



**Boston Edison**

Pilgrim Nuclear Power Station  
Rocky Hill Road  
Plymouth, Massachusetts 02360

GL 96-05

**E. T. Boulette, PhD**  
Senior Vice President - Nuclear

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BECo Ltr. #2.97.064

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

Docket No. 50-293  
License No. DPR-35

GENERIC LETTER 96-05: 180-DAY RESPONSE

- References:
1. NRC Generic Letter 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," dated September 18, 1996.
  2. Boston Edison Company Letter No. 96-099, "Response to Generic Letter 96-05: Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," dated November 15, 1996.
  3. Boston Edison Company Letter No. 97-055, "Notification of Closure of Generic Letter 89-10," dated May 19, 1997.

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NRC Generic Letter (GL) 96-05 requests licensees to submit a periodic verification program for safety-related motor-operated valves within 180 days from the date of GL 96-05, or upon notification to the NRC of completion of the GL 89-10 program, whichever is later (Reference 1).

In response to GL 96-05, Boston Edison Company informed the NRC (Reference 2) that our 180-day response on the periodic verification program would be submitted after the notification of GL 89-10 closure (Reference 3) and approximately 60 days after the completion of Refueling Outage #11. Accordingly, this letter provides the 180-day response to GL 96-05 on our periodic verification program.

The attachment to this letter provides a summary description of the periodic verification program for safety-related motor-operated valves at Pilgrim Nuclear Power Station. The verification program will be established by September 30, 1997, as stated in our 60-day response letter (Reference 2). Thereafter, we plan to develop the implementing procedures and expect to begin implementation of the verification program by December 31, 1997.

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PILGRIM NUCLEAR POWER STATION  
MOTOR-OPERATED VALVE PERIODIC VERIFICATION PROGRAM  
SUMMARY DESCRIPTION

- References:
1. NRC Generic Letter 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor Operated Valves," September 18, 1996.
  2. Boston Edison Company Letter No. 96-099, "Response to Generic Letter 96-05: Periodic Verification of Design Basis Capability of Safety-Related Motor Operated Valves," November 15, 1996.
  3. "BWR Owners' Group Program on Motor-Operated Valve (MOV) Periodic Verification," NEDC-32719 / MPR-1807, March 1997.

1.0 Purpose

This attachment provides a summary description of the safety-related motor-operated valve (MOV) periodic verification program at Pilgrim Nuclear Power Station (PNPS). This description responds to the requirements of Generic Letter (GL) 96-05. This program is subject to change, based upon the incorporation of information obtained through implementation of the program and upon industry or regulatory developments.

2.0 Introduction

On September 18, 1996, the NRC issued GL 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor Operated Valves." GL 96-05 supersedes Generic Letter 89-10 and its supplements with regard to periodic verification of MOVs. GL 96-05 requests that each plant

*"establish a program, or ensure the effectiveness of its current program, to verify on a periodic basis that safety-related MOVs continue to be capable of performing their safety functions within the current licensing bases of the facility. The program should ensure that changes in required performance from degradation (such as those caused by age) can be properly identified and accounted for."*

GL 96-05 requires a 60 day response. Boston Edison Company's (BECo) response was provided by Reference 2.

GL 96-05 requires a second response within 180 days from the date of the generic letter, or upon notification to the NRC of completion of GL 89-10, whichever is later. Consistent with the schedule provided to the NRC in Reference 2, the second response is being provided upon completion of GL 89-10. This response provides a summary description of the MOV periodic verification program, which is contained herein.

GL 96-05 also requires an implementation schedule. The schedule is provided as part of this summary description.

### 3.0 Scope

The MOV periodic verification program scope is based upon the GL 89-10 scope. However, those safety-related MOVs that do not have an active safety-related opening or closing function (i.e., safety-related for pressure boundary only) are not included in the periodic verification program. This results in 85 MOVs in the periodic verification program, compared to 90 MOVs in the GL 89-10 program.

### 4.0 Program Elements

Safety-related MOVs have been configured to ensure that they will perform their design basis function in accordance with GL 89-10. In order for these MOVs to maintain this capability, a periodic verification program will be established to monitor performance and detect degradation prior to the onset of significant degradation or failure. The periodic verification program will address the valves and their actuators. The program will periodically verify MOV capability, including static and dynamic testing. Provisions will be made for program update to reflect industry and plant specific experience.

