

March 16, 2000

Mr. Gregory M. Rueger
Senior Vice President and General Manager
Pacific Gas and Electric Company
Diablo Canyon Nuclear Power Plant
P. O. Box 3
Avila Beach, CA 93424

SUBJECT: INSERVICE INSPECTION RELIEF REQUEST - PRS-1D, REVISION 1, USE OF CODE CASE N-533-1, "ALTERNATE REQUIREMENTS FOR VT-2 VISUAL EXAMINATION OF CLASS 1, 2, AND 3 INSULATED PRESSURE-RETAINING BOLTED CONNECTIONS SECTION XI, DIVISION 1" - DIABLO CANYON POWER PLANT, UNIT NOS. 1 AND 2 (TAC NOS. MA7815 AND MA7850)

Dear Mr. Rueger:

By letter dated December 17, 1999, Pacific Gas and Electric Company submitted a new relief request PRS-1D, Revision 1, from the ASME Code Section XI requirements for the second ten-year interval for the Diablo Canyon Power Plant, Units 1 and 2 Inservice Inspection (ISI) Program. The NRC staff has reviewed and evaluated the information provided in the relief request and concluded that the alternatives discussed in the enclosed safety evaluation will provide an acceptable level of quality and safety. Therefore, the proposed alternative for relief request PRS-1D, Revision 1 is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the second ten-year inservice inspection interval.

The NRC staff's evaluation and conclusions are contained in the enclosed safety evaluation.

Sincerely

/RA/

Stephen Dembek, Chief, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-275
and 50-323

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE INSERVICE INSPECTION PROGRAM

PACIFIC GAS AND ELECTRIC COMPANY

DIABLO CANYON NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-275 AND 50-323

1.0 INTRODUCTION

By letter dated December 17, 1999, Pacific Gas and Electric Company (PG&E or the licensee) submitted a request for approval of an alternative to the ASME Boiler and Pressure Vessel Code Section XI requirements for the second ten-year interval for the Diablo Canyon Power Plant (DCPP), Units 1 and 2 Inservice Inspection (ISI) Program.

2.0 BACKGROUND

Inservice inspection of the American Society of Mechanical Engineers (ASME) Code Class 1, 2 and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel (B&PV) Code and applicable addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(6)(g)(i). Section 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2 and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first ten-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. For Diablo Canyon Power Plant, Units 1 and 2, the applicable edition of Section XI of the ASME Code for the second ten-year inservice inspection (ISI) interval is the 1989 Edition.

3.0 RELIEF REQUEST PRS-1D, REVISION 1, "ALTERNATE REQUIREMENTS FOR VT-2 VISUAL EXAMINATION OF CLASS 1, 2, AND 3 INSULATED PRESSURE-RETAINING BOLTED CONNECTIONS SECTIN XI, DIVISION 1"

The components for which relief is requested are:

Code Class: 1, 2 and 3
References: IWA-5242(a)
Examination Category: B-P, C-H, D-A, D-B and D-C
Description: Insulation removal at mechanical joints of borated systems.

Applicable Code requirement from which relief is requested:

IWA-5242(a) states, "Systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure retaining bolted connections for visual examination VT-2."

Licensee's Basis for Request (as stated):

Certain Class 2 system pressure tests are performed in Mode 3 at full system pressure and temperature up to 550 degrees F. Removal of insulation under these conditions poses a significant thermal hazard to plant personnel.

Inside containment, the additional handling of insulation and support equipment during Mode 3 may also increase the potential for introducing loose material that could be transported to the containment sump during operation.

RHR suction and discharge piping operates at elevated temperatures (approximately 350 degrees F at the highest normal operating pressure) that pose a thermal hazard to personnel who would be required to remove and install insulation during system operation including the pressure test. Also, during this operation, the radiation levels associated with the piping are considerably higher than with the system secured. However, this piping remains in operation only for a relatively short duration. Soon after the test at pressure is completed, the system is isolated and cooled down. Insulation could be removed for a VT-2 examination with the system depressurized at that time.

Code Case N-533-1 allows a system pressure test and VT-2 visual examination to be performed without removal of insulation. The insulation shall be removed from the bolted connection each period, and a VT-2 visual examination shall be performed. The connection is not required to be pressurized. Any evidence of leakage shall be evaluated in accordance with IWA-5250.

