

January 3, 1996

FOR: The Commissioners
 FROM: James M. Taylor /s/
 Executive Director for Operations
 SUBJECT: PROPOSED NRC GENERIC LETTER 89-10, SUPPLEMENT 7, "CONSIDERATION OF VALVE MISPOSITIONING IN PRESSURIZED-WATER REACTORS" (TAC NO. M82072)

PURPOSE:

To inform the Commission, in accordance with the guidance in the December 20, 1991, memorandum from Samuel J. Chilk to James M. Taylor regarding SECY-91-172, "Regulatory Impact Survey Report - Final," of the staff's intent to issue the subject generic letter supplement. This generic letter supplement will remove the recommendation that pressurized-water reactor (PWR) licensees consider motor-operated valve (MOV) mispositioning in responding to Generic Letter (GL) 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance." A copy of the proposed generic letter supplement is attached.

DISCUSSION:

In GL 89-10, the staff requested that licensees and construction permit holders develop a program that "should provide for testing, inspection, and maintenance of [safety-related] MOVs so as to provide the necessary assurance that they will function when subjected to the design-basis conditions..." by June 28, 1994, or by three refueling outages following December 28, 1989 (whichever was later). The recommended actions stated (in part):

Any MOV in a safety-related system that is not blocked from inadvertent operation from either the control room, the motor control center, or the valve itself should be considered capable of being mispositioned (referred to as position-changeable MOVs) and should be included in the program. When determining the maximum differential pressure or flow for position-changeable MOVs, the fact that the MOV must be able to recover from mispositioning should be considered.

Supplement 1 to GL 89-10 limited the prevention of inadvertent MOV operation within the context of the generic letter to the potential for MOV mispositioning from the control room. Supplement 4 to GL 89-10, which was issued on February 12, 1992, withdrew for boiling-water reactor (BWR) licensees the recommendation that MOVs in safety-related systems that are not blocked from inadvertent operation from the control room be considered capable of being mispositioned in assessing the adequacy of the MOV and plant design. Proposed Supplement 7 to GL 89-10 will withdraw this recommendation for PWR licensees.

The staff's conclusion that the MOV mispositioning issue should be removed from the scope of GL 89-10 for PWRs is based on the following considerations. First, the staff now concludes that the importance of valve mispositioning may have been overstated, especially in light of other actions to improve the capability of valves to function and to reduce the likelihood of valve mispositioning. Second, the valve mispositioning issue is beyond the design-basis requirements for the plants because it involves the assumption of multiple failures. Third, this action will be consistent with the judgments made in GL 89-10, Supplement 4, to remove the recommendation for BWRs. Fourth, efforts to date by Brookhaven National Laboratory and the staff have shown that a quantitative assessment of the risks associated with valve mispositioning is very difficult and largely beyond the state-of-the-art for current probabilistic risk assessments. However, qualitative insight from the review of several studies suggests that valve mispositioning is of limited safety significance and that it is best addressed by focusing on the physical phenomena that make some valves vulnerable to failure when mispositioned. Since its studies do not provide a strong technical basis for concluding that retaining the recommendation would result in "a substantial increase in the overall protection of the public health and safety," (10 CFR 50.109(a)(3)) the staff concludes that the appropriate action is to inform PWR licensees that MOV mispositioning need not be a part of their MOV program unless they address it voluntarily.

A notice of opportunity for public comment on the proposed generic letter supplement was published in the *Federal Register* for a 30-day public comment period on July 26, 1995. Four comments were received (from Nuclear Energy Institute, Florida Power Corporation, Centor Energy, and Virginia Power). All four comments supported issuance of the generic letter supplement as written. Centor Energy also suggested that the supplement clarify how licensees should administratively handle any commitments they might have made related to valve mispositioning. This comment was accepted and is incorporated in the staff position section of the supplement (that is, "Licensees that have already taken action or made commitments related to valve mispositioning may take advantage of this relaxed staff position provided the licensees document this change in their Generic Letter 89-10 programs.").

Copies of the comments received are available in the NRC Public Document Room (PDR). A copy of the staff evaluation of these comments is available in the NRC central files and will be made available in the PDR after the generic letter supplement is issued.

The proposed generic letter supplement was reviewed by the Committee To Review Generic Requirements (CRGR) during its meeting number 257 on May 10, 1994, and again at meeting number 276 on July 14, 1995. The staff incorporated all comments provided by the CRGR in those meetings. As previously stated, the proposed generic letter supplement was subsequently issued for public comment on July 26, 1995. In light of the public comments on the proposed supplement and because the supplement had not changed substantively since the CRGR's earlier review, on December 18, 1995, the CRGR staff indicated that NRR could proceed with issuance of the generic letter supplement without further interactions with CRGR.

The Office of the General Counsel reviewed this generic letter supplement and has no legal objections to its issuance.

The staff intends to issue this generic letter supplement approximately 10 working days after the date of this information paper.

James M. Taylor
 Executive Director for Operations

CONTACT: David C. Fischer
 415-2728

Attachment: [Proposed Generic Letter 89-10, Supplement 7, "Consideration of Valve Mispositioning in Pressurized-water Reactors"](#)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555-0001

{ date }

NRC GENERIC LETTER 89-10, SUPPLEMENT 7: "CONSIDERATION OF VALVE MISPOSITIONING IN PRESSURIZED-WATER REACTORS"

Addressees

All holders of operating licenses (except those licenses that have been amended to a possession only status) or construction permits for nuclear power reactors

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this generic letter supplement to notify addressees about a revised NRC position regarding consideration of valve mispositioning within the scope of Generic Letter (GL) 89-10 for pressurized-water reactors (PWRs). Although this generic letter supplement forwards a new staff position, no specific action or written response is required.

