BOSTON EDISON COMPANY
800 BOYLSTON STREET
BOSTON, MASSACHUSETTS 02199

WILLIAM D. HARRINGTON
SENIOR VICE PRESIDENT
NUCLEAR

July 13, 1984

BECo 84-105

Mr. Thomas E. Murley
Regional Administrator
Office Of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

License No. DPR-35
Docket No. 50-293

Report of Defect in Basic Component as Required by 10CFR Part 21

Dear Sir:

Boston Edison Company has evaluated a defect in a basic component delivered for use at Pilgrim Station and has concluded that the defect constituted a potential substantial safety hazard. This conclusion was reported to your office verbally on July 13, 1984. We are hereby submitting the following information in accordance with the requirements of 10CFR21.21(b)(3):

Identification of Basic Component

Twisted Shielded Pair Cable in Analog Trip Cabinets C2228A1, C2228A2, C2229B1, and C2229B2. These factory-installed cables supplied with the Analog Trip Cabinets are required to provide signals to the Reactor Protection System for reactor scram.

Supplier

Nutherm International, Inc.
501 S. Eleventh Street
Mt. Vernon, Illinois 62864
(618)244-6000

Nature of Defect

Several of the cables identified above were noted to exhibit cuts in the individual conductor insulation at the jacket termination. Some were also

noted to have cuts in the conductors themselves. Over 200 conductor ends are known to exhibit this defect which represents a deviation from BECo Purchase Specification #E521 in that it does not conform to the requirements of IEEE383-1974 (E521 Paragraph 4.6) provided under the controls of a 10CFR50 Appendix B quality assurance program. This appears to be the result of deficient quality in workmanship during preparation of the cable terminations (specifically, stripping of the cable jackets near the terminations).

Potential Substantial Safety Hazard

Current design only requires the use of these cabinets for the processing of signals resulting from high water level in the Scram Discharge Instrument Volume; the most significant signal being that required to initiate reactor scram. If the scram function is not initiated before reaching the high level setpoint, water discharged to the volume on a subsequent reactor scram could not be accommodated, resulting in slow scram times and/or partial rod insertion. This condition is considered to be a substantial safety hazard by the definition of 10CFR Part 21. Because of the common nature and magnitude of the deviations, the potential exists for undetected multiple failures (leakage from conductor to conductor or conductor to shield) in the cabinet circuitry from a single event. Therefore, despite redundant logic, common mode failure could result in the adverse condition described above. Each cabinet configuration has been factory wired to accept future input of additional analog trip signals and output to the Reactor Protection System. The common mode failure of cables associated with those future installations would have also threatened reactor protection.

Background

A Bechtel Non-Conformance Report (#205) was issued on June 22, 1984. The Nuclear Engineering Department (NED) was requested on July 2, 1984 to provide disposition of the NCR. The NED then recognized a need to evaluate the non-conformance as a "defect" per the guidelines of 10CFR Part 21. On July 12, 1984, the NED determined that the potential for a "substantial safety hazard" did in fact exist and that the defect was reportable under 10CFR21.

Corrective Action

The supplier was notified on June 22, 1984 of the non-conformance and all cables exhibiting the defect were replaced under the quality assurance program requirements of 10CFR50, Appendix B, as witnessed by representatives of both BECo and Nutherm Quality Control organizations.

Boston Edison Company is not aware of either the number or location of other cabinets similar to those described above, which are in use or have been supplied to other facilities subject to 10CFR Part 21. Nutherm was notified on July 13, 1984 that this defect was determined to represent a reportable item under 10CFR21 and should be able to provide the necessary information.

Very truly yours,

W D Harrington

One original and 2 copies