ) depends on the cubicle volume and HVAC flow rate.

TIDs for airborne activity in the auxiliary building (i.e., BARRIER 2) and the filter loading of ABCAEES (i.e., FILTER 2) are determined by using the ISOSHLD code which is incorporated in the RUNT-G computer code. Tables B-2 and B-3 indicate the main input parameters of the ISOSHLD code, and the ISOSHLD models are shown in Figures B-5 and B-6.

#### **B.2.2.2 Airborne Activity and Filter Loading Dose due to SI/SC/CS Leakage**

As shown in Figure B-7, the RUNT-G model is developed to simulate the time-dependent leakage from SI/SC/CS equipment, which are located at elevation 55'-0" in the auxiliary building, and the atmospheric dispersion to the environment through the auxiliary building cubicles.

It is assumed that all the ESF leakages of  $0.57 \text{ ft}^3/\text{hr}$  ( $1.61 \times 10^4 \text{ cm}^3/\text{hr}$ ) are retained on the floor of the corresponding compartments in the auxiliary building (i.e. BARRIER 1), and some of the iodines are flashed and become airborne in the auxiliary building. Then, the airborne iodine radioactivity in cubicles of the auxiliary building is released to the environment via the ABCAEES filter (i.e., paths of  $L_{23}$  and  $L_{38}$ ). The release rate to the environment through the auxiliary building depends on cubicle volume and HVAC flow rate.

TIDs for airborne activity in the auxiliary building (i.e., BARRIER 1) and the filter loading of ABCAEES (i.e., FILTER 1) are determined by using the ISOSHLD code which is incorporated in the RUNT-G computer code. The main input parameters of the ISOSHLD code and ISOSHLD model are the same as those in Tables B-2 and B-3, and in Figures B-5 and B-6, respectively.

### B.2.2.3 Post-LOCA Direct Dose from the Airborne Source in Containment

As shown in Figure B-8, the RUNT-G model is developed to calculate the time-dependent activity in the containment, which is divided into three types as gaseous (includes noble gas & organic halogen), elemental and particulate halogen.

After the onset of the LOCA event, leakage from the core to the atmosphere of the containment is modeled as the leakage from the SOURCE to BARRIER 1 (i.e., path  $L_{12}$ ). The wash-out phenomena by containment spray and natural deposition are described as the leakage from BARRIER 1 to the sump (i.e., path  $L_{24}$ ), which are only applicable to non-noble gases.

TIDs from airborne activity in containment (i.e., BARRIER 1) are determined by using the ISOSHLD code which is incorporated in the RUNT-G computer code. Table B-4 indicates the main input parameters of the ISOSHLD code, and the ISOSHLD model is shown in Figure B-9.

### B.2.2.4 Post-LOCA Direct Dose from SI/SC/CS Piping

As shown in Figure B-10, the RUNT-G model is developed to calculate the time-dependent IRWST source activity in containment. The radioactivity concentration in the IRWST water after the initiation of the LOCA event is used as the source term in SI/SC/CS circulating water.

TIDs from direct radiation in the IRWST source term (i.e., BARRIER 1) are determined by using the ISOSHLD code which is incorporated in the RUNT-G computer code. Table B-5 indicates the main input parameters of the ISOSHLD code, and the ISOSHLD model is the same as that in Figure B-9.

### B.2.2.5 Post-LOCA Direct Dose from SI/SC/CS Components

TIDs for SI/SC/CS equipment are calculated using the result of the TID calculation for the SI/SC/CS pipes.

For pumps which have the same diameter as the pipe, the TIDs for the pumps are expected to be lower than the TIDs for pipes having the same diameter because of the shield effect by the enclosing steel casing. Therefore, TIDs for the SI/SC/CS piping during the LOCA condition can be conservatively used for pumps in the SI/SC/CS systems. The heat exchangers can be also modeled with a single pipe with an effective diameter which is derived from the equation 2a or 2b below. For the tube region, where the heat exchanger tubes and shell are located, the shielding effect of internal steel and cooling water in the shell side are not taken into account. For the plenum region, where the tube side inlet and outlet are located, the same wall thickness and diameter with the tube region are applied; i.e., the wall thickness and volume are decreased. The impact of decreased radioactivity due to the decreased volume in that region is negligible since the relative impact of the decreased wall thickness is larger due to the simplification. Therefore, TIDs for pipes having the same diameter with the effective diameter of the heat exchanger can

be expected to yield conservative TID values. The effective diameter of the heat exchanger can be calculated as follows:

$$D = (2N)^{1/2} \times d \quad \text{for U-tube Type Heat Exchanger} \quad (\text{Eq.2a})$$

$$D = (N)^{1/2} \times d \quad \text{for one-through Type Heat Exchanger} \quad (\text{Eq.2b})$$

Where, N = Number of tubes in heat exchanger

d = Diameter of tube

D = Effective diameter of heat exchanger

### B.3. TIDs in fuel handling area in auxiliary building (outside the containment)

TIDs for components in the fuel handling area are calculated based on the post-FHA (fuel handling accident) environment. The input parameters, assumptions, and evaluation model for running the RUNT-G code are described below.

#### B.3.1. Input Parameters and Assumptions

- a. Source Term: For the purpose of conducting a conservative analysis that bounds most cases, all of the fuel rods in a fuel assembly are assumed to be damaged and all the gap activity in the damaged rods is assumed to be instantaneously released into the spent fuel pool, where total gap activities are 10% of Kr-85, 8% of I-131, 5% of other iodines and noble gases, and 12% of alkali metals in fuel rods. The retention of noble gases in the pool is negligible and the iodine above the pool consists of 57% of elemental iodine and 43% of organic iodine, considering the overall effective decontamination factor of 200 for iodine. The source term for the FHA event is described in detail in DCD Subsection 15.7.4.2 and Table 15.7.4-1.
- b. Fuel Handling Area: After the fuel handling accident, airborne radioactive materials in the fuel handling area are vented to the environment via fuel handling area ACUs over a two hour time period. This HVAC system emergency exhaust flow rate is 5,000 cfm/ACU. The total free volume covered by this HVAC system is  $8.77 \times 10^5 \text{ ft}^3$ . The removal efficiency of the carbon absorbers and HEPA filter is assumed to be 100%.
- c. HEPA filter and Charcoal Densities: The HEPA filter media and charcoal densities are both assumed to be  $0.48 \text{ g/cm}^3$  for conservatism.
- d. Radioactive decay and subsequent daughters: The effect of radioactive decay with subsequent daughter products during holdup in the containment is included for a duration of 1 year.

#### B.3.2. Calculation Method and Model

As shown in Figure B-11, the RUNT-G model is developed to simulate time dependent activity in the fuel handling area after the onset of the FHA event.

