



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

July 9, 2026

LICENSEE: Pacific Gas and Electric Company

FACILITY: Diablo Canyon Nuclear Power Plant, Units 1 and 2

SUBJECT: SUMMARY OF JUNE 18, 2026, PRESUBMITTAL MEETING WITH PACIFIC GAS AND ELECTRIC COMPANY REGARDING (1) ULTIMATE HEAT SINK ANALYSIS AND (2) STEAM GENERATOR INSPECTIONS AT DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2 (EPID L-2026-LRM-0060 AND EPID L-2026-LRM-0061)

On June 18, 2026, an Observation public hybrid meeting was held between the U.S. Nuclear Regulatory Commission (NRC) staff and representatives of the Pacific Gas and Electric Company (PG&E, the licensee). The purpose of the pre-submittal meeting was to provide information to the NRC staff regarding potential license amendment requests (LARs) for (1) ultimate heat sink (UHS) analysis based on a white paper for Diablo Canyon Nuclear Power Plant (Diablo Canyon), Units 1 and 2, and (2) one-time extension of a steam generator tube inspection interval for Diablo Canyon, Unit 2. The licensee's UHS white paper and steam generator presentation slides are available in the Agencywide Documents Access and Management System (ADAMS) at Accession Nos. ML26160A226 and ML26160A227, respectively. The meeting notice and agenda are available in ADAMS at Accession No. ML26155A038. A list of attendees is enclosed.

Ultimate Heat Sink White Paper

The white paper discusses the background, challenges, and licensee-proposed solution for adding alternate technical specification (TS) requirements for an elevated UHS temperature condition. The licensee indicated that elevated UHS temperatures have required shutdown of domestic and international plants. The licensee did not request NRC staff approval of the white paper. The licensee was developing an option with the pressurized-water reactor (PWR) owners group (PWROG) to provide flexibility if the Diablo Canyon UHS temperature is elevated for a short period of time. The licensee plans to have another pre-submittal meeting on the actual LAR in late summer.

The Pacific Ocean is the UHS for Diablo Canyon. The UHS provides cooling water to the component cooling water (CCW) system, which takes the heat from all the engineered safety feature components that cool the plant. The licensee indicated that the overall ocean temperature is predicted to increase and Diablo Canyon last exceeded the UHS temperature in 2018 during a period of El Niño. The current Diablo Canyon TS requires a second CCW heat exchanger to be placed in service if the UHS temperature exceeds 64 degrees Fahrenheit (°F). The licensee indicated that Diablo Canyon is limited by the CCW heat exchanger outlet temperature of 140°F for the cooling water. The licensee also indicated that the UHS analysis is conservative with a lot of margins, and risk insights can show low safety significance. The licensee has completed sensitivity case studies that took advantage of conservatism in the

existing analysis. If the ocean temperature is high and certain plant parameters are exceeded, the licensee could confirm that the margins in the analysis would accommodate higher ocean temperatures.

The licensee's proposed approach would allow a short-term exceedance of the UHS temperature based on verifying the analysis criteria were met. The licensee proposed to use a new option to re-evaluate safety analyses and confirm results remain valid, like the approach in Diablo Canyon Technical Specification (TS) 3.1.4, "Rod Group Alignment Limits," Required Action B.5. The NRC staff noted two differences between TS 3.1.4 Required Action B.5 and the proposed TS 3.7.9, "Ultimate Heat Sink," changes. The first difference is that Required Action B.5 is justified by a significant down power required by Required Action B.2, whereas the proposed TS 3.7.9 action does not require a significant plant maneuver to a lower power. The second difference is that TS 3.1.4 Actions allows continued operation for an indefinite time, whereas the proposed TS 3.7.9 Action would only allow operation for a short duration. The licensee emphasized that this "re-evaluation" is not a "re-analysis," which would be a complete UHS temperature limit re-analysis to increase the TS UHS temperature permanently and is not cost beneficial at this time. The licensee also indicated that UHS analysis could be affected by future power uprate or a redefinition of loss-of-coolant accident (LOCA).

