



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

September 18, 2015

Mr. Edward D. Halpin
Senior Vice President and Chief Nuclear Officer
Pacific Gas and Electric Company
Diablo Canyon Power Plant
P.O. Box 56, Mail Code 104/6
Avila Beach, CA 93424

SUBJECT: DIABLO CANYON POWER PLANT, UNIT NOS. 1 AND 2 – REQUEST FOR APPROVAL OF INSERVICE INSPECTION REQUEST FOR RELIEF PRS-3, ASSOCIATED WITH CLASS 1 PIPING BETWEEN FIRST AND SECOND VENT, DRAIN, AND TEST ISOLATION DEVICES (TAC NOS. MF6520 AND MF6521)

Dear Mr. Halpin:

By letter dated July 28, 2015, as supplemented by letter dated September 14, 2015, Pacific Gas and Electric Company (the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for the approval of inservice inspection (ISI) request for relief PRS-3, for the Diablo Canyon Power Plant (DCPP), Units 1 and 2, third 10-year ISI program interval. The relief request is based on the hardship of applying the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, requirements for visual examination.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) paragraph 50.55a(z)(2), the licensee requested relief from Article IWB-5222(b) of Section XI of the ASME Code regarding pressure-retaining boundary for the system leakage test, on the basis that complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The NRC staff has completed its review of the relief request as discussed in the enclosed safety evaluation. The NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2). The NRC staff has determined that the proposed alternative provides reasonable assurance of structural integrity of the subject components and that complying with the requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Therefore, the NRC staff authorizes the use of the proposed alternative for the remainder of the third 10-year ISI interval at DCPP, Units 1 and 2.

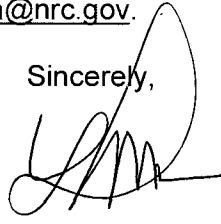
All other ASME Code, Section XI requirements for which relief was not specifically requested and authorized in the subject proposed alternative remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

E. Halpin

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If you have any questions, please contact the DCPD Project Manager, Siva P. Lingam, at 301-415-1564 or via e-mail at Siva.Lingam@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to be 'M. Markley', written over a large, loopy 'S' that extends from the word 'Sincerely'.

for

Michael T. Markley, Chief
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosure:
Safety Evaluation

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR ALTERNATIVE PRS-3 FOR THE
THIRD 10-YEAR INSERVICE INSPECTION INTERVAL
PACIFIC GAS AND ELECTRIC COMPANY
DIABLO CANYON POWER PLANT, UNITS 1 AND 2
DOCKET NOS. 50-275 AND 50-323

1.0 INTRODUCTION

By letter dated July 28, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15209A956), as supplemented by letter dated September 14, 2015 (ADAMS Accession No. ML15257A471), Pacific Gas and Electric Company (the licensee) requested relief from certain requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), for the third 10-year inservice inspection (ISI) program at Diablo Canyon Power Plant (DCPP), Units 1 and 2. The licensee submitted Relief Request PRS-3 as an alternative for system leakage testing conducted at or near the end of the inspection interval.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, paragraph 50.55a(z)(2), the licensee requested relief from Article IWB-5222(b) of Section XI of the ASME Code regarding pressure-retaining boundary for the system leakage test, on the basis that complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.55a(g)(4) specify that ASME Code Class 1, 2, and 3 components (including supports) must meet the requirements, except design and access provisions and preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for In-service Inspection (ISI) of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components.

Pursuant to 10 CFR 50.55a(z), alternatives to the ASME Code requirements may be authorized by the U.S. Nuclear Regulatory Commission (NRC) if the licensee demonstrates that: (1) the proposed alternative provides an acceptable level of quality and safety, or (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Enclosure

Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request the use of an alternative and the NRC to authorize the alternative proposed by the licensee.

3.0 TECHNICAL EVALUATION

3.1 Licensee Relief Request

3.1.1 Component Identification

The components affected by this request include ASME Code Class 1 piping system vent, drain, and test connection segments between first-off and second-off isolation valves.

