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SUBJECT: Forwards ISI relief request to use ASME Code Case N-498-1, allowing visual exam at nominal sys pressure in lieu of hydrostatic pressure.

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April 18, 1995

PG&E Letter DCL-95-085

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Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Inservice Inspection Relief Request - Hydrostatic Testing:
Use of ASME Code Case N-498-1

Gentlemen:

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-498-1, beginning with the Unit 1 seventh refueling outage (1R7). Code Case N-498-1 allows visual examination at nominal system pressure in lieu of the hydrostatic pressure. Compliance with the Code hydrostatic test pressure requirements for Class 3 systems would result in hardships without a compensating increase in the level of quality and safety.

PG&E requests that the NRC approve this relief request prior to 1R7, which is scheduled to begin in late-September 1995.

Sincerely,

Gregory M. Rueger

cc: L. J. Callan
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Enclosure

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ENCLOSURE

INSERVICE INSPECTION RELIEF REQUEST

System/Component for which Relief is Requested

ASME Class 3 pressure retaining boundary.

ASME Section XI (Code) Requirements

The applicable edition of Section XI of the ASME Code for Diablo Canyon Power Plant Unit 1 and Unit 2 first 10-year Inservice Inspection (ISI) Interval is the 1977 Edition, with Addenda through Summer 1978. Table IWD-2500-1, Categories D-A, D-B, and D-C require visual (VT-2) examination of the pressure retaining boundary during a hydrostatic test at or near the end of the inspection interval.

Code Requirement from which Relief is Requested

Relief is requested from pressurizing the Class 3 systems to hydrostatic pressure before performance of the VT-2 examination.

Basis for Relief Request

Code Case N-498 is generically approved and modifies the requirement for hydrostatic testing (ref. Reg. Guide 1.147, Rev. 9, April 1992) for Code Class 1 and 2 systems. This requirement is contained in the latest approved 1989 Edition of the Code.

The extension of this concept to Code Class 3 systems, as approved in Code Case N-498-1, is based on the potential to damage system components during hydrostatic tests and the increased safety risk to personnel performing the tests. The special pumps, test preparation, and system breaches that are required for hydrostatic test pressurization increase the effort required for hydrostatic testing compared to nominal operating pressure testing. Based on industry experience, the increase in system pressure during a hydrostatic test is no more conducive to detection of leaks than pressurization to nominal operating pressure.

Piping components are designed for a number of loadings that are postulated to occur during the various modes of plant operation. Code hydrostatic testing subjects the piping components to a small increase in pressure over the nominal operating pressure and is not intended to present a significant (potentially destructive) challenge to pressure boundary integrity. Accordingly, hydrostatic pressure testing is primarily regarded as a means to enhance leakage detection during the examination of components under pressure, rather than solely as a measure to determine the structural integrity of the components.

Industry experience has demonstrated that leaks are not discovered as a result of hydrostatic test pressures propagating a pre-existing flaw through a pipe wall. In most cases, leaks are found when the system is at normal operating pressure. At Diablo Canyon, hydrostatic pressure testing is required only upon installation and then once every 10-year inspection interval for Class 1, 3, and portions of the Class 2 boundary, while system leakage tests at nominal operating pressures are conducted a minimum of once each refueling outage for Class 1 systems, and once each 40-month inspection period for Class 3 and the remainder of Class 2 systems. In addition, leaks may be identified during routine system walkdowns by plant operators.

Although Section XI hydrostatic testing would not impair the structural integrity of the pressure boundary, it has the potential to initiate leak sites at mechanical connections (valve packing glands, flange joints), which are acceptable during the test but could continue to leak after return to service. Such leaks may have minimal safety significance but may result in additional effort for containment, cleanup, and disposal of the leakage. Also, the potential for spills, contamination, and longer personnel exposure time in radiation areas are not justified when compared to testing performed at normal operating conditions.

Proposed Alternative

In lieu of Code-required hydrostatic pressure inspection, PG&E proposes to perform the required visual examination (VT-2) at the same frequency currently required, except that the test would be performed at nominal system pressure in accordance with Code Case N-498-1 for Class 3 systems.

Justification for Granting of Relief

Compliance with Code requirements for hydrostatic pressure testing of Class 3 systems imposes an undue burden with no compensating benefit in quality or safety. Modification of the hydrostatic pressurization requirement has been generically approved for Code Class 1 and 2 systems. The same reasons also apply to Class 3 systems. The primary justification is that leaks are effectively as detectable at nominal system operating pressure as at the somewhat elevated hydrostatic pressure. Testing at nominal system pressure usually eliminates the need to use special pumps and equipment for performance of the test and the need to breach the system, which may contain hazardous or radioactive material.

Implementation Schedule

This relief request will be implemented immediately on approval. It is desired that it be approved prior to the Unit 1 and Unit 2 seventh refueling outages (1R7 and 2R7, scheduled to begin late-September 1995 and March 1996, respectively), which are the last refueling outages in the first 10-year ISI interval for Units 1 and 2.