

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

March 2, 1984

IE INFORMATION NOTICE NO. 84-16: FAILURE OF AUTOMATIC SPRINKLER SYSTEM VALVES
TO OPERATE

Addressees:

All nuclear power reactor facilities holding an operating license (OL) or a construction permit (CP).

Purpose:

This information notice provides notification of a problem involving the operational failure of deluge and pre-action fire protection water control valves, identified as Model C, manufactured by Automatic Sprinkler Corporation of America of Cleveland, Ohio. It is expected that recipients will review this information notice for applicability to their facilities. No specific action or response is required.

Description of Circumstances:

On September 4, 1983, Mississippi Power and Light (MP&L) Company's Grand Gulf Unit 1 was performing an operational test of an emergency diesel-generator when a fire involving the diesel engine occurred. The fire brigade arrived to find that the automatic deluge valve had not opened. The manual release failed to open the valve. A mechanic opened the actuator box cover and struck the actuation weight, forcing the clapper latch to release, permitting water spray from the sprinkler system to extinguish the fire. (See Attachment 1.) The valve was a 6-inch Model C, manufactured by Automatic Sprinkler Corporation of America of Cleveland, Ohio. (Reference LER 50-416/83-126.)

During subsequent testing and examination, excessive friction was noted between the weight and the weight guide rod; bowing (0.005-inch) was observed in the weight guide rod; evidence of scoring was found in two locations on the rod's surface; the weight's upper guide collar had an inside diameter (ID) of 0.637 inch rather than the manufacturer's recommended minimum of 0.647 inch; and scoring was noted on the enclosing box along the path that the weight guide bushing traces during actuation.

On December 5, 1983, a Model C valve for a pre-action sprinkler system protecting a diesel generator room failed to operate during a test at Grand Gulf. Similar roughness was found in its internals. A search of records uncovered


another event at Grand Gulf in which a Model C valve installed to protect a main transformer failed to open during a test in September 1979.

The valve manufacturer has been notified of these failures and is evaluating this problem to determine the action required.

The licensee's preliminary investigation indicates that these failures may be related to the surface condition of the latch which holds the water clapper in the normally closed position. If the mating surfaces of the latch and clapper are not smooth, the latch may fail to disengage when the actuation weight hits the latch arm. If the normal water system pressure applied to the clapper valve exceeds 140 psig, the problem becomes more acute. The water pressure at Grand Gulf is maintained at 140 psig.

MP&L has sanded and trued the guide rod; reworked the ID of the weight's upper guide collar; lubricated the rod, latch pin, clapper hinge pin, and the enclosed box along the path of the weight guide bushings; temporarily increased the testing frequency of the valves; and revised the surveillance procedures to visually verify that the clapper has lifted and locked open following the test under normal system pressure.

