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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
631 PARK AVENUE  
KING OF PRUSSIA, PENNSYLVANIA 19406

May 16, 1980

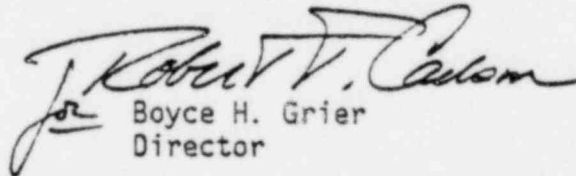
Docket Nos. 50-352  
50-353

Philadelphia Electric Company  
ATTN: Mr. John S. Kemper  
Vice President  
Engineering and Research  
2301 Market Street  
Philadelphia, Pennsylvania 19101

Gentlemen:

The enclosed IE Information Notice No. 80-21, "Anchorage and Support of Safety-Related Electrical Equipment," is forwarded to you for information. No written response is required. If you desire additional information regarding this matter, please contact this office.

Sincerely,

  
Boyce H. Grier  
Director

Enclosures:

1. IE Information Notice No. 80-21
2. List of Recently Issued IE Information Notices

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cc w/encls:

V. S. Boyer, Senior Vice President, Nuclear Power

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ENCLOSURE 1

SSINS No.: 6870  
Accession No.:  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
WASHINGTON, D.C. 20555

IE Information Notice No. 80-21  
Date: May 16, 1980  
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ANCHORAGE AND SUPPORT OF SAFETY-RELATED ELECTRICAL EQUIPMENT

Description of Circumstances:

Seismic design evaluations in connection with the NRC Systematic Evaluation Program (SEP) have indicated a potential safety deficiency in the anchorage and support of safety-related electrical equipment. This subject was highlighted for more in-depth evaluation after site visits to several facilities. The site reviews indicated that equipment was supported in a non-uniform manner. In some cases, design modifications were required to render acceptable seismic design margins. The deficiencies in anchorage and support may be due to the fact that earlier engineering design criteria did not require rigorous analyses.

Letters were issued in January 1980 to the SEP plants which requested a review of the anchorage of safety-related electrical equipment. The findings from the reviews at Haddam Neck, Big Rock Point, Dresden 2, Oyster Creek, and Palisades identified various safety-related electrical equipment that did not have positive anchorage. The reviews at other SEP plants are continuing. A summary is provided below of those items so far identified.

Station Service Transformers (4160 V - 480V)	Motor Control Centers
DC to AC Inverters	Cable Trays
Emergency Diesel Generator	Computer
Room Heater	Control Panels - MG Set
Batteries - Emergency Diesel Generator	- Air Compressor
- Diesel Fire Pump	- Control Room
- Station	Instrument Rack
Station Battery Rack	Battery Room Main Breaker and Distribution Panel

A related item has been identified at Comanche Peak (under construction) in which the welds to the floor supports for the main control panels were found to be undersized and improperly spaced. Also, the SEP reviewers observed that non-seismic Category I ancillary items (dolleys, gas bottles, block and tackle gear, ductwork, etc.) may be located such that they could potentially dislodge, impact, and damage safety related equipment during an earthquake.

The type of anchorage systems utilized in the SEP plants and their expected capacities vary widely. For example, high uncertainty exists relative to the capacity of non-engineered tack welds and attachments that rely on frictional clamping forces. In some cases, equipment has been found free standing with no means of positive lateral support. (Friction being the only lateral load carrying mechanism). Most often, heavier equipment is anchored using (1) tack welds to steel angles embedded in concrete; (2) clips that rely on frictional resistance; (3) concrete embedded anchor bolts; or (4) external braced frames. Lighter equipment housed in cabinets or attached to panels or racks has been anchored using (1) bolts; (2) sheet metal screws; (3) tack welds; and (4) braced racks.

The potential concern is that certain pieces of equipment may not have adequate levels of seismic resistance capability due to limited anchorage capacity. The potential problems relate to overturning and/or sliding of large equipment and gross movement or unacceptable forces on smaller attached equipment that may render it inoperable during an earthquake. For certain large battery racks, this judgment is supported by analysis that predict unacceptable seismic behavior.

Section 3.10 of the Standard Review Plan provides acceptance criteria for the seismic qualification of Category I electrical equipment. These criteria include IEEE Std. 344, "Guide for Seismic Qualification of Class 1E Electrical Equipment for Nuclear Power Generating Stations", first issued in 1971. Facilities designed before about 1971 without benefit of such design and testing criteria may have some anchorage deficiencies.

The NRC staff is continuing to evaluate this issue on the SEP plants as part of the seismic review in the SEP. Remedial actions have been planned for the affected plants.

This Information Notice is provided as notification of a possibly significant matter. It is expected that recipients will review the information for possible applicability to their facilities. No specific action or response is requested at this time. If NRC evaluations so indicate, additional actions may be requested or required. If you have any questions regarding this matter, please contact the Director of the appropriate NRC Regional Office.

ENCLOSURE 2

IE Information Notice No. 80-21  
Date: May 16, 1980  
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RECENTLY ISSUED IE INFORMATION NOTICES

Information Notice No.	Subject	Date Issued	Issued to
80-13	General Electric Type SBM Control Switches - Defective CAM Followers	4/2/80	All Power Reactor Facilities with an Operating License (OL) or Construction Permit (CP)
80-14	Safety Suggestions from Employees	4/2/80	All Power Reactor Facilities with an OL or CP, Fuel Fabrication and Processing Facilities and Materials Priority 1 Licensees
80-15	Axial (Longitudinal) Oriented Cracking in Piping	4/21/80	All Power Reactor Facilities with an OL or CP
80-16	Shaft Seal Packing Causes Binding in Main Steam Swing Check and Isolation Valves	5/5/80	All Power Reactor Facilities with an OL or CP
80-17	Potential Hazards Associated With Interchangeable Parts On Radiographic Equipment	5/5/80	All Radiographic Licensees
80-18	Possible Weapons Smuggling Pouch	5/5/80	All Power Reactor Facilities with an OL, Fuel Fabrication and Processing Facilities and Materials Priority I Licensees
80-19	NIOSH Recall of Recirculation-Mode (Closed-Circuit) Self-Contained Breathing Apparatus (Rebreathers)	5/6/80	All Power Reactors with an OL, Research Reactors, Fuel Facilities and Priority I Material Licensees
80-20	Loss of Decay Heat Removal Capability at Davis-Besse Unit 1 While in Refueling Mode	5/8/80	All Power Reactor Facilities with an OL or CP