Leakage from the fuel assembly to the atmosphere of the fuel handling area is modeled as the leakage from the SOURCE to BARRIER 1 (i.e. path of  $L_{12}$ ). Airborne activity in the fuel handling area is released to the environment through the fuel handling area emergency HVAC system (i.e., paths of  $L_{23}$  and  $L_{38}$ ). The release rate to the environment through the fuel handling area depends on cubicle volume and HVAC

flow rate. The reduction of the amount of radioactivity by deposition and/or plate-out on structure surfaces is not considered for the reason of conservatism.

TIDs for airborne activity in the fuel handling area (i.e., BARRIER 1) and the filter loading of the fuel handling area emergency HVAC system (i.e., FILTER 1) are determined by using the ISOSHL code which is incorporated in the RUNT-G computer code. The main input parameters of the ISOSHL code for airborne activity in the fuel handling area is given in Table B-6, and the other main parameters and ISOSHL model are the same as those in Table B-3, and Figures B-5 and B-6, respectively, presented above.

#### **B.4. TIDs in the main steam valve house inside the auxiliary building (outside the containment)**

TIDs for components in the main steam valve house (MSVH) are calculated based on the post-MSLB (main steam line break) environment. The input parameters, assumptions, and evaluation model for running the RUNT-G code are described below.

##### **B.4.1. Input Parameters and Assumptions**

- a. Source Term: Per RG 1.183, Appendix E, Section 2, for the main steam line break accident, the release from the breached fuel is based on the estimate of the number of fuel rods assumed to have experienced Departure from Nucleate Boiling (DNB) and the assumption that 5% of the core inventory of the noble gases and iodines is in the fuel gap, except for Kr-85 at 10% and I-131 at 8%.
- b. The expected number of fuel rods in DNB is assumed to be 1% of the core where the failed fuel is modeled with a radial peaking factor of 1.8. There is no fuel melt expected during the MSLB. To determine the activity in the steam generator resulting from primary-to-secondary leakage, a primary coolant of  $2.744 \times 10^5$  kg and primary to secondary (P-T-S) leakage of 0.6 gpm are used. The initial secondary coolant source term is assumed to be at the Technical Specification limit of  $3.7 \times 10^3$  Bq/g (0.1  $\mu$ Ci/g) Dose Equivalent (DE) I-131 and is given in DCD Table 15A-9. The source term for the MSLB event is described in detail as specified in DCD Subsection 15.1.5.3.3 and Table 15.1.5-12.
- c. Main Steam Valve House: The volume of each MSVH (i.e., room number of 137-A31C/D) is 123,955 ft<sup>3</sup>.
- d. Radioactive decay and subsequent daughters: The effect of radioactive decay with subsequent daughter products during holdup in the containment is included for a duration of 1 year.

##### **B.4.2. Calculation Method and Model**

As shown in Figure B-12, the RUNT-G model is developed to simulate the time-dependent activity in the MSVH.

After the onset of the MSLB event, the radioactivity leaked from the broken steam piping to the MSVH, which includes secondary coolant and RCS coolant activities, is modeled as the leakage from the SOURCE to BARRIER 1 (i.e., path of  $L_{12}$ ). The reduction of the amount of radioactivity by deposition and/or plate-out on the steam piping or structure surfaces is not considered.

TIDs from airborne activity in the MSVH (i.e., BARRIER 1) are determined by using the ISOSHL code which is incorporated in the RUNT-G computer code. Table B-7 indicates the main input parameters of the ISOSHL code, and the ISOSHL model is the same as that shown in Figure B-5.

**B.5. Summary of Accident TID Calculation**

In accordance with the requirements in RG 1.89, the TIDs are adjusted by another 10% EQ safety margin for uncertainty.

**B.6. References**

USAEC, "Meteorology and Atomic Energy", 1968.

Table B-1 (1 of 3)

Main ISOSHLD Input Parameters for Airborne Activity in Containment

| Geometry                                     |                      | ISOSHLD Parameter | Values                                    |
|----------------------------------------------|----------------------|-------------------|-------------------------------------------|
| 1) TID from Airborne Activity in Containment |                      |                   |                                           |
| Source Dimension                             | Shape                | IGEOM             | Cylindrical Source (Immersion Dose Model) |
|                                              | Height <sup>1)</sup> | SLTH              | $5.40 \times 10^3$ cm                     |
|                                              | Radius               | T(1)              | $2.29 \times 10^3$ cm                     |
|                                              | Volume <sup>2)</sup> | N/A               | $4.81 \times 10^9$ cm <sup>3</sup>        |
| Source Characteristic                        | Material             | N/A               | Air                                       |
|                                              | Density              | N/A               | $1.29 \times 10^{-3}$ g/cm <sup>3</sup>   |
| Dose Point X1                                | X                    | X (=SLTH/2)       | $2.70 \times 10^3$ cm                     |
|                                              | Y                    | N/A               | 0.0 cm                                    |
|                                              | Z                    | N/A               | 0.0 cm                                    |
| Dose Point X2                                | X                    | N/A               | $2.70 \times 10^3$ cm                     |
|                                              | Y                    | DELR              | $2.70 \times 10^3$ cm                     |
|                                              | Z                    | N/A               | 0.0 cm                                    |
| Dose Point X3                                | X                    | X (=SLTH/2)       | 0.0 cm                                    |
|                                              | Y                    | N/A               | 0.0 cm                                    |
|                                              | Z                    | N/A               | 0.0 cm                                    |

Table B-1 (2 of 3)  
Main ISOSHLD Input Parameters for Airborne Activity in Containment

| Geometry                                                   |                      | ISOSHLD Parameter | Values                                           |
|------------------------------------------------------------|----------------------|-------------------|--------------------------------------------------|
| 2) TID from Radioactivity in IRWST Sump: Above IRWST Sump  |                      |                   |                                                  |
| Source Dimension                                           | Shape                | IGEOM             | Cylindrical Source & Slab Shield on Cylinder End |
|                                                            | Height <sup>1)</sup> | T(1)              | $1.49 \times 10^2$ cm                            |
|                                                            | Radius               | SLTH              | $2.29 \times 10^3$ cm                            |
|                                                            | Volume <sup>2)</sup> | N/A               | $2.44 \times 10^9$ cm <sup>3</sup>               |
| Source Characteristic                                      | Material             | N/A               | Water                                            |
|                                                            | Density              | N/A               | 1.0 g/cm <sup>3</sup>                            |
| Air in Containment                                         | Thickness            | T(2)              | $1.37 \times 10^2$ cm                            |
|                                                            | Material             | N/A               | Air                                              |
|                                                            | Density              | N/A               | $1.29 \times 10^{-3}$ g/cm <sup>3</sup>          |
| Dose Point X1 & X2 <sup>1)</sup>                           | X                    | X (=T(1)+T(2))    | $2.85 \times 10^3$ cm                            |
|                                                            | Y                    | N/A               | 0.0 cm                                           |
|                                                            | Z                    | N/A               | 0.0 cm                                           |
| Dose Point X3                                              | X                    | X (=T(1)+2.54cm)) | $1.51 \times 10^2$ cm                            |
|                                                            | Y                    | N/A               | 0.0 cm                                           |
|                                                            | Z                    | N/A               | 0.0 cm                                           |
| 3) TID from Radioactivity in IRWST Sump: Within IRWST Sump |                      |                   |                                                  |
| Source Dimension                                           | Shape                | IGEOM             | Cylindrical Source (Immersion Dose Model)        |
|                                                            | Height <sup>1)</sup> | SLTH              | $1.49 \times 10^2$ cm                            |
|                                                            | Radius               | T(1)              | $2.29 \times 10^3$ cm                            |
|                                                            | Volume <sup>2)</sup> | N/A               | $4.81 \times 10^9$ cm <sup>3</sup>               |
| Source Characteristic                                      | Material             | N/A               | Water                                            |
|                                                            | Density              | N/A               | 1.00 g/cm <sup>3</sup>                           |
| Dose Point X4                                              | X                    | X (=SLTH/2)       | 74.3 cm                                          |
|                                                            | Y                    | N/A               | 0.0 cm                                           |
|                                                            | Z                    | N/A               | 0.0 cm                                           |

