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SUBJECT: Provides description, justification & safety evaluation for changes to post-accident sampling sys.

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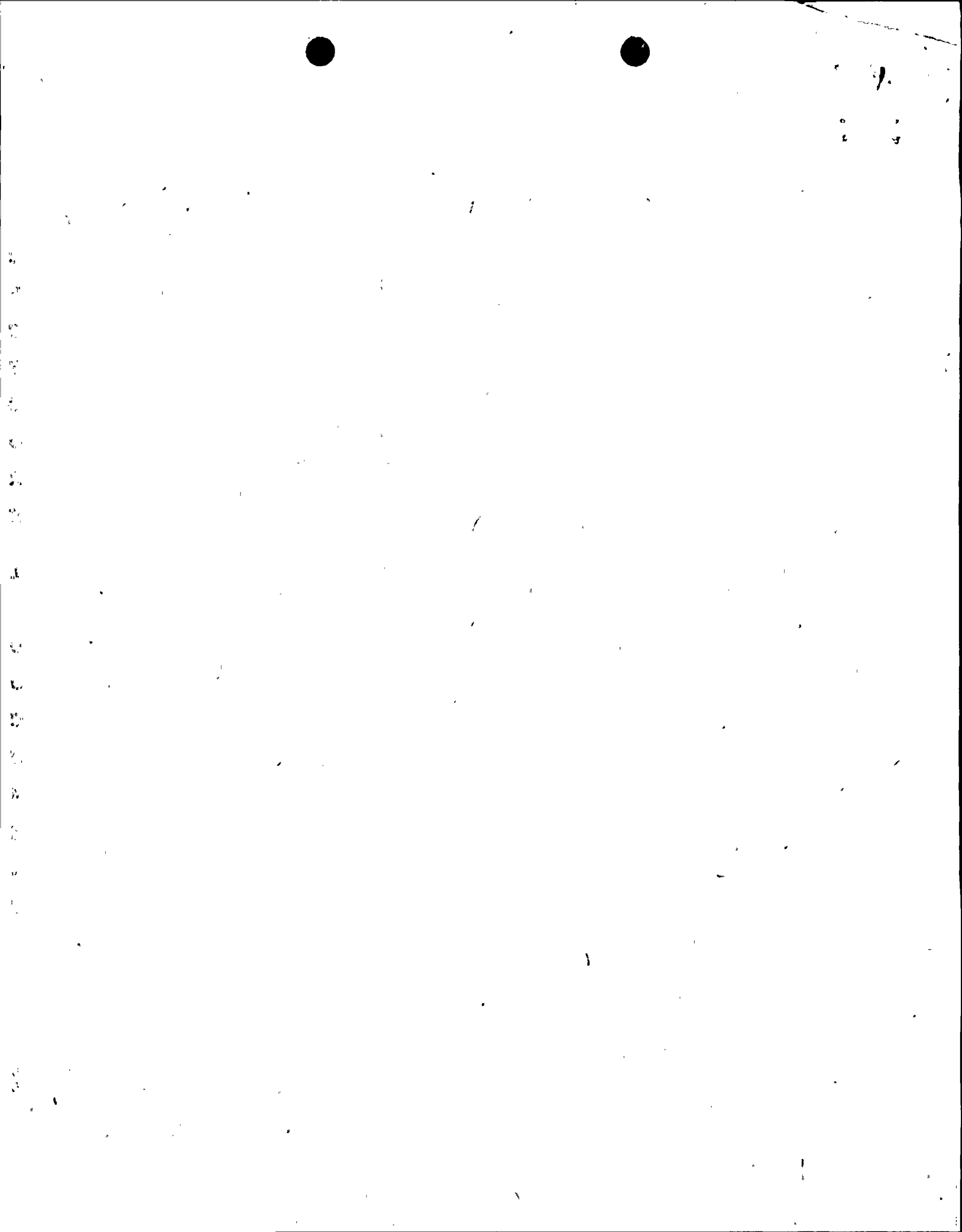
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March 27, 1997



