

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

April 30, 1985

IE INFORMATION NOTICE NO. 85-35: FAILURE OF AIR CHECK VALVES TO SEAT

Addressees:

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

Purpose:

This information notice is being provided as a notification of a potentially significant problem pertaining to Parker-Hannifin Corporation check valves, supplied by Anchor/Darling Valve Company, that may degrade the capability for closing main steam isolation valves (MSIVs) or feed water isolation valves (FWIVs) or may inhibit other safety functions. It is expected that recipients will review the information for applicability to their facilities and consider actions, if appropriate, to preclude a similar problem 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 March 14, 1985, at Byron Unit 1, two MSIVs failed to close on a main steam line isolation signal as required. The cause was determined to be failure of instrument air check valves to seat in response to gradually decreasing air pressure.


At the time of the isolation signal, the unit was cooling down following the startup test for loss of offsite power. The removal of offsite power had deenergized the station air compressors, allowing the instrument air pressure to decrease. The leaking instrument air check valves had allowed air accumulators to bleed down, removing the air pressure needed to shift hydraulic spool valves so that the hydraulic circuits could close the MSIV (see Figure 1). As a result, one of the four MSIVs did not close and one MSIV only partially closed.

In subsequent bench testing, 7 of 8 check valves removed from Unit 1 failed to seat, as did 4 of 11 replacement valves, when gradual loss of instrument air pressure was simulated. All valves seated when the supply pressure was rapidly decreased. Preoperational testing using rapid depressurization was satisfactory; however, preoperational testing did not require slow depressurization. Subsequent retesting has indicated continuing problems. The licensee has decided to replace all these Parker-Hannifin check valves with Parker-Hannifin check valves of modified design.

The valves that leaked are identified in Parker-Hannifin literature as "Barstock Inline Check Valves, C Series, Catalog 2502." They were manufactured by Parker-Hannifin and supplied by Anchor/Darling Valve Company (Part No. W30261). The replacement valves are described as Viton Seat Body Brass Check Valves with order number 8F-CAL-10-B. Anchor/Darling has notified the NRC that the same check valves have been supplied to the plants listed in Attachment 1 for use in instrument air supply lines to MSIV actuators or to FWIV actuators. It should also be noted that the valves may be in use in other applications and/or other facilities.

A previous Information Notice, 82-25, described a related event with different equipment. Valves equipped with Ralph A. Hiller Co. actuators were capable of achieving their fail-safe position when the instrument air header was suddenly depressurized, but would not do so with a slow depressurization.



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: Vern Hodge, IE
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Attachments:

