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

September 16, 1986

IE INFORMATION NOTICE NO. 86-82: FAILURES OF SCRAM DISCHARGE VOLUME VENT AND DRAIN VALVES

Addressees:

All nuclear power reactor facilities holding an operating license or a construction permit.

Purpose:

This notice is provided to inform recipients of a potentially significant problem pertaining to failures of the Hammel-Dahl valves used as vent and drain valves in the control rod drive (CRD) systems of certain boiling water reactors. It is suggested that recipients will review the information for applicability to their facilities and consider actions, if appropriate, to preclude a similar problem from occurring at their facilities. 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 February 8, 1985, the General Electric Company (GE) notified the NRC of a coupling failure of the 2"-2500# Hammel-Dahl valve used as a CRD drain valve in the scram discharge volume (SDV). The coupling connected the air actuator to the valve stem and its failure prevented the valve from fully opening or closing. This failure had occurred during equipment qualification in a laboratory and was due to automatic actuation while the manual handwheel was partially engaged.

GE identified the 2"-600#, 1"-2500#, and 1"-600# as having the same coupling design. The 1" valves are used as SDV vent valves.

On May 13,1985, GE issued service information letter (SIL) 422 to inform its customers of the potential for failure of the valve and recommended actions. In SIL 422, GE mentions a related problem that occurred at an operating plant.

Subsequently, two additional operating plants have experienced valve failures caused by partially engaged handwheels: Limerick in November of 1985 and Hope Creek in May of 1986. Limerick found an SDV drain valve with its handwheel off the neutral position and attempted to actuate the valve from the control room. The valve would not operate. Hope Creek found a coupling failed in a drain valve and the handwheel partially engaged.

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Discussion:

The SDV vent and drain valves are primary containment isolation valves that are normally open while the plant is operating. There are two valves in series in each vent and drain line. They allow water from the normal CRD seal leakage to drain to radwaste rather than accumulate in the SDV. When a scram occurs, the vent and drain valves close to isolate reactor coolant from radwaste.

GE SIL 422 recommends that licensees "provide adequate training, operating procedures, and checks to help assure that the handwheels of the valves are in the neutral position to prevent inadvertent engagement of the handwheel during automatic actuation of the valves."

When the handwheel is engaged or partially engaged, the automatic actuation function may be prevented, or, if it occurs, may damage the actuator or stem of the valve, causing it to fail in its "as-is" position. These valves are primary containment isolation valves. If two valves in series fail open, a discharge path will exist for reactor coolant to drain to the plant drain system. This path can be isolated by resetting the scram signal or by manually closing the #102 or #112 valves on each associated hydraulic control unit (HCU). (There are approximately 92 HCUs per SDV.) If the vent and drain valves fail closed, the CRD seal leakage will collect in the SDV until the SDV level reaches the scram set point.

The failure of either redundant vent valve and or either redundant drain valve represent a degradation of safety systems (CRD, primary containment, and the primary containment isolation system) and could result in unnecessary challenges of the reactor protection system. Licensee corrective actions have included training, procedure revision, and enhanced surveillance as well as adding administrative controls to maintain the handwheels in the neutral position.

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

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

Technical Contact: Mary S. Wegner, IE
(301)492-4511

Attachment: List of Recently Issued IE Information Notices

LIST OF RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
86-81	Broken Inner-External Closure Springs On Atwood & Morrill Main Steam Isolation Valves	9/15/86	All power reactor facilities holding an OL or CP
86-80	Unit Startup With Degraded High Pressure Safety Injection System	9/12/86	All power reactor facilities holding an OL or CP
86-79	Degradation Or Loss Of Charging Systems At PWR Nuclear Power Plants Using Swing-Pump Designs	9/2/86	All power reactor facilities holding an OL or CP
86-78	Scram Solenoid Pilot Valve (SSPV) Rebuild Kit Problems	9/2/86	All BWR facilities holding an OL or CP
86-77	Computer Program Error Report Handling	8/28/86	All power reactor facilities holding an OL or CP and nuclear fuel manufacturing facilities
86-76	Problems Noted In Control Room Emergency Ventilation Systems	8/28/86	All power reactor facilities holding an OL or CP
86-75	Incorrect Maintenance Procedure On Traversing Incore Probe Lines	8/21/86	All power reactor facilities holding an OL or CP
86-74	Reduction Of Reactor Coolant Inventory Because Of Misalignment Of RHR Valves	8/20/86	All BWR facilities holding an OL or CP
86-73	Recent Emergency Diesel Generator Problems	8/20/86	All power reactor facilities holding an OL or CP
86-72	Failure 17-7 PH Stainless Steel Springs In Valcor Valves Due to Hydrogen Embrittlement	8/19/86	All power reactor facilities holding an OL or CP

OL = Operating License
CP = Construction Permit