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PG&E Letter DCL-00-099

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

Docket No. 50-275, OL-DPR-80  
Docket No. 50-323, OL-DPR-82  
Diablo Canyon Units 1 and 2  
Inservice Inspection Relief Request - Visual Examination #CNT-L1, R2

Dear Commissioners and Staff:

Enclosed is a revised Inservice Inspection relief request (RR) for Diablo Canyon Power Plant Units 1 and 2 regarding visual examinations of the concrete containment surface minimum illumination, maximum examination distance, and procedure demonstration character height specified in IWL-2310, IWA-2210 and Table IWA-2210-1.

PG&E submitted RR #CNT-L1 as part of PG&E Letter DCL-00-047, dated March 31, 2000, and revised RR #CNT-L1, R1, via PG&E Letter DCL-00-093, dated June 16, 2000. Based upon discussions with NRC personnel, this relief is revised to incorporate American Concrete Institute guidance to be used by the Registered Professional Engineer when determining the necessary examination distance and illumination. The changes made are identified with revision bars.

PG&E requests that the NRC assign a medium priority and approve this RR prior to the potential need during concrete examinations to be performed during the Unit 2 tenth refueling outage, which is currently scheduled to begin May 1, 2001; and if possible prior to the Unit 1 tenth refueling outage, which is currently scheduled to begin October 8, 2000.

Sincerely,

David H. Oatley

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cc: Steven D. Bloom  
Ellis W. Merschoff  
David L. Proulx  
State of California  
Diablo Distribution

Enclosure

DDM/469/A0502111

## **INSERVICE INSPECTION (ISI) RELIEF REQUEST #CNT-L1, R2**

### System/Component for Which Relief is Requested

The exterior concrete portion of Diablo Canyon Power Plant (DCPP) Units 1 and 2 containment buildings.

### ASME Section XI Code Requirements for which Relief is Requested

ASME Code, Section XI, 1992 Edition, 1992 Addenda, paragraph IWL-2310, "Visual Examination and Personnel Qualification," and IWA-2210, "Visual Examinations," require specific minimum illumination and maximum direct examination distance for all concrete surfaces and maximum procedure demonstration lower case character height. The concrete portion of the containment buildings at DCPP Units 1 and 2 are subject to the rules and requirements for ISI of Class CC components, Examination Category L-A, Concrete, Item L1.11, as applicable to IWL-2310, "Visual Examination and Personnel Qualification," and IWA-2210, "Visual Examinations."

### Code Requirement from Which Relief is Requested

Relief is requested from the IWL-2310 requirement to use the minimum illumination, maximum direct examination distance, and maximum procedure demonstration lower case character height specified in IWA-2210 and Table IWA-2210-1 for VT-3 examinations, when performing visual examinations (VT-3C) of the concrete containment surface.

### Basis for Relief Request

The VT-3 requirements specified in IWA-2210 and Table IWA-2210-1 were developed for the examination of components such as Class 1 pump and valve bodies, the Class 1 reactor pressure vessel interior, Class 3 welded attachments, and Class 1, 2, and 3 supports. These VT-3 examinations are conducted to determine the general mechanical and structural condition of components and their supports by verifying parameters such as clearances, settings, and physical displacements. Additionally, VT-3 examinations are conducted to detect discontinuities and imperfections, such as loss of integrity at bolted or welded connections, loose or missing parts, debris, corrosion, wear, or erosion. For these Class 1, 2, and 3 components, small amounts of corrosion/erosion or small crack-like surface flaws may be detrimental to the structural integrity of the component.

