

#### **4A Typical Control Rod Patterns and Associated Power Distribution for ABWR**

The information in this appendix of the reference ABWR DCD, including all subsections, tables, and figures, is incorporated by reference with no departures or supplements.

As required by Section IV.A.3 of the ABWR Design Certification Rule, the plant-specific DCD must physically include the proprietary and safeguards information referenced in the ABWR DCD. Appendix 4A in the reference ABWR DCD references proprietary information. That proprietary information is provided below, has finality in accordance with Section VI.B.2 of the ABWR Design Certification Rule, and does not constitute a supplement to or departure from the reference ABWR DCD.

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**Figure 4A-1a Summary of Haling Condition—100% Rated Core Flow**



**Figure 4A-1d Integrated Power per Bundle (Haling) at 8.5 GWd/MT Cycle Exposure**



**Figure 4A-1e Average Bundle Exposure (Haling) at 8.5 GWd/MT Cycle Exposure**



**Figure 4A-2a Summary of Haling Condition—111% Rated Flow**



**Figure 4A-2d Integrated Power per Bundle (Haling) at 9.0 GWd/MT Cycle Exposure**



**Figure 4A-2e Average Bundle Exposure (Haling) at 9.0 GWd/MT Cycle Exposure**



**Figure 4A-3a Summary of 0.22 GWd/MT Condition**



**Figure 4A-3d Integrated Power per Bundle at 0.22 GWd/MT Cycle Exposure**



**Figure 4A-3e Average Bundle Exposure at 0.22 GWd/MT Cycle Exposure**



**Figure 4A-4a Summary of 1.10 GWd/MT Condition**





**Figure 4A-4d Integrated Power per Bundle at 1.1 GWd/MT Cycle Exposure**



**Figure 4A-4e Average Power Bundle Exposure at 1.1 GWd/MT Cycle Exposure**



**Figure 4A-5a Summary of 2.20 GWd/MT Condition**



**Figure 4A-5d Integrated Power per Bundle at 2.2 GWd/MT Cycle Exposure**



**Figure 4A-5e Average Bundle Exposure at 2.2 GWd/MT Cycle Exposure**



**Figure 4A-6a Summary of 3.31 GWd/MT Condition**



**Figure 4A-6d Integrated Power per Bundle at 3.3 GWd/MT Cycle Exposure**



**Figure 4A-6e Average Bundle Exposure at 3.3 GWd/MT Cycle Exposure**



**Figure 4A-7a Summary of 4.41 GWd/MT Condition**



**Figure 4A-7d Integrated Power per Bundle at 4.4 GWd/MT Cycle Exposure**



**Figure 4A-7e Average Bundle Exposure at 4.4 GWd/MT Cycle Exposure**



**Figure 4A-8a Summary of 5.51 GWd/MT Condition**





**Figure 4A-8d Integrated Power per Bundle at 5.5 GWd/MT Cycle Exposure**



**Figure 4A-8e Average Bundle Exposure at 5.5 GWd/MT Cycle Exposure**



**Figure 4A-9a Summary of 6.61 GWd/MT Condition**



**Figure 4A-9d Integrated Power per Bundle at 6.6 GWd/MT Cycle Exposure**



**Figure 4A-9e Average Bundle Exposure at 6.6 GWd/MT Cycle Exposure**



**Figure 4A-10a Summary of 7.72 GWd/MT Condition**



**Figure 4A-10d Integrated Power per Bundle at 7.7 GWd/MT Cycle Exposure**



**Figure 4A-10e Average Bundle Exposure at 7.7 GWd/MT Cycle Exposure**



**Figure 4A-11a Summary of 8.07 GWd/MT Condition**



**Figure 4A-11d Integrated Power per Bundle at 8.0 GWd/MT Cycle Exposure**



**Figure 4A-11e Average Bundle Exposure at 8.0 GWd/MT Cycle Exposure**



**Figure 4A-12a Summary of 8.42 GWd/MT Condition**





**Figure 4A-12d Integrated Power per Bundle at 8.4 GWd/MT Cycle Exposure**



**Figure 4A-12e Average Bundle Exposure at 8.4 GWd/MT Cycle Exposure**



**Figure 4A-13a Summary of 9.00 GWd/MT Condition**



**Figure 4A-13d Integrated Power per Bundle at 9.0 GWd/MT Cycle Exposure**



**Figure 4A-13e Average Bundle Exposure at 9.0 GWd/MT Cycle Exposure**

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