Background

In GL 89-10 (June 28, 1989), "Safety-Related Motor-Operated Valve Testing and Surveillance," the staff recommended, among other things, that any motor-operated valve (MOV) in a safety-related system that is not blocked from inadvertent operation from the control room, the motor control center, or the valve itself, be considered capable of being mispositioned (referred to as position-changeable MOVs) and be included in licensee MOV programs. When determining the maximum differential pressure or flow for position-changeable MOVs, the licensees were asked to consider "the fact that the MOV must be able to recover from mispositioning ...". Supplement 1 to GL 89-10 limited the prevention of inadvertent MOV operation within the context of the generic letter to the potential for MOV mispositioning from the control room.

The Boiling Water Reactor Owners Group (BWROG) submitted a backfit appeal on the recommendations for position-changeable valves. The staff, with the assistance of Brookhaven National Laboratory (BNL), reviewed and evaluated the issues concerning the mispositioning of valves from the control room and determined that the recommendations in GL 89-10 should be changed for BWRs. The BNL study, which used probabilistic risk assessment (PRA) techniques, and the NRC staff evaluation and conclusions were transmitted in a letter from the NRC to the BWROG dated February 12, 1992. The conclusions were communicated to industry and the public at large via Supplement 4 to GL 89-10, also dated February 12, 1992. Supplement 4 indicated that the NRC would perform a similar review for PWRs and stated that GL 89-10 might be revised, if warranted, to clarify the NRC position regarding consideration of MOV mispositioning within the scope of GL 89-10 for PWRs.

Description of Circumstances

By letter dated July 21, 1992, the Westinghouse Owners Group (WOG) asked the NRC staff to notify PWR licensees that the provisions of GL 89-10 for valve mispositioning are not applicable to PWRs, based on arguments similar to those made by the BWROG.

Discussion

Under contract to the NRC staff, BNL performed a study similar to the one performed for BWRs of the safety significance of inadvertent operation of MOVs in safety-related piping systems of three PWRs. Consistent with Supplement 1 to GL 89-10, the scope of the study was limited to MOVs in safety-related systems that could be mispositioned from the control room. However, because the available PRA models do not include active mispositioning of MOVs or the physical phenomena that could inhibit repositioning, BNL's study of available plant models was limited in its ability to address this issue. Given this limited scope, BNL concluded that the risk insights from the mispositioning of unlocked MOVs were similar for both PWRs and BWRs. Although PWRs tend to have a higher core damage frequency (CDF) than BWRs, which would suggest that the net increase in CDF from mispositioning of MOVs would be higher for PWRs than for BWRs, PWRs typically have a lower conditional containment failure probability, which would tend to balance the overall risk to the public.

The NRC is removing the recommendation that MOV mispositioning be considered by PWR licensees in responding to GL 89-10, as was done for BWR licensees in Supplement 4, in light of the following:

- Corrective actions have been taken by licensees subsequent to the Davis-Besse event (i.e., detailed control room design reviews, independent valve position verification programs, and operator training improvements),
- Corrective actions are being applied to many of the most important valves under the other provisions of GL 89-10,
- Other operational events are absent (other than Davis-Besse) in which mispositioning MOVs from the control room actually set up conditions that prevented repositioning, and
- The results of the BNL study for PWRs.

Implementation of this relaxation by licensees is voluntary.

Staff Position

The staff no longer considers the inadvertent operation of MOVs from the control room to be within the scope of GL 89-10 for PWRs. However, the staff believes that consideration of valve mispositioning benefits safety.

Licensees that have already taken action or made commitments related to valve mispositioning may take advantage of

this relaxed staff position provided the licensees document this change in their GL 89-10 programs.

Modifying the provisions in GL 89-10 for valve mispositioning does not affect the GL 89-10 recommendations for licensees to review safety analyses, emergency procedures, and other plant documentation to determine the design-basis⁽¹⁾ fluid conditions under which all MOVs in safety-related piping systems may be called upon to function. This position also does not supersede the NRC generic recommendations or regulations on valve mispositioning that pertain to such other issues as interfacing-systems loss-of-coolant accidents (ISLOCAs) or fire protection (10 CFR Part 50, Appendix R).

Backfit Discussion

This letter represents a relaxation of recommendations set forth in GL 89-10 and prior supplements. Implementation of this relaxation is voluntary and this generic letter supplement requests neither actions nor information from licensees. Therefore, this generic letter supplement is not considered a backfit and the staff has not performed a backfit analysis.

Federal Register Notification

The proposed generic letter supplement was published in the *Federal Register* for a 30-day public comment period on July 26, 1995. Four comments were received (from Nuclear Energy Institute, Florida Power Corporation, Centerior Energy, and Virginia Power). All four comments supported issuance of the generic letter supplement as written. Centerior Energy also suggested that the supplement clarify how licensees should administratively handle any commitments they might have made related to valve mispositioning. This comment was accepted and is incorporated in the staff position section of this supplement.

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

Dennis M. Crutchfield, Director
Division of Reactor Program Management
Office of Nuclear Reactor Regulation

Technical contact:

David C. Fischer, NRR (301) 415-2728

Lead project manager:

Allen G. Hansen, NRR (301) 415-1390

Attachment: 1. List of Recently Issued NRC Generic Letters

¹ Design-basis conditions are those conditions during both normal operation and abnormal events that are within the design basis of the plant.