The components for which an alternative is proposed are identified in Tables 1 and 2 of the licensee's letter dated July 28, 2015, which identify the components for DCP, Units 1 and 2, respectively.

3.1.2 Code Requirements for Which Relief is Requested

The Code of record for the third ISI interval for both Units 1 and 2 is the ASME Code, Section XI, 2001 Edition with 2003 Addenda.

ASME Code, Section XI, IWB-2500, Table IWB-2500-1, Examination Category B-P, establishes requirements to conduct the system leakage test and the VT-2 visual examination in accordance with IWB-5220 and IWA-5240, respectively, prior to plant startup following each refueling outage. In accordance with IWB-5221(a), the system leakage test shall be conducted at a pressure not less than the pressure corresponding to 100 percent rated reactor power.

By letter dated July 28, 2015, the licensee stated, in part, that:

Paragraph IWB-5222(a) requires the pressure retaining boundary during the system leakage test shall correspond to the reactor coolant boundary, with all valves in the position required for normal reactor operation startup. The visual examination shall extend to and include the second closed valve at the boundary extremity. Paragraph IWB-5222(b) requires the pressure retaining boundary during the system leakage test conducted at or near the end of each inspection interval extend to all Class 1 pressure retaining components within the system boundary.

3.1.3 Licensee's Proposed Alternative

As an alternative to IWB-5222(b), the licensee proposes to use the boundary prescribed by IWB-5222(a), which is the requirement of ASME Code Case N-798, "Alternative Pressure Testing Requirements for Class 1 Piping between the First and Second Vent, Drain, and Test Isolation Devices." The NRC staff unconditionally approved ASME Code Case N-798 in NRC Regulatory Guide (RG) 1.147, Revision 18, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1"; however, the rulemaking is not expected to be published until

October 2015. As such, use of the code case as an alternative to the ASME Code, Section XI, requires the NRC pre-authorization.

By letter dated July 28, 2015, the licensee stated, in part, that:

Code required VT-2 examinations of the Class 1 system are performed each refueling outage during the system leakage test. Each line segment listed in Table 1 and Table 2 will be visually inspected during the system leakage test; however, the line segments will not be pressurized to full system pressure. Pressure may exist due to upstream valve leak by and thermal effects.

3.1.4 Licensee's Duration of Relief Request

By letter dated September 14, 2015, the licensee stated, in part, that:

Relief is requested for the remainder of the DCP Unit 1 and Unit 2 third [ISI] intervals. The DCP Unit 1 third inspection interval nominally would have ended on May 6, 2015, but is being extended through November 6, 2015 to include the Unit 1 nineteenth refueling outage (1R19) as provided in ASME Section XI Paragraph IWA-2430(d). The DCP Unit 2 third inspection interval is nominally scheduled to end on March 12, 2016. Actual end dates of the interval are dependent on the completion dates of the 19th refueling outages for each unit, in accordance with ASME Section XI, paragraph IWA-2430(d)(1).

3.1.5 Licensee's Basis for Relief

The licensee submitted the request for alternative on the basis of hardship or unusual difficulty.

By letter dated July 28, 2015, the licensee stated, in part, that:

The DCP line segments between the manual isolation valves (or between the manual isolation valve and blind flange) serve as open- or closed-end vent, fill, drain, or test lines. All of the segments are short, the closed end drains less than 18 inches and the open end segments less than 12 inches on average; and small diameter, being 3/4 inch [nominal pipe size (NPS)], 1 inch NPS, or 2 inch NPS as listed in Tables 1 and 2. The vent, drain, and test connection valves in normal alignment are closed and none of the isolation valves are capable of automatic actuation. The line segments are not normally pressurized. Line pressure may exist due to first-off valve leak by and thermal effects.

Paragraph IWB-5222(b) requires the pressure retaining boundary during the system leakage test conducted at or near the end of each inspection interval shall extend to all Class 1 pressure retaining components within the system boundary. Relief is requested for the following reasons:

- a) Using system pressure to test these line segments would require opening the first-off manual valve in Mode 3 (Hot Standby) to

pressurize between the two valves or valve and blind flange. However, pressure testing in this manner would result in violation of the Class 1 system requirement for double isolation valve protection.