BECo is a participant in the Joint Owners Group (JOG) program on motor operated valve periodic verification (PV). The program is described in Reference 3. The intended implementation of the JOG PV program at PNPS is described below.

#### 4.1 Risk Prioritization and Margin

A safety ranking for each of the valves within the scope of the program will be completed to assign a high, medium, or low safety risk significance. The risk ranking process will be based on a set of criteria documented by an expert panel review.

Margin is a consideration that is evaluated for each valve in determining test frequency. Margin is the difference between the available thrust or torque that is capable of being delivered by the actuator and the required thrust or torque demanded by the valve under design basis conditions. The available actuator output and the required valve thrust and torque are adjusted as required for several factors. These factors include test equipment inaccuracy, torque switch repeatability, rate of loading, spring pack relaxation, and stem lubrication degradation. Margin will be quantified for each valve in the PNPS program.

#### 4.2 Periodic Verification Testing

Periodic verification testing is performed to provide assurance that the MOVs continue to perform their safety functions, consistent with the current licensing basis. That is, the switch settings for control of the MOVs account for the design basis performance uncertainties including margin for age-related degradation.

#### a). Static Testing

The program will include: (1) continuation of IST stroke testing, and (2) performance of static diagnostic testing at a frequency based upon safety risk significance, margin, internal and external environment, and consideration of the benefits versus adverse effects of testing. This program will be applied to each valve within the scope described in section 3.0 of this attachment. This approach is consistent with the "interim" program criteria (described in the JOG PV program (Reference 3)).

#### b). Dynamic Testing

The JOG PV program will perform a significant number of in-situ dynamic tests with the purpose of evaluating the results to detect and quantify any age-related degradation trends. The testing will be performed in accordance with a standard test specification over the next five years. BECo intends to implement the dynamic testing portion (including test evaluation, analysis, and resolution) of the JOG PV program as follows:

- Performing dynamic testing of assigned valves.
- Evaluating JOG dynamic test results for applicability to PNPS and adjusting the PNPS program if required.

The results of the JOG program will be applied to the specific BECo program MOVs, where appropriate, to account for age-related degradation. Valves in the BECo program that are not covered by the JOG program will be evaluated to determine if they can be dynamically tested. If they can be tested, then a testing frequency will be established based upon risk significance and margin, similar to the static testing program. If the valves cannot be dynamically tested, then the EPRI performance prediction methodology (Reference 3) will be used to bound the degradation.

BECo continues to pursue state-of-the-art diagnostic testing methodologies for use during static and dynamic testing. We have initiated the use of an on-line data acquisition system on selected MOVs, which will permit collection of data every time the valve is stroked. This has the added benefit of reducing personnel radiation exposure. BECo is continuing to evaluate motor power monitoring and other alternative trending methods. These alternate methods may be used if proven to be technically acceptable.

#### 4.3 Evaluation of Test Results and Program Update

The static and dynamic test results will be monitored and trended. The periodic verification program is based upon having sufficient margin to accommodate degradation. Margin assures that the MOV can continue to function, considering assumed actuator, stem factor, or valve degradation. Each test will be evaluated to determine if degradation is occurring. Valve specific and generic degradation will be quantified and compared to initial assumptions. Corrective actions will be taken, as necessary, to ensure valve operability and to correct original assumptions.

The results of the dynamic testing of the JOG PV program valves assigned to PNPS will be transmitted to the JOG Steering Committee for analysis, in accordance with the JOG PV program requirements. The Committee will determine if any of the specific test results submitted by participating utilities warrant further generic evaluation or modification of the program.

Based on the BECo and JOG test results, the test intervals for specific valves may be adjusted where appropriate. This will include consideration of scheduled MOV overhauls and preventive maintenance. In addition, the JOG will periodically evaluate the dynamic test results to validate the program assumptions. This will be done in support of recommending a long term MOV periodic verification program to be considered for implementation at PNPS. BECo will evaluate any JOG program changes as they may occur throughout the program development and make adjustments to the PNPS program as required.

BECo will address the NRC Safety Evaluation Report on the JOG PV program topical report (Reference 3) when it is issued.

#### 5.0 Implementation Schedule

The periodic verification program will be established by September 30, 1997. The implementation of the program is expected to begin by December 31, 1997.