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SUBJECT: Suppls 900126 response to Generic Ltr 89-13, "Svc Water Sys Problems Affecting Safety-Related Equipment." Routine insp & maint program established to ensure that auxiliary svc water sys performance not adversely impaired.

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Gregory M. Rueger
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November 25, 1991

PG&E Letter No. DCL-91-286

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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
Supplemental Response to Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment"

Gentlemen:

Generic Letter (GL) 89-13 required that licensees submit an initial response advising the NRC whether they had established programs to implement the five GL 89-13 recommendations, and also required that licensees submit a supplemental response within 30 days following completion of initial program actions. PG&E Letter No. DCL-90-027, dated January 26, 1990, provided initial information to the NRC regarding PG&E's program in accordance with GL 89-13. PG&E completed the initial GL 89-13 program actions during the fourth refueling outage for each unit at Diablo Canyon, which ended on April 4, 1991, for Unit 1 and on October 26, 1991, for Unit 2. This letter documents completion of the initial program actions in accordance with GL 89-13 requirements. The enclosure to this letter provides a summary description of the actions PG&E has taken to address each of the GL 89-13 recommendations.

Sincerely,

Gregory M. Rueger

cc: Ann P. Hodgdon
John B. Martin
Philip J. Morrill
Harry Rood
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Enclosure

5551S/0085K/ALN/2232

ENCLOSURE

SUPPLEMENTAL RESPONSE TO GENERIC LETTER 89-13, "SERVICE WATER SYSTEM PROBLEMS AFFECTING SAFETY-RELATED EQUIPMENT"

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SUPPLEMENTAL RESPONSE TO GENERIC LETTER 89-13, "SERVICE WATER SYSTEM PROBLEMS AFFECTING SAFETY-RELATED EQUIPMENT"

This enclosure provides a summary description of the actions PG&E has taken to address the five recommendations of Generic Letter (GL) 89-13.

Recommendation 1: *"For open-cycle service water systems, implement and maintain an ongoing program of surveillance and control techniques to significantly reduce the incidence of flow blockage problems as a result of biofouling."*

PG&E has implemented an ongoing program to visually inspect the auxiliary saltwater (ASW) system intake structure, including the pump bays and screens, during refueling outages. This program includes inspection for macroscopic biological fouling (macrofouling), sediment, and corrosion, as well as actions to be taken for evaluation and disposition of any problems identified. The initial inspections were completed for Units 1 and 2 during their respective fourth refueling outages. These inspections found that ASW system macrofouling was minimal except in areas of turbulent flow and at joints in the piping where significant amounts of macrofouling were noted. However, the ASW system flow testing has demonstrated that the observed macrofouling has not adversely affected ASW system operability.

PG&E has reviewed several biofouling control methods, including fresh water layup (stagnation) and intermittent and continuous halogenation. PG&E currently uses intermittent halogenation with sodium hypochlorite and also periodic stagnation with seawater as trains of the ASW system are rotated. PG&E has found that intermittent halogenation and stagnation are adequate to control microfouling and to some extent macrofouling. However, PG&E plans to enhance the control program to be more effective in minimizing the impacts of macrofouling by implementing a program to continuously halogenate the ASW system to minimize both micro and macrofouling, which will include halogenated stagnation as a part of ASW system train rotation. Until the continuous halogenation program is in place, PG&E will continue to perform intermittent halogenation coupled with periodic stagnation.

With respect to ASW system cooling loop flushing and flow testing, as stated in our original GL 89-13 response, STP M-26, "ASW System Performance Monitoring," and the Annunciator Response Procedure PK01-01, "ASW SYS HS DELTA P/HDR PRESS," meet the recommendations of GL 89-13 control technique C. The Units 1 and 2 fourth refueling outage inspections have confirmed that current layup and flushing procedures, in conjunction with the other aspects of the surveillance and control program, are adequate to assure ASW system operability but do not minimize the potential for macrofouling to the extent that PG&E would like based on recent operating experience. To minimize ASW system unavailability due to heat exchanger cleaning, PG&E is implementing a design change to provide continuous halogenation as mentioned above.

