



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: 724-940-8505
e-mail: sisk1rb@westinghouse.com

Your ref: Docket No. 52-006
Our ref: DCP_NRC_002985

July 29, 2010

Subject: AP1000 Response to Request for Additional Information (SRP 23)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 23. 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(s):

RAI-DCP-CN60-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,

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

/Enclosure

1. Response to Request for Additional Information on SRP Section 23

DO63
MRO

cc: D. Jaffe - U.S. NRC 1E
E. McKenna - U.S. NRC 1E
B. Anderson - U.S. NRC 1E
M. Wentzel - 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
S. Ritterbusch - Westinghouse 1E

ENCLOSURE 1

Response to Request for Additional Information on SRP Section 23

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-DCP-CN60-SRSB-01
Revision: 0

Question:

In its May 10, 2010, letter, Westinghouse proposed to add a PRHR actuation reactor trip function, which is based on the PRHR HX control valve indication, to DCD Chapter 7.2, "Reactor Trip," for the mitigation of an inadvertent PRHR actuation event.

(A) In DCD Section 6.3.7.6.1, a sentence is added which states that for the PRHR heat exchanger discharge valves, valve position indication is used to initiate a reactor trip upon opening of these valves while the reactor is at power.

Please discuss the PRHR HX discharge control valve position indication design features pertaining to the requirements for the safety-related function.

(B) In DCD Section 15.1.6, Inadvertent Operation of the PRHR Heat Exchanger, Subsection 15.1.6.2 states that since a reactor trip is initiated as soon as the PRHR discharge valves are not fully closed, this event is essentially a reactor trip from the initial condition and requires no separate transient analysis. In DCD Table 15.0-4a, it indicates that a time delay of 1.25 seconds for the reactor trip on the PRHR discharge valve not closed is assumed for the inadvertent PRHR actuation event.

Please provide an evaluation, considering the 1.25 seconds time delay in the reactor trip from the PRHR discharge valve not fully closed, for the conclusion stated in DCD section 15.1.6.3 that inadvertent actuation of the PRHR does not result in violation of the core thermal design limits or RCS overpressure.

Westinghouse Response:

- (A) These valve position indicators are magnetic type switches that actuate when the magnetic slug attached to the valve stem triggers that switch. The valve will have 4 close position indicators that will give the (2 of 4) logic for the reactor trip signal. The position indicators will be arranged so that there is no interference between them and so they provide the redundancy needed for accurate control function valve position indication.
- (B) Westinghouse has performed an evaluation of the Operation of the PRHR Heat Exchanger transient assuming a conservative 1.25 second reactor trip response time. The response time covers the time to sense the opening of the PRHR valves through initial insertion of the control rods. A confirmatory analysis using LOFTRAN, with conservative adjustments to improve the mixing models in LOFTRAN for this specific transient, shows that the minimum time between the opening of the PRHR valves and

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any colder water reaching the core inlet is at least 2 seconds. Since the control rods are already inserting into the core before any colder water reaches the core inlet, there will not be an adverse power increase for this transient.

Design Control Document (DCD) Revision:

None

PRA Revision:

None

Technical Report (TR) Revision:

None