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**APP-GW-GLR-014**  
**Revision 0**

**March 2006**

# **AP1000 Standard Combined License Technical Report**

## **Closure of COL Items in DCD Chapter 11 Dilution and Control of Boric Acid Discharge**

**Revision 0**

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## **AP1000 Standard Combined License Application Technical Report**

### **Closure of COL Items in DCD Chapter 11**

### **Dilution and Control of Boric Acid Discharge**

#### **Introduction**

AP1000 units constructed at various sites may use different technology for the plant heat sink (circulating water), including cooling towers, river water and sea water, and the selection of this heat sink is not included in or required by the AP1000 Design Certification.

The circulating water system provides the dilution stream for liquid plant discharges. Different technology selections for the circulating water system make a large difference in the available dilution flowrate.

In Design Control Document (DCD) (Reference 1) section 11.2.5.4, COL item "Dilution and Control of Boric Acid Discharge" requires the COL applicant to evaluate planned discharge rates and associated dilution factors. This is COL information item 11.2-4 and FSER (Reference 2) COL action item 11.2-4. However, the information provided in the AP1000 DCD actually bounds anticipated dilution flowrates. Therefore, this COL item may be generically addressed.

#### **COL Information Item 11.2-4**

"The Combined License applicant will determine the rate of discharge and the required dilution to maintain acceptable concentrations. Refer to Section 11.5 for a discussion of the program to control releases.

The Combined License applicant will discuss the planned discharge flow rate for borated wastes and controls for limiting the boric acid concentration in the circulating water system blowdown."

#### **Technical Background**

The 6000 gpm cooling tower blowdown rate used for calculation of concentrations in DCD Tables 11.2-8 and 11.2-9 represent the lower bound; sites using other sources for circulating water (sea water, river water) will have much higher dilution flows available. The dilution rate is consistent with the information for the liquid radwaste systems and components discussed in the DCD. Using the Cooling Tower discharge to determine the dilution flow rate in the DCD for NRC COL approval does not constitute a certified standard design item that would require a COL revision to change after the completion of the COL approval.

There are no design changes to the radwaste systems and components to close this COL information item. The description of the systems and components and operation in the DCD are not altered by the inclusion of the dilution rate.

It is the responsibility of the plant operator to ensure releases meet the requirements of 10 CFR Part 50, Appendix I, and that the release concentrations meet 10 CFR Part 20 requirements. These requirements must be met throughout the life of the plant, and additional verification during the Combined License phase does not provide useful information.

Boric acid concentration in the discharged water is not a value regulated on a Federal level. State and local requirements on boric acid release concentration will be evaluated outside the COL application review. Therefore, additional information about boric acid dilution during the Combined License phase.

### Regulatory Impact

The FSER discusses the dilution of boric acid wastes in Subsection 11.2.1. It is identified as a COL responsibility. The addition of dilution rates for boric acid rate will have no impact on the FSER discussion of the handling and treatment of radioactive wastes. The FSER conclusions in 11.2.2 are not impacted by defining the dilution flow.

The changes to the DCD presented in this report do not represent an adverse change to the design function or to how design functions are performed or controlled. The changes to the DCD do not involve revising or replacing a DCD-described evaluation methodology nor involve a test or experiment not described in the DCD. The DCD change does not require a license amendment per the criteria of VIII. B. 5.b. of Appendix D to 10 CFR Part 52.

The DCD change does not affect resolution of a severe accident issue and does not require a license amendment based on the criteria of VIII. B. 5.c of Appendix D to 10 CFR Part 52.

The closure of the COL Information Item will not alter barriers or alarms that control access to protected areas of the plant. The closure of the COL Information Item will not alter requirements for security personnel. Therefore, the closure of the COL Information Item does not have an adverse impact on the security assessment of the AP1000.

### REFERENCES

1. APP-GW-GL-700, AP1000 Design Control Document, Revision 15
2. NUREG-1793, Final Safety Evaluation Report Related to Certification of the AP1000 Standard Design, September 2004.

### DCD Mark-Up

The following DCD markups identify how COL application FSARs should be prepared to incorporate the subject change.

Revise the First Paragraph of 11.2.3.3 as follows:

#### 11.2.3.3 Dilution Factor

The dilution factor provided for the activity released is site dependent; the value of 6000 gpm used herein is based on cooling tower blowdown requirements and is expected to be conservatively low. The plant operator will select dilution flowrates to ensure that the effluent concentration limits of 10 CFR Part 20 and any local requirements are continuously met and is provided by the Combined License applicant. If the available dilution is low, the discharge rate can be reduced to maintain acceptable concentrations.

Revise Subsection 11.2.5.4 as follows:

**11.2.5.4 Dilution and Control of Boric Acid Discharge**

**Completed.** The Combined License applicant will determine the rate of discharge and the required dilution to maintain acceptable concentrations for borated wastes is discussed in Subsection 11.2.3.3. Refer to Section 11.5 for a discussion of the program to control releases.

The Combined License applicant will discuss the planned discharge flow rate for borated wastes and controls for limiting the boric acid concentration in the circulating water system blowdown.