

### 3I Equipment Qualification Environmental Design Criteria

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

STD DEP T1 2.14-1 (Table 3I-13)

STD DEP 3I-1

STD DEP 3I-2 (Tables 3I-3 and 3I-17)

STD DEP Admin

The Hydrogen Recombiner deletion was provided in ABWR Licensing Topical Report NEDE-33330-P "Advanced Boiling Water Reactor (ABWR) Hydrogen Recombiner Requirements Elimination." Page C-21 of this LTR is incorporated by reference.

#### 3I.3.2.3 Water Quality and Submergence

STD DEP 3I-1

*A 1600 micrometer particle (maximum diameter) sized containment spray with a flow density of (approximately) ~~1.0~~ 0.4 liter/s per square meter may be initiated at ~~ten~~ 30 minutes following a loss-of-coolant accident (LOCA) signal and ~~continuing~~ operated continuously for up to ~~100~~ 3 days, for areas inside primary containment vessel (drywell and wetwell). The plant design includes provisions for drainage to prevent submergence of essential equipment in the upper drywell during spray operation. Essential equipment located in the lower drywell will be qualified for submergence.*

#### 3I.3.3 COL License Information

The following site-specific supplement addresses COL License Information Item 3.43.

The radiation environment conditions given in Tables 3I-7 through 3I-11 and Tables 3I-16 through 3-19 will be revised as necessary based upon as-designed and as-procured equipment. These tables in the FSAR will be updated as necessary in accordance with 10 CFR 50.71(e).

**Table 3I-3 Thermodynamic Environment Conditions Inside Reactor Building (Secondary Containment) Plant Normal Operating Conditions**

| <b>Plant Zone/Typical Equipment</b>                         | <b>Pressure<sup>1</sup><br/>kPaG</b> | <b>Temperature<br/>°C</b>     | <b>Relative Humidity</b> |
|---|--------------------------------------|-------------------------------|--------------------------|
| General floor area (not otherwise noted) /Similar Equipment | 0                                    | Max 40<br>Min 10              | Max 90<br>Min 10         |
| RHR pump rooms [Figs. 1.2-4/5.4-10]                         | 0                                    | Max 40 <sup>2</sup><br>Min 10 | Max 90<br>Min 10         |
| RCIC pump room [Figs. 1.2-4/5.4-8]                          | <b>0</b>                             | <b>Max 40<br/>Min 10</b>      | <b>Max 90<br/>Min 10</b> |
| HPCF pump rooms [Figs. 1.2-4/6.3-7]                         | <b>0</b>                             | <b>Max 40<br/>Min 10</b>      | <b>Max 90<br/>Min 10</b> |
| FPC pump room [Figs. 1.2-9/9.1-1]                           | <b>0</b>                             | <b>Max 40<br/>Min 10</b>      | <b>Max 90<br/>Min 10</b> |
| SGTS rooms [Figs. 1.2-10/6.5-1]                             | <b>0</b>                             | <b>Max 40<br/>Min 10</b>      | <b>Max 90<br/>Min 10</b> |
| MS tunnel room [Figs. 1.2-8/5.1-3]                          | 0                                    | Max 60<br>Min 10              | Max 90<br>Min 10         |
| Divisional valve rooms [Figs. 1.2-8/ ECCS]                  | 0                                    | Max 60<br>Min 10              | Max 90<br>Min 10         |
| Instrument rack rooms [Figs. 1.2-6/ ECCS]                   | 0                                    | Max 40<br>Min 10              | Max 90<br>Min 10         |
| CUW heat exchanger rooms (Figs. 1.2-4 and 5.4-12)           | 0                                    | Max 50<br>Min 10              | Max 90<br>Min 10         |

1. The indicated (positive or negative) pressure will be maintained. Pressure difference will not be controlled.
2. During pump operation (test running, etc.) this temperature will be a Max. 66°C. The frequency of this maximum temperature occurrence is assumed 2 hours/month (test) or 90 days/year in RHR room (abnormal) and 2 hours/month in the other rooms.

**Table 3I-17 Radiation Environment Conditions Inside Reactor Building  
Design Basis Accident (Secondary Containment)**

| Plant Zone/Typical Equipment               | Accident | LOCA Dose Rate |             | Integrated Dose <sup>1</sup> |                 |
|--|----------|----------------|-------------|------------------------------|-----------------|
|  |          | Gamma (Gy/h)   | Beta (Gy/h) | Gamma (Gy)                   | Beta (Gy)       |
| General floor area [Fig. 1.2-4]            | 15.6.5   | 8E-2           | 2E+0        | 2E+1                         | 3E+2            |
| RHR room [Figs. 1.2-4/5.4-10]              | 15.6.5   | 2E+3           | 1E+5        | 6E+5                         | 8E+7            |
| RCIC room [Figs. 1.2-4/5.4-8]              | 15.6.2   | 7E-2           | 1E+0        | 9E-1                         | 3E+1            |
| HPCF room [Figs. 1.2-4/6.3-7]              | 15.6.5   | 1E+3           | 6E+4        | 4E+5                         | 5E+7            |
| SGTS room [Figs. 1.2-10/6.5-1]             | 15.6.5   | 2E+4           | 2E+0        | 3E+7                         | 3E+2            |
| MS tunnel [Figs. 1.2-8/5.1-3]              | 15.6.4   | 9E-1           | 7E+0        | <b>2E+03E+4</b>              | <b>9E+02E+5</b> |
| Divisional valve room<br>[Figs 1.2-5/ECCS] | 15.6.5   | 2E+3           | 2E+5        | 8E+5                         | 2E+8            |
| Instrument rack room<br>[Figs. 1.2-6/ECCS] | 15.6.5   | 3E-2           | 2E+0        | <b>5E+06E+4</b>              | <b>5E+25E+6</b> |

1. Integration dose is summed over a six month period for Accident Case 15.6.5, 6 hours for 15.6.2, and 2 hours for 15.6.4.