PG&E will continue to evaluate the ongoing surveillance and control program for effectiveness and modify the program as necessary.

Recommendation 2: *"Conduct a test program to verify the heat transfer capability of all safety-related heat exchangers cooled by service water. The total test program should consist of an initial test program and a periodic retest program. Both the initial test program and the periodic retest program should include heat exchangers connected to or cooled by one or more open-cycle systems as defined above.*

"An equally effective program to ensure satisfaction of the heat removal requirements of the service water system would also be acceptable. An example of an alternative action that would be acceptable to the NRC is frequent regular maintenance of a heat exchanger in lieu of testing for degraded performance of the heat exchanger."

As stated in our original response to GL 89-13, PG&E discussed and has since implemented an alterative monitoring program that combines flow testing, trending, ASW system component inspections, and regular preventive maintenance. The procedures and inspections for this program have been established and were performed during the Units 1 and 2 fourth refueling outages, and frequencies of performance were established or confirmed in response to the observations during these outages.

PG&E also performed ASW system open-cycle heat exchanger (also referred to as component cooling water (CCW) heat exchanger) performance tests and used a computer model to predict heat exchanger performance at design heat loads. Although these tests exhibited significant sensitivity to instrument inaccuracies due to the low heat loads measured, the computer model predicted that the heat exchanger would remove the design basis heat load at design conditions. PG&E is considering future testing and use of the computer model for heat exchanger trending. However, any future testing would be considered as additional information and an enhancement to the established alternative monitoring program.

Recommendation 3: *"Ensure by establishing a routine inspection and maintenance program for open-cycle service water system piping and components that corrosion, erosion, protective coating failure, silting, and biofouling cannot degrade the performance of the safety-related systems supplied by service water."*

PG&E conducted ASW system piping inspections during the Unit 2 third refueling outage and the Units 1 and 2 fourth refueling outages. These inspections showed only limited amounts of biofouling except as noted above, no erosion, and limited silting. With the exception of two locations where minor defects in the piping inner lining were noted, no corrosion was found. Actions were taken to resolve the conditions found during the inspections, including repair of the pipe and pipe inner coating for the defects and corrosion. Overall, the piping inspections showed the ASW system piping lining to be in excellent condition and therefore able to meet its function as a protective barrier. PG&E has established a routine inspection and maintenance program to ensure that ASW system performance is not adversely impaired.

Recommendation 4: *"Confirm that the service water system will perform its intended function in accordance with the licensing basis for the plant. Reconstitution of the design basis of the system is not intended. This confirmation should include a review of the ability to perform required safety functions in the event of failure of a single active component. To ensure that the as-built system is in accordance with the appropriate license basis documentation, this confirmation should include recent (within the past 2 years) system walkdown inspections."*

Design Criteria Memoranda (DCMs) for the ASW and CCW systems were completed in 1990. Also, the PG&E Quality Assurance Department performed a safety system functional audit and review in 1990 for these systems. No significant deficiencies were identified, and the minor problems identified during these activities were resolved in accordance with PG&E's procedures for resolving nonconforming conditions. In addition, the system and system design engineers continued to conduct their regular system walkdowns. These actions provide confirmation that the ASW system will perform its intended function in accordance with the licensing basis and that the as-built system is in accordance with the appropriate licensing basis documentation.

Recommendation 5: *"Confirm that maintenance practices, operating and emergency procedures, and training that involves the service water system are adequate to ensure that safety-related equipment cooled by the service water system will function as intended and that operators of this equipment will perform effectively. This confirmation should include recent (within the past 2 years) reviews of practices, procedures, and training modules. The intent of this action is to reduce human errors in the operation, repair, and maintenance of the service water system."*

Maintenance practices, operating and emergency operating procedures, and training applicable to the ASW system were reviewed, and PG&E concluded that the existing practices, procedures, and training minimize the potential for human error and that the safety-related equipment cooled by the ASW system will function as intended. In addition, the ASW system procedures were reviewed as a part of the DCM preparation and were found to be adequate.