

Illinois Power Company
Clinton Power Station
P.O. Box 678
Clinton, IL 61727
Tel 217 935-6225
Fax 217 935-4632

J. Stephen Perry
Senior Vice President



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Docket No. 50-461

10CFR21.21

Document Control Desk
Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: 10CFR21 Defect 21-93-027: Puffer Tube Assemblies for
Westinghouse 4160 Volts Alternating Current (VAC) Breakers

Dear Sir:

On November 10, 1993, during refurbishment of the spare 4160 VAC breaker in cubicle 1AP09EK, one of three puffer tube assemblies was found broken. A new puffer tube assembly withdrawn from Stores to replace the broken puffer tube assembly was found to be incorrectly configured and poorly constructed. The four remaining puffer tube assemblies in Stores were also found to be incorrectly configured and poorly constructed.

On November 11, 1993, Illinois Power (IP) determined that the incorrectly assembled puffer tube assemblies were conditions potentially reportable under the provisions of 10CFR21.

Based on a subsequent evaluation of this matter, IP concluded that these conditions constitute a defect and provides the following information in accordance with the requirements of 10CFR21.21(c)(4). Initial notification of this matter will be provided by facsimile of this letter to the NRC Operations Center in accordance with 10CFR21.21(c)(3) on the date this letter is signed.

- (i) J. S. Perry, Senior Vice President of IP, Clinton Power Station, Post Office Box 678, Clinton, Illinois, 61727, is informing the Nuclear Regulatory Commission (NRC) of a 10CFR, Part 21 defect by means of this report.

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- (ii) The basic component involved in this reportable defect is the puffer tube assembly for safety-related 4160 VAC breakers model number 50DHP350. The puffer tube assembly is Westinghouse part number 693C248G01. The puffer tube assembly is designed to supply a jet or puff of air through an insulating tube and nozzle to each of the three contact assemblies each time the breaker is opened. The jet of air from the puffer facilitates the movement of the arc current upward into the arc chute where it is quickly interrupted. The 4160 VAC breakers control the Class 1E power supply to several pieces of safety-related equipment such as the Low Pressure Core Spray system pump, the Shutdown Service Water system pump A, and the Residual Heat Removal system pump A.
- (iii) The puffer tube assemblies were manufactured by Westinghouse Electric Corporation.
- (iv) The defect is the incorrect configuration and poor construction of the puffer tube assembly. The assembly includes four sections joined with adhesive: a long bottom tube, an angle elbow, a short tube, and the end diffuser. The assembly was found to be incorrectly configured with the bottom tube being the short tube and the long tube connected to the diffuser. If the incorrectly configured puffer tube assembly were installed in the breaker, the end of the diffuser would be lower and closer to the breaker main moving contact than the correct assembly. This would change the location and direction of the jet of air, potentially diminishing the ability of the puffer to perform its function. While attempting to install the assembly in the spare breaker in cubicle 1AP09EK, the puffer assembly could not be installed due to physical interference with the moving contact arm. There was approximately 1/4-inch interference between the end of the diffuser and the moving contact arm when the breaker was in the closed position. The assemblies were also poorly constructed. On some of the assemblies, the joints of the tubing and two-part diffuser nozzle were loose, contained gaps and were not completely sealed to prevent excessive leakage of the jet of air.

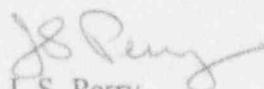
Failure of the puffer tube assembly to perform its function could lead to the breaker being unable to interrupt its rated fault current. Should the breaker fail to interrupt a fault, other breakers in the electrical distribution system would be required to open, thus removing power to other important safety-related equipment.

- (v) The deficiencies of the puffer tube assemblies were discovered on November 10, 1993. On November 11, 1993, Illinois Power determined the deficiencies were potentially reportable under the provisions of 10CFR21.

- (vi) Illinois Power has identified six affected puffer tube assemblies at Clinton Power Station (CPS). IP does not have any information about potentially deficient assemblies supplied to other purchasers.
- (vii) IP's investigation of this issue identified that puffer tube assemblies were procured only one time, and six assemblies were procured and received. Four of the affected assemblies were in Stores and one was withdrawn from Stores for the breaker in cubicle 1AP09EK. These five assemblies have been placed on hold pending disposition through the CPS corrective action program. One additional assembly is installed in a non-safety-related application. At present, IP has not determined if the non-safety-related breaker has a properly assembled puffer tube assembly.
- (viii) IP has no advice or additional information to provide to other purchasers or licensees regarding this defect. The IP contact for this defect is J. W. Blount, Lead Procurement Classification Specialist, (217) 935-8881, extension 3638.

Documentation related to this defect is available for your review at our offices.

Sincerely yours,


J. S. Perry
Senior Vice President

RSF/csm

cc: NRC Clinton Licensing Project Manager
NRC Resident Office, V-690
Regional Administrator, Region III, USNRC
Director, Office of Nuclear Reactor Regulation
INPO Records Center
Illinois Department of Nuclear Safety
Westinghouse Electric Corporation