

**From:** Lee, Samson  
**Sent:** Tuesday, August 3, 2021 1:32 PM  
**To:** Richardson, Michael  
**Subject:** Request for additional information - Diablo Canyon Request to Revise Technical Specification 3.8.1, "AC Sources - Operating" to Support Diesel Fuel Oil Transfer System Component Planned Maintenance (EPID: L-2021-LLA-0056)

By letter dated March 29, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21088A437), Pacific Gas and Electric Company (PG&E or the licensee) requested changes to the Technical Specifications (TSs) for the Diablo Canyon Nuclear Power Plant, Units 1 and 2 (Diablo Canyon). The proposed amendments would revise TS 3.8.1, "AC [alternating current] Sources – Operating," Condition F Completion Time (CT) to allow a separate one-time CT of 7 days during the planned maintenance for each diesel fuel oil (DFO) transfer pump (DFOTP) 0-1 and 0-2, with the portable DFOTP staged and available. The one-time CT of 7 days for DFOTP 0-1 and 0-2 supports planned maintenance to maintain high reliability of the DFOTPs. The NRC staff has reviewed the license amendment request (LAR) and determined that additional information is required to complete the review. The NRC staff's requests for additional information (RAIs) are listed below. The PG&E staff indicated that a clarification call is not necessary. The PG&E staff requested, and NRC agreed, to an RAI response by September 2, 2021.

The NRC staff considers that timely responses to RAIs help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources. Please note that if you do not respond to this request by the agreed upon date or provide an acceptable alternate date, we may deny your application for amendment under the provisions of Title 10 of the Code of Federal Regulations, Section 2.108. If circumstances result in the need to revise the agreed upon response date, please contact me at (301) 415-3168 or via e-mail [Samson.Lee@nrc.gov](mailto:Samson.Lee@nrc.gov).

### **Risk Insights:**

### **Regulatory Bases**

Title 10 of the Code of Federal Regulations (10 CFR) Section 50.36, "Technical Specifications," in part, requires that the technical specifications be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto and includes items in following categories: (1) safety limits, limiting safety systems settings, and limiting control settings; (2) LCOs; (3) surveillance requirements; (4) design features; (5) administrative controls; (6) decommissioning; (7) initial notifications; and (8) written reports. Paragraph (c)(2)(i) of 10 CFR 50.36 states, in part, that "limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met."

Paragraph (a)(4) of 10 CFR 50.65 (the Maintenance Rule) requires licensees to assess and manage the increase in risk that may result from proposed maintenance activities, prior to performing these activities. The industry guidance for implementation of the Maintenance Rule is documented in NUMARC 93 01, "Industry Guideline for Monitoring the Effectiveness of

Maintenance at Nuclear Power Plants.” Section 11.0 of NUMARC 93-01 provides guidance for implementation of the requirements in 10 CFR 50.65(a)(4), including guidance regarding Risk Management Actions (RMAs) that should be employed to control the risks associated with proposed maintenance activities. The NRC staff endorsed NUMARC 93-01, Revision 4A, in Regulatory Guide (RG) 1.160 (ADAMS Accession No. ML18220B281) with additional provisions and clarifications.

### **RAI APLA-01 – Protected Trains**

Section 3 of the LAR enclosure outlines the specific RMAs proposed to mitigate the increased risk associated with the DFOTP maintenance activities. These include protection of the offsite AC power circuits and the Turbine-Driven Auxiliary Feedwater (TDAFW) pump train and supporting equipment on both units. However, the LAR enclosure does not explicitly state that the in-service DFOTP (i.e., the DFOTP that is not undergoing maintenance), nor its supporting equipment, will be protected during the maintenance evolution on the out-of-service (OOS) DFOTP. State whether the in-service DFOTP and its supporting equipment (e.g., motor controls, local and remote control switches and interlocks) will be protected during maintenance on the OOS DFOTP.

### **RAI APLA-02 – Discretionary Testing and Maintenance Activities**

Section 3 of the LAR enclosure outlines the specific RMAs proposed to mitigate the increased risk associated with the DFOTP maintenance activities. No information is provided regarding the administrative controls that may be used to manage and limit discretionary testing and maintenance on risk-significant Structures, Systems and Components (SSCs) during the proposed DFOTP maintenance windows. State whether additional controls or requirements will be applied to discretionary testing and maintenance on risk-significant SSCs (e.g., direct-current (DC) power supplies) during the proposed DFOTP maintenance windows.

