

From: Wang, Alan
Sent: Monday, July 12, 2010 3:34 PM
To: Schrader, Kenneth; Baldwin, Thomas (DCPP); Parker, Larry M
Cc: Lent, Susan; Burkhardt, Janet
Subject: Request for Additional Information Regarding Diversity and Defense in Depth Topical Report (ME3732, ME3733)

Tom and Larry,

By letter dated April 9, 2010 (Agencywide Documents Access & Management System (ADAMS) Accession No. ML101100646), Pacific Gas and Gas and Electric Company (PG&E), the licensee for Diablo Canyon Power Plant, Unit Nos 1 and 2 (DCPP), requested approval of the DCPP Topical Report, "Process Protection System Replacement Diversity & Defense-in-Depth Assessment," Revision 0.

The US Nuclear Regulatory Commission (NRC) staff has determined that the following additional information is needed to complete its review of the subject topical report. This request was discussed with Ken Schrader of your staff on July 9, 2010, and it was agreed that a response would be provided within 30 days of receipt of this email. If circumstances result in the need to revise the requested response date, please contact me at (301) 415-1445 or via e-mail at Alan.Wang@nrc.gov.

REQUEST FOR ADDITIONAL INFORMATION

1. Section 2.3.2 of the LTR states that "The diverse ALS portion of the proposed replacement PPS is a logic-based platform that does not utilize a microprocessor and therefore has no software component required for operation of the system". The staff understands that the FPGA technology used does not utilize software during operation, however, it is also understood that software based development tools are used extensively during the design, implementation, and testing of these FPGA devices. Therefore, the characterization that no software component is required for operation of the system does not seem to be consistent with the actual system development lifecycle. Please provide clarification to this statement to include a discussion of the software that is relied upon for the design and development of the FPGA-Based system.
2. Section 2.3.2 of the LTR states that "A software-related CCF that disables ALS protective functions is not considered credible...". Because software based tools which could be susceptible to failure are utilized in the FPGA design and development process for all four protection sets, the staff considers that a software CCF could be credible in this case. Please provide additional information to support this claim or provide an explanation of how software based development tools which may have the potential to introduce faults into all protection sets will be accounted for in the PPS system design.
3. In figure 2-8, a class I to class II isolation boundary is shown in the ALS block. The staff would like to have a better understanding of the nature of this boundary. Please provide a description of the components that comprise this isolation boundary and of how the electrical, physical, and data isolation characteristics of this boundary are achieved in the PPS system design.

4. Figure 2-8 shows an input line titled "Process Inputs (4-20 mA)" that provides input to the TRICON system, the ISLN system and the ALS system. Please provide additional details on these input signals. The staff would like to have a better understanding of what these signals are as well as how and why these signals are shared among the systems.
5. Figure 2-8, shows a class II Data link to the process plant computer. The staff would like to have a better understanding of the nature of this class I to class II boundary. Please provide a description of the components that comprise this isolation boundary and of how the electrical, physical, and data isolation characteristics of this boundary are achieved in the PPS system design.
6. The inherent internal diversity of the ALS system is referenced and relied upon throughout the LTR as a means of addressing the diversity requirements for the three events requiring exception as described in section 1.0 of the LTR. The approval of the Wolf Creek MSFIS SER is referenced in section 2.3.2 as a basis for this inherent internal diversity, however, the Wolf Creek SER points out that the safety determination was specific to the MSFIS design and that future more complex uses of the ALS platform, such as for a system receiving sensor signals and making trip or actuation determinations may require additional design diversity. As this appears to be the case for the proposed PPS, the staff requests that the applicant provide a description of any additional design diversity measures that are being taken for the PPS system to ensure that this inherent internal diversity will meet the requirements of Interim Staff Guidance #2, issue 5, staff position 1.
7. The discussion in the second paragraph of section 2.0 of rack sets, redundant process channels, and logic racks (trains) is confusing. The only definition provided is for Process Channel. Please provide definitions for each of these terms as well as a clear description or illustration of how these separation schemes are applied to the PPS architecture.
8. The last sentence in section 2.3.1 correctly states that Triconex has submitted an updated platform LTR which is currently under review by the NRC staff. Please state if the proposed PPS system will be based upon the Version 10 Tricon system or if the PPS system will be based upon the previous approved version of Tricon. If version 10 is to be used, then completion of the safety evaluation for this LTR under review would be required prior to approval of the proposed PPS system.

If you have any questions, please contact me at (301) 415-1445.

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