



**Pacific Gas and  
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PG&E Letter DCL-10-051

10 CFR 50.55a

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Docket No. 50-275, OL-DPR-80  
Diablo Canyon Power Plant (DCPP) Unit 1  
ASME Section XI Inservice Inspection Program Relief Request NDE-RCS-SE-1R16  
to Allow Use of Alternate Sizing Qualification Criteria

Dear Commissioners and Staff:

Pursuant to 10 CFR 50.55a(a)(3)(i), Pacific Gas and Electric Company (PG&E) hereby requests NRC approval of Inservice Inspection (ISI) Relief Request NDE-RCS-SE-1R16 for the DCPP Unit 1 Sixteenth Refueling Outage (1R16). The details of the request are enclosed.

This request for relief is associated with the use of an alternative to the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, Appendix VIII, Supplement 10 as modified by Code Case N-695 "Qualification Requirements for Dissimilar Metal Piping Welds."

To support the examinations to be performed in the upcoming 1R16 refueling outage scheduled for October 2010, PG&E requests approval of Relief Request NDE-RCS-SE-1R16 by September 15, 2010.

PG&E makes no regulatory commitments (as defined by NEI 99-04) in this letter.

If you have any questions or require additional information, please contact Tom Baldwin at (805) 545-4720.

Sincerely,

James R. Becker

tcg/4231  
Enclosure



cc: Diablo Distribution  
cc/enc: Elmo E. Collins, Regional Administrator, NRC Region IV  
Michael S. Peck, NRC Senior Resident Inspector  
Alan B. Wang, Project Manager, Office of Nuclear Reactor Regulation  
State of California, Pressure Vessel Unit

**10 CFR 50.55a Relief Request NDE-RCS-SE-1R16**

**Proposed Alternative  
in Accordance with 10 CFR 50.55a(a)(3)(i)**

--Alternative Provides Acceptable Level of Quality and Safety--

1. ASME Code Components Affected

Relief is requested for reactor vessel nozzle-to-safe-end welds when examined from the inside diameter with procedures, personnel and equipment qualified to American Society of Mechanical Engineering (ASME) Section XI, Appendix VIII, Supplement 10, as modified by Code Case N-695. The affected components are shown below. See Figure 1 for safe-end general configuration and materials.

Code Cat./ Item No.	Description	Weld Number	Line Inside Diameter
R-A, R1.20	Loop 1 outlet nozzle-to-safe-end	WIB-RC-1-1(SE)	29"
	Loop 1 inlet nozzle-to-safe-end	WIB-RC-1-18(SE)	27.5"
	Loop 2 outlet nozzle-to-safe-end	WIB-RC-2-1(SE)	29"
	Loop 2 inlet nozzle-to-safe-end	WIB-RC-2-20(SE)	27.5"
	Loop 3 outlet nozzle-to-safe-end	WIB-RC-3-1(SE)	29"
	Loop 3 inlet nozzle-to-safe-end	WIB-RC-3-18(SE)	27.5"
	Loop 4 outlet nozzle-to-safe-end	WIB-RC-4-1(SE)	29"
	Loop 4 inlet nozzle-to-safe-end	WIB-RC-4-18(SE)	27.5"

2. Applicable Code Edition and Addenda

The Diablo Canyon Third Inservice Inspection Interval Program plan is based on the ASME Boiler and Pressure Vessel Code, Section XI, 2001 Edition with 2003 Addenda. Appendix VIII ultrasonic piping examinations are performed in accordance with the Section XI, 2001 Edition without Addenda.

3. Applicable Code Requirement

Examination Category R-A, Item R.120 (formerly Code Category B-F, B5.10 in the 2001 Edition through 2003 Addenda) specifies volumetric examination. This volumetric examination is to be conducted in accordance with Appendix VIII, Supplement 10 in the 2001 Edition of Section XI, no Addenda.

4. Reason for Request

Relief is requested from the 0.125 inch root mean square error (RMSE) depth sizing accuracy requirement of Appendix VIII, Supplement 10, as modified by the requirements of Code Case N-695.

To date, although examination vendors have qualified for detection and length sizing in accordance with the requirements for examinations from the inside diameter (ID), the vendors have not met the established RMSE of 0.125 inch for depth sizing.

The examination vendor contracted to perform reactor coolant system nozzle-to-safe-end examinations at Diablo Canyon Power Plant (DCPP) has demonstrated the ability to depth size indications in dissimilar metal welds with a RMSE of 0.189 inches instead of the 0.125 inch RMSE required by Appendix VIII Supplement 10 and Code Case N-695.

DCPP will perform examinations of both hot and cold leg safe end welds in the Unit 1 Sixteenth Refueling Outage (1R16) to satisfy the requirements of MRP-139 R1, "Materials Reliability Program: Primary System Piping Butt Weld Inspection and Evaluation Guideline." MRP-139 specifies that ASME XI, Appendix VIII criteria be used for volumetric examination of safe-end dissimilar metal welds.

