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SUBJECT: Provides response to Generic Ltr 93-04, "Rod Control Sys
 Failure & Withdrawal of Rod Control Cluster Assemblies,
 10CFR50.54(f)."

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Gregory M. Rueger
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September 17, 1993

PG&E Letter No. DCL-93-226



Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
90-day Response to Generic Letter 93-04

Gentlemen:

PG&E Letter No. DCL-93-198, dated August 5, 1993, provided PG&E's 45-day response to Generic Letter (GL) 93-04, "Rod Control System Failure and Withdrawal of Rod Control Cluster Assemblies, 10 CFR 50.54(f)," as it applies to Diablo Canyon Power Plant (DCPP) Units 1 and 2. The letter stated that PG&E would provide additional information within 90 days of the issue date of the generic letter.

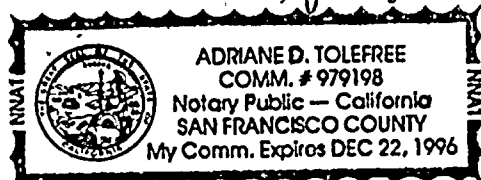
PG&E's 90-day response to the generic letter is enclosed. This letter, together with DCL-93-198, provides a complete response to GL 93-04. PG&E concludes that the licensing basis of DCPP is satisfied for General Design Criterion 25 (Required Response 1.(a)). Additional information for long-term resolution of this generic issue is provided in the enclosure. The safety assessment that was provided in the 45-day response (DCL-93-198, Enclosure 2) is confirmed; i.e., based on three-dimensional transient analyses, there is no safety significance for Westinghouse plants for a Salem-type, asymmetric rod cluster control assembly withdrawal.

Sincerely,

Gregory M. Rueger

Subscribed and sworn to before me
this 17th day of September 1993.

Attorneys for Pacific Gas and
Electric Company
Howard V. Golub
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Enclosure

6235S/85K/BDP/2232



ENCLOSURE 1

90-DAY RESPONSE TO NRC GL 93-04

PG&E Response

PG&E's response to Generic Letter (GL) 93-04, "Rod Control System Failure and Withdrawal of Rod Control Cluster Assemblies, 10 CFR 50.54(f)," is provided below. The response is consistent with the schedule relief granted in an NRC letter (A. C. Thadani) to the Westinghouse Owners Group (WOG) (Roger Newton) on July 26, 1993.

"1. Within 45 days from the date of this generic letter:

- (a) Provide an assessment of whether or not the licensing basis for each facility is still satisfied with regard to the requirements for system response to a single failure in the rod control system and provide a supporting discussion for this assessment in light of the information generated as a result of the Salem event."*

PG&E RESPONSEAssessment of Licensing Basis Compliance

The purpose of this response is (1) to provide an assessment of whether or not the licensing basis for Diablo Canyon Power Plant (DCPP), Units 1 and 2 is still satisfied with regard to the requirements for system response to a single failure in the rod control system, and (2) to provide supporting discussion for this assessment in light of the information generated as a result of the Salem event (Required Response 1.(a)).

The WOG has undertaken the following initiatives to support the response to NRC GL 93-04: conducting rod control system testing in the Salem training center; examining the existing rod control system failure modes and effects analysis (FMEA); analyzing the worst-case, asymmetric rod cluster control assembly (RCCA) withdrawal combinations with three-dimensional analytical methods; and performing an equipment survey of Westinghouse plants to determine the frequency and significance of control system circuit card failures.

After this extensive investigation, the WOG has concluded that General Design Criterion (GDC) 25 continues to be met, but the Group also recognizes that there are questions regarding the interpretation of not only the intent of GDC 25, but also the appropriate definition of the specified acceptable fuel design limit as well.

Based on previous communications, the NRC has conservatively interpreted the GDC 25 fuel design limit to be the departure from nucleate boiling (DNB) design basis. The WOG believes that this is a conservative definition if



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applied to all events. The equipment survey conducted by the WOG demonstrated that the card failure rate that could result in the movement of less than a whole group of rods is on the order of 4×10^{-8} /critical card hours. This would indicate that the likelihood of a Salem-type event is extremely remote. With this in mind, the WOG would propose that a Condition III (or IV) specified acceptable fuel design limit would be applicable.

Based on the WOG's understanding of GDC 25, the purpose of this criterion is to ensure that the appropriate limits (commensurate with the probability of occurrence) are not violated for a "worst-case," stand-alone, single failure. The test program conducted at the Salem training center demonstrated that all the rods within a given group would receive the same signals. The corrupted current orders generated by the logic cabinet failures at Salem were transmitted identically to all 8 RCCAs in Shutdown Bank A. The fact that only one RCCA withdrew in the plant was due to a second unrelated effect. Had all the rods in Shutdown Bank A responded as predicted in the existing FMEA, all the rods would have withdrawn uniformly and would have been enveloped by the existing FSAR accident analyses. In addition, existing rod motion surveillance requirements would detect the type of rod motion failure observed at Salem. Thus, the requirement that one single failure not result in exceedence of a specified acceptable fuel design limit, in this case the DNB design basis, would remain satisfied.

Assessment of the Safety Significance of Potential Asymmetric Rod Motion in the Rod Control System

Westinghouse has also performed a safety analysis using three-dimensional safety analysis techniques to assist the WOG in determining the safety significance of an uncontrolled asymmetric rod withdrawal. WCAP-13803, Revision 1, documented the safety analysis program and concluded that the generic analysis and plant-specific applications demonstrate that DNB does not occur for a worst-case asymmetric rod withdrawal for all affected Westinghouse plants. As such, the analysis program concluded that there is no safety significance for affected Westinghouse plants for a Salem-type rod withdrawal.

PG&E Letter No. DCL-93-198, dated August 5, 1993, provided PG&E's 45-day response to the Generic Letter 93-04 as it applies to DCP. The response provided a summary of the results of the generic safety analysis program conducted by the WOG and the applicability of these results to DCP, Units 1 and 2.

- "2. If the assessment in 1(a) indicates that the licensing basis is not satisfied, within 90 days from the date of this generic letter provide a plan and schedule for the long-term resolution of this issue."*

PG&E RESPONSE

While the assessment indicates that the licensing basis is currently satisfied, the WOG believes that there are measures that can be taken by utilities to make compliance with GDC 25 more clear. Those recommended modifications include a combination of rod control system logic cabinet

changes (current order timing adjustments) and an additional plant surveillance, or FSAR safety analyses analyzing asymmetric rod withdrawal and an additional plant surveillance.

PG&E will implement a new current order surveillance (taking current order traces in each rod control power cabinet) following each refueling outage at DCCP. This surveillance will ensure proper current orders are produced to prevent any uncontrolled asymmetric rod withdrawal in the event of a Salem-type failure. The current order surveillance will be implemented starting with the sixth refueling outages.

PG&E will implement a revised current order timing sequence. This will be contingent upon receipt of the official technical bulletin from Westinghouse and successful demonstration of the timing sequence. The revised current order sequence will be implemented during the seventh refueling outages. The basis for allowing this time period is that existing rod motion surveillance tests provide assurance that the failure scenarios of an uncontrolled asymmetric rod withdrawal will be detected, and the analysis program performed and documented in WCAP-13803, Revision 1, concluded that there was no safety significance for affected Westinghouse plants for a Salem-type rod withdrawal.

