



Westinghouse Electric Company  
Nuclear Power Plants  
P.O. Box 355  
Pittsburgh, Pennsylvania 15230-0355  
USA

U.S. Nuclear Regulatory Commission  
ATTENTION: Document Control Desk  
Washington, D.C. 20555

Direct tel: 412-374-6206  
Direct fax: 412-374-5005  
e-mail: sisk1rb@westinghouse.com

Your ref: Docket No. 52-006  
Our ref: DCP/NRC2321

December 12, 2008

Subject: AP1000 Response to Request for Additional Information (SRP6)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 6. This RAI response is submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included in the response is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

A response is provided for RAI-SRP6.2.1.3-SPCV-01.

Questions or requests for additional information related to the content and preparation of this response should be directed to Westinghouse. Please send copies of such questions or requests to the prospective applicants for combined licenses referencing the AP1000 Design Certification. A representative for each applicant is included on the cc: list of this letter.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Robert Sisk'.

Robert Sisk, Manager  
Licensing and Customer Interface  
Regulatory Affairs and Standardization

/Enclosure

1. Response to Request for Additional Information on SRP Section 6

cc: D. Jaffe - U.S. NRC 1E  
E. McKenna - U.S. NRC 1E  
B. Gleaves - U.S. NRC 1E  
P. Ray - TVA 1E  
P. Hastings - Duke Power 1E  
R. Kitchen - Progress Energy 1E  
A. Monroe - SCANA 1E  
P. Jacobs - Florida Power & Light 1E  
C. Pierce - Southern Company 1E  
E. Schmiech - Westinghouse 1E  
G. Zinke - NuStart/Entergy 1E  
R. Grumbir - NuStart 1E  
D. Behnke - Westinghouse 1E

ENCLOSURE 1

Response to Request for Additional Information on SRP Section 6

# AP1000 TECHNICAL REPORT REVIEW

## Response to Request For Additional Information (RAI)

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RAI Response Number: RAI-SRP6.2.1.3-SPCV-01  
Revision: 0

### **Question:**

DCD Sections 6.2.1.3 and 6.2.1.4 describe the mass and energy release calculations and include a +1% full power allowance for calorimetric error, which appears to be inconsistent with SRPs 6.2.1.3 and 6.2.1.4. Also, DCD section 4.3.1.3.1 describes the operating limit of peak linear heat rate and includes an allowance of 1% for calorimetric error, which appears to be inconsistent with the calorimetric error assumed in safety analyses. Both SRP 6.2.1.3 and 6.2.1.4 recommend the use of 10 CFR Part 50 Appendix K, paragraph I.A, which requires either 1.02 times the licensed power to allow for instrumentation error or an alternative value that has been demonstrated to account for uncertainties due to power level instrumentation error. Additionally, other sections of the DCD such as Section 15.2.7.2.1 and Table 15.0-5 assume calorimetric errors of 2.0% rated power. Please provide the rationale for using 1% allowance for calorimetric error for the mass and energy release calculations in DCD Sections 6.2.1.3 and 6.2.1.4, and the peak linear heat rate calculation in DCD Section 4.3.1.3.1.

### **Westinghouse Response:**

As indicated in Notes 1 and 3 for the calorimetric heat balance for Technical Specification Surveillance Requirement SR 3.3.1.2, the design basis calorimetric error uncertainty limit that requires excore nuclear instrumentation adjustment is 1% of rated thermal power.

It should be noted that this calorimetric uncertainty assumption has not changed from the AP1000 Certified Design documented in DCD Revision 15. The 1% calorimetric uncertainty is part of the plant design basis in the AP1000 Final Safety Analysis Report (NUREG-1793), as indicated in the list of analytical assumptions in FSER Section 6.2.1.3, and also in the example MSLB case of FSER Table 6.2-4 which presents the summary of where the assumed rated thermal power of 101 % is indicated [in row three of the table].

The information presented in DCD section 4.3.1.3.1, as well as the information assumed in DCD sections 6.2.1.3.2, 6.2.1.4.1.1, and Table 6.2.1.1-1 are consistent with the Technical Specification SR design basis value of 1% calorimetric uncertainty.

The precision main feedwater flow measurement equipment provided for the plant as part of the evolving plant design detail satisfies the design commitment for a 1% calorimetric uncertainty.

It is acceptable to perform the identified plant safety analysis in DCD Chapters 4 and 6 with a calorimetric uncertainty value as low as 1% and be consistent with the design basis for the plant. A more conservative value of 2% power uncertainty is assumed in some of the DCD Chapter 15 safety analyses. This assumption is conservative and bounds a 1% calorimetric uncertainty, so the safety analyses support the 1% calorimetric uncertainty design basis.



# AP1000 TECHNICAL REPORT REVIEW

## Response to Request For Additional Information (RAI)

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The following note has been added to the appropriate subsections and tables of Revision 17 of DCD Chapter 15 to indicate that the use of a 2-percent calorimetric uncertainty is conservative:

"The main feedwater flow measurement supports a 1-percent power uncertainty; use of a 2-percent power uncertainty is conservative."

The affected DCD locations include the following:

- 15.0.3.2
- Note a of Table 15.0.2
- Table 15.0-5 (the row entry for assumed calorimetric error)
- 15.2.6.2.1
- 15.2.7.2.1
- 15.2.8.2.1
- Note 3 of Table 15.4-3
- 15.5.1.2
- 15.5.2.2
- 15.6.5.3.1.2
- 15.6.5.4B.2.1
- 15.6.5.4B.3.3
- Note 1 of Table 15.7-1

**Design Control Document (DCD) Revision:**

None

**PRA Revision:**

None

**Technical Report (TR) Revision:**

None