Flaw indications detected in ASME Code piping during MRP-139 examinations require evaluation in accordance with applicable Code acceptance criteria. As such, relief from the Code specified RMSE value for depth sizing accuracy is necessary to support evaluation of findings from MRP-139 examinations when conducted from the inside surface.

The current 1R16 inspection plan will employ inside surface examination technology for the hot leg safe-end welds while the cold leg safe end welds will be examined from the outside surface. Contingency plans allow for inspection of the cold leg welds from the inside surface if deemed necessary.

5. Proposed Alternative and Basis for Use

PG&E proposes to use approved Code Case N-695 with the demonstrated RMSE of 0.189 inches for ID examination of the nozzle-to-safe-end welds in lieu of the specified 0.125 inch RMSE. In the event an indication that requires sizing is detected, the 0.064 inch difference between the demonstrated RMSE and the required RMSE (0.189 inches - 0.125 inches = 0.064 inches) will be added to the measured through-wall (TW) extent for comparison with the applicable acceptance criteria.

The ID ultrasonic examination technology used to examine these welds has not evolved significantly since the most recent qualification efforts. Therefore, additional attempts to improve the depth sizing RMSE accuracy are not likely to result in improved performance at this time. If advances in technology are realized and the contracted examination vendor demonstrates an improved RMSE for the Supplement 10 prior to the examinations, the difference of the improved RMSE over the 0.125 inch RMSE requirement, if any, will be added to the measured TW dimension of indications requiring sizing before comparison to the applicable acceptance criteria.

All welds included in this request have been previously examined from the ID with an Appendix VIII qualified detection process in the Unit 1 thirteenth refueling outage. The ultrasonic examinations were supplemented by surface profilometry and eddy current testing. Greater than 90 percent coverage of the required exam areas was achieved in all cases. This history confirms that the inside surface profile of these welds is suitable for ultrasonic examination from the ID in accordance with the referenced requirements as modified by the proposed alternative sizing requirements. PG&E will use the same exam process of ultrasonic examination supplemented by surface profilometry and eddy current testing for examinations in the 1R16 refueling outage where examinations are performed from the inside diameter.

The proposed alternatives assure that examination of the DCP Unit 1 reactor coolant nozzle-to-safe-end welds, when examined from the inside diameter, are performed using personnel, procedures, and equipment qualified by demonstration in all aspects except depth sizing. The addition of the difference between demonstrated and required RMSE values will compensate for the potential sizing variation and provides an acceptable level of quality and safety in accordance with 10 CFR 50.55a (a)(3)(i).

6. Duration of Proposed Alternative

The duration of the proposed alternative is for a single use in the 1R16 refueling outage in the event sizing of indications is required.

7. Precedent

The proposed alternative method of adding the difference between the demonstrated and required RMSE values to the measured indication depth was approved for the Comanche Peak and Wolf Creek Stations by NRC letters dated September 18, 2008 (ADAMS Accession No. ML082490050), and July 23, 2009 (ADAMS Accession No. ML091680414), respectively.

### DCPP Unit 1 Sketch of Hot Leg and Cold Leg Safe-End General Configuration

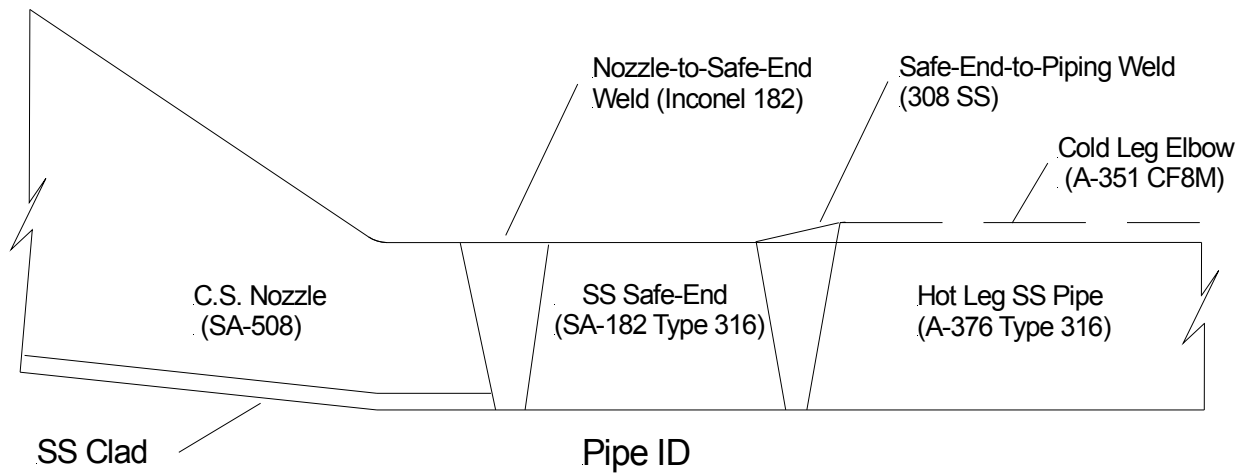


Figure 1