

REQUEST FOR ADDITIONAL INFORMATION NO. 130-1715 REVISION 1

12/18/2008

US-APWR Design Certification

Mitsubishi Heavy Industries

Docket No. 52-021

SRP Section: 11.05 - Process and Effluent Radiological Monitoring Instrumentation and Sampling Systems

Application Section: 11.5

QUESTIONS for Instrumentation, Controls and Electrical Engineering 1 (AP1000/EPR Projects) (ICE1)

11.05-1

Section 11.5.1.2, "Design Criteria," 7th bullet down on page 11.5-2 states "The monitoring and sampling systems shall also activate appropriate safety controls." Is this in reference to controls for the Main Control Room isolation initiated by the Main Control Room Outside Air Intake Radiation Monitors? Are these the only safety controls activated by this system? Please stipulate.

11.05-2

Section 11.5.2.2.6 identifies the Main Control Room Outside Air Intake Radiation Monitors as safety related. The conformance to applicable requirements of IEEE Std. 603-1991 is required by 10 CFR 50.55a(h)(3) which should be stipulated for these Monitors and any other portions of this system which are safety-related. The Final Safety Analysis Report should discuss how such equipment meets the requirements outlined in IEEE Std. 603-1991.

11.05-3

Describe how EPRI TR-106439, "Guideline on Evaluation and Acceptance of Commercial Grade Digital Equipment for Nuclear Safety Applications," was considered in the selection of digital equipment for the process effluent radiation monitoring and sampling system.

10 CFR Part 50, Appendix A, General Design Criteria 1, "Quality Standards and Records," requires structures, systems, and components important to safety to be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. Section 7.7 of NUREG-0800, "Standard Review Plan," addresses the use of digital systems and states that to minimize the potential for control system failures that could challenge safety systems, control system software should be developed using a structured process similar to that applied to safety system software. The applicant stated that to ensure that quality assurance is maintained, only instruments designed and manufactured for the intended services, and instruments with industry-proven performances, are used. The staff needs additional information regarding the process by which radiation monitoring instruments

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are selected to address quality. Specifically, if commercial equipment is used, what standards and processes (i.e., EPRI TR-106439) are used to ensure adequate quality.

11.05-4

Describe what means are provided to ensure that radiation monitoring instrumentation will function properly for possible environmental conditions.

10 CFR Part 50, Appendix A, General Design Criteria 13, "Instrumentation and Control," states that instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety. The staff needs additional information that will address how the instrumentation design and/or environmental control systems are available to protect radiation monitoring instrumentation from the effects of environmental stressors. Examples of environmental conditions include freezing conditions, high temperatures, electromagnetic interference, high humidity, seismic/vibration conditions, and high radiation.