

REQUEST FOR ADDITIONAL INFORMATION 672-4982 REVISION 2

12/6/2010

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 07.02 - Reactor Trip System

Application Section: 07.2.1.4.3

QUESTIONS for Instrumentation, Controls and Electrical Engineering 2 (ESBWR/ABWR Projects)
(ICE2)

07.02-3

The Equations in DCD Chapter 7, Sections 7.2.1.4.3.1, 7.2.1.4.3.2, and DCD Chapter 16, Table 3.3.1-1, Notes 1&2 were revised in Revision 2 and are now different from the equations in NUREG 1431, Table 3.3.1-1, Notes 1&2.

Responses to RAI 167-1769, questions 16-212 (#6500) and 16-213 (#6501), did not provide the justification for making those changes. The response was more of consistency between Chapter 7 and 16.

Either submit a previously approved reference supporting the changes to the OTΔT and OPΔT trip functions or submit a reference that supports the changes from DCD Revision 1 to Revision 2.

Provide a description of the equations in DCD Tier 2 Sections 7.2.1.4.3.1 and 7.2.1.4.3.2 for the over-temperature and over-power delta-T algorithms regarding the lead-lag processing of core heat removal protection trips, including the purpose of the processing. The algorithms shown in DCD Tier 2 Sections 7.2.1.4.3.1 and 7.2.1.4.3.2 for the over-temperature and over-power delta-T calculations only describe the calculation of the trip setpoints under normal conditions. Discuss the limiting events for the core heat removal trip response. The lead-lag signal processing, described in Sections 7.2.1.4.3.1 and 7.2.1.4.3.2 and shown in Figure 7.2.2, depends on the time history of the input signal and so presents a more complicated effect for timing and errors. Discuss the special operation conditions for lead-lag signal processing such startup of the signal processing module, lost data, restart of the module while operating, and any other special operating modes for lead-lag signal processing modules.

The response should be coordinated with Chapter 16 PM and SRSB.

Relates to question numbers, 6500 (16-212), 6501 (16-213), 6502 (16-214), and 6533 (16-236) of RAI 167-1769.

Reference: MHI's Amended Response to US-APWRD DCD RAI 167-1769; MHI Ref: UAP-HF-09354; dated July 3, 2009; ML091890964.

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07.02-4

DCD Chapter 7, Section 7.2.1 states "The reactor trip (RT) system, which achieves the all RT functions, consists of the following Class 1E systems: Safety sensors, RPS, RTB, and Safety grade HSIS." The response to RAI 166-1784, question 16-158, (6623) states, "Chapter 16 bases documents describes the system as segmented into three distinct but interconnected modules as illustrated in Chapter 7."

Provide clarification and consistency between the two chapters.

Reference: MHI's Amended Response to US-APWRD DCD RAI 166-1784; MHI Ref: UAP-HF-09354; dated July 3, 2009; ML091890964.