Licensee's Proposed Alternative Provisions (as stated):

PG&E will implement Code Case N-533-1 for the portions of Class 2 systems identified above. The examination with insulation removed (depressurized) would be performed no later than the outage following the test at pressure.

Licensee's Justification for Granting Relief (as stated):

Pressure tests are conducted at nominal operating pressure in accordance with Code Case N-498-1 and N-416-1, approved for use at Diablo Canyon Power Plant in accordance with NRC transmittals dated May 1, 1998, and June 13, 1995, respectively. The mechanical joints in systems are not subjected to excessively high pressures formerly associated with hydrostatic tests, and thus are not susceptible to leakage initiated from stress to the joint caused by the abnormally high hydrostatic test pressures.

Use of Code Case N-533-1 for these portions of the Class 2 systems eliminates the hazard to personnel associated with removing insulation on systems at high temperature during pressurization.

The proposed use of Code Case N-533-1 for the identified portions of Class 2 systems provides an equivalent level of quality and safety in accordance with 10 CFR 50.55a(a)(3)(i).

3.1 Evaluation

The Code requires the removal of all insulation from pressure-retaining bolted connections in systems borated for the purpose of controlling reactivity when performing VT-2 visual examinations during system pressure tests. For Class 1 systems, the Code requires this examination each refueling outage, while Class 2 and 3 systems are required to receive this examination each inspection period. As an alternative to the Code requirements, the licensee has proposed to use Code Case N-533-1, *Alternative Requirements for VT-2 Visual Examination of Class 1, 2 and 3 Insulated Pressure Retaining Bolted Connections, Section XI, Division 1* for borated Class 1, 2 and 3 systems at Diablo Canyon Power Plant, Units 1 and 2. This code case was originally written for Class 1 systems (Code Case N-533). The licensee has been authorized to implement an alternative examination similar to Code Case N-533 for Class 1 bolted connections in a safety evaluation dated May 1, 1998. The safety evaluation allows the licensees to perform the VT-2 visual examination with the insulation in place during a system pressure test following a minimum four-hour hold time, and requires the insulation be removed for direct visual examination for any evidence of leakage each outage for Class 1 bolted connections. Under the licensee's proposal for Class 2 and 3 systems, the code case rules would be the same except that the inspection frequency would be the Code required frequency of every inspection period as stated in Code Case N-533-1.

The staff finds for Class 1, 2 and 3 systems, the alternative in Code Case 533-1 provides an acceptable approach to ensuring the leak-tight integrity of systems borated for the purpose of controlling reactivity. The approach includes that a system pressure test and VT-2 visual examination will be performed each outage for Class 1 systems and each period for Class 2 and 3 systems. For the staff to find the use of this code case acceptable, the system pressure test will utilize a minimum four-hour hold time. The four-hour hold time will allow any leakage to penetrate the insulation, thus providing a means of detecting any significant leakage with the insulation in place. By removing the insulation each outage for Class 1 systems and each inspection period for Class 2 and 3 systems, the licensee will be able to detect minor leakage indicated by the presence of boric acid crystals or residue. The staff finds this two-step

approach will provide an acceptable level of quality and safety for bolted connections in borated systems.

3.2 Summary

The staff concludes that the use of Code Case N-533-1 for use on Class 1, 2 and 3 systems following a system pressure test with a minimum four-hour hold time is authorized pursuant to 10 CFR 50.55a(a)(3)(i). The alternative is authorized for the remainder of the second interval at Diablo Canyon Power Plant, Units 1 and 2 or until such time Code Case N-533-1 is published in a future revision of Regulatory Guide (RG) 1.147, "Inservice Inspection Code Case Acceptability—ASME Section XI, Division 1." At that time, if the licensee intends to continue to implement Code Case N-533-1, the licensee should follow all the provisions in Code Case N-533-1 with the limitations issued in RG 1.147, if any.

4.0 CONCLUSION

The staff has reviewed the licensee's relief request and HAS determined that the licensee's alternative will provide an acceptable level of quality and safety. Therefore, the proposed alternative for relief request number PRS-1D, Revision 1 is authorized pursuant to 10 CFR 50.55a(a)(3)(i) for the remainder of the second ten-year inservice inspection interval.

Principal Contributor: Steve Bloom, PDIV-2/NRR

Date: March 16, 2000