PG&E Letter DCL-97-050

U.S. Nuclear Regulatory Commission
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Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Revision of Commitments Regarding NUREG-0737 and Regulatory Guide 1.97
Sampling Requirements for the Post Accident Sampling System

Dear Commissioners and Staff:

Per a discussion between PG&E and the NRC on September 11, 1996, the enclosures to this letter provide a description, justification, and safety evaluation for changes to the post-accident sampling system (PASS). This is similar to exceptions to Regulatory Guide (RG) 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 3, that were requested in PG&E Letter DCL-93-040, dated February 17, 1993. Specifically, PG&E has evaluated the impact on the Diablo Canyon Power Plant (DCPP) licensing basis of deleting the following NUREG-0737, "Clarification of TMI Plan Requirements," and RG 1.97, Revision 3, sampling requirements for the PASS.

1. Reactor coolant for dissolved oxygen.

The deletion of this requirement is acceptable because the measurement of reactor coolant oxygen concentration is recommended by NUREG-0737, but NUREG-0737 does not mandate a specific requirement for such a sample. Thus, the requirement for sampling of dissolved oxygen in reactor coolant may be deleted.

2. Containment atmosphere for percent hydrogen.

The deletion of this requirement is acceptable because PASS sampling of containment atmosphere hydrogen is not necessary because there are safety-grade in-line containment monitors installed, as required by 10 CFR 50.34 and NUREG-0737. Due to the redundant safety-related

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quality requirements of these in-line monitors, it is not necessary to provide an in-line grab sample as a backup.

3. Containment atmosphere for percent oxygen.

The deletion of this requirement is acceptable because measurement of containment atmosphere oxygen concentration is a licensing basis commitment identified in Table 3 of RG 1.97, but is not a requirement of NUREG-0737. Potentially explosive mixtures of hydrogen and oxygen in containment atmosphere are controlled at DCPD by controlling the percentage of hydrogen. Therefore, the sampling of containment atmosphere for percent oxygen may be deleted.

Enclosure 1 provides the detailed bases for these three items. Enclosure 2 includes a 10 CFR 50.59 evaluation for revising the sampling requirements of the PASS as identified above. Based on the results of this evaluation, PG&E concludes that implementation of these revisions to the PASS sampling requirements does not constitute an unreviewed safety question, and DCPD will remain within its licensing basis. However, it is our understanding that since these commitments were specifically required to be implemented in Supplemental Safety Evaluation Reports 14 and 31, prior NRC approval is required. PG&E considers this request to be a cost beneficial licensing action and desires expeditious approval of this request.

Sincerely,



Robert P. Powers

cc: Steven D. Bloom
Ellis W. Merschoff
Michael D. Tschiltz
Diablo Distribution

Enclosures



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BASES FOR CHANGES

INTRODUCTION

PG&E has reviewed the impact on the Diablo Canyon Power Plant (DCPP) licensing basis of revising the following NUREG-0737, "Clarification of TMI Plan Requirements," and Regulatory Guide (RG) 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 3, requirements and/or commitments for the post-accident sampling system (PASS):

1. The sampling of reactor coolant for dissolved oxygen be deleted;
2. The sampling of containment atmosphere for percent hydrogen be deleted; and
3. The sampling of containment atmosphere for percent oxygen be deleted.

The enclosure provides an evaluation and justification for revising the sampling requirements of the PASS as identified above. These relaxations to the NUREG-0737 and RG requirements and/or commitments will require a revision to Equipment Control Guideline (ECG) 11.1, and the Final Safety Analysis Report (FSAR) Update. Specifically, Table 11.1-2 of ECG 11.1 and FSAR Update Sections 9.3.2.2.1, 9.3.2.2.2 and Table 9.3-4 will be revised to reflect the deletion of the sampling requirements identified above.

