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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE MODIFICATION OF THE POST ACCIDENT SAMPLING SYSTEM

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON POWER PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-275 AND 50-323

1.0 INTRODUCTION

By letter dated March 27, 1997, Pacific Gas and Electric Company (PG&E) submitted a request to modify the sampling requirements for the post-accident sampling system (PASS) in Diablo Canyon Power Plant, Unit Nos. 1 and 2. PG&E requested removal of the requirements for sampling for dissolved oxygen in the reactor coolant and for hydrogen and oxygen in the containment atmosphere. PG&E justified their request by showing that the specifications in Item II.B.3 of NUREG-0737, "Clarification of TMI Action Plan Requirements," do not require performing oxygen determination in the reactor coolant and the amount of oxygen in the non-inerted containment of the Diablo Canyon plant will be approximately that of the surrounding air. Formation of explosive mixtures in the containment post-accident atmosphere will be, therefore, controlled by the amount of released hydrogen which will be measured by the existing instrumentation. PG&E also demonstrated that hydrogen measurement in the containment atmosphere by PASS is redundant because this measurement can be performed by the safety-grade containment hydrogen monitoring system.

2.0 EVALUATION

Item II.B.3 of NUREG-0737 specifies eleven criteria which a post-accident sampling system has to meet in order to perform its design function. Included in these criteria are the types of samples to be taken by PASS. Criterion 4, defining the sampling of reactor coolant, states that "measurement of the O_2 concentration is recommended, but is not mandatory." Since it is non-mandatory and since PG&E does not use this parameter in its plant emergency procedures, it can be deleted from the PASS without downgrading operability of the system.

Item II.B.3 of NUREG-0737 does not require PASS to measure oxygen in the containment atmosphere, but it is specified in Table 3 of Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident." The reason for this specification is to be able to find when sufficient oxygen is accumulated to form explosive mixtures with the accidentally released combustible gases. However, the containment in the Diablo Canyon plant is not inerted and the concentration of oxygen approximates that of the surrounding air, which is close to 20 percent.

At this concentration of oxygen, formation of explosive mixtures will be controlled not by the amount of oxygen, but by the amount of the combustible gases released to the containment. The information about oxygen concentration is not, therefore, needed and PASS is not required to have the capability for measuring concentration of oxygen in the containment atmosphere.

Knowing the amount of the post-accident hydrogen released to the containment is an important parameter in the Diablo Canyon plant because it controls formation of explosive mixtures in the containment after an accident. However, hydrogen concentration in the containment could be measured by the safety-grade instrument required by a specification in Item II.F.1 of NUREG-0737 and this renders the hydrogen determination by PASS superfluous. Therefore, removal of the sampling requirement for hydrogen measurement in the containment atmosphere by PASS is acceptable.

3.0 CONCLUSION

The staff has reviewed the proposed modifications to the PASS at Diablo Canyon Power Plant, Unit Nos. 1 and 2. These modifications delete the requirements for measuring oxygen in the reactor coolant and oxygen and hydrogen in the containment atmosphere. Based on its review, the staff concurs with the justifications provided by PG&E and finds the proposed modifications acceptable.

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