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AUTH. NAME AUTHOR AFFILIATION
 VAUGHN, G.E. Carolina Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION
 Document Control Branch (Document Control Desk)

SUBJECT: Suppls 891227 response to Generic Ltr 89-10 re
 clarifications on motor-operated valve program, per NRC
 Bulletin 85-003. Util participating in EPRI motor-operated
 valve performance program & will monitor results.

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NOTES: Application for permit renewal filed. 05000400

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Carolina Power & Light Company

P.O. Box 1551 • Raleigh, N.C. 27602

JUN 06 1991

SERIAL: NLS-91-138

G. E. VAUGHN
Vice President
Nuclear Services Department

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
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BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324/LICENSE NOS. DPR-71 AND DPR-62

SUPPLEMENTAL RESPONSE TO NRC GENERIC LETTER 89-10: CLARIFICATIONS ON MOTOR-OPERATED VALVE PROGRAM

Gentlemen:

On June 28, 1989, the NRC issued Generic Letter No. 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," which expanded the scope of the previously issued IE Bulletin 85-03. Carolina Power & Light Company (CP&L) responded to the Generic Letter on December 27, 1989, committing to a motor-operated valve (MOV) program subject to the resolution of specific issues. Since that time, CP&L has participated in various NRC-sponsored meetings and industry activities pertaining to motor-operated valve issues, and the NRC has issued three Supplements to the original Generic Letter. The purpose of this letter is to provide clarifications concerning CP&L's program based on the aforementioned activities. These clarifications are provided in the enclosure on an item-by-item basis.

If you have any questions about the information contained in the enclosure or require additional information, please contact Mr. S. D. Floyd at (919) 546-6901.

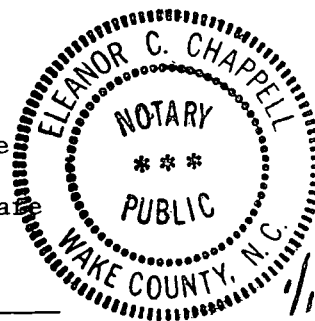
Yours very truly,


G. E. Vaughn

LSR/jbw (1121GLU)
Enclosure

G. E. Vaughn, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, contractors, and agents of Carolina Power & Light Company.


Notary (Seal)



My commission expires: 2/6/96

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PDR ADOCK 05000261
PDR

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cc: Mr. S. D. Ebnetter
Mr. L. Garner (NRC-HBR)
Mr. N. B. Le
Mr. R. Lo
Ms. B. L. Mozafari
Mr. R. L. Prevatte (NRC-BSEP)
Mr. J. E. Tedrow (NRC-SHNPP)

**CLARIFICATIONS TO NRC GENERIC LETTER 89-10
MOTOR-OPERATED VALVE PROGRAM**

Corporate Action Plan

Carolina Power & Light Company's December 27, 1989 response (Reference 1) indicated that a corporate action plan had been developed for each of CP&L's plant sites to comply with the Generic Letter 89-10 recommendations. This action plan, which provides the framework for accomplishing the actions that will be taken in implementing an MOV program to satisfy the intent of the Generic Letter, is a single document applicable to each of CP&L's three plants outlining task items to be accomplished and scheduler dates for accomplishment. Specific commitments to the recommendations of the Generic Letter are contained in CP&L's December 27, 1989 response and in this supplemental response.

Valve Mispositioning

In responding to Generic Letter 89-10, CP&L indicated that the issues raised by NUMARC (Reference 2) required resolution before firm commitments could be made to the specific recommendations and implementation schedules of the Generic Letter. An NRC letter dated June 27, 1990 (Reference 3) indicated that these issues would be finalized in a supplement to the Generic Letter. Supplements 1, 2 and 3 to Generic Letter 89-10 have been issued and some of the issues have been resolved. However, the issue pertaining to "valve mispositioning" has to date not been satisfactorily resolved.

Carolina Power & Light Company is a member of the Westinghouse Owners Group (WOG), the BWR Owners Group (BWROG) and NUMARC and supports the position expressed by those industry organizations via References 4, 5, 6 and 7. Valve mispositioning (inadvertently by an operator in the control room), in conjunction with an additional single active failure, is beyond the current licensing basis for CP&L's plants. As such, only events within the current licensing basis are being considered in evaluating MOVs in the program.

Carolina Power & Light Company intends to review the design basis differential pressure of those MOVs applicable to the Generic Letter 89-10 program with respect to their need to operate to satisfy an active safety function in accordance with each plant's licensing basis. "Normal" operating differential pressure for the applicable MOVs (which includes test modes) will also be reviewed to ensure that the greater of the two differential pressures (accident versus normal) is used during the evaluation process of the MOV design for torque switch settings.

