



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 92 TO FACILITY OPERATING LICENSE NO. DPR-80
AND AMENDMENT NO. 91 TO FACILITY OPERATING LICENSE NO. DPR-82

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON NUCLEAR POWER PLANT, UNITS 1 AND 2

DOCKET NOS. 50-275 AND 50-323

1.0 INTRODUCTION

By letter of February 17, 1994, Pacific Gas and Electric Company (or the licensee) submitted a request for changes to the Technical Specifications (TS) for Diablo Canyon Power Plant (DCPP) Units 1 and 2. The proposed amendments would revise TS 3/4.3.2, "Engineered Safety Features Actuation System Instrumentation," Table 3.3-3, functional unit 6.c.2), Start Turbine-Driven Pump, and Table 3.3-4, functional unit 4.e, Negative Steam Pressure Rate - High. The proposed amendments would revise TS changes originally issued on October 7, 1993, in License Amendments 84 and 83 for the Process Protection System Upgrade (Eagle 21). Specifically, TS 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation," would be revised as follows:

1. Table 3.3-3, functional unit 6.c.2), channels to trip, would be changed from 2/steam generator in one steam generator to 2/steam generator in any 2 steam generators due to an administrative error.
2. Table 3.3-4 would be changed as follows:
 - a. Functional Unit 4.e., Negative Steam Pressure Rate - High, trip setpoint and allowable value, would be changed from -100 psi/sec and -105.4 psi/sec to 100 psi and 105.4 psi, respectively.
 - b. A note would be added stating that the time constants utilized in the rate-lag controller for Negative Steam Pressure Rate - High, are equal to 50 seconds.

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2.0 EVALUATION

As part of the changes approved in License Amendments 84 and 83, Table 3.3-3, functional unit 6., Auxiliary Feedwater, item c., Steam Generator Water Level - Low-Low, requirements were revised to add a start of the motor-driven and turbine-driven auxiliary feedwater (AFW) pumps on reactor coolant system (RCS) loop delta-T. The addition of RCS loop delta-T AFW pump starts was the only intended change to functional unit 6.c. However, due to an administrative error, the channels to the trip column for the turbine-driven AFW pump start on steam generator water level - low-low was inadvertently changed from 2/Steam Generator in any 2 operating steam generators to 2/Steam Generator in one steam generator. The actuation logic for the turbine-driven AFW pump start on steam generator water level - low-low is not affected by the installation of Eagle 21 and the resistance temperature detector (RTD) bypass elimination changes. This administrative change to the turbine-driven AFW pump start function corrects the error and reflects the current actuation logic. The staff finds the proposed change acceptable.

On January 20, 1994, Westinghouse notified the licensee that the Eagle 21 TS issued in LA 84 and 83 required changes, and provided PG&E with corrected TS pages. Installation of Eagle 21 is scheduled for the Unit 1 sixth refueling outage (scheduled for March 1994) and the Unit 2 sixth refueling outage (scheduled for September 1994). As part of Eagle 21 installation, a new steam line break protection functional upgrade will be implemented to accommodate the removal of the steam flow signals and the comparison of steam line pressures. These ESF actuation signals have historically been the source of inadvertent safety injection (SI) actuations. The new protection logic uses low pressure and high negative steam pressure rate setpoints in each steam line, without comparison between steam lines, to initiate mitigating actions for steam line break (SLB) scenarios. Included in the new steam line break protection logic is a steam line isolation (SLI) signal generated on high negative steam pressure rate below the P-11 Pressurizer Pressure Low (P-11) setpoint.

With the new SLB protection logic, SI and SLI on high steam line flow coincident with either low steam line pressure or Lo-Lo T_{avg} are deleted; SI on high steam line differential pressure would also be deleted. These would be replaced with SI and SLI on low steam line pressure and SLI on high negative steam pressure rate when below P-11. Manual block switches allow operators to switch from the low steam line pressure protection to steam line pressure rate during normal heatup and cooldown operations while in Mode 3 below P-11.

There is no DCPD specific accident analysis that credits mitigation via the Negative Steam Line Pressure Rate - High, trip function. With the exception of the Boron Dilution event, no licensing basis event is limiting at an RCS pressure below the P-11 setpoint.

The 100 psi setpoint with rate-lag time constants equal to 50 seconds is employed at most Westinghouse plants with new steam line break protection.

The setpoint was chosen such that the protection setpoint would not be reached during a normal cooldown (with allowance for short term perturbations) and yet would provide automatic protection for rapid steam line depressurizations consistent with steam line breaks.

While typical cooldown rates are on the order of 50 degrees F/hour, larger perturbations were considered such that a "bounding" setpoint of 2.0 psi/sec was selected. Analytical work performed for Westinghouse plants demonstrated this setpoint would be reached for a spectrum of steam line breaks. At a constant depressurization of 2.0 psi/sec in a steamline, the output from the rate-lag filter asymptotically approaches the trip setpoint of 100 psi. At constant rates of greater than 2.0 psi/sec, the output from the rate-lag filter will exceed the trip setpoint of 100 psi. A greater depressurization rate (e.g., 10 psi/sec) will result in a shorter period of time before the trip setpoint is exceeded.

The rate-lag time constants are input into the Eagle 21 algorithm code as τ_3 and τ_4 , both set equal to 50 seconds. To more adequately define the Negative Steam Pressure Rate - High function, the licensee is proposing to change the units of the setpoint and allowable value from psi/sec to psi and to add Note 3 to Table 3.3-4. The proposed Note 3 states: "Time constants utilized in the rate-lag controller for Negative Steam Pressure Rate - High are $\tau_3 = 50$ seconds and $\tau_4 = 50$ seconds." Additionally, the negative signs would be deleted from the numerical values for the trip setpoint and allowable value. Since the heading for functional unit 4.e. already indicates a "negative" rate of pressure change, the additional minus signs could cause confusion.

The changes proposed in this license amendment request more adequately define the trip setpoint and allowable values to be consistent with the original intent of License Amendments 84 and 83 and actual plant practice. These clarifying changes do not involve changes to the actual values themselves or the manner in which they are used. In addition, these proposed changes are consistent with other similar values' signs/units located within Table 3.3-4, i.e., functional unit 4.d., Steam Line Pressure - Low.

Based on the above, the staff finds the proposed changes acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the California State official was notified of the proposed issuance of the amendments. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

These amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released

offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (59 FR 9789). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: April 1, 1994