

PHILADELPHIA ELECTRIC COMPANY

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January 18, 1983

Docket Nos. 50-277
50-278

Mr. R. C. Haynes, Administrator
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19046

SUBJECT: Licensee Event Report Narrative Description

Dear Mr. Haynes:

The following occurrence was reported to Mr. R. A. Blough of
Region I U.S. NRC on January 4, 1983:

Reference:	Docket Nos. 50-277 & 50-278
Report Number:	2-83-01/IT-0
Report Date:	January 17, 1983
Event Date:	January 4, 1983
Facility:	Peach Bottom Atomic Power Station Rd 1, Delta, PA 17314

Technical Specification Reference:

This LER is made in accordance with the requirements of USNRC
I.E. Bulletin 79-01B which requires, in part, that a report be
filed for any class IE electrical equipment item which has been
determined as not being capable of meeting environmental
qualifications requirements for the service intended.

Description of the Event:

During environmental qualification testing, electrical switches
of the type used for the ECCS room coolers failed. The nylon
material used for the switch cam surface became embrittled and
cracked during a radiation dose of 27 megarad. This switch is a
General Electric type CR2940.

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Cause of the Event:

Radiation induced embrittlement of the nylon cam surface material.

Probable Consequences of the Event:

One mode of failure could potentially cause the shutdown of the RHR System room coolers during the long term (180 day) cooling phase of the design basis LOCA. The radiation levels used in this test were representative of the long term design basis LOCA radiation profiles. Since the RHR system is the long term post LOCA cooling system, it is of primary interest. It is assumed that the loss of the room coolers could lead to the failure of the RHR pump motors due to overheating.

The 180 day LOCA radiation doses in the ECCS rooms are as follows:

<u>System</u>	<u>Dose (MEGA RAD)</u>
RHR	33.5
Core Spray	3.0
HPCI	12.8
RCIC	6.7

As stated in the prompt report a second failure mode could potentially result in the operation of both room coolers (each room is provided with redundant coolers).

An engineering analysis of PBAPS process diagram Emergency Service Water Bechtel Print 6280 M-343, Rev. A indicates that the ESW design basis is for one ESW pump to provide adequate cooling flow for the four Diesel Generators and 10 ECCS coolers on each unit with an 18% reserve. Therefore, a single ESW pump could supply the four Diesel Generator coolers, 10 coolers in the non-LOCA plant, of which only one is used during a normal shutdown, 10 coolers on the LOCA plant, and an additional six coolers which are assumed to have failed in the "in service" mode. In addition, there is a redundant full capacity ESW pump.

This analysis shows that a switch failure, such that both coolers are operating in all ECCS rooms of the LOCA plant, does not effect long term post-LOCA cooling.

As an additional consideration, a previously reported problem concerning an electrical separation criteria has resulted in the requirement for continuous operation of one cooler in the HPCI, B Core spray, and B RHR rooms (LER 2-81-34/1T-0).

Immediate Corrective Action:

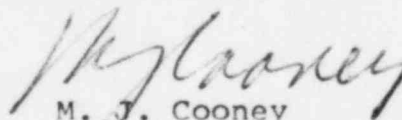
As an immediate corrective action, the control switch contacts have been jumpered in either the run or auto position, as appropriate, and leads have been lifted to ensure that the room coolers will function to provide the proper cooling in both the short and long term ECCS cooling modes.

Future Corrective Action:

Action has been initiated to rewire these switches so that they fail in a conservative mode. It is anticipated that approved engineering drawings will be issued for construction implementation by January 24, 1983. It is anticipated that these modifications should be completed by the end of February, 1983.

In addition, an investigation is underway to determine if an alternate material is available to replace the nylon cam surface or if a replacement switch is available.

Sincerely,



M. J. Cooney
Superintendent
Generation Division-Nuclear

cc: Mr. Victor Stello, Director
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U.S. Nuclear Regulatory Commission
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Mr. Norman Haller, Director
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