

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION  
WASHINGTON, D.C. 20555

June 8, 1989

NRC INFORMATION NOTICE NO. 89-52: POTENTIAL FIRE DAMPER OPERATIONAL PROBLEMS

Addressees:

All holders of operating licenses or construction permits for nuclear power reactors.

Purpose:

This information notice is being provided to alert addressees to potential problems affecting the closing reliability of curtain-type fire dampers under ventilation system operational air flow conditions. It is expected that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems. However, suggestions contained in this information notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances:

On November 6, 1984, Ruskin Manufacturing transmitted a 10 CFR Part 21 notification to the NRC regarding seven of its curtain-type fire dampers that failed to close during ventilation duct air flow tests. The tests were performed at the Palo Verde nuclear plant and were conducted to determine the ability of the curtain-type fire dampers to close under operational air flow conditions, as designed.

On January 18, 1985, Northern States Power Company (NSP) notified the NRC of several curtain-type fire dampers that failed to fully close under ventilation system air flow conditions during ventilation duct system operability tests performed by NSP. The fire damper testing method used remote trip wires in place of the thermal links and the ventilation ducts were fully closed with no open duct access panels, thus representing the actual air flow and pressures that would be present during operating conditions.

On May 14, 1986, Wisconsin Public Service Corporation (WPSC) notified the NRC of two curtain-type fire dampers manufactured by Action Air that were tested and that failed to close completely under normal air flow conditions.

On December 27, 1987, Alabama Power Company notified the NRC that control room fire dampers at Farley Unit 1 were inoperable because of failure to close during testing under air flow conditions.

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On February 23, 1988, Alabama Power Company reported to NRC that a number of fire dampers at Farley Unit 2 failed to close when tested under air flow.

Until quite recently, the only industry standard governing the design, fabrication, and testing of fire dampers was Underwriters Laboratories, Inc. (UL) Standard 555, "Fire Dampers and Ceiling Dampers." The 1979 edition states in part that "the closing reliability of fire dampers...is evaluated on the basis that...ventilating systems are automatically shut down when a fire occurs... therefore, the UL ratings are applicable to fire dampers...installed in systems where air movement is effectively stopped at the start of a fire...." The standard does not evaluate whether or not fire dampers will close under air flow conditions. Therefore, the UL fire damper rating only indicates whether a fire damper in the closed position will maintain its integrity under fire conditions for a specific time period, typically rated for 1½ or 3 hours.

#### Discussion:

NRC requirements and guidelines for fire damper configurations are contained in various documents, including Appendix A to the Branch Technical Position (BTP) APCS 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976," (NUREG-75/087; NUREG-0800) and Standard Review Plan (SRP) 9.5.1, "Fire Protection Program" (NUREG-0800). The extent to which these guidelines apply to a specific plant depends on licensee commitments and license requirements that are applicable to the fire protection program. The objective of these guidelines is to provide a fire damper that will close and latch as required to ensure that those systems and components important to safe shutdown will be capable of performing their intended functions.

Licensees should be aware that fire damper testing methods that do not simulate the actual total differential pressure at the damper (i.e., visual inspection or drop testing with duct access panels open) may not show operability under air flow conditions. If licensees depend on the UL product listing and do not sufficiently model air flow during surveillance testing, they cannot be sure that the dampers will close fully when called upon to do so unless air flow is stopped first.

Licensees who have adequately addressed this issue have either (1) type tested "worse-case" air flow conditions of plant-specific fire damper configurations; (2) tested all dampers installed in required fire barriers; or (3) administratively shut down the ventilation systems to an area upon confirmation of a fire. The last approach has been incorporated into plant emergency procedures.

Because all curtain-type fire dampers currently installed at nuclear power stations are of a similar design, all stations having these fire dampers should consider the 10 CFR Part 21 report, which specifically references Ruskin dampers, to be applicable to curtain-type fire dampers manufactured by other companies. This type of fire damper, as installed in nuclear power stations, is typically used to protect redundant trains of safe shutdown systems and should be capable of closing and latching under anticipated air flow conditions.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact one of the technical contacts listed below or the Regional Administrator of the appropriate regional office.

*Charles E. Rossi*  
Charles E. Rossi, Director  
Division of Operational Events Assessment  
Office of Nuclear Reactor Regulation

Technical Contacts: Dennis J. Kubicki, NRR  
(301) 492-0825

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(312) 790-5712

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LIST OF RECENTLY ISSUED  
NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
89-51	Potential Loss of Required Shutdown Margin During Refueling Operations	5/31/89	All holders of OIs or CPs for nuclear power reactors.
88-88, Supp. 1	Degradation of Westinghouse ARD Relays	5/31/89	All holders of OIs or CPs for nuclear power reactors.
89-50	Inadequate Emergency Diesel Generator Fuel Supply	5/30/89	All holders of OIs or CPs for nuclear power reactors.
89-49	Failure to Close Service Water Cross-Connect Isolation Valves	5/22/89	All holders of OIs or CPs for nuclear power reactors.
89-48	Design Deficiency in the Turbine-Driven Auxiliary Feedwater Pump Cooling Water System	5/22/89	All holders of OIs or CPs for nuclear power reactors.
89-47	Potential Problems With Worn or Distorted Hose Clamps on Self-Contained Breathing Apparatus	5/18/89	All holders of OIs or CPs for nuclear power reactors and fuel facilities.
89-46	Confidentiality of Exercise Scenarios	5/11/89	All holders of licenses for fuel cycle facilities and byproduct material licensees having an approved emergency response plan.
89-45	Metalclad, Low-Voltage Power Circuit Breakers Refurbished with Sub-standard Parts	5/8/89	All holders of OIs or CPs for nuclear power reactors.
89-44	Hydrogen Storage on the Roof of the Control Room	4/27/89	All holders of OIs or CPs for nuclear power reactors.

OL = Operating License  
CP = Construction Permit

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TechEd  
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\*D/DRIS:NRR  
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