Prior IE Bulletin 85-03 Commitments

Reference 3 stated that CP&L "should request relief from any specific commitments made in response to NRC IE Bulletin 85-03 in writing and provide technical justification for the request."

Based upon a review of CP&L's responses to IE Bulletin 85-03 for the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR2), the Shearon Harris Nuclear Power Plant (SHNPP), and the Brunswick Steam Electric Plant, Unit Nos. 1 and 2 (BSEP), the only IE Bulletin 85-03 commitments requiring further action at the time of issuance of Generic Letter 89-10 pertained to MOV training programs and programs to maintain procedural control of selected MOV switch settings (includes control and adjustment of limit switches and actuator torque switches). These are the same programs recommended by Generic Letter 89-10, Items (b) and (d). Since the Generic Letter expands the scope of MOVs that are to be considered in these programs, these programs will be revised as necessary to comply with the Generic Letter recommendations. These commitments to Bulletin 85-03 for HBR2, SHNPP, and BSEP are considered to be superseded by the Generic Letter; and all items related to the Bulletin are closed.

It should also be noted that while the original responses to IE Bulletin 85-03 identified specific numbers for the various procedures, there is not a commitment to retain these numbers for the MOV procedures. Plant-specific MOV program documents will identify the specific procedures once the MOV program becomes fully implemented.

Commitment to Generic Letter 89-10 Recommendations

Carolina Power & Light Company is establishing and implementing a program which we believe satisfies the intent of the Generic Letter recommendations. However, we have reviewed NRC Temporary Instruction 2515/109 prepared for use by NRC inspectors in assessing licensees' programs and are concerned that it is overly prescriptive. The following current MOV issues highlight our concerns:

1. Evaluation of MOV Design Reviews Including Thrust Calculations

Recent generic correspondence from the NRC (References 8 and 9) pertaining to MOVs imply that problems exist with gate valves on a generic basis with respect to thrust requirements and/or valve design.

During a 1990 safety system functional inspection (SSFI), an NRC inspector in Region III indicated that for MOVs being reviewed during the NRC Generic Letter 89-10 inspection process, a Valve Factor of 0.5 should be used in the basic industry thrust equation for the determination of required thrust for all gate valves. This position was apparently based on NRC Information Notice No. 90-40 (Reference 8), but is not technically justifiable at this time on a generic basis for all gate valves.

Many of the MOVs in service at CP&L's plants have performed successfully under full flow differential pressure conditions during various test programs with torque switch settings based on the assumptions (i.e., valve factor of 0.3) used in the industry thrust equation. There is no basis for changing the variables or parameters in the basic thrust equation.

NRC Information Notice No. 90-72 (Reference 9) suggests that there are concerns related to parallel disc gate valves based upon testing performed in Europe. The European development of a higher valve factor appears to have been derived from a "modified" version of the typical thrust equation which purposely generates a high valve factor or conservatism (based upon information provided from the ASME paper mentioned in Reference 9). Reference should be made to the EPRI NMAC "Application Guide for Motor-Operated Valves in Nuclear Power Plants," NP-6660-D.

Carolina Power & Light Company intends to use the criteria furnished by the applicable valve vendors when evaluating MOVs in the program. MOV configuration/set-up parameters may be modified to reflect values obtained from diagnostic test results if the diagnostic information indicates parameters used in the MOV evaluation process were overly conservative, or conversely, not sufficiently conservative.

Carolina Power & Light Company is participating in EPRI's MOV performance program and will continue to monitor their test results. Additionally, CP&L is participating in the Motor-Operated Valve Users Group and the BWROG Valve Technical Resolution Group which bring together nuclear utilities to discuss and report on various aspects of MOV performance. We will continue to participate in and track industry testing and experience with MOVs and will apply the knowledge gained as appropriate.

2. Design Basis Differential Pressure Testing

Generic Letter 89-10 recommends that each safety-related MOV "be demonstrated to be operable by testing it at the design-basis differential pressure and/or flow." The Generic Letter further states that "testing MOVs at design-basis conditions is not recommended where such testing is precluded by the existing plant configuration." CP&L has attended the NRC-sponsored workshops and reviewed Supplement 1 to the Generic Letter with respect to the practicability of in situ design differential pressure testing of MOVs.

