P21 94132

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Westinghouse Electric Corporation — Energy Systems

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August 30, 1991

Mr. M. R. Tresler
Pacific Gas & Electric Company
333 Market Street
San Francisco, CA 94106

Ref: SEAPT-EQ&T-3529

Attention: Mohsin Khan

PACIFIC GAS AND ELECTRIC COMPANY
NUCLEAR PLANT, DIABLO CANYON UNITS 1 & 2
Type ASL Power Center Transformer Cracked Pressure Blocks

Dear Mr. Tresler:

In response to Pacific Gas and Electric's request, Westinghouse Equipment Qualification and Testing (EQ&T) has performed a review to investigate the seismic impact of having cracked pressure blocks within the Type ASL Power Center Transformers. The transformers in question are those purchased by PG&E from Washington Public Power Supply System Nuclear Project No. 3 (WNP-3).

The results of this evaluation are documented in the attached. If you have any questions, please contact Jim Parello at 412-256-6230 or the undersigned.

Very truly yours,

WESTINGHOUSE ELECTRIC CORPORATION

Michael J. Miller /for

Scott A. McHugh, Manager
Pacific Gas and Electric Project

MJM/ajs

M. R. Tresler 1L, 1A

cc: W. H. Fujimoto 1L
R. C. Andersen 1L
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P21 94132
p.2

Attachment to PGE-91
SE&PT-EQ&T-3539
Page 1 of 2

PACIFIC GAS & ELECTRIC
DIABLO CANYON SITE
TYPE ASL POWER CENTER TRANSFORMER
CRACK PRESSURE BLOCKS

During a telephone conversation with PG&E (M. Khan) on 8/22/91 Westinghouse was asked to investigate the impact of having cracked pressure blocks (ceramic insulators) within the Type ASL Power Center Transformer during a potential seismic event. PG&E identified that the cracked pressure blocks are a noncompliance since they may potentially impair the intended safety function of the transformer during a seismic event.

The Type ASL Power Center Transformer Assembly consists of three (3) high voltage coil assemblies. Each high voltage assembly has twelve (12) pressure blocks. Six (6) pressure blocks are uniformly spaced around the core of the assembly and located at both the top and bottom between the high voltage coil and the pressure ring. The high voltage coil assembly is held together by securing the top pressure ring to the transformer structure with four (4) jack bolts uniformly spaced at the top of the assembly.

The pressure blocks are intended to maintain a compressive preload on the high voltage coils while isolating them from the steel pressure ring. This assembly is designed to maintain the spatial relationship of the elements during any electrical fault condition and provide electrical insulation between the high voltage coil (4160 volts) and the ground plane of the transformer.

Cracked pressure blocks have been found in both energized and non-energized (spares) transformers at the Washington Public Power Supply System Nuclear Project No. 3 (WNP-3) and spare transformer assemblies located at the Pacific Gas & Electric (PG&E) Diable Canyon site. The spare transformer assemblies were purchased by PG&E from WNP No.3.

ABB Replacement Component Services (RCS) Personnal (J.J. Jelovich/ L.W. Gauss Sr.) have performed an inspection of the pressure blocks at the WNP-3 and PG&E sites. The inspection identified that more than one pressure block could be cracked and the cracks could be located above and/or below the high voltage coil. The observed cracking was circumferential and occurred at only one location in the upper half of the pressure block at its smallest cross-section.

P21 94132
p. 3

Westinghouse Equipment Qualification & Testing (EQ&T) has performed a review of the cracking which has occurred in Type ASL Power Center Transformer pressure blocks. It is Westinghouse's opinion that the cracks will not effect the functionality of the pressure blocks during a seismic event. The only seismic load that can be induced is cyclic compression based on:

- The pressure blocks are a solid ceramic material with no positive tension connection within the high voltage coil assembly.
- The pressure blocks are held in place by application of a compressive preload during assembly.

The reduction in effective compressive surface due to cracking will not prevent the pressure block(s) from transferring the required load and performing their isolation function during normal operation or a seismic event.

To ensure that the Type ASL Power Center Transformer is maintained properly, Westinghouse recommends that the cracked pressure blocks found during an inspection of a high voltage coil assembly be replaced as soon as possible.