PHILADELPHIA ELECTRIC COMPANY

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SHIELDS L. DALTROFF
VICE PRESIDENT
ELECTRIC PRODUCTION

March 23, 1983

Docket Nos. 50-277
50-278

Mr. R. C. DeYoung, Director
Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

SUBJECT: Notification of Existence of a Potential Defect per 10 CFR 21.21

Dear Mr. DeYoung:

The following notification of existence of a potential defect was reported to Mr. J. F. Stolz and other NRR/NRC individuals during a meeting held at the NRC Bethesda office, March 3, 1983. This meeting was held as a result of notification to Mr. A. R. Blough, NRC Site Inspector, Peach Bottom, January 4, 1983 and issuance of an LER 2-83-01/1T-0, January 18, 1983. This Part 21 notification is the appropriate vehicle of documenting the discovery of failure during Environmental Qualification (EQ) testing of a DuPont TM 'Delrin' switch cam within a switch which operates coolers within the Emergency Core Cooling System (ECCS) pump rooms of the Peach Bottom Unit 2 and 3 Reactor Buildings. The manufacturer of the component, the General Electric Company, General Purpose Control Department of Bloomington, Illinois, has been notified by Philadelphia Electric Company of this potential defect and the corrective actions initiated by Philadelphia Electric Company. The information required within this Part 21 report as itemized within 10CFR21.21(3) is as follows:

(i) Name and Address of Individual Informing the Commission:

PHILADELPHIA ELECTRIC COMPANY
2301 Market Street
P. O. Box 8699
Philadelphia, PA 19101

IE19

(ii) Identification of the Facility, the basic component supplied for such facility which contains a defect.

Facility: Peach Bottom Atomic Power Station
RD 1, Delta, PA 17314

Component: A DuPont TM 'Delrin' Operator Cam #14 within a General Electric 4 position selector switch, Model No. CR-2940 UB203W.

(iii) Identification of the firm constructing the component which contains a defect.

General Electric Company
General Purpose Control Department
P. O. Box 2913
Bloomington, Illinois, 61701

(iv) Nature of the Potential Defect and Safety Hazard Created

Nature of Defect:

In accordance with IE Bulletin No. 79-01B, Environmental Qualification of Class IE Equipment, the licensee initiated EQ testing to resolve documentation deficiencies for CR-2940 control stations. Two specimens were included in the test. One specimen was exposed to a dose of 37 megarads (33.5 megarads plus margin). Following the radiation aging testing this electrical switch failed. Upon disassembly of the Control Station, it was determined that the Delrin material used for the switch cam had fractured into many small pieces thereby changing the setting of the four-way switch used to control the ECCS pump room coolers.

Potential Safety Hazard Created:

The licensee has postulated two potential safety hazards;

1. The fracturing of the Delrin switch cam could potentially open all contacts and would disable both area coolers within each ECCS pump room. The loss of

these room coolers is assumed to result in the loss of ECCS pump room ambient cooling.

2. The fracturing of the Delrin switch cam could also potentially shift contacts to a position resulting in operation of all coolers within every ECCS pump room. This event could result in the simultaneous operation of all twenty coolers thereby exceeding the capacity of the Emergency Service Water (ESW) supply.

(v) Chronological Order of Events

During EQ testing of the switch, Philadelphia Electric Co. and Franklin Research Center witnessed and determined cause of failure of component - January 4, 1983

Submission of LER 2-83-01/1T-0 on the event to the Regional Administrator - January 18, 1983

Bethesda meeting with NRC/NRR regarding the event and discussion of a need for Part 21 Report - March 3, 1983.

(vi) The Number and Location of Components of Concern

Peach Bottom Unit 2
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Building	Room	No. of Rooms	No. of Components Per Room	Total No. of Components
Reactor	RHR Pump	4	2	8
Reactor	Core Spray Pump	4	2	8
Reactor	HPCI Pump	1	2	2
Reactor	RCIC Pump	1	2	2
Total Number of Components				20

Peach Bottom Unit 3
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Building	Room	No. of Rooms	No. of Components Per Room	Total No. of Components
Reactor	RHR Pump	4	2	8
Reactor	Core Spray Pump	4	2	8
Reactor	HPCI Pump	1	2	2
Reactor	RCIC Pump	1	2	2
Total Number of Components				20

(vii) The corrective action being taken, name of organization responsible; length of time to complete action

Immediate Corrective Action:

As an immediate corrective measure, the licensee installed jumpers on the auto or run contacts and leads were lifted on the manual contact, as follows:

(The four RHR and Core Spray Pump Rooms are designated as 'A', 'B', 'C', & 'D')

RHR Pump Rooms A,C,D - one cooler auto contact jumpered; one cooler run contact jumpered

RHR Pump Room B - one cooler manual contact jumpered; one cooler auto contact jumpered

Core Spray Pump Rooms A,C,D - lifted lead on manual contact on both coolers

Pump Room B Core Spray - lifted lead on manual contact on one cooler

HPCI Pump Room - lifted lead on manual contact on one cooler

RCIC Pump Room - lifted lead on manual contact on both coolers

Please note that the RHR B, Core Spray B and HPCI pump rooms have one cooler operating in the manual mode due to a previously reported electrical separation problem.

The effect of these modifications is to counteract the two postulated failure modes as follows:

Jumpers installed across the run or auto contacts effectively bypass the switches thus failure of the cam will not preclude cooler operation. Lifting of manual leads on the limited number of coolers precludes inadvertent operation of these coolers and maintains the ESW flow below the maximum capacity. Although the modification constitutes a minor inconvenience to plant operations, there is no deleterious effect to plant safety.

Long Term Corrective Action:

Replacement of the existing Delrin switch cam with a metallic component. A sample cam manufactured from stainless steel has been machined by the licensee and is undergoing testing to assure switch operability. Upon the successful completion of these tests, cams will be manufactured for installation. Philadelphia Electric Co. is contemplating additional radiation testing of the Delrin cam component to determine if component replacement is required within ECCS pump rooms subject to radiation doses of less than 33.5 megarads.

Schedule for Long Term Corrective Action:

Fabrication of a sample metallic cam for testing - March 11, 1983.

Testing of metallic cam - within two months of fabrication

Installation of replacement components - within four to six months of fabrication in switches containing this Delrin component subject to a radiation dose which may result in a failure of the cam.

(viii) Advice related to the defect or basic component.

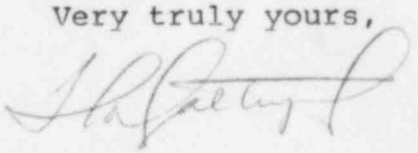
The EQ testing of this cam by the Philadelphia Electric Co. has determined a potential failure of switches containing a Delrin cam exposed to a dose of 37 megarads or greater.

Selection of this component for this application was made by the A/E, Bechtel Power Corporation, who may have used this specific component in other facilities.

In summary, we conclude the immediate corrective actions taken by the licensee compensate for the postulated failure modes associated with the test failure whereas the proposed long term corrective actions obviates the need for the interim measure. For these reasons, it is our belief that the continued operation of Peach Bottom Atomic Power Station does not constitute an undue hazard to the public due to the test failure or the interim or proposed long term corrective actions.

If you have any questions or require additional information, please do not hesitate to contact us.

Very truly yours,



cc: R. C. Haynes, Administrator
Region I, US NRC
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John F. Stolz, Chief
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