## **INSERVICE INSPECTION (ISI) RELIEF REQUEST #CNT-L1, R2**

### Basis for Relief Request (continued)

The 1989 Code does not incorporate this level of detail for minimum illumination, maximum examination distance or procedure qualification, has proven fully adequate to detect such relevant conditions in Class 1, 2 and 3 components, and continues to be universally implemented for these examinations. Also, it was recognized by the industry and the NRC during the development of the implementing rules in 10 CFR 50.55a that IWA-2210 and Table IWA-2210-1 requirements were excessively stringent for the IWE-required examination of the metal portion of the containment. Therefore, the NRC changed the requirements to allow that "When performing remotely the visual examinations required by Subsection IWE, the maximum direct distance specified in Table IWA-2210-1 may be extended and the minimum illumination requirements specified in Table IWA-2210-1 may be decreased provided that the conditions or indications for which the visual examination is performed can be detected at the chosen distance and illumination."

PG&E has concluded that the use of the VT-3 requirements found in IWA-2210 and Table IWA-2210-1 when performing VT-3C examinations of the concrete surfaces is also excessively stringent and should not be applied. This is based on the recognition that due to the nature of concrete, a concrete containment will have numerous, small "shrinkage-type" surface cracks or other imperfections that are not detrimental to the structural integrity of the containment. The application of IWA-2210 and Table IWA-2210-1 "minimum illumination requirements," "maximum direct visual examination distance requirements," and "maximum procedure demonstration lower case character height requirements," to attempt to identify these small "shrinkage-type cracks" or other imperfections is considered to be unnecessary and could result in a large number of manhours erecting scaffolding, using lifts, and evaluating insignificant indications, with no increase in or benefit to safety.

Per the requirements of IWL-2320, the Registered Professional Engineer (RPE) is experienced in evaluating the inservice condition of structural concrete and is knowledgeable of the design and Construction Codes and other criteria used in design and construction of concrete containments. The RPE will use experience and knowledge to determine the necessary examination distance and illumination to detect the conditions or indications for which the visual examination is performed. It is anticipated that most examinations will be conducted outside in daylight with or without optical aids such as binoculars. The procedures and equipment used will be demonstrated according to the standards specified by the RPE using American Concrete Institute (ACI) 349.3R-96 as a guideline, to the satisfaction of the Authorized Nuclear Inservice Inspector for the examination of concrete surfaces.

## **INSERVICE INSPECTION (ISI) RELIEF REQUEST #CNT-L1, R2**

### Basis for Relief Request (continued)

The ASME standard 1/32 inch black line on an 18 percent neutral gray card will be used to assure ability to detect those conditions specified by the RPE under field conditions. The visual examinations will be performed in sufficient detail to identify areas of concrete deterioration and distress, such as defined in ACI 201.1R-92.

### Proposed Alternative

VT-3C examinations will be performed as required by IWL-2310 except that instead of using the minimum illumination, maximum direct examination distance, and maximum procedure demonstration lower case character height requirements specified in IWA-2210 and Table IWA-2210-1 for VT-3 examinations, the recommendations of the RPE for illumination and distance, as described here, will be implemented. The examination system, either direct or remote, shall demonstrate ability to resolve a 1/32 inch black line on an 18 percent neutral gray test card on the examination surface or under similar conditions of illumination and distance as the test surface.

### Justification for Granting of Relief

Section XI relies on the knowledge and experience of the RPE as a key element for an IWL visual inspection program. Examining the concrete surfaces using distances and illumination requirements established by a knowledgeable RPE, which are demonstrated to resolve a 1/32 inch line on an 18 percent neutral gray test card, and based on ACI 349.3R-96 guidelines, would provide for detection of flaws of sufficient size to assure that the structural integrity of the concrete containment is being maintained. The proposed alternative is derived from the requirement for VT-1 examination in the 1989 edition of Section XI, and provides an acceptable level of quality and safety in accordance with 10 CFR 50.55a(a)(3)(i).

**INSERVICE INSPECTION (ISI) RELIEF REQUEST #CNT-L1, R2**

Implementation Schedule

The alternative examination will be performed in Units 1 and 2, as conditions warrant, beginning with the first inspection interval for ASME Section XI Code, Subsection IWL-classified components that commenced prior to the end of the first inspection period (September 8, 2001).

This is a new request based on the NRC Final Rule (10 CFR 50.55a) issued on August 8, 1996.