### **RAI APLA-03 – Testing and Maintenance Assumptions**

Section 3 of the LAR enclosure provides an overview of the Probabilistic Risk Analyses (PRA) performed to support the proposed completion time extension. This information includes the total exposure time and a general conclusion regarding the results of the analyses indicating that the risk significant criteria in RG 1.174 (ADAMS Accession No. ML17317A256) were not exceeded when the analyses were performed.

- a. State what assumptions were used in the PRA relative to testing and maintenance activities (e.g., suspension of discretionary testing and maintenance) when the risk significance of the proposed change was evaluated.
- b. State whether these assumptions were used to inform RMAs related to discretionary testing and maintenance activities during the extended completion time (see RAI APLA-02).

### **RAI APLA-04 – Human Reliability Analysis**

Staging the Portable DFOTP (PDFOTP) during the planned maintenance activities on the permanently installed DFOTPs has been proposed as one of the RMAs supporting the proposed completion time extension. Section 3 of the LAR enclosure indicates that human actions for aligning the PDFOTP and manipulating the valves supporting PDFOTP operation are

proceduralized and included in the DCCP PRA model. As part of the broader Human Reliability Analysis (HRA) for these actions:

- a. Discuss HRA performance shaping factors and timing that were used in the PRA model for evaluating alignment of the PDFOTP.
- b. State whether Job Performance Measures (JPMs) are used to formally assess operator proficiency with these tasks.
- c. If JPMs are not applicable to these tasks, state the type of training activities (e.g., classroom, on-the-job training) that are used to ensure operator proficiency for these tasks and further ensure reliable deployment of the PDFOTP.
- d. Discuss any sensitivity analyses that were performed to bound uncertainty.

### **Human Factor Engineering:**

#### **Regulatory Bases**

10 CFR, Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," Criterion V, "Instructions, Procedures, and Drawings" requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances.

NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: [Light-Water Reactor] LWR Edition," Chapter 18, "Human Factors Engineering," Revision 3 (ADAMS Accession No. ML16125A114), provides the regulatory guidance for human factors engineering (HFE) considerations for applicants. SRP Chapter 18 indicates that, for requests associated with changes to important human actions, applicable acceptance criteria are contained in NUREG 1764. NUREG-1764 provides guidance for determining the level of HFE review required for such requests and the HFE criteria to be considered while completing the staff's evaluation.

For a non-risk-informed LAR submittal, NUREG-1764 includes instructions for NRC staff to take into consideration certain qualitative factors that can affect the necessary level of HFE review for the submittal. Among the qualitative factors to be considered are the following:

- Change in Performance Context: Has the requested change created, in some way, a new context for task performance?
- Change in Procedures: Has the requested change significantly changed the procedures that personnel use to perform the task?
- Change in Training: Has the requested change significantly modified the training, or is the task not addressed in training?

The NRC staff have determined that the risk-mitigating action of staging the PDFOTP, which is to be incorporated as a condition within the requested change to Technical Specification 3.8.1, constitutes a change to an operator action relied upon to restore system operability in the event of a failure of the remaining permanently-installed transfer pump. Specifically, the staging of the

PDFOTP at a location that is different from its usual location will introduce a change in the performance context for the task.

### **RAI IOLB-01**

The NRC staff has considered the possibility of an operator being unaware of the change in PDFOTP location, when staged. Without adequate instruction indicating that the pump has been staged, an operator could potentially experience a challenge if they had to spend unanticipated time identifying that the pump was not in the expected location (in accordance with established training/procedures), and thereafter having to track down its staged location. This is especially a potential concern when considering that fact that, as discussed in Section 2 of the submittal, operators only have a nominal one-hour time allotment to perform the critical task of restoring the system to an operable state.

In Section 2 of the License Amendment Request, the licensee states, "The use of the PDFOTP is proceduralized using [Diablo Canyon] Operating Procedure OP J-6C:V, 'Diesel Fuel Oil Transfer System - Use of Portable FOTP and DFO Day Tank LCVs.'" However, the submittal does not include information regarding how this procedure will be impacted by the PDFOTP being staged in a different location. Specifically, the submittal does not indicate whether instructions in the procedure are reliant on the pump being in its usually-stored location, nor does the submittal indicate whether a change to the procedure or a separate set of instructions will be necessary to account for the relocation of the pump.