Table B-1 (3 of 3)

Main ISOSHLD Input Parameters for Airborne Activity in Containment

| Geometry                                                                     |           | ISOSHLD Parameter | Values                                  |
|------------------------------------------------------------------------------|-----------|-------------------|-----------------------------------------|
| 4) TID by Plate-out Radioactivity on Containment Wall: Center of Containment |           |                   |                                         |
| Source Dimension                                                             | Shape     | IGEOM             | Point Source                            |
|                                                                              | Radius    | T(1)              | $2.29 \times 10^3$ cm                   |
| Source Characteristic                                                        | Material  | N/A               | Air                                     |
|                                                                              | Density   | N/A               | $1.29 \times 10^{-3}$ g/cm <sup>3</sup> |
| Dose Point X1 & X3 <sup>2)</sup>                                             | X         | X (=T(1))         | $2.29 \times 10^3$ cm                   |
|                                                                              | Y         | N/A               | 0.0 cm                                  |
|                                                                              | Z         | N/A               | 0.0 cm                                  |
| 5) TID by Plate-out Radioactivity on Containment Wall: Wall of Containment   |           |                   |                                         |
| Source Dimension                                                             | Shape     | IGEOM             | Disk Source                             |
|                                                                              | Thickness | T(1)              | 0.0 cm                                  |
|                                                                              | Radius    | SLTH              | $2.70 \times 10^3$ cm                   |
| Source Characteristic                                                        | Material  | N/A               | Air                                     |
|                                                                              | Density   | N/A               | $1.29 \times 10^{-3}$ g/cm <sup>3</sup> |
| Dose Point X2 <sup>3)</sup>                                                  | X         | X                 | 1.00 cm                                 |
|                                                                              | Y         | N/A               | 0.0 cm                                  |
|                                                                              | Z         | N/A               | 0.0 cm                                  |

- 1) The dose rate at containment wall surface is assumed to be the same as that at center of containment atmosphere (i.e., dose point of X1) from the source in IRWST sump water for conservatism. Therefore, every parameter has the same value with the input parameter for dose point X1.
- 2) The dose rate at bottom of containment is assumed to be the same as that at center of containment atmosphere (i.e., dose point of X1) from the source deposited on the surface is used as. Therefore, every parameter has the same value with the input parameter for dose point X1
- 3) The dose point is set 1 cm away from the wall to avoid the singularity at  $X = 0$ .

Table B-2

Main ISOSHLD Input Parameters for Airborne Activity in Auxiliary Building

| Geometry              |                      | ISOSHLD Parameter | Values                                    |
|-----------------------|----------------------|-------------------|-------------------------------------------|
| Source Dimension      | Shape                | IGEOM             | Cylindrical Source (Immersion Dose Model) |
|                       | Height <sup>1)</sup> | SLTH              | $6.10 \times 10^2$ cm                     |
|                       | Radius               | T(1)              | $1.58 \times 10^3$ cm                     |
|                       | Volume <sup>2)</sup> | N/A               | $4.81 \times 10^9$ cm <sup>3</sup>        |
| Source Characteristic | Material             | N/A               | Air                                       |
|                       | Density              | N/A               | $1.29 \times 10^{-3}$ g/cm <sup>3</sup>   |
| Dose Point            | X                    | X (=SLTH/2)       | $3.05 \times 10^2$ cm                     |
|                       | Y                    | N/A               | 0.0 cm                                    |
|                       | Z                    | N/A               | 0.0 cm                                    |

- 1) Height of rooms in auxiliary building is assumed to be 610cm (=20ft)
- 2) Volume of rooms or cubicles, which contains components/equipment in the ESF systems, ranges from  $2.21 \times 10^8$  cm<sup>3</sup> ( $=7.82 \times 10^3$  ft<sup>3</sup>) to  $9.15 \times 10^8$  cm<sup>3</sup> ( $=3.23 \times 10^4$  ft<sup>3</sup>), but it is conservatively assumed to be  $4.81 \times 10^9$  cm<sup>3</sup> ( $= 1.70 \times 10^5$  ft<sup>3</sup>) as a bounding volume, thus leading to maximization of the potentially expected TIDs for the corresponding components/equipment.

Table B-3

Main ISOSHL D Input Parameters for ABCAEES Filter

| Geometry                 |                        | ISOSHL D Parameter | Values                               |
|--------------------------|------------------------|--------------------|--------------------------------------|
| Source Dimension         | Shape                  | IGEOM              | Rectangular Source                   |
|                          | Width (X)              | T(1)               | $6.10 \times 10^1 \text{ cm}$        |
|                          | Length (Y)             | Y                  | $6.10 \times 10^1 \text{ cm}$        |
|                          | Height (Z)             | SLTH               | $6.10 \times 10^1 \text{ cm}$        |
|                          | Volume                 | N/A                | $2.27 \times 10^5 \text{ cm}^3$      |
| Source Characteristic    | Material <sup>1)</sup> | N/A                | Carbon                               |
|                          | Density                | N/A                | $4.80 \times 10^{-1} \text{ g/cm}^3$ |
| Dose Point <sup>1)</sup> | X                      | X (=T(1) + T(2))   | $3.30 \times 10^1 \text{ cm}$        |
|                          | Y                      | YP                 | $3.05 \times 10^1 \text{ cm}$        |
|                          | Z                      | SP                 | $3.05 \times 10^1 \text{ cm}$        |

