PSNH

Public Service of New Hampshire

SEABROOK STATION
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July 1, 1983

SBN- 526
T.F. Q2.2.2

United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

50-443
-444

Attention: Mr. Richard W. Starostecki, Director
Division of Project and Resident Programs

References:
(a) Construction Permits CPPR-135 and CPPR-136, Docket Nos. 50-443 and 50-444
(b) Telecon of February 16, 1983, A. L. Legendre (YAEC) to J. Wiggins (NRC, Region I)
(c) PSNH Letter, dated March 18, 1983, "Interim 10CFR50.55(e) Report; Westinghouse 7300 Series Process I&C System Cabinets," J. DeVincentis to R. W. Starostecki
(d) PSNH Letter, dated May 20, 1983, "Interim 10CFR50.55(e) Report; Westinghouse 7300 Series Process I&C System Cabinets", J. DeVincentis to R. W. Starostecki
(e) Telecon of June 17, 1983, A. L. Legendre (YAEC) to Eugene Kelly (NRC, Region I)
(f) Westinghouse Letter, dated June 1, 1983, E. P. Rahe to R. C. DeYoung

Subject: Interim 10CFR50.55(e) Report; Westinghouse 7300 Process Protection System NLP Card Heat Sinks and NTC Card Relays

Dear Sir:

On February 16, 1983 and June 17, 1983, we provided telephone notification of two potential 10CFR50.55(e) deficiencies affecting the Westinghouse 7300 Process Protection System. The following descriptions and corrective actions are based on a Westinghouse letter to the Office of Inspection and Enforcement (Reference (f)). The two deficiencies are described below:

1. HEAT SINKS ON NLP CARD, REFERENCES (b), (c), AND (d)

Description of Deficiency

Heat sink adhesive failures have been identified at several utilities including Seabrook Station and were reported to Westinghouse as field deficiencies. All reported field failures

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occurred only on the Loop Power Supply (NLP) cards. Westinghouse has determined that NLP printed circuit cards shipped from Westinghouse Industry Electronics Division (WIED) between August 1, 1980 and September 1, 1982 were equipped with a thermal heat sink assembly on the inverter transistors that are subject to potential failures in the adhesive bond in the thermal link assembly. The adhesive bond is between an insulating washer and the thermal link. Failure of the bond can cause the heat sink plate to separate from the thermal links and fall off of the printed circuit board. The plate is conductive metal and under certain circumstances could cause shorting of low level signals if it became wedged between cards in the card frame. The printed circuit boards which have experienced heat sink separation are:

5NLP Sub-level 18 and above
6NLP Sub-level 18 and above
Note: Previous Sub-levels did not contain heat sinks. The assembly sub-level identification sticker is attached to the solder side of the card near the front edge. It is not the revision identified on the front edge.

The adhesive failure mechanism or expected number of hours of system operation before failure is not defined. All reported problems have occurred under normal system usage or storage. To date, these heat sink adhesive failures have not resulted in any damage to the Westinghouse 7300 Process Protection System nor have these failures resulted in any loss of system safety functions. At the time of this report, it has not been determined which of the two types of circuit boards have been installed in the Seabrook 7300 Process Protection System.

Corrective Action

Replacements for the heat sinks that are subject to this potential adhesive failure mechanism will be provided by Westinghouse. These affected heat sinks can be identified by inspection of the printed circuit card for hex nuts visible on the top side of the assembly. The new style heat sink has screw heads visible from the top side of the assembly.

2. NTC CARD RELAY, REFERENCE (e)

Description of Deficiency

During siesmic testing of the Temperature Channel Test (NTC) card, contact bounce was experienced in the mercury relay utilized on this card. This intermittent contact bounce will result in signal saturation of the downstream RTD Amplifier (NRA) card in the T_{hot} and T_{cold} circuits of the Westinghouse 7300 Process Protection System. In these systems, filters are adjusted to maintain a total time constant of approximately two seconds for the RTD/filter combination. Since the filter is downstream of the relay, the

characteristics of the channel response depend on the time constant of the filter. For RTDs specified by Westinghouse, the filter has been set at either zero or two seconds depen ing on the type of RTD (fast or slow response) utilized. For applications utilizing unfiltered signals, as is the design for Seabrook Station, saturation of the NRA card could delay initiation of the Overtemperature - Delta T and Overpower - Delta T trips. For applications utilizing a filtered signal, NRA card saturation would not prevent plant trips, but could result in a spurious plant trip. This problem only occurs as a result of contact bounce induced by a siesmic event.

Corrective Action

A replacement relay is being developed and tested by Westinghouse. These replacement relays will be installed in Seabrook Station subsequent to development and testing.

We will submit a final report to Region I upon verification that the heat sink modification is complete and replacement relays are installed at Seabrook Station.

Since the replacement parts are currently being fabricated/developed by Westinghouse, no schedule for corrective action is available at this time. We will provide a status report by January 5, 1984 if a final report has not been filed by that time.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

J. DeVincentis
Project Manager

MHO/gmd

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