UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

March 12, 1998

The Honorable Shirley Ann Jackson
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Chairman Jackson:

SUBJECT: RISK-RANKING APPROACH FOR MOTOR-OPERATED VALVES

During the 449th meeting of the Advisory Committee on Reactor Safeguards (ACRS), March 2-4, 1998, we reviewed the efforts of the staff and industry to resolve the issues raised in Generic Letters (GL) 89-10 and 96-05. During this review, we had the benefit of discussions with representatives of the NRC staff and of the documents referenced.

This subject has been of continued interest to the ACRS for almost a decade, as evidenced by our report dated May 9, 1989, on this subject and by our subsequent periodic reviews of the subject matter.

The staff and industry efforts have led to substantial increases in the reliability of motor-operated valves (MOVs) under flow conditions for design-basis accidents. Virtually all licensee responses to GL 89-10 have been closed out and a long-term resolution of this issue will be achieved through GL 96-05. This progress has been made possible, to a large extent, by the cooperation between the staff and the licensees, as both have recognized the significance of this important safety issue.

A Joint Owners Group (JOG), with representation from owners of 93 operating plants, was formed. The JOG proposed a risk-ranking approach for MOVs. The frequency of inspection and testing was then related to the risk to plant safety imposed by failure of the individual MOVs. The NRC staff reviewed the proposed program and issued a Safety Evaluation Report that endorsed the methodology with some limitations and conditions, which were accepted by the JOG.

The staff's concern about the emphasis of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code on stroke time and leak testing under normal conditions was resolved by a combination of dynamic testing by the Electric Power Research Institute and instrumented diagnostic tests at nuclear power plants. These results provided an empirical database that is being used to assess the performance of MOVs.

Expert panels were used extensively to evaluate the risk ranking of systems and components. The lessons learned from this experience should be helpful to the utilities in the implementation of other programs that rely on expert panels for this purpose.

The efforts of the staff and industry have resulted in a program that increases assurance of the proper functioning of MOVs during safety operations.

Sincerely,

R. L. Seale

R. L. Seale
Chairman

References:

1. NRC Generic Letter 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," issued June 28, 1989.
2. NRC Generic Letter 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," issued September 18, 1996.
3. NRC Generic Letter 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," issued August 17, 1995.
4. V-E-C-1658, Rev. 1, "Risk Ranking Approach for Motor-Operated Valves in Response to Generic Letter 96-05," Westinghouse Electric Company, December 1997.
5. NRC Safety Evaluation of BWR Owners' Group Topical Report NEDC 32264, "Application of Probabilistic Safety Assessment to Generic Letter 89-10 Implementation" (Revision 2), February 27, 1996.
6. Letter dated October 30, 1997, from T. H. Essig, Office of Nuclear Reactor Regulation, NRC, to T. J. Rausch, Commonwealth Edison Company, Subject: Safety Evaluation of Joint Owners' Group Program on Periodic Verification of Motor-Operated Valves Described in Topical Report NEDC-32719 (Revision 2).

7. ACRS report dated May 9, 1989, from Forrest J. Remick, Chairman, ACRS, to NRC Chairman Lando W. Zech, Jr., Subject: Generic Letter on Safety-Related Motor-Operated Valve Testing and Surveillance.