1) Be assumed to be 2.54cm away from HVAC ACU source term

Table B-4

Main ISOSHLD Input Parameters for Direct Dose from Containment

| Geometry                                       |                      | ISOSHLD Parameter | Values                                  |
|------------------------------------------------|----------------------|-------------------|-----------------------------------------|
| Source Dimension                               | Shape                | IGEOM             | Cylindrical Source & Cylindrical Shield |
|                                                | Height <sup>1)</sup> | SLTH              | $5.40 \times 10^3$ cm                   |
|                                                | Radius               | T(1)              | $2.29 \times 10^3$ cm                   |
|                                                | Volume               | N/A               | $8.86 \times 10^{10}$ cm <sup>3</sup>   |
| Source Characteristic                          | Material             | N/A               | Air                                     |
|                                                | Density              | N/A               | $1.29 \times 10^{-3}$ g/cm <sup>3</sup> |
| Containment Concrete Shield Wall <sup>2)</sup> | Thickness            | T(2)              | $1.37 \times 10^2$ cm                   |
|                                                | Material             | N/A               | Concrete                                |
|                                                | Density              | N/A               | 2.242 g/cm <sup>3</sup>                 |
| Dose Point                                     | X                    | X                 | $2.42 \times 10^3$ cm                   |
|                                                | Y                    | Y (=SLTH/2)       | $2.70 \times 10^3$ cm                   |
|                                                | Z                    | N/A               | 0.0 cm                                  |

- 1) Calculated based on the containment plane area of  $1.64 \times 10^7$  cm<sup>2</sup> ( $=1.77 \times 10^4$  ft<sup>2</sup>)
- 2) The shielding effect of the 137cm (=4.5ft) containment cylindrical concrete wall is only considered. The additional shielding effect due to structures in the auxiliary building is not considered for conservatism.

Table B-5

Main ISOSHLD Input Parameters for Direct Dose from SI/SC/CS Piping

| Geometry                |                      | ISOSHLD Parameter | Values                                                                                                  |
|-------------------------|----------------------|-------------------|---------------------------------------------------------------------------------------------------------|
| Source Dimension        | Shape                | IGEOM             | Cylindrical Source & Cylindrical Shield                                                                 |
|                         | Height <sup>1)</sup> | SLTH              | $6.10 \times 10^2$ cm                                                                                   |
|                         | Radius               | T(1)              | $1.90 \times 10^1$ cm                                                                                   |
|                         | Volume               | N/A               | $6.95 \times 10^5$ cm <sup>3</sup>                                                                      |
| Source Characteristic   | Material             | N/A               | Water                                                                                                   |
|                         | Density              | N/A               | 1.00 g/cm <sup>3</sup>                                                                                  |
| Pipe Wall <sup>2)</sup> | Radius               | T(2)              | 1.27 cm                                                                                                 |
|                         | Material             | N/A               | Steel                                                                                                   |
|                         | Density              | N/A               | 7.86 g/cm <sup>3</sup>                                                                                  |
| Air                     | Radius               | T(3)              | $3.05 \times 10^1$ cm                                                                                   |
|                         | Material             | N/A               | Air                                                                                                     |
|                         | Density              | N/A               | $1.29 \times 10^{-3}$ g/cm <sup>3</sup>                                                                 |
| Concrete Shield Wall    | Radius               | T(4)              | Wall Thickness (T) of Adjacent Room                                                                     |
|                         | Material             | N/A               | Concrete                                                                                                |
|                         | Density              | N/A               | 2.242 g/cm <sup>3</sup>                                                                                 |
| Dose Point              | X                    | X                 | $5.08 \times 10^1$ cm w/o concrete wall <sup>3)</sup><br>( $5.33 \times 10^1 + T$ ) cm w/ concrete wall |
|                         | Y                    | Y (=SLTH/2)       | $3.05 \times 10^2$ cm                                                                                   |
|                         | Z                    | N/A               | 0.0 cm                                                                                                  |

- 1) Piping length is assumed to be 20ft.
- 2) Only shielding effect of the pipe wall of 1.27cm is considered for conservatism
- 3) Assumed to be 1ft away from the SI/SC/CS piping

