REQUEST FOR ADDITIONAL INFORMATION 771-5827 REVISION 5

6/15/2011

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 07.01 - Instrumentation and Controls - Introduction
Application Section: 07.01 - Instrumentation and Controls - Introduction

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

07.01-40

The criteria of Appendices A and B of 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," apply to systems and related quality assurance processes, and if those systems include software, the requirements extend to the software elements.

In Section 3.0, "Applicable Code, Standards and Regulatory Guidance," of MUAP-07005-P, Rev. 7, conformance to the IEEE software standards (examples: items 65–74) are identified as being provided in the pre-Appendix B based QAP procedures, not the Appendix B-based QAP procedures.

If the pre-Appendix B-based QAP procedures can be used to meet 10 CFR 50 Appendix B criteria with no changes required, the reasons why each pre-Appendix B procedure was replaced, as shown by Appendix C of MUAP-07005, to an Appendix B-based QAP procedure should be identified. Otherwise, MHI is requested to reference the Appendix B-based QAP procedures in Section 3.0 and throughout the document.

07.01-41

GDC 24, "Separation of Protection and Control Systems," of 10 CFR Part 50, Appendix A, states, "The protection system shall be separated from control systems to the extent that failure of any single control system component or channel, or failure or removal from service of any single protection system component or channel which is common to the control and protection systems leaves intact a system satisfying all reliability, redundancy, and independence requirements of the protection system. Interconnection of the protection and control systems shall be limited so as to assure that safety is not significantly impaired."

The staff has not accepted that permanent connection of the maintenance network, including the engineering tool, conforms to this GDC and thereby safety is not significantly impaired. Several sections of MUAP-07005-P, Rev.7, discuss the permanent connection of the maintenance network to the safety system controllers including the design basis which states that this permanent connection improves plant safety.

As this technical report applies only to US-APWR and the maintenance network will be temporarily connected for US-APWR, MHI is requested to review all discussion of the maintenance tool being permanently connected and revise the discussions in this technical report accordingly.

07.01-42

10 CFR 50.55a(h)(2), *Protection systems*, states, in part, that protection systems must meet the requirements stated in IEEE Std. 603-1991, which would apply to the US-APWR application. IEEE Std. 603-1991, criterion 5.8.3, Indication of Bypasses, states, "If the protective actions of some part of a safety system have been bypassed or deliberately rendered inoperative for any purpose other than an operating bypass, continued indication of this fact for each affected safety group shall be provided in the control room."

Section 4.3.4.2 of MUAP-07005-P, Rev. 7, discusses powering off a MELTAC controller to write to F-ROM memory and the resulting signal that can be used to generate an alarm in the MCR. However, not in this section, nor anywhere else in the TR or Chapter 7, is there a discussion of how continuous indication is provided for the affected functions associated with each controller when any part of the safety system is inoperative.

MHI is requested to provide in this section, or a section in Chapter 7, that will identify how criterion 5.8.3 of IEEE Std. 603, and all subparagraphs, are met.

07.01-43

In MUAP-07005, Safety System Digital Platform - MELTAC - Section Section 3.0, Applicable Code, Standards and Regulatory Guidance, MHI is requested to do the following:

MUAP-07017, US-APWR Software Program Manual, should be the reference to plant software life cycle processes conforming to life cycle process RGs (1.152, 1.168 - 1.173) and BTP 7-14.

Also, JEXU-1012-1132, MELTAC Platform Basic Software Program Manual, should be the reference to digital platform software processes conforming to life cycle process RGs (1.152, 1.168 - 1.173) and BTP 7-14. These are identified in items 22, 24 - 29.