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SUBJECT: ForwardsISI relief request for units 1 & 2 to use ASME Code Case N-533, "Alternative Requirements for VT-2 Visual Exam of Class I Insulated Pressure-Retaining Bolted Connections, Section XI,Div 1."

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May 2, 1997

PG&E Letter DCL-97-082

U.S. Nuclear Regulatory Commission
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Washington, DC 20555

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Power Plant Units 1 and 2
Inservice Inspection Relief Request - Use of ASME Code Case N-533, Alternative Requirements for VT-2 Visual Examination of Class I Insulated Pressure-Retaining Bolted Connections, Section XI, Division 1

Dear Commissioners and Staff:

Pursuant to 10 CFR 50.55a(g)(5)(iii), enclosed is an Inservice Inspection (ISI) relief request for Units 1 and 2 to use ASME Code Case N-533. The request is limited to the examination of three pressurizer relief valve (PRV) flange connections, beginning with the Unit 1 eighth refueling outage (1R8). Code Case N-533 is an approved alternative to the requirements of the 1989 Edition Code IWA-5242, which requires insulation be removed from Class I pressure retaining bolted connections to perform VT-2 visual examinations.

PG&E removed the three PRVs located at the top of the pressurizer during 1R8 in order to perform surveillance testing at an offsite facility. The PRVs and insulation required for proper operation of the valves will be reinstalled with the reactor coolant system (RCS) depressurized and cooled.

The VT-2 examinations are required to be performed with the RCS at normal operating pressure and normal operating temperature. This produces ambient conditions at the top of the pressurizer which are physically demanding on personnel due to the adverse environment. Ambient temperatures in the PRV area can be as high as 130°F and radiological fields vary from approximately 30 to 50 millirem/hour. Stay times for personnel may be less than 1 hour and would require multiple containment entries to remove insulation, perform the VT-2 examination, and re-install the insulation. Performing the VT-2 examination using Code Case N-533 will reduce personnel entries to the minimum required to perform the VT-2 inspection and reduce personnel heat stress and radiological exposure risks.

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In accordance with 10 CFR 50.55(a)(3), proposed alternative testing may be used when authorized by the Director of the Office of Nuclear Reactor Regulation when the proposed alternative test provides;

- an acceptable level of quality and safety, or
- the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

PG&E believes the limited use of the industry approved Code Case N-533 results in an acceptable alternative leakage test and avoids the personnel hardships without a compensating increase in the level of quality and safety. Code Case N-533 has been previously approved for use at Florida Power and Light Company's St. Lucie Unit 2, Omaha Public Power District's Fort Calhoun Station, and Indiana Michigan Power's D. C. Cook Units 1 and 2.

PG&E requests that the NRC approve this relief request prior to completing PRV leakage testing during 1R8, currently scheduled to be performed May 19, 1997.

Sincerely,

J E Molden for

Robert P. Powers

cc: Steven D. Bloom
Ellis W. Merschoff
Kenneth E. Perkins
Michael D. Tschiltz
Diablo Distribution

Enclosure

DDM/469

Enclosure
PG&E Letter DCL-97-082

INSERVICE INSPECTION (ISI) RELIEF REQUEST #PRS-1B

System/Component For Which Relief Is Requested

Pressurizer relief valve flange joints.

Pressure Test Requirement For Which Relief Is Requested

Removal of insulation at bolted connections of the pressurizer relief valves during VT-2 visual examination.

ASME Section XI Code Requirements

ASME 1989 Edition, Table IWB-2500-1, Category B-P, items B15.10 and B15.11 require a system leakage test (IWB-5221) every refueling outage for those components which have been opened and reclosed (IWA-5211[a]), except that a system hydrostatic test (IWB-5222) is required instead once during the ten year interval. Visual examination VT-2 is required in conjunction with these pressure tests. Article IWA-5000, paragraph IWA-5242, requires that for insulated systems borated for the purpose of controlling reactivity, the insulation shall be removed from pressure retaining bolted connections for VT-2 visual examination.

Code Requirement From Which Relief Is Requested

Relief is requested from removing insulation for performance of VT-2 visual examination on the pressurizer relief valve flange joints.

Basis for Relief Request

At the completion of each refueling outage, prior to startup, a system leakage test (or system hydrostatic test) is required per IWB-5221 (or IWB-5222). This test will include the pressurizer relief valve joints which are normally insulated; therefore, the Code would require the insulation be removed for VT-2 visual examination.

Code Case N-533 modifies the requirement for removal of insulation while pressurized and allows the removal of insulation and inspection of the bolted connections to be conducted after depressurization.

Basis for Relief Request (continued)

The pressurizer relief valves are located at the top of the pressurizer on approximately the 165' elevation. The valves are bolted to the loop seal piping flanges using 1 3/8" diameter SA 564 Type 630 bolting. The environment in this application is not conducive to primary water stress corrosion cracking of this bolting material.

The pressurizer relief valve insulation is critical in maintaining design basis temperature profiles in the pressurizer loop seal as required in NUREG 0737. The loop seal and its associated pressurizer nozzle is designed to provide a water seal under the safety valve seat. Condensate accumulates in this loop as a result of normal heat losses to ambient, forming the water seal in the looped piping. Temperature requirements for the loop seals are based on keeping the water on the loop seal near saturation temperature and at a lower density. This minimizes water hammer and allows most of the water to flash to steam when discharged through the safety valves, thus protecting the downstream piping from extreme stresses. The insulation surrounding the looped piping is designed to maintain the loop seal water temperature above 260°F and valve body temperatures to less than 350°F to meet these temperature requirements. Experience at Diablo Canyon Power Plant (DCPP) has found that establishing the proper temperature profiles requires the precise installation of this insulation.

Removal/replacement of this insulation poses considerable personnel hazards due to the limited accessibility and high operating temperatures. At normal operating temperature and pressure the pressurizer cubicle ambient temperature runs approximately 130°F. This requires personnel to use welder's gloves and protective footwear to avoid melting rubber anti-contamination gloves and boots. Coupled with the narrow ladder access from the 140' elevation, this poses severe risks to personnel hauling insulation up the ladder and working in cumbersome protective apparel in this hot environment to reinstall insulation. Removal and reinstallation of the insulation in these extreme environmental conditions is impractical and would increase the potential for installation errors and personnel injury.

Proposed Alternative

Following return to NOP/NOT, the system leakage test (or system hydrostatic test) on the relief valves will be performed with a 4 hour hold time to assure that any leakage will be detectable without the removal of the insulation. The pressurizer relief valve joint insulation will not be removed for performance of VT-2 visual examination until the next scheduled maintenance on the relief valves during the following refueling outage, as allowed per Code Case N-533.

Justification for Granting of Relief

The examinations conducted at NOP/NOT after a 4 hour hold time, as mandated by the previous Section XI Code edition used by DCPP, provide adequate assurance of detecting conditions that may be adverse to quality. The use of Code Case N-533 provides a reasonable approach to maintaining a high level of examination sensitivity without the hazards involved with insulation removal and replacement at high temperatures and pressures.

Requiring removal of the insulation for direct VT-2 is impractical and would cause an extreme burden on PG&E with no increase in quality and no commensurate benefit to the health and safety of the public.

Implementation Schedule

This relief request will be implemented during Units 1 and 2 second ISI intervals. The examinations will be performed every refueling outage.

This is a new request based on the 1989 Code requirement.