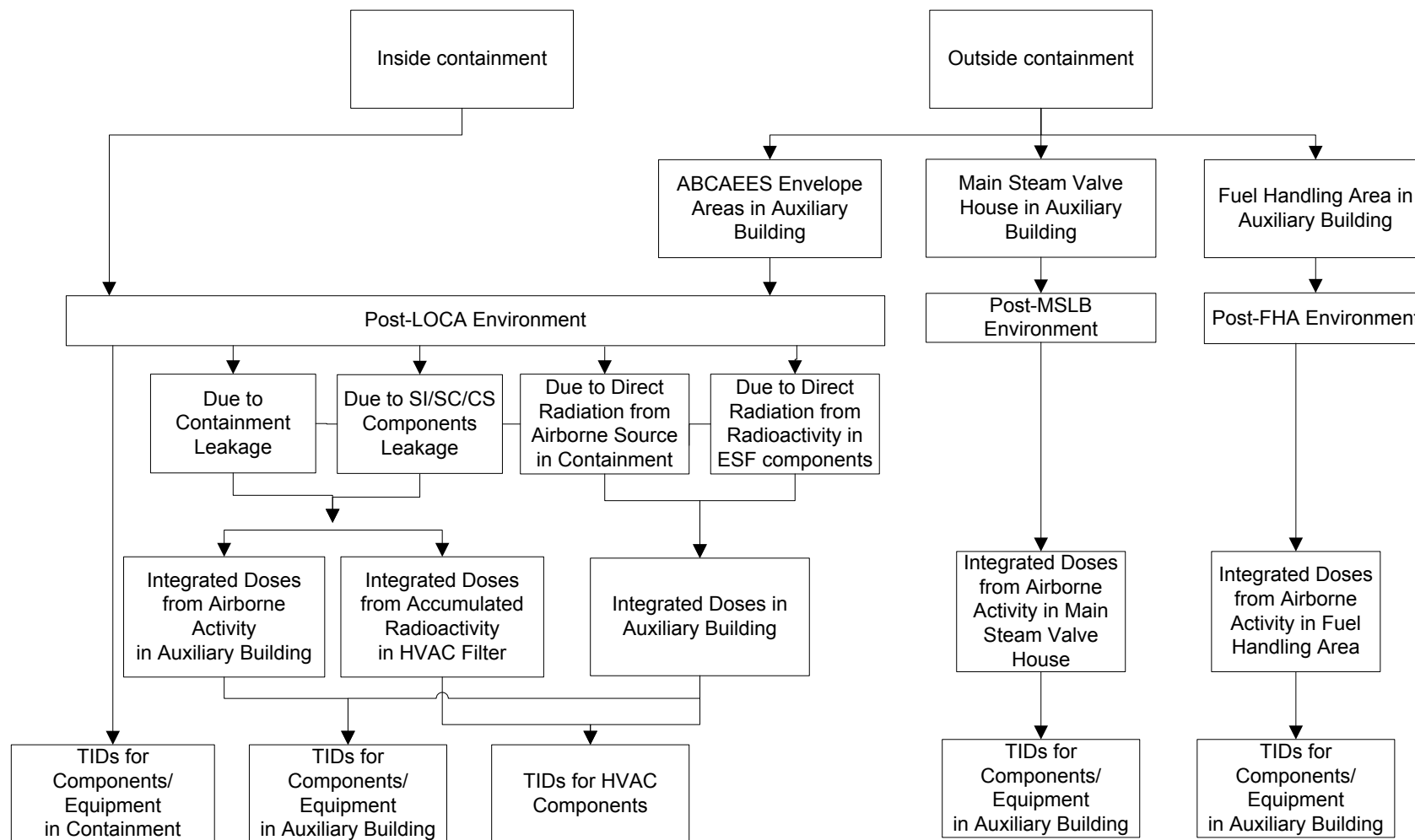


Figure B-1 A Simplified Flowchart for Determination of Accident TIDs

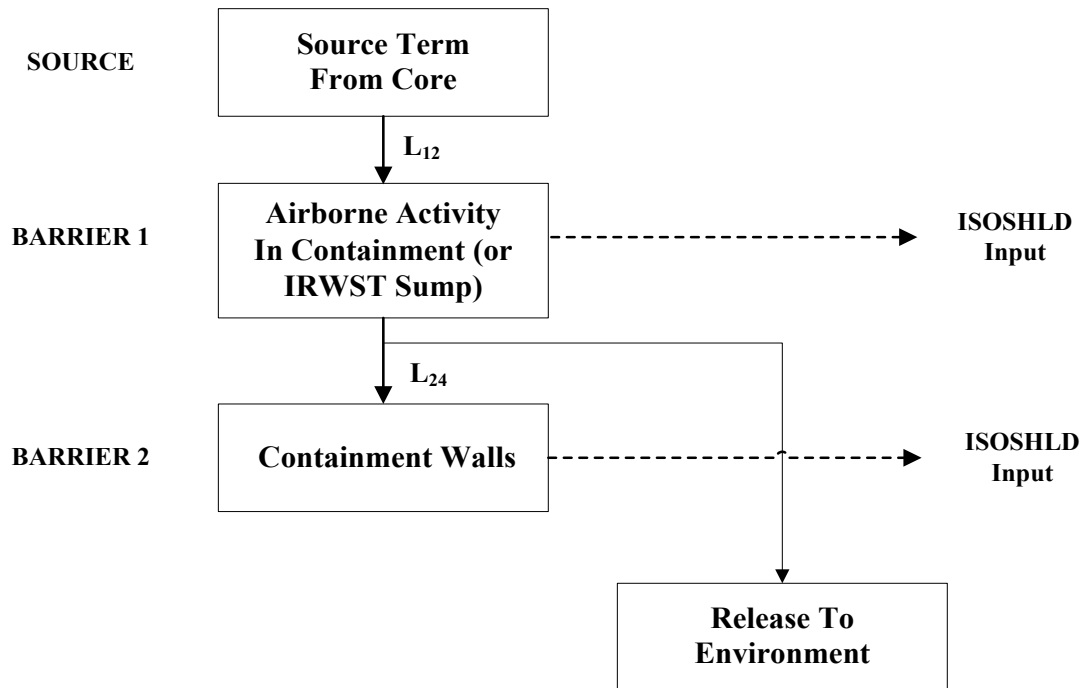


Figure B-2 RUNT-G Model to Calculate radioactivity in containment, IRWST sump, and walls

