

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

September 17, 1999

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Serial No. 99-002A
NL&P/MAE: R1"
Docket Nos. 50-280/-281
50-338/-339
License Nos. DPR-32/-37
NPF-4/-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
NORTH ANNA POWER STATION UNITS 1 AND 2
GENERIC LETTER 96-05, PERIODIC VERIFICATION OF DESIGN-BASIS
CAPABILITY OF SAFETY-RELATED MOTOR-OPERATED VALVES (MOVs)

On September 18, 1996, the NRC issued Generic Letter (GL) 96-05, entitled "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves." The generic letter required a 60 day response and a 180 day response. Virginia Electric and Power Company's (Virginia Power's) 60 day response was documented in a letter dated November 13, 1996 (Serial No. 96-504). The 180 day response required utilities to provide a written summary description of its MOV periodic verification program established in accordance with the requested actions. Virginia Power's 180 day response was documented in a letter dated March 12, 1997 (Serial No. 96-504A).

Virginia Power notified the NRC on May 26, 1999 (Serial No. 99-002) that our MOV periodic verification program as described in our 180 day response would be revised to conform with the Joint Owners' Group (JOG) Program on MOV periodic verification. Attached is our revised 180 day response to GL 96-05. This response supercedes the previously submitted March 12, 1997 response in its entirety.

If you have any questions, please contact us.

Very truly yours,



David A. Christian
Vice President – Nuclear Operations

Attachment

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Commitments made by this letter:

1. None.

cc: Regional Administrator
U.S. Nuclear Regulatory Commission
Region II
Atlanta Federal Center
61 Forsyth St., SW, Suite 23 T85
Atlanta, Georgia 30303-3415

Mr. R. A. Musser
NRC Senior Resident Inspector
Surry Power Station

Mr. M. J. Morgan
NRC Senior Resident Inspector
North Anna Power Station

[illegible]

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by David A. Christian, who is Vice President - Nuclear Operations, of Virginia Electric and Power Company. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 17th day of September, 1999.

My Commission Expires: 3/31/2000

Maggie McClure
Notary Public

(SEAL)

VIRGINIA POWER

MOV PERIODIC VERIFICATION PROGRAM

I. Purpose

Establish the requirements for implementing the motor operated valve (MOV) periodic verification program for Virginia Power at Surry and North Anna Power Stations. The periodic verification program consists of dynamic diagnostic testing, static diagnostic testing, and preventive maintenance.

II. Scope

The Virginia Power MOV Periodic Verification Program addresses MOVs that were included in the scope of Generic Letter 89-10. The program is being enhanced to address possible MOV changes in performance resulting from degradation as discussed in GL 96-05. This program has been revised to conform, as applicable, to the Joint Owners' Group (JOG) program on MOV periodic verification.

Virginia Power will implement the Joint Owners' Group Program on Periodic Verification of Motor-Operated Valves in accordance with JOG Topical Report MPR-1807, Revision 2, titled "Joint BWR, Westinghouse and Combustion Engineering Owners' Group Program on Motor-Operated Valve (MOV) Periodic Verification."

The JOG program consists of three elements:

A. JOG Dynamic Test Program

1. Participating utilities in the JOG program dynamically test a small population of MOVs and share the results with other program participants.
2. Virginia Power will diagnostically test four valves per nuclear station under differential pressure conditions as described in the JOG program as a participant of the five-year JOG Dynamic Test Program.

B. JOG Interim Periodic Test Program

1. Static diagnostic testing frequency is based upon MOV margin and risk ranking.

C. JOG Long -Term Periodic Test Program

1. The Long-Term Periodic Test Program involves evaluation of the data from the JOG Dynamic Test Program. The industry test data will be analyzed and distributed by the JOG at the conclusion of the current five-year test program. (Scheduled for completion in mid-2002.)
2. The results of the test data will be given in a final report that specifies the final periodic verification criteria and associated justification.

III. Structure of Program

The Virginia Power MOV Periodic Verification Program is comprised of three areas of focus.

A. Dynamic MOV Diagnostic Testing

The purpose of dynamic diagnostic testing for periodic verification is to identify age-related degradations in the valve assembly that may lead to an increase in the actuator thrust or torque requirements. Dynamic diagnostic testing will be performed on various MOVs within the scope of this program.

1. Virginia Power will diagnostically test specific MOVs under differential pressure conditions as a participant of the JOG Dynamic Test Program.
2. Other program MOVs may be diagnostically tested in a dynamic system situation based on the following factors:
 - a) Utility experience
 - b) Industry experience
 - c) Joint Owners' Group Feedback Notices
 - d) Susceptibility to age-related degradation
 - e) Low design margin
 - f) Ability to be tested
 - (1) Ability to conduct a test that approaches design basis conditions and is repeatable.
 - (2) Ability to monitor necessary MOV parameters such as thrust and torque.
 - (3) Ability to monitor system conditions such as pressure, flow, differential pressure, and system temperature.

- (4) Performance of the test does not place the plant at risk.
3. Regulatory approved analytical techniques in combination with static test data may be applied to exclude program MOVs from dynamic diagnostic testing.
4. Sufficient information should be obtained during the course of the JOG Dynamic Test Program to identify immediate safety concerns from potential age-related degradation that applies to all MOVs. Therefore, the need for dynamic diagnostic testing of valves outside the scope of the JOG Dynamic Test Program will be addressed at the completion of the JOG Dynamic Test Program when adequate statistical data is gathered from the industry.
5. Upon completion of the JOG Dynamic Test Program and subsequent final report, Virginia Power will incorporate the JOG final periodic verification criteria into the Virginia Power MOV Program, as applicable, and determine the necessity for further diagnostic differential pressure testing.
6. MOVs selected for dynamic diagnostic testing will be scheduled through the use of the preventive maintenance program.
7. Diagnostic test evaluations will be documented in a test report.

