

ILLINOIS POWER COMPANY



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

Docket No. 50-461

August 28, 1985

Mr. James G. Keppler
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

SUBJECT: Reportable 10CFR50.55(e) Deficiency 55-84-23:
Ruskin Interlocking Blade Fire Dampers

Dear Mr. Keppler:

On December 3, 1984, Illinois Power Company verbally notified Mr. F. Jablonski, US NRC Region III (Ref. Record of Coordination, Y-25989 dated December 3, 1984) of a potentially reportable deficiency, per 10CFR50.55(e), concerning the indeterminate quality of the Ruskin Interlocking Blade Fire Dampers utilized at Clinton Power Station (CPS). This initial notification was followed by two (2) interim reports (Ref: IP Letter U-10237, D. P. Hall to J. G. Keppler, dated January 4, 1985, and IP Letter U-10265, D. P. Hall to J. G. Keppler, dated April 4, 1985). Illinois Power's investigation of this matter is complete. Our investigation identified, documented and evaluated for adequacy the Ruskin Interlocking Blade Fire Dampers utilized at CPS. Our investigation into this matter has determined that this issue represents a reportable deficiency under the provision of 10CFR50.55(e). This letter is submitted as a final report in accordance with the requirements of 10CFR50.55(e). Attachment A provides the details of our investigation.

We trust that this final report provides you sufficient background information to perform a general assessment of this reportable deficiency and adequately describes our overall approach to resolve this issue.

Sincerely yours,

D. P. Hall
Vice President

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Attachment

cc: NRC Resident Office
Director, Office of I&E, US NRC, Washington, DC 20555
Illinois Department of Nuclear Safety
INPO Records Center

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ATTACHMENT A

Illinois Power Company
Clinton Power Station

Docket No. 50-461

Reportable 10CFR50.55(e) Deficiency 55-84-23
Ruskin Interlocking Blade Fire Dampers

Final Report

Statement of Reportable Deficiency/Background

On November 6, 1984, the Ruskin Division of Philips Industries, Inc. notified the NRC of a reportable 10CFR21 condition involving Ruskin Interlocking Blade Fire Dampers, Model numbers IBD-21, IBD-23, and NIBD-23 supplied with closure springs. Ruskin has determined that their test methods for testing for closure under air flow may not accurately depict actual installed conditions. Ruskin recommends that the fire dampers supplied to Clinton Power Station (CPS), with closure springs, which require closure under air flow conditions, be tested to verify proper operation.

Investigation Results

Illinois Power Company has prepared and implemented an investigation plan to determine the extent of this deficiency at the CPS. The investigation results are as follows:

1. A review to identify the applicable damper model and number utilized in safety-related systems was performed. Of the 218 Ruskin fire dampers that are to be installed at CPS, 118 are utilized in safety-related applications.
2. A review was performed to identify the quantity and system configuration of fire dampers.

Corrective Action

On February 12, 1985, Ruskin prepared a Generic Test Report addressing the capability of the fire dampers to close under air flow using specific installation parameters. The objective of this report was to provide guidelines to evaluate the installed condition versus the Ruskin tested configuration for closure under air flow conditions. The report was evaluated by Illinois Power Nuclear Station Engineering Department (NSED) and Sargent & Lundy (S&L) and determined to be inadequate to address specific duct configurations and testing requirements of CPS HVAC system.

ATTACHMENT A
(continued)

On February 15, 1985, S&L was requested to develop the necessary test plan requirements for both horizontal and vertical dampers (Ref. Letter S-5163 from H. R. Victor to R. C. Heider, dated February 15, 1985). Subsequently, Ruskin was asked to prepare a test procedure in accordance with the S&L test plan and submit it to S&L for acceptance prior to performing the tests at the Ruskin facilities.

On May 2, 1985, test procedure 41585DY NIBD 23 "Fire Damper Closure at Velocity and Pressure" was developed by Ruskin and approved by S&L on May 10, 1985. On May 13 through May 17, 1985, testing was conducted at the Ruskin facilities, and witnessed by representatives of NSED, S&L and Zack (the HVAC subcontractor at CPS). Units with standard size springs and those fitted with maximum size (1" wide) springs were tested. At the conclusion of the testing Ruskin submitted the results.

On July 22, 1985, NSED's and S&L's evaluation of the Ruskin Test report was completed. The following is a summary of the results and recommendations for the 218 Ruskin Interlocking Blade Fire Dampers at CPS:

- 1) 150 dampers (26 horizontal and 124 vertical) are acceptable per the test results; no modification required.
- 2) 29 dampers (2 horizontal and 27 vertical) are acceptable since they are no longer in fire area barriers per the Fire Protection Evaluation Report (Approved August 23, 1985), Figures FP-1 to FP-26; no modification required.
- 3) 9 horizontal dampers in the VD System (Diesel Generator Building) are acceptable since they presently have auto shutdown of the fan on a fire detection signal; no modification required.
- 4) 20 horizontal dampers in VC System (Control Building) are not acceptable. Heat detectors are to be provided within selected ducts so that administrative controls can be implemented to manually shut the fan off to prevent transmission of fire from one fire area to the other.
- 5) 1 vertical damper in the VA System (Auxiliary Building) is acceptable per the test results with the recommended change to larger springs. This change has been issued to the Zack Co. on Field Engineering Change Notice (FECN) 10503, dated June 28, 1985.
- 6) 9 vertical dampers in the non-safety related area VF, VJ, VO, VQ, VT, and VW Systems (Fuel Building, Machine shop, Off gas, Drywell, Turbine and Radwaste Building, respectively) are not acceptable. Heat detectors are to be provided within the ducts to trip the fans off to prevent transmission of fire from one fire area to the other.

ATTACHMENT A
(continued)

The corrective action as described in items 4,5 and 6 is expected to be completed by November 12, 1985.

To preclude recurrence of this deficiency Engineering Change Notice (ECN) 5124 was initiated to revise S&L Specification K-2910. This revision includes the requirements necessary to determine, by testing CPS sample configurations, that fire dampers mounted in duct work will close under air flow conditions. The parameters to be met are defined within ECN 5124 and form CPS-HVAC-FDC Rev. 1, dated April 12, 1985.

Root Cause

The deficiencies identified in this investigation are attributed to the test methods utilized for closure under air flow which did not accurately depict actual installation conditions. Underwriter Laboratories (UL) Test No. 555 does not require dampers to be tested under air flow conditions, and there was no requirement in Specification K-2910 for Ruskin to test fire dampers to actual CPS field installation conditions. Ruskin fire dampers, as recommended by Air Moving and Conditioning Association (AMCA) Standard 500, were tested per figure 5.5, face mounted on the tunnel.

Safety Implication/Significance

The safety implication and significance was evaluated by S&L (Ref. Letter SLMI-16522C from J. G. Krier to H. R. Victor, dated July 18, 1985). The S&L evaluation concluded that the dampers which isolate Fire Area to Fire Area (Category 4 per Letter SLMI-16522C) would have failed to close under air flow and therefore represent a condition adverse to the safe operation of CPS. Illinois Power has reviewed and evaluated the deficiencies associated with this investigation and has concluded that this issue represents a reportable condition under the provision of 10CFR50.55(e).