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Your ref: Docket No. 52-006
Our ref: DCP/NRC1652

November 26, 2003

SUBJECT: Transmittal of Revised Responses to AP1000 DSER Open Items

This letter transmits Westinghouse revised responses to Open Items in the AP1000 Design Safety Evaluation Report (DSER). A list of the revised DSER Open Item responses transmitted with this letter is Attachment 1. The non-proprietary responses are transmitted as Attachment 2.

Please contact me at 412-374-4728 if you have any questions concerning this submittal.

Very truly yours,

R. P. Vijuk, Manager
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AP600 & AP1000 Projects

/Attachments

1. List of the AP1000 Design Certification Review, Draft Safety Evaluation Report Open Item Responses transmitted with letter DCP/NRC1652
2. Non-Proprietary AP1000 Design Certification Review, Draft Safety Evaluation Report Open Item Responses dated November 26, 2003

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Attachment 1

List of

Non-Proprietary Responses

Table 1 "List of Westinghouse's Responses to DSER Open Items Transmitted in DCP/NRC1652"	
6.2.1.8.3-4 Revision 0	

DCP/NRC1652
Docket No. 52-006

November 26, 2003

Attachment 2

AP1000 Design Certification Review
Draft Safety Evaluation Report Open Item Non-Proprietary Responses

AP1000 DESIGN CERTIFICATION REVIEW

Draft Safety Evaluation Report Open Item Response

DSER Open Item Number: 6.2.1.8.3-4

Original RAI Number(s): None

Summary of Issue:

The NRC staff has been developing Revision 3 to Regulatory Guide 1.82, "Water Sources For Long term Recirculation Cooling Following a Loss-of-coolant Accident." During that review, the staff has identified concerns related to additional debris that can be caused by chemical reactions in the containment. The staff is requesting that the applicant address the following chemical effects as they relate to head loss calculations provided in the responses to Open Items 6.2.1.8.2-1, 6.2.1.8.3-1, and 6.2.1.8.3-3.

a. To minimize potential debris caused by chemical reaction of the pool water with metals in the containment, exposure of bare metal surfaces (e.g., scaffolding) to containment cooling water through spray impingement or immersion should be minimized either by removal or by chemical-resistant protection (e.g., coatings or jackets).

b. In addition to debris generated by jet forces from the pipe rupture, debris created by the resulting containment environment (thermal and chemical) should be considered in the analyses. Examples of this type of debris would be disbondment of coatings in the form of chips and particulates or formation of chemical debris (precipitants) caused by chemical reactions in the pool.

Westinghouse Response:

a) Note that AP1000 has no "spray impingement" because there is no automatically actuated spray system that will be used during a design basis accident.

The AP1000 has been designed to include platforms that should eliminate the need for the use of temporary scaffolding as a normal practice during refueling outages. In addition, two large staging / storage areas have been provided outside containment in the Annex building. One is just outside the main equipment hatch at the operating deck level (135' 3") and the other is just outside the maintenance equipment hatch at the 107' 2" floor elevation. These areas eliminate the benefits of storing outage materials inside containment. COL item 6.3.8.1 will be revised to require that the practice of storing outage materials (like temporary scaffolding and tools) inside containment be limited by the COL cleanliness program consistent with COL item 6.3.8.2.

Our preferred approach to the selection of materials inside containment is to use materials that do not need coatings or have permanent coatings (such as galvanizing) that do not need to be applied / re-applied in the plant. Where this is not practicable, coatings are utilized. COL item 6.3.8.2 will be revised to require that the potential for chemical debris be evaluated.

b) Disbonding of coatings has been evaluated in RAI 650.006 / DSER OI 6.2.1.8.3-2. The formation of chemical debris (precipitants) is addressed by the COL item as discussed in item a) above.

Design Control Document (DCD) Revision:

6.3.8.1 Containment Cleanliness Program

The Combined License applicants referencing the AP1000 will address preparation of a program to limit the amount of debris that might be left in the containment following refueling and maintenance outages. The cleanliness program will limit the storage of outage materials (such as temporary scaffolding and tools) inside containment during power operation consistent with COL item 6.3.8.2.

6.3.8.2 Verification of Water Sources for Long-Term Recirculation Cooling Following a LOCA

The Combined License applicants referencing the AP1000 will perform an evaluation consistent with Regulatory Guide 1.82, revision 3, to demonstrate that adequate long-term core cooling is available considering debris resulting from a LOCA together with debris that exists before a LOCA. As discussed in DCD section 6.3.2.2.7.1, a LOCA in the AP1000 does not generate fibrous debris due to damage to insulation or other materials included in the AP1000 design. The evaluation will consider resident fibers and particles that could be present considering the plant design, location and the containment cleanliness program. The determination of the characteristics of such resident debris will be based on sample measurements from operating plants. The evaluation will also consider the potential for the generation of chemical debris (precipitants). The potential to generate such debris will be determined considering the materials used inside the AP1000 containment, the post accident water chemistry of the AP1000 and applicable research / testing.

PRA Revision:

None