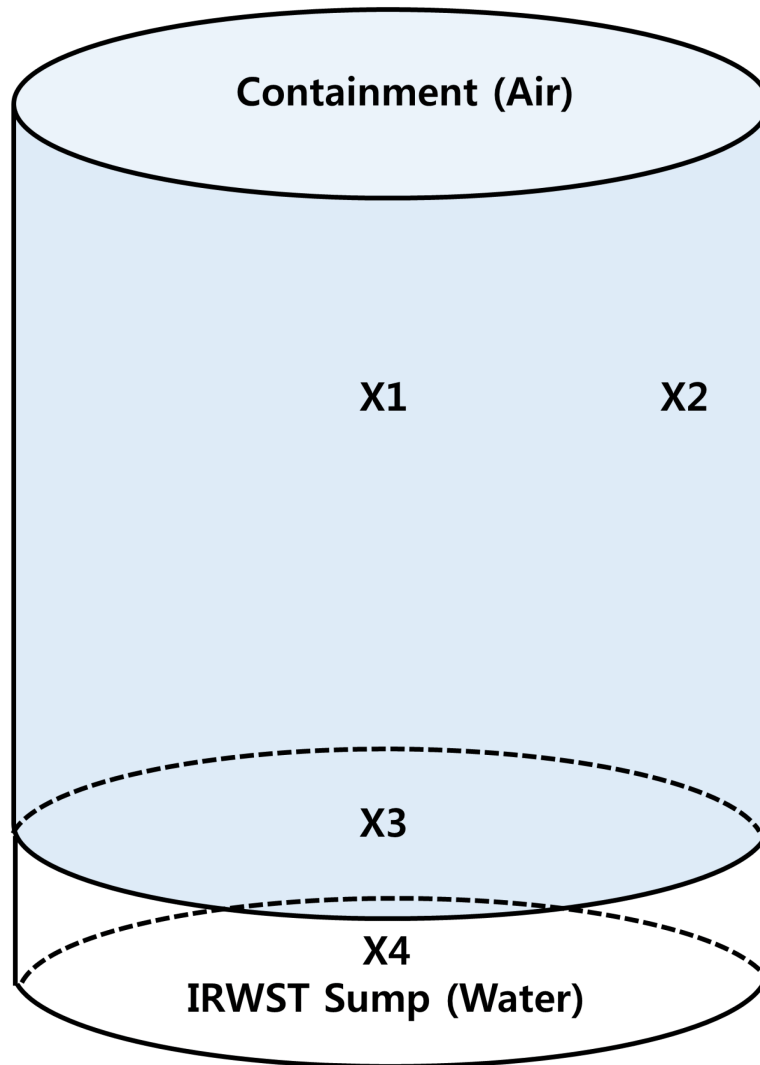


Figure B-3 ISOSHL Model for Dose Evaluation Inside Containment

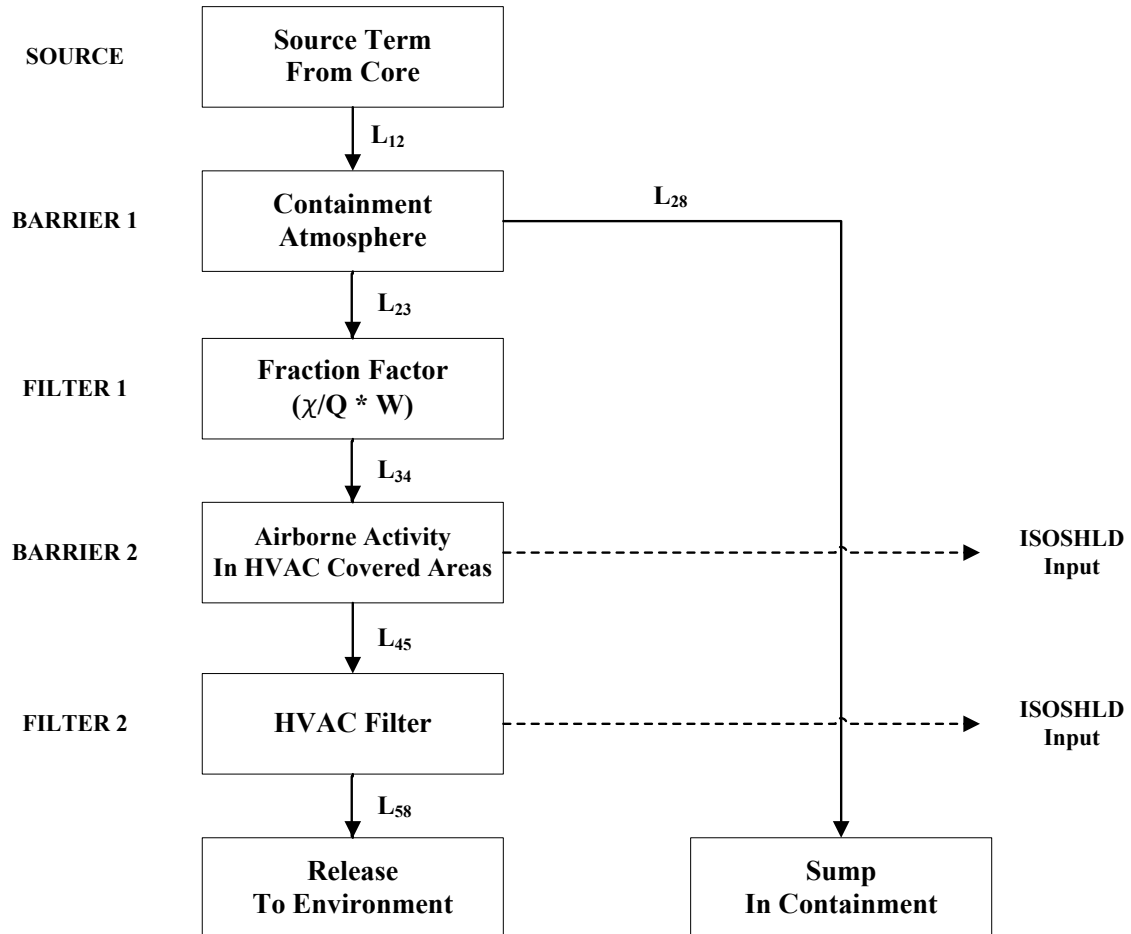


Figure B-4 RUNT-G Model for Containment Leakage

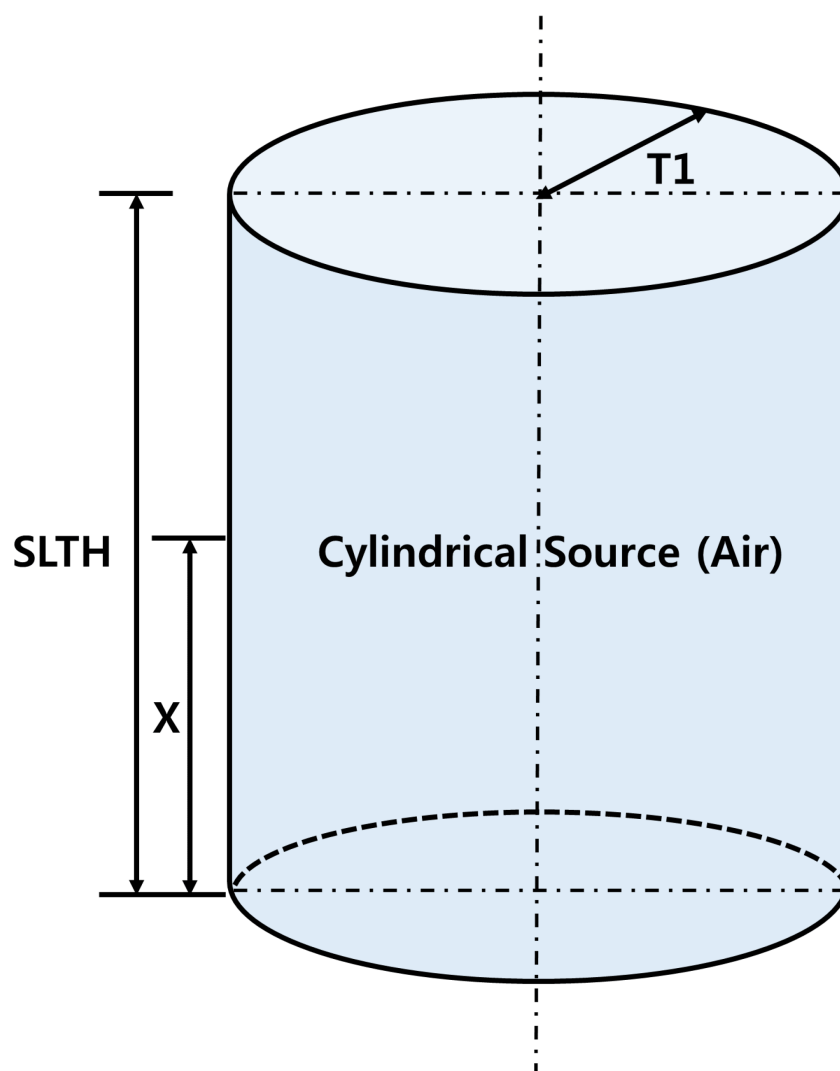


Figure B-5 ISOSHLD Model for Immersion Dose Evaluation

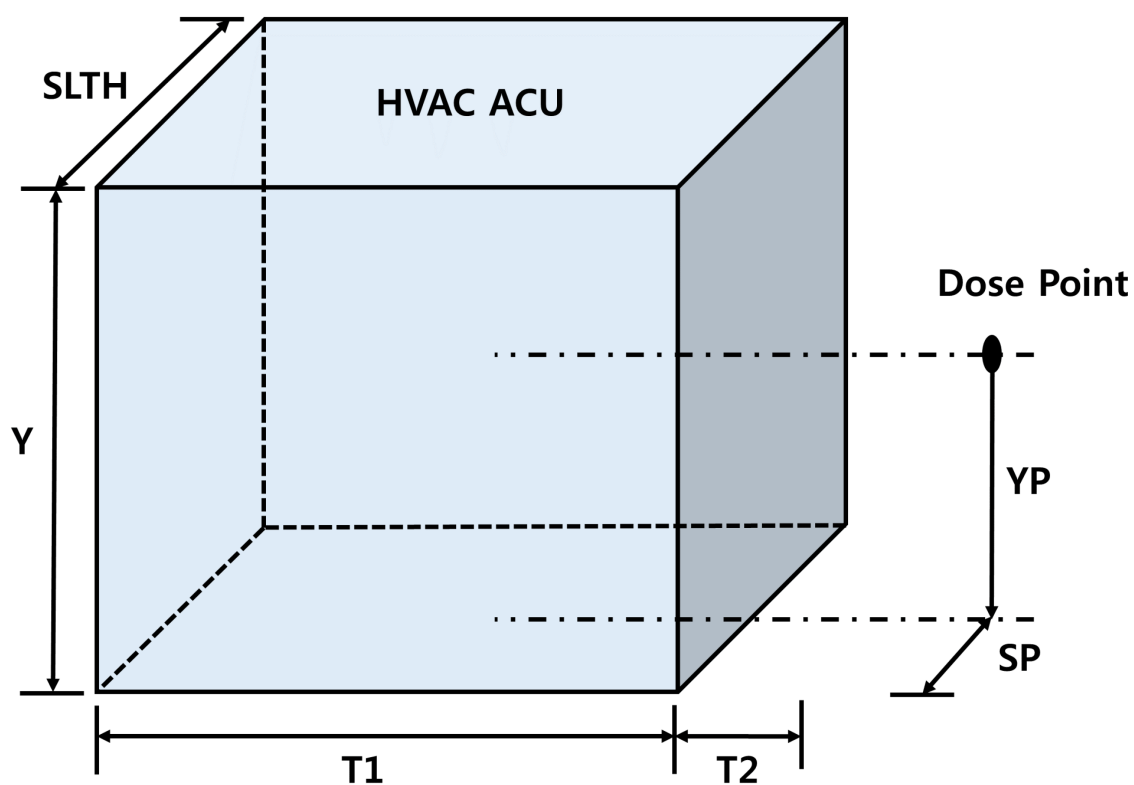


