



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 25, 2009

LICENSEE: Pacific Gas and Electric Company

FACILITY: Diablo Canyon Power Plant

SUBJECT: SUMMARY OF AUGUST 27, 2009, PRE-LICENSING MEETING WITH PACIFIC GAS AND ELECTRIC COMPANY REGARDING DIGITAL UPGRADE OF THE EAGLE 21 PROCESS PROTECTION SYSTEM (TAC NOS. ME1778 AND ME1779)

On August 27, 2009, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of the Pacific Gas and Electric Company (PG&E, the licensee) at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. Digital Instrumentation and Controls (DI&C) Draft Interim Staff Guidance (ISG)-6, "Task Working Group #6: Licensing Process," provides the licensing process to be used in the review of DI&C system modifications in operating plants. As described in this guidance, a pre-licensing (Phase 0) meeting was held to discuss the digital upgrade of the reactor trip system and the engineered safety features actuation system at the Diablo Canyon Power Plant (DCPP). PG&E discussed the architecture that PG&E will propose to the NRC for the replacement of the Eagle 21 portion of the DCPP process protection system. Enclosed is a list of attendees.

The licensee presented information (Agencywide Documents Access and Management System (ADAMS) Accession No. ML092440508). A summary of the items discussed at the meeting are provided below:

Scope

The scope of the proposed upgrade is to replace the existing Eagle 21 system. The Eagle 21 system provides trip status and parameter input signals to the Solid State Protection System (SSPS), which in turn performs the reactor trip and engineered safety component actuation functions. The analog SSPS protection system will be retained for now. Therefore, this is a partial reactor protection system (RPS) upgrade which does not include the voter functionality which will be retained by the SSPS system.

Diversity

The proposed design includes the use of the CS Innovations Advanced Logic Systems (ALS) FPGA technology for those safety functions that currently require manual operator actions (MOAs) in the event of a software common cause failure. The built-in diversity capability of the ALS would eliminate the need for MOAs. Namely, the signals requiring this diversity are containment pressure, reactor coolant system (RCS) flow, and pressurizer pressure. The safety actuations requiring this diversity are containment spray, safety injection, and reactor trip.

Cross-channel Communications

The proposed design does not include cross-channel communication links. Unlike some previously submitted designs, the DCPD design is maintaining communication independence between safety divisions. Also, because there is no voter function in the proposed design, there will be no need for interchannel communications. This is expected to simplify the review process.

Non-Safety Related Maintenance Terminal

Similar to previously submitted designs, DCPD wants to have a non-safety related (NSR) maintenance terminal connected to the safety system at all times. Unlike those previous designs, there would be a separate maintenance terminal for each division. Each of the proposed maintenance terminals would serve as the interface for both the Tricon system and the ALS system for the associated channel. Thus, there would be four NSR maintenance terminals for the new digital safety system.

Inclusion of an NSR maintenance terminal that is to be connected to the safety system during normal operations has required a significant additional review effort for previously submitted designs. The absence of a qualified safety-related display system from these designs appears to have made it necessary for the designers of these systems to pursue this alternate approach for providing an operator interface to the safety system. Inclusion of safety display interfaces would be expected to simplify the review process for future applications.

Safety-related to NSR Communications

The proposed design includes a communications link to the existing Process Plant Computer (PPC) system. The licensee stated that this was to be a one-way communications pathway from the safety system to the PPC. Details on how this would be enforced were not available and the NRC stated that the characteristics of this data link would be subject to closer detailed review during the evaluation.

Class I to Class II Boundary

The proposed design also includes a fiber optic communication link from the Class I Tricon to a Class II Tricon Remote Chassis. This is a two-way communications link and would be subject to a detailed evaluation by the NRC staff.

Software Development

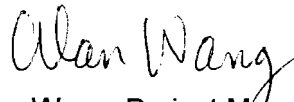
PG&E stated it is considering performing the software development in lieu of its vendor Invensys. This decision has not yet been made. The NRC staff informed PG&E that, if PG&E develops its own software, additional review of the licensee software development programs would be necessary in order to complete the NRC staff's review. The licensee acknowledged this concern and agreed to take this under consideration.

Based on the meeting, the NRC staff offered the following comments regarding the upcoming license amendment request (LAR):

1. Cyber security should be addressed using the criteria in NRC Regulatory Guide 1.152, "Criteria for Digital Computers in Safety Systems of Nuclear Power Plants," dated January 2006 (ADAMS Accession No. ML053070150).
2. The licensee should verify what software quality assurance (QA) program was approved for the Tricon platform, and if the licensee decides not to develop the application software, will the Invensys software QA program be used?
3. The licensee stated it plans to submit the LAR in the spring/summer 2010. The defense-in-depth and diversity (D-3) analysis should be submitted at least 6 months prior to the LAR (winter 2009).
4. The NRC staff stated it will work with the PG&E staff to format the LAR per ISG-6. Mr. William Kemper, Chief, Instrumentation and Controls Branch, Division of Engineering, Office of Nuclear Reactor Regulation (NRR/DE/EICB), informed PG&E that Mr. Richard Stattel will be the lead reviewer for this LAR and Mr. Bernie Dittman will provide support for the FPGA review.

The NRC staff stated another Phase 0 meeting would be useful when PG&E had more information on its design considerations. PG&E suggested that another Phase 0 meeting be scheduled to be held in November 2009. Members of the public were in attendance. Public Meeting Feedback forms were not received.

Please direct any inquiries to me at 301-415-1445, or via email at Alan.Wang@nrc.gov.



Alan Wang, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosure:
List of Attendees

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LIST OF ATTENDEES
AUGUST 27, 2009, PRE-LICENSING MEETING WITH
PACIFIC GAS AND ELECTRIC COMPANY (PG&E)
DIGITAL UPGRADE TO THE EAGLE 21 PROCESS PROTECTION SYSTEM

<u>NAME</u>	<u>AFFILIATION</u>
J. Hefler	Altran Solutions Corp.
B. Haywes	Invensys
M. Phillips	Invensys
T. Foley	Altran Solutions Corp.
G. Adkins	Tennessee Valley Authority
G. Clarkson	Wolf Creek Nuclear Operating Corporation
S. Sorensen	CS Innovations
S. Smith	Lockheed Martin
C. Vitalbo	Westinghouse
B. Lint	Altran Solutions Corp.
S. Sykes	Invensys
G. Clefton	Nuclear Energy Institute
D. Raleigh	Scientech
K. Schrader	PG&E
S. Patterson	PG&E
R. Stattel	NRC
P. Loeser	NRC
W. Kemper	NRC
A. Wang	NRC
D. Herrmann	NRC
G. Singh	NRC
D. Santos	NRC
B. Dittman	NRC

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/ra/

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Office of Nuclear Reactor Regulation

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DHerrmann, NRO/DE
DSantos, RES/DE
LTrocine, EDO Region IV

ADAMS Accession Nos. Meeting Notice ML09209415, Meeting Summary ML092450476, Handouts ML092440508

OFFICE	NRR/LPL4/PM	NRR/LPL4/LA	NRR/DE/EICB/BC	NRR/LPL4/BC	NRR/LPL4/PM
NAME	AWang	JBurkhardt SLittle for	WKemper	MMarkley	AWang
DATE	9/10/09	9/9/09	9/18/09	9/25/09	9/25/09

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