



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 28, 1993

TO: ALL LICENSEES OF OPERATING NUCLEAR POWER PLANTS AND HOLDERS OF
CONSTRUCTION PERMITS FOR NUCLEAR POWER PLANTS

SUBJECT: GENERIC LETTER 89-10, SUPPLEMENT 5, "INACCURACY OF MOTOR-OPERATED
VALVE DIAGNOSTIC EQUIPMENT"

BACKGROUND

In Generic Letter (GL) 89-10 (June 28, 1989), "Safety-Related Motor-Operated Valve Testing and Surveillance," the NRC staff requested holders of operating licenses and construction permits for nuclear power plants to provide additional assurance of the capability of safety-related motor-operated valves (MOV) and certain other MOVs in safety-related systems to perform their intended functions by reviewing MOV design bases, verifying MOV switch settings initially and periodically, testing MOVs under design-basis conditions where practicable, improving evaluations of MOV failures and necessary corrective action, and trending MOV problems. The NRC staff issued several supplements to GL 89-10 to clarify or modify its recommendations.

As an integral part of their GL 89-10 programs, most licensees are relying on MOV diagnostic equipment to provide information on the thrust required to open or close the valve as well as the thrust delivered by the motor actuator. The various types of MOV diagnostic equipment estimate stem thrust using different parameters, such as spring pack displacement or strain in the stem, mounting bolts, or yoke. Because some licensees make decisions regarding the operability of safety-related MOVs based on diagnostic equipment thrust readings, the use of MOV diagnostic equipment can have a significant effect on the safe operation of a nuclear power plant.

DISCUSSION

The NRC staff has recently become aware of new information on the accuracy of MOV diagnostic equipment. This new information raises a generic concern regarding the reliability of the data provided by MOV diagnostic equipment. For example, the MOV Users Group (MUG) of nuclear power plant licensees on February 3, 1992, released "Final Report - MUG Validation Testing as Performed at Idaho National Engineering Laboratories" (Volume 1). The MUG final report indicates that the MOV diagnostic equipment that relied on spring pack displacement to estimate stem thrust did not meet the accuracy claims of its vendors. In addition, the NRC staff has been informed of increased inaccuracy of specific MOV diagnostic equipment that relies on valve yoke strain to estimate stem thrust.

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On March 2, 1992, the NRC staff held a public meeting with representatives of ITI-MOVATS to discuss the accuracy of the ITI-MOVATS thrust measuring device (TMD) to estimate stem thrust on the basis of spring pack displacement. At this meeting, the representatives of ITI-MOVATS indicated that the results of their field validation program showed that the inaccuracy of the TMD may be larger than licensees had assumed in some instances. The ITI-MOVATS representatives also discussed the results of their activities to resolve concerns regarding the fact that the TMD is calibrated in the valve opening direction, although it also is used to predict the thrust delivered by the actuator in the valve closing direction. ITI-MOVATS prepared Engineering Report 5.2 (March 13, 1992) to provide guidance to its licensee customers for evaluating the capability of an MOV to perform its safety function under design-basis conditions in light of the increased inaccuracy of the TMD. The Nuclear Management and Resources Council (NUMARC) has developed guidelines for licensees to use in evaluating individual MOVs that had been verified as properly sized and set, using MOV diagnostic equipment manufactured by ITI-MOVATS that relies on spring pack displacement to estimate stem thrust. Subject to comments provided to NUMARC on May 12, 1992, the NRC staff considers the NUMARC guidelines to contain an acceptable approach for addressing the uncertainty resulting from the use of the ITI-MOVATS TMD.

ABB-Impell manufactures MOV diagnostic equipment that relies on spring pack displacement to estimate stem thrust. Following the release of the MUG report, Impell representatives stated that they would be working with their licensee customers to develop new accuracy values. The NRC staff has not reviewed any guidance by Impell to address the new information on MOV diagnostic equipment inaccuracy.