The NRC staff asked questions about and made observations regarding the licensee's proposed approach. The following items, not in any order, are to be considered for greater NRC review efficiency:

1. Confirm whether net positive suction head (NPSH) for the pumps is adequately considered in the containment pressure and temperature analysis/sensitivities and address this in the LAR documentation.
2. Review and revise the proposed TS formatting and wording for the UHS action statement changes, including clarifying bounds, periodic verification, and ensuring alignment with licensing basis requirements.
3. Include a detailed explanation of how the proposed TS changes will be implemented during UHS temperature excursions above 64°F, including excursions above 70°F.
4. Evaluate the need for periodic re-verification of plant parameters, for example, refueling water storage tank temperature may increase during extended UHS action periods, and include this consideration in the LAR.
5. Clarify in the LAR how sensitivity cases will be used for re-evaluation, including step-by-step procedures and examples, to ensure NRC staff understands the process for temporary exceedance evaluations.
6. Ensure that risk insights fully explain implications across plant systems and identify limiting accident scenarios, including a clear list of systems affected by CCW, and not simply report model results without context. Specifically, the NRC staff is interested in how increased CCW may influence reactor coolant pump seal integrity and the impacts on other equipment associated with increases in CCW temperature, including any impact on the 30-day inventory requirement. Include a list of other important equipment that would be impacted by the increased CCW temperature and the associated safety significance. When the CCW temperature increases, discuss its impact on other systems

outside the CCW and whether they can become a bounding concern at some temperature.

7. Identify and document the specific main steam line break size and scenario assumed in the accident analysis (e.g., main steam line break) for the UHS evaluation and clarify its impact on risk models. Specify whether additional failures are assumed when estimating limiting CCW inlet temperatures.
8. The licensee indicated that Diablo Canyon may be the pilot application of this new approach to address UHS temperature limits that may become generic. However, NRC staff noted there are many plant-specific aspects. For example, Diablo Canyon has two CCW heat exchangers and TS 3.1.4, cited as an example in the UHS white paper, requires a 75 percent down power. The NRC staff recommended clarifying and addressing plant-specific considerations when applying the proposed approach at any site.
9. Describe the differences between “re-evaluation” and “re-analysis” with the proposed new approach. Provide examples to illustrate the methodology.
10. Discuss the sensitivity studies, including pre-run cases and the types of calculations to be performed. Discuss whether sensitivity studies will be re-run when an issue occurs to satisfy entry into the new proposed TS.
11. The licensee indicated that the Diablo Canyon UHS temperature is capped at 70°F maximum in the licensing basis. Discuss how this limit is verified during the application of the proposed approach and any required action if it is exceeded.
12. Discuss specific types of input and analyses that would be acceptable for use in the re-evaluation. Discuss how the inputs and analyses are controlled.
13. Discuss a listing of parameters or input parameters that could be changed to raise the UHS temperature in your analysis. Discuss whether this new approach will be proceduralized for consistent application.
14. Provide a step-by-step process for applying the new approach. For example, what is the next step if plant conditions do not match the sensitivity studies.
15. The licensee plans to submit a regular (deterministic) LAR with risk insights. Ensure the risk insights provided support the deterministic conclusion. When providing risk insights, include details (e.g., what systems or components are assumed to fail in the event of increased UHS temperatures, any key assumption made that may be conservative or non-conservative) to enable NRC staff to independently verify those risk insights.
16. Discuss periodic verification of compliance with analysis assumptions during the 7-day period in the proposed TS change.
17. The licensee’s approach compares plant input parameters to sensitivity studies. Discuss the role of the final safety analysis report (FSAR) in maintaining the licensing basis.

18. Discuss change controls for sensitivity studies and whether these sensitivity studies are based on current analysis methods.

