



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/NRC2387

February 24, 2009

Subject: AP1000 Response to Request for Additional Information (SRP5)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 5. This RAI response is submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included in this response is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

Enclosure 1 provides the response for the following RAI:

RAI-SRP5.4.4-SRSB-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 cursive script that reads 'Robert Sisk'.

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

/Enclosure

1. Response to Request for Additional Information on SRP Section 5

cc:	D. Jaffe	- U.S. NRC	1E
	E. McKenna	- U.S. NRC	1E
	P. Buckberg	- U.S. NRC	1E
	C. Proctor	- U.S. NRC	1E
	T. Spink	- 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
	J. DeBlasio	- Westinghouse	1E

ENCLOSURE 1

Response to Request for Additional Information on SRP Section 5

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP 5.4.4-SRSB-01

Revision: 0

Question:

In Revision 17 of DCD, Section 5.4.4, the pressure drop through the steam generator flow restrictor at 100 percent steam flow is changed from 8.0 psi to 15 psi based on a steam flow rate of 7.49×10^6 lbm/hr and the equivalent throat area of 1.4 ft², which remain unchanged in Revision 17. The AP1000 DCD Revision 17 Change Matrix indicates that this is a calculation based change.

- a) Explain the reason for the change to the higher flow resistance (unrecoverable pressure drop coefficient) across the SG restrictor, including whether this change is due to design changes in the restrictor insert material/configuration or changes in the design analysis calculation, and how the new pressure drop value (15 psi) is derived.
- b) Discuss any effect of the flow restrictor pressure drop change on the integrity of the internal steam generator components, including the pressure differential across the tube support plates.
- c) Discuss any effect of the flow restrictor pressure drop change on the choke flow rate and safety analysis of the design basis steam line break event in DCD Section 15.1.5.

Westinghouse Response:

- a) There has been no design change to the flow restrictor. The flow restrictor pressure drop value in DCD Section 5.4.4 has been updated to 15 psi to reflect the current design calculation. The flow restrictor pressure drop is calculated utilizing a loss factor which is based on the ratio of the venturi throat diameter to the exit diameter. This loss factor is calculated in Reference 1.
- b) The flow resistance based on 15 psi at full load has been taken into account in the evaluation of the SG internals, including loadings on internal support plates. These structures have been qualified per the ASME code with these loadings. In this case, the higher loss factor serves to protect the internals during a steam line break event (this is a secondary function to limiting mass and energy release rate into containment). Since the SG is larger but the flow limiter size has been maintained, there is increased margin for protecting the SG internals compared to many operating plants.
- c) In the analytical model utilized in the analysis of the design basis steam line break in DCD Section 15.1.5 the area of the flow restrictor is the design input, not the pressure drop. Since there has been no change in the area of the flow restrictor, the choked flow rate and steam line break analysis results are not impacted.

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

References:

- 1) CN-NCE-06-34 Revision 0, "AP1000 Steam Generator Analysis: GENF Performance Model and Calculation," J. D. Burr.

Design Control Document (DCD) Revision:

None

PRA Revision:

None

Technical Report (TR) Revision:

None