Carolina Power & Light Company intends to evaluate each applicable MOV's ability to be differential pressure tested using the following guidance:

- a. Those MOVs capable of being tested will be tested with the differential pressures achievable with existing plant procedures and configurations (i.e., use existing pumps, valves, piping and operating pressures).
- b. Differential pressure testing will not place the plant systems in unusual configurations nor will it establish abnormal conditions.
- c. Differential pressure testing will not be performed if it is deemed that it could increase the probability of safety system challenges, create a potential for damage to important equipment or structures, or create the potential for radioactive contamination beyond what is normally experienced.

- d. Differential pressure testing will not be performed such that it could challenge or violate plant Technical Specifications or procedures.
- e. Carolina Power & Light Company will test the applicable program MOVs under the criteria discussed above. The maximum test differential pressure may be different from the differential pressure identified in the MOV evaluation as the design differential pressure. It is intended that the valves and operators be appropriately tested to demonstrate their capability to function properly with available plant voltage. The ability of an MOV to perform under degraded voltage conditions will be demonstrated analytically.

The differential pressure developed during the design basis differential pressure evaluation process may be increased to ensure conservatism in the MOV set-up requirements, and thus increase inherent design margins. For example, the highest relief valve setting plus tolerances in a bank of relief valves could be used during the evaluation. This practice generally results in conservative (higher) differential pressures. Thus, utilizing the testing guidance described above for in situ testing, the MOV may not be tested at "full" or "near-full" design differential pressures; but it would potentially be the maximum differential pressure the MOV would be subjected to without taking extraordinary steps outside the licensing basis of the plant.

With respect to flow rate, fluid flow will not be evaluated at a rate which the valve could experience under design basis conditions. The flow rates for certain systems are contained in various plant documents and analyses and will not be reevaluated for the Generic Letter MOV program. A component for flow does not exist in the current industry equations for MOV sizing or in the proposed INEL thrust equation. The flow rates that the program MOVs will experience during differential pressure testing will be the rates that can be achieved with existing system configurations (i.e., using available pumps, valves and piping, etc.).

Preliminary reviews of MOV configurations show that certain MOVs have more than sufficient design margin to function under design conditions (i.e., thrust capable of being delivered by the actuator exceeds closing, or opening, thrust requirements). For example, many of the two-inch and smaller gate and globe valves have actuators which are oversized when compared with their differential pressure force requirements. These MOVs are generally set at the lowest possible torque switch setting for the installed actuator, yet the thrust delivered is far in excess of the force required. A small population of these valves will be differential pressure tested. If the initial test results demonstrate the actuators' capability to generate more than sufficient thrust for the valve to perform its safety function within the analytical model, then the remainder of these small valves will be set up based on the information obtained on a static basis only (zero pressure). Those MOVs which will not be differential pressure tested will be evaluated and a justification will be prepared for not having tested them under dynamic pressure conditions.

- REFERENCES:
- 1) CP&L LETTER TO THE NRC, DATED DECEMBER 27, 1989,
SERIAL: NLS-89-324
 - 2) NUMARC LETTER FROM MR. T. E. TIPTON TO DR. T. E. MURLEY,
DATED NOVEMBER 17, 1989
 - 3) NRC LETTER FROM E. G. ADENSAM TO MR. L. W. EURY, DATED
JUNE 27, 1990
 - 4) BWR OWNERS' GROUP LETTER FROM MR. G. J. BECK TO MR. L. B.
MARSH (NRC), DATED JUNE 13, 1990, BWROG-9077
 - 5) WESTINGHOUSE OWNERS' GROUP LETTER FROM MR. G. GOERING TO
MR. J. E. RICHARDSON (NRC), DATED OCTOBER 29, 1990
 - 6) BWR OWNERS' GROUP LETTER FROM MR. G. J. BECK TO DR. T. E.
MURLEY (NRC), DATED MARCH 14, 1991
 - 7) WESTINGHOUSE OWNERS' GROUP LETTER FROM MR. A. W. ENGEL TO
DR. T. E. MURLEY (NRC), DATED APRIL 16, 1991
 - 8) NRC INFORMATION NOTICE NO. 90-40, "RESULTS OF NRC-SPONSORED
TESTING OF MOTOR-OPERATED VALVES," DATED JUNE 5, 1990
 - 9) NRC INFORMATION NOTICE NO. 90-72, "TESTING OF PARALLEL DISC
GATE VALVES IN EUROPE," DATED NOVEMBER 28, 1990
 - 10) NRC LETTER FROM MR. J. E. RICHARDSON TO MR. T. E. TIPTON
(NUMARC), DATED JANUARY 29, 1990