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

May 29, 1992

NRC INFORMATION NOTICE 92-41: CONSIDERATION OF THE STEM REJECTION LOAD IN CALCULATION OF REQUIRED VALVE THRUST

Addressees

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

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice to alert addressees to the fact that a valve vendor (Anchor Darling Valve Co.) did not include the stem rejection load in its calculation of the minimum thrust requirements for some of its motor-operated valves (MOVs). 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 are not NRC requirements; therefore, no specific action or written response is required.

Description of Circumstances

On February 12, 1992, the General Electric Company (GE) notified the NRC by letter that it had found instances in which Anchor Darling had not included the stem rejection load in its calculation of the minimum thrust requirements for some motor-operated gate valves. GE indicated that Anchor Darling representatives had stated that their standard practice was not to include the stem rejection load if it was less than 20 percent of the disk force. Further, when the stem rejection load exceeded 20 percent of the disk force, they would only include the excess above 20 percent. GE stated that the licensees of boiling water reactor (BWR) plants were including the stem rejection load in their minimum thrust calculations in their responses to Generic Letter (GL) 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance."

On March 18, 1992, the Commonwealth Edison Company notified the NRC by letter of a similar concern.

During a telephone conversation with the NRC, Anchor-Darling stated that in December 1980 they began including the stem rejection load in calculations of the minimum thrust requirements for all motor-operated gate valves.

Discussion

A primary reason for developing GL 89-10 was the concern that valve vendors had underestimated the thrust required to operate their valves under design-basis conditions. This concern has been verified for some valves under certain differential pressure and flow conditions through operating events, motor-operated valve research, and licensee testing as part of their GL 89-10 programs. As licensees have obtained additional information from their own MOV tests and other sources, they have found that some MOVs required upgrading to ensure their design-basis operability.

Valve vendors typically have predicted the minimum thrust required to operate valves by calculating the sum of the differential pressure load (the product of the valve factor, the differential pressure, and the disk flow area), the stem rejection load (the product of the system pressure and the stem area), and the packing load. In its Gate and Globe Valve Operator Selection Procedure SEL-3 (February 26, 1979), the actuator manufacturer (Limitorque Corporation) states that stem rejection load may be neglected if system pressure is below 500 pounds per square inch. However, Limitorque also states that further consideration may be necessary where the running load (the sum of stem rejection load and packing load) constitutes more than one-third of the total required thrust.

The fact that Anchor Darling did not consider stem rejection load before December 1980 provides additional evidence that thrust requirements for some MOVs may be underestimated. This condition may also apply to other valve vendors in that they may have not included the stem rejection load in their minimum thrust calculation. The implementation of GL 89-10 programs by licensees on a prompt basis will likely resolve this issue.

This information notice requires no specific action or written response. If you have any questions about the information in this notice, please contact one of the technical contacts listed below or the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

Charles E. Rossi

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

Technical contacts: Thomas G. Scarbrough, NRR
(301) 504-2794

Edmund J. Sullivan, Jr., NRR
(301) 504-3266

Attachment: List of Recently Issued NRC Information Notices

LIST OF RECENTLY ISSUED NRC INFORMATION NOTICES

Information Notice No.	Subject	Date of Issuance	Issued to
92-40	Inadequate Testing of Emergency Bus Undervoltage Logic Circuitry	05/27/92	All holders of OLs or CPs for nuclear power reactors.
92-39	Unplanned Return to Criticality during Reactor Shutdown	05/13/92	All holders of OLs or CPs for nuclear power reactors.
92-38	Implementation Date for the Revision to the EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents	05/12/92	All holders of OLs or CPs for nuclear power reactors, non-power reactors and materials licensees authorized to possess large quantities of radioactive material.
92-37	Implementation of the Deliberate Misconduct Rule	05/08/92	All Nuclear Regulatory Commission Materials Licensees.
92-16, Supp. 1	Loss of Flow from the Residual Heat Removal Pump during Refueling Cavity Draindown	05/07/92	All holders of OLs or CPs for nuclear power reactors.
92-36	Intersystem LOCA Outside Containment	05/07/92	All holders of OLs or CPs for nuclear power reactors.
92-35	Higher Than Predicted Erosion/Corrosion in Unisolable Reactor Coolant Pressure Boundary Piping Inside Containment at A Boiling Water Reactor	05/06/92	All holders of OLs or CPs for nuclear power reactors.

OL = Operating License
CP = Construction Permit