

From: Lee, Samson
Sent: Friday, August 14, 2020 7:07 PM
To: Richardson, Michael
Subject: Diablo Canyon request for additional information: Exigent License Amendment Request for Application to provide a new Technical Specification 3.7.5, "Auxiliary Feedwater System," Condition G (EPID: L-2020-LLA-0176)

By letter dated August 12, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20225A303), Pacific Gas and Electric Company (PG&E or the licensee) requested changes to the Technical Specifications (Appendix A to Facility Operating License Nos. DPR 80 and DPR-82) for the Diablo Canyon Nuclear Power Plant (Diablo Canyon), Units 1 and 2. The proposed amendments would avoid an unnecessary plant shutdown during the expected time needed to perform potential repairs to the Unit 1 auxiliary feedwater system (AFW) piping that PG&E conservatively anticipates may be identified during Diablo Canyon, Unit 1, Cycle 22, planned upcoming inspections to the AFW system. 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 staff may have additional RAIs. The staff held a public teleconference call with PG&E on August 14, 20120, to discuss topics of these RAIs. The PG&E staff requested, and NRC agreed, to a RAI response by August 16, 2020.

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.

1. Corrosion: Please discuss:
 - a. Material type of the auxiliary feedwater (AFW) piping (e.g., carbon steel)
 - b. Degradation mechanism identified at Unit 2 (e.g., general corrosion)
 - c. Corrosion at Unit 2 was on the internal or external surfaces?
 - d. Corrosion at Unit 2 was at welds or piping?
 - e. Are there any differences between the AFW piping at Units 1 and 2 in terms of material type, corrosion protection (i.e., coatings), or environment (e.g., time of wetness, potential for contaminants such as chlorides to accelerate corrosion)?
 - f. Describe the locations of corrosion found in Unit 2 and plan for inspection in Unit 1.
2. Please identify the AFW piping design Code and the process that will be followed for the repair consistent with the Code requirements. Is the one-to-one repair/replacement method being utilize?
3. License amendment request (LAR), p.7 of 22, states that:

On July 23, 2020, with Diablo Canyon Unit 2 still in Mode 3, a 3.9 gallons per minute calculated through-wall leak was observed coming out of the elbow just downstream of Valve LCV-111 in the discharge line for Unit 2 AFW Pumps 2-1 and 2-2 to SG 2-2.

Describe the configuration of the valves and pumps, for example, which valve is downstream of Pump 2-1.

4. LAR, p.8 of 22, states that:

While in Condition G the steam generator (SG) 1-2 related technical specification (TS) required equipment will continue to remain operable.

Please explain what are the related TS required equipment.

5. LAR, p.9 of 22, states that

Conditions B and GD are modified to add new Condition G as a Condition for which an inoperable Condition is applicable. Please verify the statement.

6. LAR p.10 states that:

Loss of Normal Feedwater Transient. The condition 2 event of loss of normal feedwater is addressed in the Final Safety Analysis Report Update (FSARU) Section 15.2.8. This transient is modeled with an assumed single failure of the turbine-driven pump, resulting in the remaining two motor-driven pumps operable and feeding all four SGs with a total of 600 gallons per minute (gpm) flow. The proposed possible isolation of AFW flow to SG 1-2 means that the AFW system will have three available AFW pumps, which can provide well above 600 gpm, but only to the three unaffected SGs. There is an additional FSARU analysis of the loss of normal feedwater transient in Section 6.5.3.7, termed a "better-estimate" analysis, that is done for AFW reliability demonstration. FSARU Section 6.5.3.7 notes that the FSARU Section 15.2.8 analysis has considerable margin when 4 SGs are credited, and that the better-estimate analysis shows successful event mitigation with just two SGs receiving a total of 390 gpm. Therefore, the proposed SG 1-2 isolation case, with three available SGs, is bounded by the FSARU Section 6.5.3.7 better-estimate case which only credits AFW flow to 2 SGs.

FSARU 6.5.3.7 states that:

A better-estimate analysis is performed to address the reliability of the AFW system. This analysis is similar to that described above for the Chapter 15 analysis, but assuming that only a single motor-driven AFW system pump supplies a minimum of 390 gpm to two of the four SGs. The cases considered in this additional analysis assume better-estimate conditions for several key parameters, including initial power level, decay heat, reactor coolant system (RCS) temperature, pressurizer pressure, and low-low SG level reactor trip setpoint. The results of this better-estimate analysis demonstrate that there is margin to pressurizer over-filling. While this analysis demonstrates that the AFW system remains highly reliable, the Diablo Canyon licensing basis requires that at least two AFW pumps delivering at 600 gpm to four SGs is required for this event.

The staff requests the licensee to explain the bases that a better-estimate analysis (two DGs receiving 390 gpm) can be used to cover a licensing based event (four SGs receiving 600 gpm).

7. The licensee proposed a completion time (CT) of 7 days for TS 3.7.5 Condition G, "One or two AFW trains inoperable in MODE 1, 2, or 3 due to inoperable AFW piping affecting the AFW flow path(s) to one steam generator," for Unit 1 during repair of AFW piping. The proposed Condition is modified by a note which identifies that the condition is only applicable to Unit 1 once during Unit 1 Cycle 22 during repair of AFW piping.

In the Enclosure of the LAR on pages 12-13, the licensee provides a list of risk management actions (RMAs) the licensee will implement during the TS 3.7.5 Condition G 7-day CT. It appears that part of the justification for the proposed temporary CTs relies on the RMAs listed in the Enclosure.

Provide further justification for the proposed note language, which does not currently mention the RMAs. Alternatively, consider rewording the proposed note language to indicate that the 7 day CT is contingent on implementation of the RMAs listed in the LAR.

In addition, clarify whether the identified risk management actions will be required to be in place for the duration of the extended completion time.

8. In the description of risk management actions, the LAR describes "protecting" certain equipment during the extended completion time. Clarify whether this includes preventing the protected equipment from being taken out of service for testing and maintenance activities.
9. The LAR proposes risk management actions (RMAs) based on insights from the probabilistic risk assessment (PRA) to be implemented during proposed TS 3.7.5 Condition G. These RMAs support the availability of AFW, feed and bleed, and main feedwater. The NRC staff identified additional actions that could potentially support the availability of these systems/functions, which are in alignment with the proposed RMAs in the LAR. Provide a justification for not including the following actions as RMAs in the LAR. Include in this justification, a discussion of relevant risk information associated with the proposed change (e.g., change in risk contribution or importance measures) and defense-in-depth related to system redundancy, independence and diversity. Alternatively, include these actions as RMAs in the LAR.
 - Protect the supporting equipment of AFW Pumps 1-1 and 1-2,
 - Protect supporting equipment of AFW valves (e.g., power, air/nitrogen),
 - Ensure the Power-Operated Relief Valves (PORV) block valves remain open to ensure feed-and-bleed availability,
 - Protect the residual heat removal (RHR) pumps and centrifugal charging/intermediate head pumps to ensure feed-and-bleed availability,
 - Protect RHR sump recirculation valves (and support systems) to ensure feed-and-bleed availability,
 - Protect the steam-driven main feedwater pumps and the turbine to ensure feedwater availability.
10. The leak and degraded conditions on the Unit 2 AFW system were discovered on July 23rd. The staff is aware that the licensee has performed initial walkdown of Unit 1 AFW piping. The licensee had originally scheduled the Unit 1 AFW extent of condition inspection for the week of August 10th. The staff is aware that the current plan is to perform inspection the week of August

24th. Please discuss, from a safety perspective, why it is acceptable to wait two additional weeks, approximately one month after the Unit 2 leak, was identified?

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