

ILLINOIS POWER COMPANY



CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

JSP-0235-90
April 3, 1990
10CFR21.21

Docket No. 50-461

Mr. A. B. Davis
Regional Administrator
Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Subject: 10CFR21 Defect 21-90-04:
Inaccurate Pressure Drops Supplied by American Air
Filter Company

Dear Mr. Davis:

On March 5, 1990, following Illinois Power Company's (IP's) discovery that some heat removal components in Division I of the Shutdown Service Water (SX) system had flow rates less than design values, IP identified discrepancies in the acceptance criteria used in the pre-operational test of the SX system performed prior to initial plant startup. On March 7, 1990, IP's investigation of the discrepancies identified that the American Air Filter Company may have provided incorrect acceptance criteria. This concern was determined to be potentially reportable under the provisions of 10CFR21. Further investigation of this concern has identified that the American Air Filter Company provided inaccurate pressure drop information for cooling coils which they provided to Clinton Power Station (CPS) for use in the SX system and this inaccurate information was incorporated into the pre-operational test for the SX system resulting in flow rates less than design values. Based on an evaluation of this matter, IP is providing the following information to the Nuclear Regulatory Commission (NRC) in accordance with the requirements of 10CFR, Part 21.21(b)(3). Region III of the Nuclear Regulatory Commission was verbally notified of this defect on March 29, 1990.

- (i) J. S. Perry, Vice President of Illinois Power Company, Clinton Power Station, Post Office Box 678, Clinton, Illinois 61727, is informing the Nuclear Regulatory Commission of a 10CFR21 defect by means of this report.

- (ii) The basic components involved in this reportable defect are cooling coils located in the Heating, Ventilating, and Air Conditioning (HVAC) area coolers which provide cooling for various spaces within CPS and inaccurate pressure drop information supplied for these cooling coils.
- (iii) The cooling coils and the inaccurate pressure drop information were supplied by the American Air Filter Company (AAF) for use with the Shutdown Service Water system. The coils provide area cooling for certain plant equipment required for safe shutdown of the reactor following a loss of coolant accident or loss of off-site power event.
- (iv) Incorrect data for the pressure drop across the cooling coils is the defect. Specifically, AAF provided data that was not appropriate for the type of cooling coils purchased and delivered to CPS. The data did not include appropriate head losses for clean-out plugs in the cooling coils. This incorrect data was incorporated into the CPS pre-operational test of the SX system and provided a principal factor for acceptance criteria of flow balancing the SX system prior to initial plant operation. This contributed to less than design specified cooling water flow being supplied to cooling coils.

Preliminary review of as-found SX water flows has identified that the following Division I safety-related area coolers potentially fail to provide adequate heat removal capability:

Low Pressure Core Spray Pump Room Cooler	1VY01S
Residual Heat Removal (RHR) Pump Room Cooler	1VY02S
RHR Heat Exchanger Room Cooler	1VY03S
Reactor Core Isolation Cooling Pump Room Cooler	1VY04S
SX Pump Room Cooler	1VH07SA
Standby Gas Treatment System Room Cooler	0VG05SA

IP's preliminary calculations indicate that the reduced as-found water flow through these safety-related area coolers would cause temperatures in some areas of the plant containing safety-related components to exceed design temperatures for those areas. For example, the difference between the AAF supplied pressure drop and the calculated pressure drop across the 1VY03S cooling coil was as high as 202 inches of water (The AAF supplied value was 72 inches of water while the IP calculated value was 274 inches of water). Based on preliminary calculations, the area temperature increase due to the incorrect pressure drop could be as high as fourteen degrees Fahrenheit. This condition could have

had an adverse affect on the equipment qualification of components and on the secondary containment draw-down time by the Standby Gas Treatment System.

(v)

In response to Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," IP's plan was to open, inspect, and obtain baseline data on safety-related heat exchangers and develop a program to monitor the performance of the heat exchangers for the life of the plant. In November 1989, IP experienced tube leaks on the Division I and II diesel generator heat exchangers. Investigation of this problem resulted in the conclusion that the tubes were experiencing Microbiologically Induced Corrosion (MIC) attack. IP accelerated the open and inspect program for safety-related heat exchangers and developed a plan to open Division I heat exchangers prior to and during PO-3 (a planned maintenance outage which began February 21, 1990, and is currently scheduled to be completed during the second week in April 1990, when the Clinton Power Station is synchronized to the grid). During the performance of the work, the field reported that 1VH07SA (SX Division I pump room cooler) could not achieve design flow. Investigation by engineering resulted in the discovery that the acceptance criteria in the pre-operational test was incorrect for the type of heat exchanger installed in the field. During an investigation of the source of the pre-operational test acceptance criteria on March 7, 1990, IP discovered that AAF may have provided incorrect pressure drop data for Division I SX cooling coils.

(vi)

American Air Filter supplied twenty-three cooling coils which use the three divisions of the SX system for cooling water. Division I SX has ten, Division II has ten and Division III has three AAF supplied cooling coils. IP has determined that AAF provided incorrect pressure drop data for twenty-two of the twenty-three cooling coils. (The remaining coil did not have clean-outs and therefore the pressure drop value provided by AAF for this coil was appropriate.)

(vii)

IP restored flow rates for the Division I SX cooling coils to acceptable values. This was achieved by adjusting the flow to achieve the original design bases values for seven cooling coils. Acceptable flow rates for the remaining three cooling coils were achieved by a combination of adjusting flow through the cooling coils and recalculating the design bases values to verify that the as-left flow conditions were acceptable at less than original design values.

IP has measured the as-found flow conditions for Divisions II and III of the SX system, however, the capability of the safety-related area coolers in these divisions to provide adequate heat removal at the as-found flow conditions has not been determined. IP has restored flow rates through the Division III SX cooling coils to meet the original design bases values by adjusting the flow through the cooling coils.

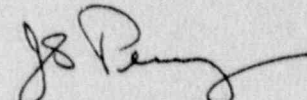
IP is currently working on Division II of the SX system and will restore the flow rates through the cooling coils of this division to acceptable values prior to startup from the current planned maintenance outage (PO-3).

Additionally, IP plans to review selected safety-related pre-operational tests to ensure that they do not contain similar errors. This review is scheduled to be completed by the end of PO-3.

(viii) IP has no additional advice or information to provide to other purchasers or licensees regarding this defect.

Additional information on this reportable defect is available for your review at our offices. I trust this letter provides sufficient information for your review and assessment of this reportable defect.

Sincerely yours,



J. S. Perry
Vice President

RSF/csm

cc: NRC Resident Office
Director, Office of Nuclear Reactor Regulation
INPO Records Center
Illinois Department of Nuclear Safety
American Air Filter Company, Inc.