BACKGROUND

The PASS for DCPP provides facilities for prompt remote sampling and analysis of the reactor coolant and containment atmosphere following an accident. The information provided by this system assists in assessing and controlling the course of recovery from an accident. The system is designed and located such that plant personnel are able to obtain the necessary samples and analyses under accident conditions while limiting personnel radiation exposure. Each DCPP unit has been provided with a sampling system that can perform PASS functions. PASS provides analysis capability of both reactor coolant and containment atmosphere samples. The PASS provides the means for manual, grab type sample collection and where applicable, continuous on-line monitoring of key chemistry parameters.

The DCPP PASS is designed to provide both in-line and off-line monitoring for the sampling and analyses of the reactor coolant and containment atmosphere. The system has the capability to quantify the following:



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1. Certain radionuclides in the reactor coolant and containment atmosphere. These radionuclides may be indicators of the degree of core damage.
2. Dissolved gases (e.g., hydrogen and oxygen) in liquids.
3. Boron and chloride content of liquids.
4. The pH level of liquids.
5. Hydrogen levels in the containment atmosphere.
6. Oxygen levels in the containment atmosphere.

All sampling and analyses, as required by NUREG-0737, including the off-line sampling and analyses can be done within a three hour period.

REVISION OF PASS SAMPLING REQUIREMENTS

Dissolved Oxygen in Reactor Coolant

The requirement for sampling of dissolved oxygen in the reactor coolant is proposed to be deleted. NUREG-0737 recommends, but does not mandate, the measurement of the oxygen concentration. NUREG-0737 II.B.3 (4) states that "...measuring the oxygen concentration is recommended, but is not mandatory." It is also noted that DCPD does not use this parameter in emergency procedures, and therefore the requirement for sampling of dissolved oxygen in reactor coolant may be deleted.

NRC letter dated April 1993, to Florida Power and Light (FP&L) approved a similar request based on a report produced by Combustion Engineering (CE), which provided evaluation and justification for deletion of PASS sampling of dissolved oxygen in reactor coolant.

Hydrogen in Containment Atmosphere

The sampling of containment atmosphere for percent hydrogen is proposed to be deleted. NUREG-0737 II.B.3 and NUREG-0737 II.F.1 both require the measurement of containment atmosphere for percent hydrogen. To meet these NUREG requirements, redundant monitors have been installed at DCPD. The redundant monitors are in-line monitors. Due to the redundant safety-related quality requirements of these in-line monitors, PG&E believes that it is not necessary to provide an in-line grab sample as a backup to the in-line monitors.

NUREG-CR-4330, "Review of Light Water Reactor Regulatory Requirements," states that "there is no need for the PASS to sample hydrogen in the containment atmosphere because there is a safety-grade containment monitor required by 10 CFR 50.34 and NUREG-0737."

NRC letter dated April 1993, to FP&L reviewed and approved CE report which provided evaluation and justification for the deletion of PASS sampling for hydrogen in the containment atmosphere. The justification provided by CE is equivalent to that proposed by PG&E. CE concludes that the use of current safety-grade in-line containment hydrogen monitors for analysis and trending of the hydrogen concentration is an acceptable alternative to the PASS sampling requirement.

Oxygen in Containment Atmosphere

The sampling of containment atmosphere for percent oxygen is proposed to be deleted. The measurement of containment atmosphere for percent oxygen is identified in Table 3 of RG 1.97, Revision 3. Thus, the sampling of containment atmosphere for percent oxygen is a licensing basis requirement for DCPD. The containment buildings at DCPD are not inerted, and therefore it is expected that the percent oxygen in the containment atmosphere will be approximately 20.8 percent (naturally occurring). The percentage is well within the explosive range when mixed with greater than 4 percent hydrogen. PG&E recognizes that there will always be sufficient oxygen in containment to form an explosive mixture with greater than 4 percent hydrogen, and therefore believes that it is not necessary to quantify the amount of oxygen. Potentially explosive mixtures of hydrogen and oxygen in containment atmosphere is controlled at DCPD by monitoring and controlling the percentage of hydrogen.



