

## 1AA Plant Shielding to Provide Access to Vital Areas and Protective Safety Equipment for Post-Accident Operation [II.B.2]

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

STD DEP 1AA-1

STD DEP T1 2.4-1 (Table 1AA-2)

STD DEP T1 2.14-1 ([Table 1AA-3](#))

STD DEP Admin (Table 1AA-2)

~~The Hydrogen Recombiner deletion was provided in ABWR Licensing Topical Report NEDE-33330P, "Advanced Boiling Water Reactor (ABWR) Hydrogen Recombiner Requirements Elimination," Rev. 1 dated September 2007. Pages C-12 through C-14 of this LTR are incorporated by reference.~~

### 1AA.2 Summary of Shielding Design Review

STD DEP 1AA-1

The results of the review are:

- (2) Based upon the accident source terms of Regulatory Guides 1.3 and 1.7 and Standard Review Plan 15.6.5 including normal operations, the vital equipment exposures will be enveloped based upon the table below:

Area	Gamma (Gy)	Beta (Gy)
ECCS Rooms	<del>4x10<sup>5</sup></del> <del>3x10<sup>7</sup></del> <del>6x10<sup>5</sup></del>	8x10 <sup>7</sup>
SGTS Area	5x10 <sup>5</sup> 3x10 <sup>7</sup>	<del>2x10<sup>-4</sup></del> 3x10 <sup>2</sup>

### 1AA3.2 Vital Area and Systems

STD DEP T1 2.14-1

A vital area is any area which will or may require occupancy to permit an operator to aid in the mitigation of or recovery from an accident. Areas which must be considered as vital after an accident are the control room, technical support center, sampling station, sample analysis area and the HPIN nitrogen supply bottles.

The vital areas also include consideration (in accordance with NUREG-0737, II.B.2) of the post-LOCA hydrogen control system, containment isolation reset control area, manual ECCS alignment area, motor control center and radwaste control panels. However, the ABWR design does not require a containment isolation reset control area or a manual ECCS alignment area, as these functions are available from the control room. Those vital areas which are normally areas of mild environment, allowing unlimited access, are not reviewed for access.

Essential systems specific to the ABWR to be considered post-accident are those for the ECCS, fission product ~~and combustible gas~~ control and the auxiliary systems necessary for their operation (i.e., instrumentation, control and monitoring, power, cooling water, and air cooling).

### 1AA.5.1.2 Emergency Core Cooling Systems and Auxiliaries

STD DEP T1 2.4-1

*The fuel pool cooling function (Subsection 1.2.2.7.2) is also included on the basis that a recently unloaded fuel batch could require continued cooling during the post-accident period. This function is also supplemented by the RHR Fuel Pool Cooling Mode as described in ~~Section~~ Subsection 9.1.3.2. The RHR equipment is environmentally qualified, so access is not required and redundancy is included in system components.*

### 1AA.5.1.3 Combustible Gas Control Systems and Auxiliaries

STD DEP T1 2.14-1

Flammability control in the primary containment is achieved by an inert atmosphere during all plant operating modes except for operator access ~~for~~ during refueling and maintenance ~~and a recombiner system to control oxygen produced by radiolysis~~. The high pressure nitrogen (HPIN) gas supply is described in Subsection 1.2.2.12.13. The Containment Atmospheric Monitoring System (CAMS) measures and records containment oxygen/hydrogen concentrations under post-accident conditions. It is automatically initiated by detection of a LOCA (Subsection 7.6.1.6). Table 1AA-3 lists the combustible gas control principal components and their locations.

Table 1AA-2 Post-Accident Emergency Core Cooling Systems and Auxiliaries

Equipment	MPL	Location
<b>HPCF</b>		
SP Water Level	T31-LT0058A,B,C,D	By HPCF Rm. B,C (SC)
<b>LPCF</b>		
FPC Supply Valve	E11-F015A,B,C	Valve Rm. A,B,C (SC)

Table 1AA-3 Post-Accident Combustible Gas Control Systems and Auxiliaries

<u>Equipment</u>	<u>MPL</u>	<u>Location</u>
<b><i>FCS</i></b>		
<i>Recombiner &amp; Auxiliaries</i>	<i>T49-A001A,B</i>	<i>(PG)</i>
<i>RHR Cooling/Isol. Valve</i>	<i>T49-F008,010;A,B</i>	<i>(PG)(SC)</i>
<i>Flow</i>	<i>T49-FT002,004;A,B</i>	<i>Inst. Rack Rm. A,B (SC)</i>
<i>Pressure</i>	<i>T49-PT003A,B</i>	<i>Inst. Rack Rm. A,B (SC)</i>