Figure B-6 ISOSHL Model for ABCAEES Filter

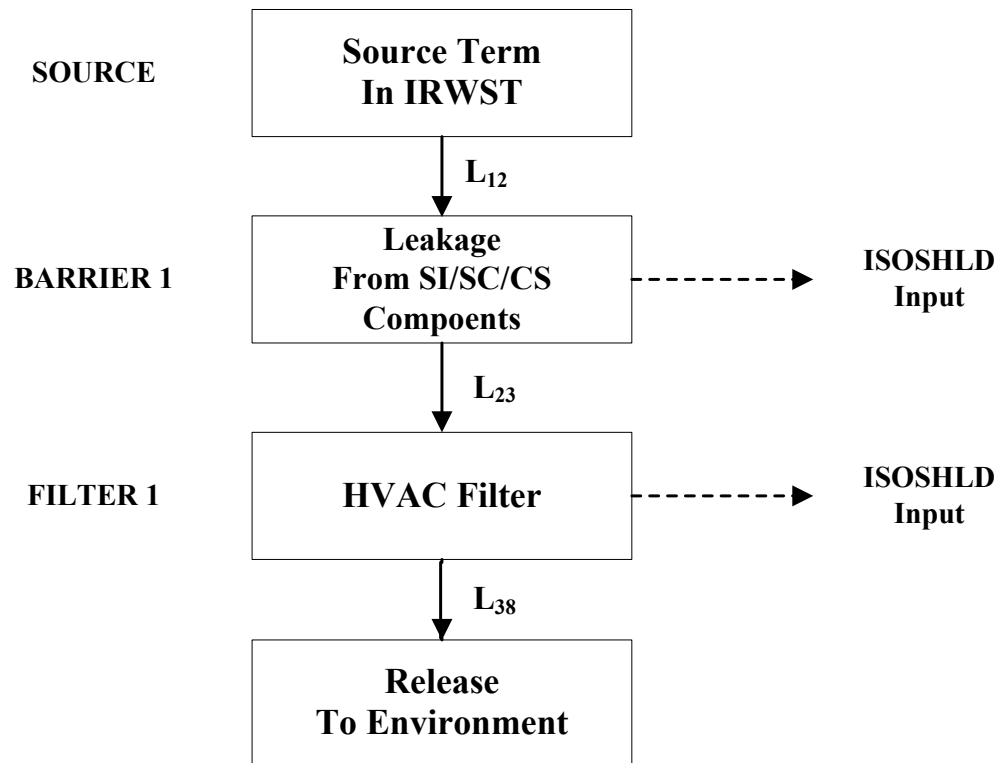


Figure B-7 RUNT-G Model for SI/SC/CS Components Leakage

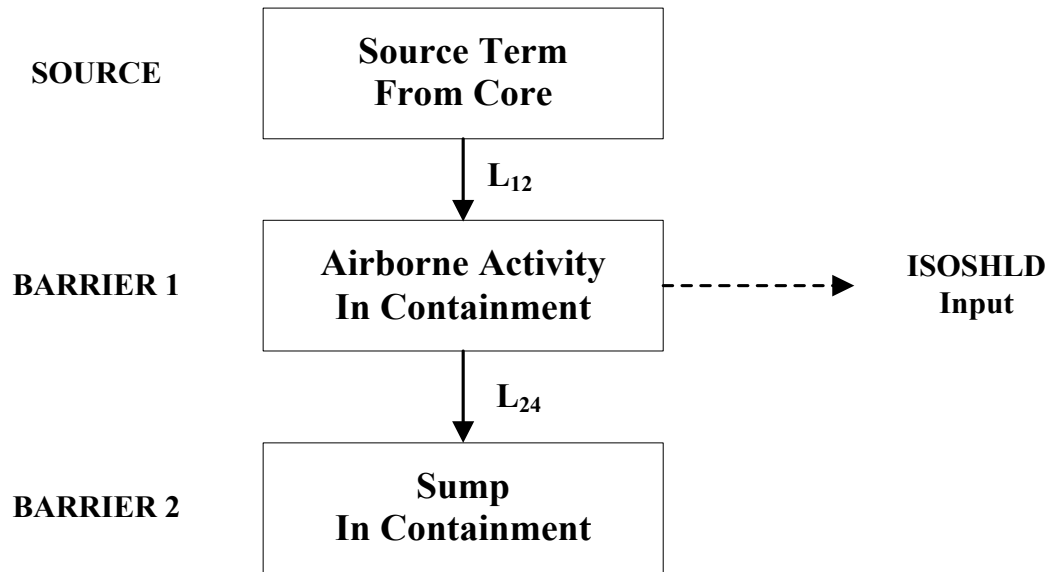


Figure B-8 RUNT-G Model for Direct Shine from Containment

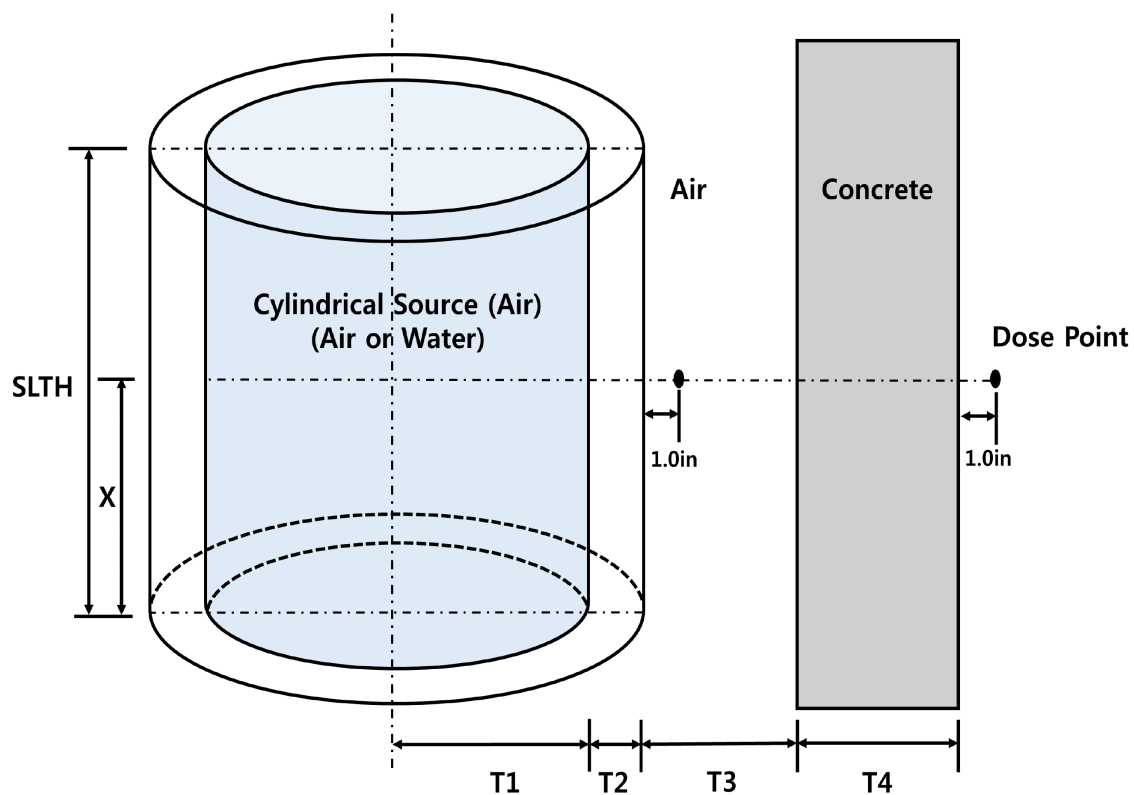


Figure B-9 ISOSHLD Model for Direct Shine from Containment or SI/SC/CS Piping