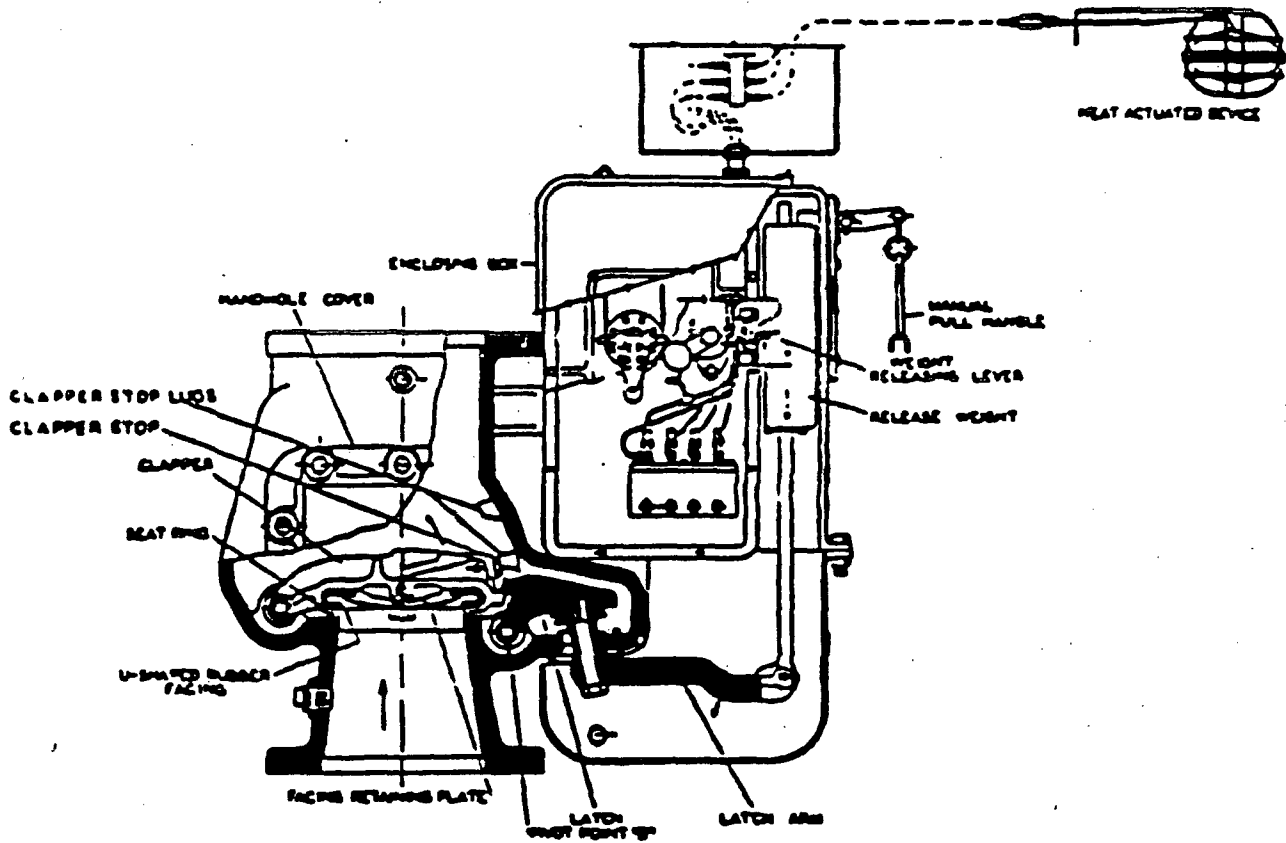
If you have any questions regarding this matter, contact the Regional Administrator of the appropriate NRC Regional Office, or this office.


Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

Technical Contact: M. S. Wegner, IE
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Attachments:

1. Drawing of Automatic Model C Valve
2. List of Recently Issued IE Information Notices



MODEL C VALVE

LIST OF RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
84-15	Reporting of Radiological Releases	3/2/84	All power reactor facilities holding an OL or CP
84-14	Highlights of Recent Transport Regulatory Revisions by DOT and NRC	3/2/84	All NRC licensees
84-13	Potential Deficiency in Motor-Operated Valve Control Circuits and Annunciation	2/28/84	All power reactor facilities holding an OL or CP
84-12	Failure of Soft Seat Valve Seals	2/27/84	All power reactor facilities holding an OL or CP
84-11	Training Program Deficiencies	2/24/84	All power reactor facilities holding an OL or CP
84-10	Motor-Operated Valve Torque Switches Set Below the manufacturer's Recommended Value	2/21/84	All power reactor facilities holding an OL or CP
84-09	Lessons Learned from NRC Inspections of Fire Protection Safe Shutdown Systems (10 CFR 50, Appendix R)	02/13/84	All power reactor facilities holding an OL or CP
83-63 Supp 1	Pontential Failures of Westinghouse Electric Corporation Type SA-1	2/15/84	All power reactor facilities holding an OL Or CP
84-08	10 CFR 50.7, "Employee Protection"	2/14/84	All power reactor facilities holding an OL or CP; and NSSS & AE

OL = Operating License
CP = Construction Permit