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United States Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

Subject: 60 Day Response to Inspection: Report Nos. 50-373/94013; 50-374/94013
NRC Docket Numbers 50-373 and 50-374.

Reference: 1. E. G. Greenman letter to R.E. Querio,
Dated August 16, 1994, Transmitting
NRC Inspection Report 50-373/94013; 50-374/94013.

Enclosed is ComEd's response to the Reference 1 letter request for the justification of white paper technical guidance on the operability of GL 89-10 MOVs. Attachment A addresses the technical justification of white paper technical guidance concerning the operability of safety related MOVs. Also included is a description of ComEd's plans and schedules for additional justification of MOV Program technical positions.

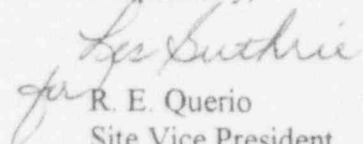
ComEd agrees that clarification of these White Paper issues is needed. The specific technical justification and documentation contained in this response were developed to address both NRC and ComEd concerns with respect to GL 89-10 implementation at LaSalle County Station. In addition to Attachment A, ComEd is committing to the following actions:

- ◆ ComEd corporate engineering will complete the degraded voltage AC motor testing program and publish the results and initial conclusions of the testing by 2/1/95. ComEd will consider additional generic testing on actuator efficiencies and load sensitive behavior if future information suggests that this additional testing is warranted.
- ◆ ComEd will contract with an independent engineering consultant to perform a technical assessment of the key positions and documentation of ComEd's GL 89-10 implementation. The assessment will be completed by 12/31/94 and the final report is expected to be issued in January 1995. ComEd will be prepared to discuss the results of the independent assessment with the NRC.

JE01

If there are any questions or comments concerning this letter, please refer them to me at (815) 357-6761, extension 3600.

Respectfully,


R. E. Querio
Site Vice President
LaSalle County Station

cc: J. B. Martin, Regional Administrator, Region III
W. D. Reckley, Project Manager, NRR
P. G. Brochman, Senior Resident Inspector, LaSaile
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B. J. Adams, MOV/Generic Issues, NETS
Station file

ATTACHMENT A
NRC INSPECTION REPORT
50-373/94013, 50-374/94013
White Paper Technical Justification

The NRC requested that LaSalle Station provide responses on three (3) specific ComEd corporate technical position white papers in Reference 1. These white papers are:

1. **WP-122 => "Limitorque Operator Thrust and Torque Rating Extension"**
2. **WP-125 => "Installed Motor Capability Evaluation"**
3. **WP-129 => "MOV Design Margin Evaluation and Diagnostic Test Feedback Evaluation".**

The subject white papers listed are part of a controlled set of ComEd's GL 89-10 program documentation. These technical position papers are generated and reviewed by both station and corporate personnel and are subject to a formal review process before final implementation.

In early 1993, ComEd embarked on a comprehensive improvement program to formally document the technical positions and guidance for implementation of GL 89-10 activities at the various sites. This effort was made in response to internal ComEd assessments and NRC concerns raised during GL 89-10 inspection activities. All three white papers in question by the NRC were developed by ComEd to provide a more rigorous set of criteria for dispositioning operability issues that arise through the course of GL 89-10 implementation activities.

A description of the specific justification and application for each of the above referenced white papers follows:

1. WP-122 - "Limitorque Operator Thrust and Torque Rating Extension"

WP-122 was developed to provide disposition of MOVs where the published Limitorque torque and thrust ratings for specific actuators (SMB-000, SMB-00, SMB-0, and SMB-1) are exceeded. WP-122 was developed, documented, and reviewed utilizing the results of the Kalsi Phase I Report, *"Thrust Rating Increase of Limitorque Actuators"*.

ComEd contracted with Kalsi Engineering in early 1994 to formally review WP-122. During the recent LaSalle MOV inspection, NRC inspectors were provided with a copy of the draft review documentation that Kalsi Engineering submitted to ComEd. This review has now been formally documented. Kalsi concurred with the technical position taken by ComEd. In addition, a second independent engineering consultant (EMS) was contracted to assess the technical adequacy of WP-122. EMS also concluded that the methodology presented in the white paper was acceptable. Both Kalsi and EMS provided comments to enhance the white paper. These comments were evaluated and incorporated into WP-122, where appropriate.

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2. WP-125 "Installed Motor Capability Evaluation"

WP-125 was developed to provide a methodology to determine MOV motor gearing capability. ComEd believes that WP-125 provides a conservative representation of the torque capability for a given motor and is consistent with the reasonable assurance arguments discussed in GL 91-18, "Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability."