Liberty Technologies has manufactured MOV diagnostic equipment, referred to as valve operation test and evaluation system (VOTES), that estimates the thrust needed to open or close a valve on the basis of strain of the valve yoke. The VOTES equipment derives thrust from yoke strain that has been calibrated to stem thrust using measured diametral strain of the valve stem and nominal engineering material properties. On October 2, 1992, Liberty Technologies notified the NRC, in accordance with 10 CFR Part 21, that it had determined that two new factors can affect the thrust values obtained with its VOTES equipment. Those factors involve (1) the possible use of improper stem material constants and (2) the failure to account for a torque effect when the equipment is calibrated by measuring strain of the threaded portion of a valve stem. In its October 2 submittal, Liberty Technologies provides guidance to licensees for correcting the thrust data by hand calculations and states that its new Software Version 2.3 will assist in performing the corrections. The staff has not evaluated guidance provided to licensees by Liberty Technologies to address the increased inaccuracy of its MOV diagnostic equipment.

GL 91-18, "Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and Operability," contains information on guidance provided to NRC inspectors in the area of operability of safety-related components. If an MOV is determined to be inoperable, the licensee will be expected to satisfy the requirements of the NRC regulations and plant technical specifications.

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REQUESTED ACTIONS

1. On the basis of the new information on MOV diagnostic equipment inaccuracy discussed in this letter, licensees are requested to reexamine their MOV programs and to identify measures taken or planned to account for uncertainties in properly setting valve operating thrust to ensure operability. Licensees should not limit their evaluation to only the specific examples of increased inaccuracy of MOV diagnostic equipment provided in the Discussion section of this GL supplement, but should consider any information reasonably available to them.
2. Licensees are requested to evaluate the schedule necessary (a) to consider the new information on MOV diagnostic equipment inaccuracy and (b) to respond to that information.

REPORTING REQUIREMENTS

Pursuant to section 182a of the Atomic Energy Act of 1954, as amended, 10 CFR 50.54(f) and 10 CFR 2.204, each addressee is required to submit a written response providing the information described below. The response shall be addressed to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555, under oath or affirmation. A copy shall also be submitted to the appropriate regional administrator. This generic letter supplement requires information that will enable the NRC to verify whether the licensee is evaluating new information on the accuracy of MOV diagnostic equipment. This information will enable the Commission to determine whether or not any license should be modified, suspended or revoked.

- (1) Within 90 days of receipt of this letter, all licensees are required to notify the NRC staff of the diagnostic equipment used to confirm the proper size, or to establish settings, for MOVs within the scope of GL 89-10.
- (2) Within 90 days of receipt of this letter, licensees are required to report whether they have taken actions or plan to take actions (including schedule and summary of actions taken or planned) to address the information on the accuracy of MOV diagnostic equipment.

BACKFIT DISCUSSION

The NRC staff has determined that the actions requested in this generic letter supplement are necessary to provide confidence that nuclear power facilities are in compliance with their safety analyses and Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50, which requires that test procedures include provisions for ensuring that adequate test instrumentation is available. Therefore, the NRC staff has determined that this generic letter supplement is exempt from the requirements for preparation of a backfit analysis under 10 CFR 50.109(a)(4)(i).

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The NRC published a proposed version of this generic letter supplement for public comment in the Federal Register on July 8, 1992. The NRC staff response to each public comment received on the proposed generic letter supplement is being placed in the NRC Public Document Room. The accession number for this document is 9306010155.

PAPERWORK REDUCTION ACT STATEMENT

This generic letter contains information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget, approval number 3150-0011.

The public reporting burden for this collection of information is estimated to average 150 hours per licensee response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for further reducing this burden, to the Information and Records Management Branch (MNBB-7714), U.S. Nuclear Regulatory Commission, Washington, D.C., 20555; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-3019, (3150-0011), Office of Management and Budget, Washington, D.C., 20503.