Extension of Diablo Canyon Unit 2 Steam Generator Tube Inspection Period

The licensee is considering requesting a one-time extension of the Diablo Canyon, Unit 2 steam generator tube inspection from 96 to 97 effective full power months (EFPM). The licensee's adoption of Technical Specifications Task Force (TSTF) Traveler TSTF-577, "Revised Frequencies for Steam Generator Tube Inspections," permits a maximum time between steam generator tube inspections of up to 96 EFPM, if supported by the unit-specific operational assessment. The licensee plans to move the plant outage to a period of reduced electric demand and to avoid two refueling outages in a single year for Units 1 and 2. The licensee indicated that moving the Unit 2 outage to spring 2029 from fall 2028 would exceed 96 EFPM by about 20 days and reduce the calculated margin to the tube integrity acceptance criterion by a negligible 0.1 percent.

The following are NRC staff comments, not in any particular order, that should be considered for greater NRC review efficiency of the licensee's proposed LAR:

1. Slide 6 of the licensee's presentation shows the proposed TS revision. The NRC staff suggested that the proposed TS revision should specify that it is a one-time use TS change, that it *may* apply, and the refueling outage (RFO) event that would signal an exit from the 97 EFPM interval.
2. The NRC staff noted that Slide 8, second sub-bullet, "no instances of tube integrity criteria not met due to wear," is no longer correct for units with Alloy 690 tubing. In late 2023, there was a U.S. PWR with Alloy 690 tubing that failed to meet the structural integrity performance criterion due to low row tube wear at tube support plates. In that case, the licensee did not recognize a sub-population of aggressive tube wear during the previous inspection. The NRC staff noted that the Diablo Canyon Unit 2 steam generator tube inspection results to date have not identified any aggressive tube wear at structures such as support plates.
3. Attaching the steam generator operational assessment (OA) to the LAR would allow the most efficient review of the change in projected tube degradation resulting from the additional 1 EFPM of operation. The NRC staff noted that the OA should include details about how the tube wear growth rate values were calculated and would allow the NRC staff to view growth rate distributions. The NRC staff and licensee also discussed that if the OA was proprietary, another option could be an audit with portal access to the OA. Part of the NRC staff review of the LAR would be confirming the appropriateness of the projected wear growth rates for detected and undetected tube wear. Having complete information up front is important for amendment reviews performed on an accelerated basis.
4. Include details about the robust foreign material exclusion controls noted in Slide 11. Examples may include items such as steam generator design features that limit foreign object size, specific foreign object control measures, or secondary side inspections that may have been performed with an objective of preventing or removing foreign objects.

5. Discuss whether there is any primary to secondary leakage occurring in the Diablo Canyon Unit 2 steam generators.
6. Slide 12 of the licensee's presentation shows an aggressive NRC staff review schedule. The NRC staff requested the licensee to submit their LAR soon to provide sufficient time to support the licensee's need.

James Lynde, PWROG Chairman, made a public comment to indicate that PWROG and the industry support leading efforts by Diablo Canyon. No regulatory decisions were made at the meeting.

Please direct any inquiries to me at 301-415-3168 or Samson.Lee@nrc.gov.

/RA/

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Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosure:
List of Attendees

cc: Listserv

LIST OF ATTENDEES

JUNE 18, 2026, PRESUBMITTAL HYBRID MEETING REGARDING

(1) ULTIMATE HEAT SINK ANALYSIS AND (2) STEAM GENERATOR INSPECTIONS

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2

U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation (NRR)

Ultimate Heat Sink White Paper:

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Clint Ashley, NRR*
Sunil Weerakkody, NRR

Pacific Gas and Electric Company

Kenneth Schrader
Michael Richardson
Garrett Reed*
John Moorehead, Westinghouse (PG&E Contractor)

Public

James Lynde, PWR Owners Group Chairman*

*Remote participants

Enclosure

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ML26180A251 (Meeting Summary)
ML26155A038 (Meeting Notice)
ML26160A226 (White Paper)
ML26160A227 (Meeting Slides)
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