Please provide information regarding how the staging of the PDFOTP will be controlled by documented instructions, procedures, and/or drawings, of a type appropriate to the circumstances. (For example, will a temporary procedure or work order instructions be used to indicate the location of the pump? Will the staging of the pump be addressed through pre-job and/or shift-turnover briefs during the period of time while the station is in the extended LCO? Will any additional training be necessary to ensure operators can complete tasks as intended? If so, please describe.)

### **Mechanical Engineering:**

#### **Regulatory Bases**

General Design Criterion (GDC)-17, "Electric power systems," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, requires, in part, that nuclear power plants have onsite and offsite electric power systems to permit the functioning of SSCs that are important to safety.

### **RAI EMIB-01**

Section 2, "DETAILED DESCRIPTION", page 3 of the submittal states that each diesel fuel oil transfer pump delivers more than 55 gallons per minute at a discharge pressure of approximately 50 pounds per square inch gauge, and one pump is more than adequate to supply the six diesel generators (DGs) of Unit 1 and Unit 2 operating at full load. It is also stated that the portable fuel oil transfer pump "supplies the required flow." Provide the flow rate and discharge pressure for the portable fuel oil transfer pump, the type of pump, and whether it is adequate to supply the six DGs of Unit 1 and Unit 2 operating at full load. Describe how the portable fuel oil transfer pump is connected to the fuel oil transfer system piping before the

repairs to the fuel oil transfer pumps begin, or if it is staged nearby and ready to be connected to the piping if required.

### **RAI EMIB-02**

Section 2, "DETAILED DESCRIPTION", page 6 of the submittal states that the FLEX portable diesel fuel oil transfer pump has a 40 gpm capacity. State whether this flow rate is adequate to supply the six DGs of Unit 1 and Unit 2 operating at full load. Also provide the pump discharge pressure and state whether it is adequate. During the repairs to the fuel oil transfer pumps, if this pump is required to operate, state what type of power will be provided to the pump (i.e., 1E, non-1E).

### **Electrical Engineering:**

#### **Regulatory Bases**

Diablo Canyon final safety analysis report (FSAR) Section 3.1.5.6, Criterion 24, 1967 - Emergency Power for Protection Systems (Category B) states:

In the event of loss of all offsite power, sufficient alternate sources of power shall be provided to permit the required functioning of the protection systems.

Discussion: The facility is supplied with normal and standby emergency power to provide for the required functioning of the protection systems.

In the event of loss of normal power, emergency AC power is supplied by six diesel generators, as described in Chapter 8. Only four diesels are required to supply the power requirements with one unit in an accident situation and to bring the other to the shutdown condition from full power. The instrumentation and controls portions of the protection systems are supplied initially from the station batteries and subsequently from the emergency diesel generators. A single failure of any one component will not prevent the required functioning of protection systems.

### **RAI EEEB-01**

In the LAR, the licensee proposed to revise TS 3.8.1 to allow a one-time extension of CT for maintenance of each of the two DFOTPs. The proposed amendment includes notes that would require a staged portable DFOTP during the required DFOTP maintenance.

Please clarify the type of the proposed portable pump, pump capacity, estimate of time to start pumping, and provide a brief description of how the pump will be staged sufficient to support the proposed completion time extension.

### **Technical Specifications:**

#### **Regulatory Bases**

The regulation in 10 CFR 50.36(c)(2)(i) states in part:

Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition

for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.

**RAI STSB-01**

The NRC staff reviewed the licensee's LAR for a one-time CT extension from 72 hours to 7 days during the planned maintenance for each DFOTP. The NRC staff noted that the Diablo Canyon marked-up TS pages (Attachment 1 to the LAR) are inconsistent with the recommended style of Standard Technical Specifications, and the proposed changes appear to have potential for misinterpretation by licensee operators and NRC inspectors. Please clarify the proposed Diablo Canyon TS 3.8.1 marked-up pages to have an appropriate amount of detail and include the following elements:

- a. An expiration date for using the extended CT for each DFO transfer system pump;
- b. One-time use of the CT extension to 7 days for each applicable DFOTP, regardless of whether maintenance is completed during the attempt;
- c. Section 2.8.2, "Temporary Changes," of the Writer's Guide for Plant-Specific Improved Technical Specifications states, "Do not use footnotes for temporary changes, except as allowed for figures and tables." The licensee is requested to determine if including a note instead of a footnote in the CT would provide additional consistency.

Docket Nos. 50-275 and 50-323

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