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10 CFR 50.59 SAFETY EVALUATION

1. May the probability of occurrence of an accident previously evaluated in the SAR be increased? No

Justification: The changes to the equipment control guidelines (ECG) and the Final Safety Analysis Report (FSAR) Update have no adverse impact on the probability of occurrence of an accident previously evaluated in the Diablo Canyon Power Plant (DCPP) FSAR Update. No mechanism has been identified by which the proposed ECG and FSAR Update changes will degrade the performance of any other plant safety system. The changes do not adversely affect the normal plant operating conditions or postulated accident conditions. Further, the proposed ECG and FSAR Update revisions will not increase challenges to the safety systems assumed to function in the accident analysis, such that safety system performance is degraded below the design basis. Therefore, the probability of any accident previously identified will not increase.

2. May the consequences of an accident previously evaluated in the SAR be increased? No.

Justification: There is no change to the effectiveness of the Emergency Plan or the capability for post-accident sampling and analysis as required by NUREG-0737. No increased leakage is expected as a result of these changes. The proposed ECG and FSAR Update changes were not found to have any adverse effect on systems or equipment necessary to mitigate the consequences of previously evaluated accidents. No failure or damage due to the ECG or FSAR Update revisions has been identified which would result in greater post-accident consequences as defined by the acceptance criteria of the guidelines of 10 CFR 100 for those accidents previously analyzed. Therefore, the consequences of any accident previously identified will not increase.

3. May the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the SAR be increased? No.

Justification: There is no change in the method of operation of equipment important to safety; there are no physical changes to the post-accident sampling system (PASS) and the PASS is not a safety-related system. The proposed relaxations do not adversely affect the ability of the existing plant protection components to perform their intended safety functions. Therefore, the probability of a malfunction of equipment important to safety previously identified will not increase.

4. May the consequences of a malfunction of equipment important to safety previously evaluated in the SAR be increased? No

Justification: The PASS is used to assess the consequences of an accident, which could involve the malfunction of equipment. However, since the PASS is only used to assess the resulting consequences, it cannot directly impact the consequences of a malfunction. There is no increase in consequences since the capability to perform adequate sampling and analysis is maintained. Consequently, adequate information will be available for assessment of plant conditions to assure that appropriate actions to mitigate the consequences of an accident, including any associated equipment malfunctions. The proposed PASS relaxations were not found to have any adverse effect on systems or equipment necessary to mitigate the consequences of previously evaluated equipment malfunctions. No failure or damage, due to these relaxations, has been identified which would result in greater post-accident equipment malfunction consequences than those previously analyzed. Therefore, the consequences of a malfunction of equipment important to safety previously identified will not increase.

5. May the possibility of an accident of a different type than any previously evaluated in the SAR be created? No.

Justification: The PASS is not a safety-related system. There is no change to other existing required sampling methods. The proposed ECG and FSAR Update changes will not introduce any new features into the plant such that an initiator for a new or different type of accident would be created. No new single failures have been identified as a result of the changes. Therefore, the possibility of a new accident will not increase.

6. May the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR be created? No.

Justification: There is no change in the method of operation of equipment important to safety, nor have any physical changes to installed plant equipment been made. The proposed ECG and FSAR Update revisions will not introduce any new features into the plant such that an initiator for a new or different type of malfunction would be created. Therefore, the possibility of a new malfunction of equipment important to safety will not increase.



7. Is there a reduction in the margin of safety as defined in the basis for any Technical Specification? No.

Justification: The proposed ECG changes will not affect the operability of any nuclear steam supply system or component and will not decrease the margin of safety in the basis of any technical specification (TS) within their respective area of responsibility. There is no creation of any condition more limiting than that assumed in the plant safety analyses, and no reduction in margin of safety in any TS.



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