- b) For the closed end line segments, costly system modifications would be required to cut into the system and weld in test connections with open ended isolation valves at each location, and concurrent unnecessary radiation exposure to personnel, in order to permit pressurization with a hydro pump during Mode 6 (Refueling). Testing these closed end drain segments without modification would require defueling the reactor, reclosing and repressurizing the primary system with the first-off valves open, thus extending the outage critical path by approximately ten days. Both of these options constitute extreme hardships with no compensating increase in safety.
- c) For the open ended line segments, testing in Mode 6 without modification is possible because the lines are provided with test connections and inboard isolation. However, pressurizing each line segment to the nominal reactor coolant system operating pressure would require use of a hydro pump at each of the locations. This would result in radiation exposure to plant personnel and increase the risk of contaminated liquid spill. All of these locations are in radiation areas. Staging the hydro pump, providing access, removing the pipe cap, opening the second off valve, filling and pressurizing the line segment, inspecting, depressurizing and restoring the system, securing the equipment, and disposing of effluent would result in radiation exposure at each location dependent upon dose rates. The dose rates at these locations may change depending on changing conditions and on-going evolutions in nearby areas. This radiation exposure would also constitute a hardship with no compensating increase in safety.

3.2 NRC Staff Evaluation

The NRC staff has evaluated PRS-3 pursuant to 10 CFR 50.55a(z)(2). The NRC staff focused on whether compliance with the specified requirements of 10 CFR 50.55a(g), or portions thereof, would result in hardship or unusual difficulty, and if there is a compensating increase in the level of quality and safety despite the hardship.

The NRC staff determined that requiring the licensee to conduct the IWB-5222(b) required system leakage test of the reactor coolant system (RCS) vents and drains piping segments at 100 percent rated reactor power would result in hardship. By imposing the IWB-5222(b) requirement, the licensee has to manually open the inboard valve to pressurize the RCS vent and drain piping, which places the plant in abnormal conditions. The inability to depressurize the piping after completion of the test is an additional difficulty and a concern to personnel safety. Opening of the inboard valve defeats the double isolation criteria. Furthermore, both opening the valve and performing the ASME Code, Section XI, compliant test would expose the

licensee's personnel to additional radiation dose, which would be an 'as low as reasonably achievable' concern.

For the RCS vents and drains piping segments, the NRC staff concludes that the proposed system leakage testing is acceptable because the piping between the first and second isolation valve normally remains closed during plant operation and the downstream of the inboard valve is not pressurized. The NRC staff concludes that performing the proposed system leakage testing with all valves in the position required during plant startup, and extending the required VT-2 visual examinations to include the second (outboard) closed valve, provides reasonable assurance of structural integrity and leak tightness of the subject RCS vents and drains piping segments.

ASME Code Case N-798 allows the use of IWB-5222(a) for defining the pressure test boundary as an acceptable alternative to the extended pressure test boundaries of IWB-5222(b). The NRC will unconditionally accept ASME Code Case N-798 in RG 1.147 by proposed rulemaking (10 CFR 50.55a) that is expected to be published in October 2015.

Based on the above, the NRC staff concludes that complying with the requirement specified in IWB-5222(b) would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The NRC staff also concludes that the licensee's proposed alternative is acceptable and provides a reasonable assurance of the structural integrity and leak tightness of the subject piping segments.

4.0 CONCLUSION

As set forth above, the NRC staff determines that the proposed alternative provides reasonable assurance of structural integrity of the subject components and that complying with the requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2). Therefore, the NRC staff authorizes the use of the proposed alternative for the remainder of the third 10-year ISI interval at DCCP, Units 1 and 2.

All other ASME Code, Section XI, requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: Margaret Audrain, NRR

Date: September 18, 2015

E. Halpin

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If you have any questions, please contact the DCPD Project Manager, Siva P. Lingam, at 301-415-1564 or via e-mail at Siva.Lingam@nrc.gov.

Sincerely,

/RA Lisa Regner for/

Michael T. Markley, Chief
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-275 and 50-323

Enclosure:
Safety Evaluation

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