1. Figure 1 MSIV Control System
2. List of Known Applications
3. List of Recently Issued IE Information Notices

 Air System
 Hydraulic System

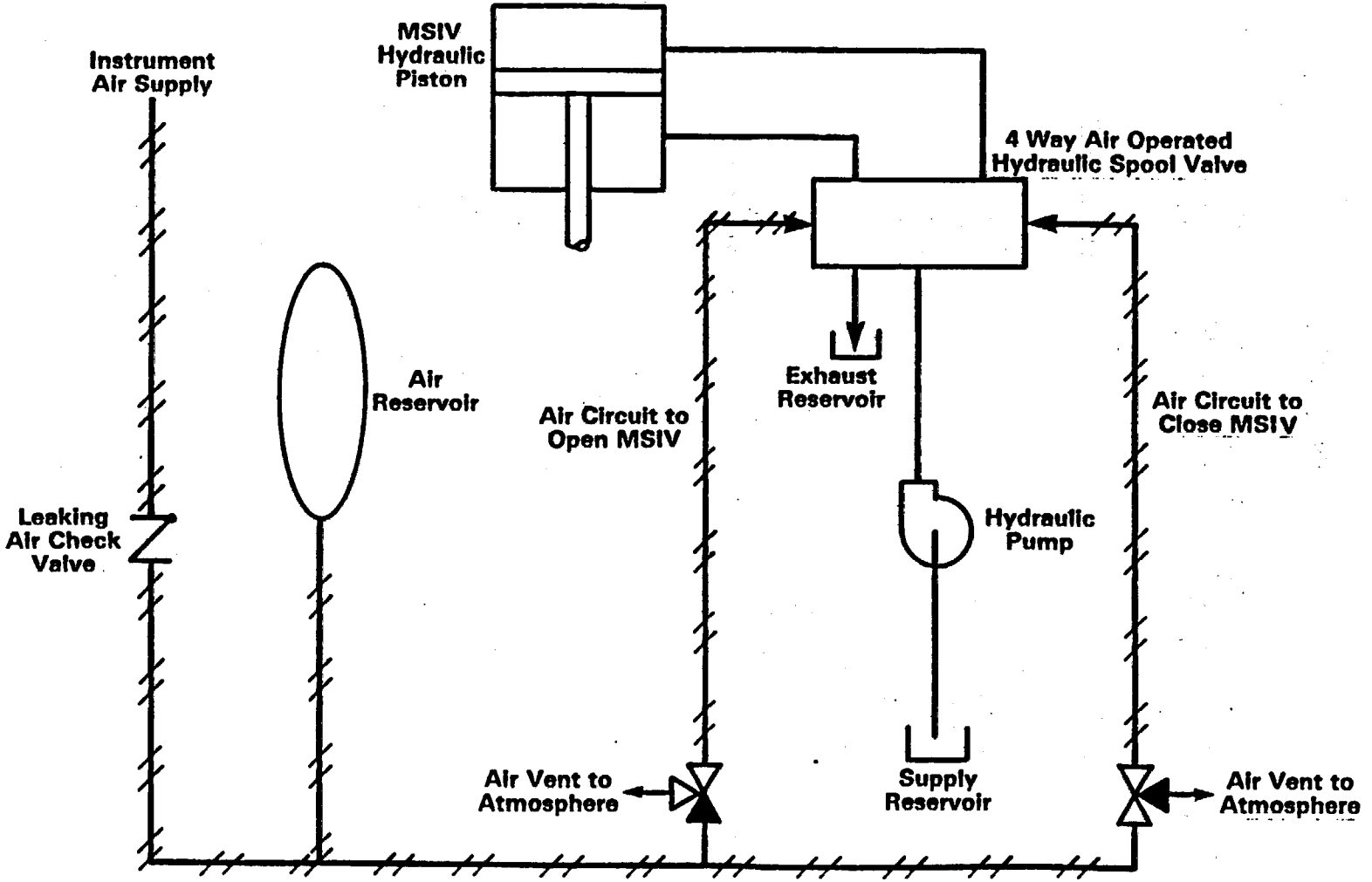


Figure 1 MSIV Control System

Attachment 1
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List of Known Applications

The Anchor/Darling Valve Company has supplied Parker-Hannefin air check valves, which leaked at Byron 1, to the following plants for applications in main steam isolation valve (MSIV) actuators or feed water isolation valve (FWIV) actuators.

<u>Plant</u>	<u>Application</u>
Byron 1, 2	MSIV
Braidwood 1, 2	MSIV
Callaway	MSIV, FWIV
Wolf Creek	MSIV, FWIV
WNP 1	MSIV, FWIV
WNP 3	MSIV
Palo Verde 1, 2, 3	MSIV, FWIV
Millstone 3	FWIV
Summer	FWIV
Waterford 3	FWIV
Vogtle 1, 2	FWIV

LIST OF RECENTLY ISSUED
 IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
85-34	Heat Tracing Contributes To Corrosion Failure Of Stainless Steel Piping	4/30/85	All power reactor facilities holding an OL or CP
84-84 Rev. 1	Deficiencies In Ferro-Resonant Transformers	4/24/85	All power reactor facilities holding an OL or CP
85-33	Undersized Nozzle-To-Shell Welded Joints In Tanks And Heat Exchangers Constructed Under The Rules Of The ASME Boiler And Pressure Vessel Code	4/22/85	All power reactor facilities holding an OL or CP
85-32	Recent Engine Failures Of Emergency Diesel Generators	4/22/85	All power reactor facilities holding an OL or CP
85-31	Buildup Of Enriched Uranium In Ventilation Ducts And Associated Effluent Treatment Systems	4/19/85	All uranium fuel fabrication licensees
85-30	Microbiologically Induced Corrosion Of Containment Service Water System	4/19/85	All power reactor facilities holding an OL or CP
85-29	Use Of Unqualified Sources In Well Logging Applications	4/12/85	All well logging source licensees
85-03 Sup. 1	Separation Of Primary Reactor Coolant Pump Shaft And Impeller	4/9/85	All power reactor facilities holding an OL or CP
85-28	Partial Loss Of AC Power And Diesel Generator Degradation	4/9/85	All power reactor facilities holding an OL or CP

OL = Operating License
 CP = Construction Permit