B. Static MOV Diagnostic Testing

The purpose of static diagnostic testing is to detect age-related degradations in motor, actuator, and stem factor. These degradations may be manifested in a decrease in motive force delivered to the valve. Static diagnostic testing will be performed on MOVs within the scope of this program.

Virginia Power will maintain the current method of static diagnostic testing until the JOG Interim Periodic Test Program is implemented.

1. The JOG Interim Periodic Test Program revises testing frequency based upon design margin and risk ranking.
 - a) The safety significance of each MOV will be evaluated using probabilistic safety assessment (PSA) models. The MOVs will be categorized as having high, medium, or low risk significance.
 - b) To assist in accurate risk ranking, the MOVs within the scope of GL 96-05 will be reviewed for operating or

environmental conditions that could induce age-related degradation (e.g., valves normally stroked under significant differential pressure, valves in raw water systems).

- c) An expert panel will review the MOV risk ranking and may adjust it based upon their evaluation. The Station Nuclear Safety and Operating Committee will review the results as appropriate.
 - d) To implement the JOG Interim Periodic Test Program, Virginia Power will utilize the Westinghouse Owners Group (WOG) risk ranking methodology in accordance with engineering report V-EC-1658, Revision 2, titled "Risk Ranking Approach for Motor-Operated Valves in Response to Generic Letter 96-05."
 - e) The implementation and application of the WOG risk ranking methodology to all GL 96-05 program valves allows the maximum period of time between static diagnostic tests to be ten years.
- 2. MOVs within the scope of the GL 96-05 program will have periodic static testing scheduled through the use of the preventive maintenance program.
 - 3. Diagnostic test evaluations will be documented in a test report.

C. Preventive Maintenance

The purpose of preventive maintenance is to both identify and prevent age and environmentally initiated degradations. Preventive maintenance will be performed on MOVs within the scope of this program.

- 1. A preventive maintenance program is established for MOVs in accordance with the appropriate administrative procedure.
- 2. Valve actuator stem factor degradation will be minimized through performance of frequent valve stem lubrication preventive maintenance evolutions.
- 3. Preventive maintenance evaluations will consider the following items:
 - a) Manufacturer's recommendations
 - b) Engineering analysis
 - c) Equipment operating history
 - d) Industry findings and recommendations

- e) Lessons learned and station experience
 - f) Conditions of operation (system and environmental)
4. MOVs within the scope of the GL 96-05 program will have preventive maintenance tasks scheduled through the use of the preventive maintenance program.

IV. Frequencies

- A. Preventive Maintenance frequencies are governed by the appropriate administrative procedure.
- B. Until the JOG Interim Periodic Test Program for static diagnostic testing is implemented, the current static diagnostic test frequency of three refueling outages or five years, whichever is longer, will be applied. A $\pm 25\%$ grace period for frequency adjustment will be used for test scheduling purposes.
- C. Upon implementation of the JOG Interim Periodic Test Program for static testing, the static diagnostic test frequency will be in accordance with the periodic verification test criteria for MOVs (categorized in three levels of safety significance) as described in the JOG Topical Report MPR-1807. A $\pm 25\%$ grace period for frequency adjustment will be used for test scheduling purposes. The maximum interval between static diagnostic tests, including the grace period, will not exceed 10 years.
- D. Dynamic diagnostic testing for the valves selected under the JOG Dynamic Test Program will be conducted for three consecutive periods (each period will be a minimum of one year); however, the dynamic diagnostic testing will not extend beyond the JOG Dynamic Test Program.
- E. Test frequencies for static and dynamic diagnostic testing may be modified in accordance with the JOG Program based upon the following conditions:
 - 1. Plant specific maintenance data
 - 2. Plant specific test data
 - 3. Manufacturer's recommendations
 - 4. Industry information
 - 5. PSA reviews
 - 6. Regulatory requirements
 - 7. Maintenance Rule information
 - 8. Advances in testing and evaluation methods
 - 9. Joint Owners' Group Feedback Notices
 - 10. Changes in design margin

- F. Changes in testing and preventive maintenance frequencies and methods will be formally evaluated and documented in accordance with the appropriate administrative procedures.

V. Design Margin

Margin is the difference between available thrust (or torque) capability of the actuator and the thrust (or torque) required by the valve under design basis conditions.

Design margin will be calculated as described in the JOG Topical Report MPR-1807, Revision 2.

VI. Post Maintenance Testing

Post maintenance testing will be controlled through the use of the appropriate administrative procedure to ensure that the MOV continues to be capable of performing its design functions following maintenance.

VII. Acceptance Criteria

Acceptance criteria will be delineated in the appropriate procedures and will ensure that the MOV is capable of performing its design basis functions.

VIII. Corrective Action

- A. Corrective action will be initiated for any MOV for which test analysis shows it may not have sufficient margin to ensure operability at the time of the next scheduled test. This corrective action can include rescheduling of a diagnostic test that would monitor the MOV's condition at a time to ensure continued operability.
- B. Conditions which would cause an MOV to become inoperable before the next scheduled test will be evaluated to assess the impact on related MOVs in the same group.
- C. If any differential pressure testing evaluation shows a negative margin trend, or an MOV appears to require more margin than was previously estimated, then the design margin value will be reviewed. Appropriate corrective action will be taken to ensure valve operability until the next scheduled review interval. Margin assessments for other similarly grouped MOVs will also be performed.