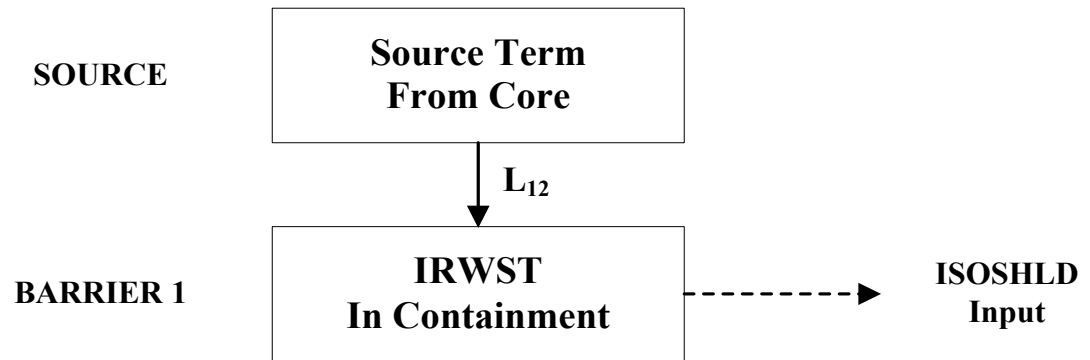


Figure B-10 RUNT-G Model for Direct Shine from ESF Components

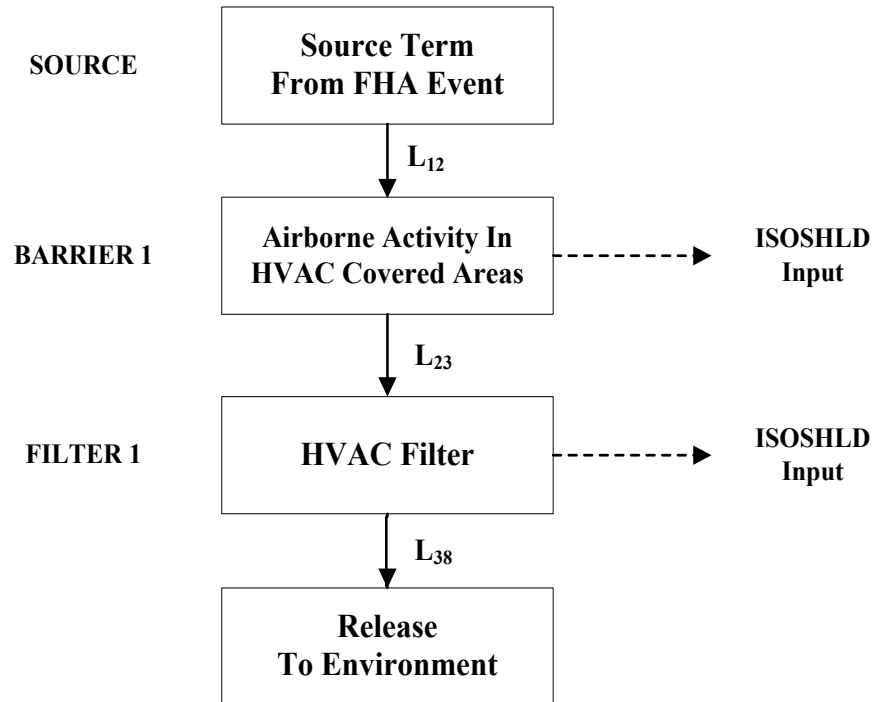


Figure B-11 RUNT-G Model for Fuel Assembly Leakage

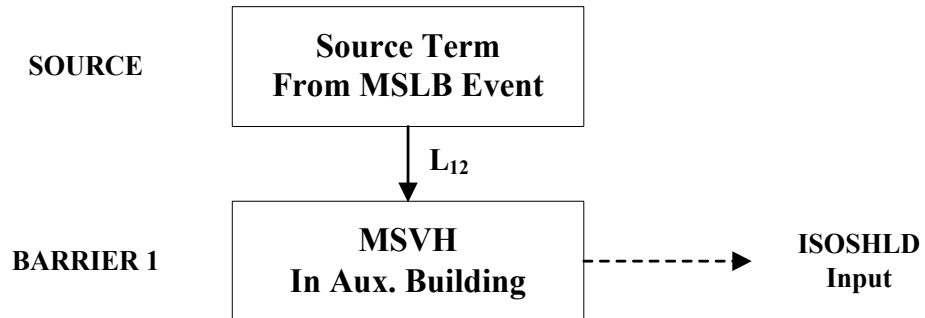


Figure B-12 RUNT-G Model for Radioactivity Release from MSLB Event