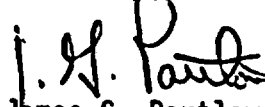
Compliance with the following request for information is purely voluntary. The information would assist the NRC in evaluating the cost of complying with this generic letter supplement:

- (1) the licensee's time and costs to perform requested inspections, corrective actions, and associated testing;
- (2) the licensee's time and costs to prepare the requested reports and documentation;
- (3) the additional short-term costs incurred as a result of the inspection findings, such as the costs of the corrective actions or the costs of down time; and
- (4) an estimate of the additional long-term costs that will be incurred in the future as a result of implementing commitments such as the estimated costs of conducting future inspections or increased maintenance.

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If you have any questions about this matter, please contact the contacts listed below or the appropriate Office of Nuclear Reactor Regulation project manager.

Sincerely,



James G. Partlow
Associate Director for Projects
Office of Nuclear Reactor Regulation

Enclosure:

List of Recently Issued NRC Generic Letters

Technical contact: Thomas G. Scarbrough
(301) 504-2794

Lead Project Manager: Anthony T. Gody, Jr.
(301) 504-1387

LIST OF RECENTLY ISSUED GENERIC LETTERS

<u>Generic Letter</u>	<u>Subject</u>	<u>Date of Issuance</u>	<u>Issued To</u>
93-04	ROD CONTROL SYSTEM FAILURE AND WITHDRAWAL OF ROD CONTROL CLUSTER ASSEMBLIES, 10 CFR 50.54(f)	06/21/93	ALL HOLDERS OF OLs OR CPs FOR (W)-DESIGNED NPRs EXCEPT HADDAM NECK ALL HOLDERS OF OLs OR CPs FOR (CE)-DESIGNED AND (B&W)-DESIGN NPRs AND HADDAM NECK
93-03		NOT AS YET ISSUED	
93-02	NRC PUBLIC WORKSHOP ON COMMERCIAL GRADE PRO- CUREMENT AND DEDICATION	03/23/93	ALL HOLDERS OF OLs OR CPs FOR NPRs AND ALL RECIPIENTS OF NUREG-0040, "LICENSEE CONTRACTOR AND VENDOR INSPECTION STATUS REPORT" (WHITE BOOK)
93-01	EMERGENCY RESPONSE DATA SYSTEM TEST PROGRAM	03/03/93	ALL HOLDERS OF OLs OR CPs FOR NPRs, EXCEPT FOR BIG ROCK POINT AND FACILITIES PERMANENTLY OR INDEFINITELY SHUT DOWN
92-09	LIMITED PARTICIPATION BY NRC IN THE IAEA INTERNATIONAL NUCLEAR EVENT SCALE	12/31/92	ALL HOLDERS OF OLs OR CPs FOR NPRs
92-08	THERMO-LAG 330-1 FIRE BARRIERS	12/17/92	ALL HOLDERS OF OLs OR CPs FOR NPRs
92-07	OFFICE OF NUCLEAR REACTOR REGULATION REORGANIZATION	10/10/92	ALL HOLDERS OF OLs OR CPs FOR NPRs
83-28 SUPPLEMENT 1	REQUIRED ACTIONS BASED ON GENERIC IMPLICATIONS OF SALEM ATWS EVENTS	10/07/92	ALL LIGHT-WATER REACTOR LICENSEES AND APPLICANTS
92-06	OPERATOR LICENSING NATIONAL EXAMINATION SCHEDULE	09/06/92	ALL POWER REACTOR LICENSEES AND APPLICANTS FOR AN OL

OL = OPERATING LICENSE
CP = CONSTRUCTION PERMIT

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If you have any questions about this matter, please contact the contacts listed below or the appropriate Office of Nuclear Reactor Regulation project manager.

Sincerely,

Orig /s/ 'd by JGPartlow
James G. Partlow
Associate Director for Projects
Office of Nuclear Reactor Regulation

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6/25/93

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DATE	06/03/93	06/03/93	06/07/93	06/15/93

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