WP-125 is used to support testing, and in limited cases, to establish an *interim* torque switch setting for an MOV until a change to enhance margin can be completed. WP-125 does allow a relaxation of some conservatisms in the motor/gearing capacity equation provided in the Limitorque Selection Guides. For example, WP-125 allows the motor torque for MOV analysis to be increased by 75% of the difference between motor start torque and stall from the generic motor curve. The white paper also accounts for reduced actuator efficiency as the motor approaches stall conditions.

It should be noted that ComEd is the sponsor and lead utility of a large AC motor testing program that has wide industry participation and funding. ComEd has dedicated two AC Motor Test Program Engineers over the past year to accomplish the testing. The testing is being performed in-house by ComEd utilizing a detailed action plan and testing procedures. Over 40 AC motors of various sizes and applications in motor operated valves have been tested to date. The data is being reviewed and finalized for publishing. An analysis of the preliminary results obtained from the testing supports the evaluation criteria in WP-125. ComEd will publish a report of the results and initial conclusions of the testing in early 1995.

ComEd has not determined whether additional testing of actuator efficiencies and load sensitive behavior is needed at this time. ComEd will continue to monitor information from other licensees in the future to determine if additional testing is appropriate. At this time, ComEd has not identified any concerns with the application of WP-125 that question the conservatism of the analysis.

3. WP-129 " MOV Design Margin Evaluation and Diagnostic Test Feedback Evaluation"

In mid 1993, ComEd recognized the need to evaluate the design basis capabilities of all GL 89-10 MOVs using the best information available. To achieve that objective, a margin review program (WP-129) was developed and implemented that utilized the most recent diagnostic test information to determine the analytical design margin of each MOV in the GL 89-10 Program.

The margin review program provided ComEd with the following benefits:

1. MOVs with limited design margin were identified;
2. Design factors limiting optimal MOV performance were clearly evident; and

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3. A process to prioritize available resources on MOVs with low margin and high safety significance was implemented.

The evaluation process described in WP-129 determines the design margin for any MOV based on the best available information considering the MOV's design requirements, existing hardware, and current setup. WP-129 was developed consistent with the guidance presented in GL 91-18 and was used to evaluate the operability status of all GL 89-10 gate and globe MOVs. A similar white paper, WP-158, was developed and used for the ComEd butterfly valve population.

ComEd agrees that the certainty with which MOV thrust and torque values, and therefore the MOV Design Margin, can be determined, is a function of the accuracy and conservatism of all the MOV design parameters, the repeatability of the MOV control system, and the accuracy of the diagnostic test equipment. The uncertainties associated with these values can be grouped into two types, *bias* and *random*.

The design parameters such as line pressure, differential pressure, valve factor, and motor capability are biased in the MOV evaluations in the conservative direction. As a result, the calculated minimum required thrust values are conservative. In addition, the bias observed in rate of loading (5% or measured value, if available) is included as an adjustment to the calculated minimum required thrust.

ComEd has used the *random* uncertainties to define three classifications of design margin: **high**, **medium**, and **low**. Since the margin review evaluates several attributes essential to proper MOV performance including minimum required thrust, motor gearing capacity, actuator capacity, and seismic/structural capacities, classification criteria has been established for each of these attributes. For example:

- The minimum required closing thrust for a **high margin** MOV includes allowances for all appropriate random uncertainties;
- The minimum required closing thrust for a **medium margin** MOV includes allowances for the random uncertainties of torque switch repeatability and test equipment accuracies;
- The minimum required closing thrust for a **low margin** MOV does not include explicit margin allowances for random uncertainties. A **low margin** valve would typically have less than 10% margin to the minimum required closing thrust.

Note that the random uncertainty associated with torque switch repeatability has been shown via testing by ComEd to be approximately 2% and the random diagnostic equipment inaccuracies based on VOTES guidance is typically on the order of 9%. When statistically combined, these random errors are on the order of 10 percent.

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The basis for the conclusion that WP-129 is appropriate, lies with the correct selection of reasonably conservative values for the design parameters such as stem factor and valve factor. ComEd recognizes that "stacking" of multiple reductions in conservatism provides less assurance that a particular MOV will perform its intended function. Where a low margin valve is identified using WP-129, reasonable assurance of functionality must exist for that valve to be declared operable. In many instances, the reasonable assurance determination is based on engineering judgment that takes into account the additional non quantified conservatisms in the MOV equations. These additional conservatisms typically can be found in the design basis dP and degraded voltage assumptions and the valve factor assumptions. In essence, it is ComEd's position that an additional 10% of unquantified conservatism exists in the MOV analysis. This additional unquantified conservatism adds credence to the reasonable assurance methodology documented in WP-129. If reasonable assurance of this additional conservatism does not exist for a particular valve, the appropriate corrective actions are initiated. A number of examples exist where ComEd has taken the conservative action and declared MOVs inoperable based on the results of this methodology. These examples include MOVs where no diagnostic test had yet been performed.