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LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION P.O. BOX 618, NORTH COUNTRY ROAD + WADING RIVER, N.Y. 11792

JOHN D. LEONARD, JR. VICE PRESIDENT - NUCLEAR OPERATIONS

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Regulatory Publications Branch Division of Freedom of Information and Publication Services Office of Administration and Resources Management U.S. Nuclear Regulatory Commission Washington, DC 20555

SUBJECT: Request for Public Comment on Draft Regulatory Guide 1.9 (Revision 3), "Selection, Design, Qualification, Testing and Reliability of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," (USNRC Task No. RS 802-5) - FR Vol. 53, No. 219 of November 14, 1988, Pg. 45831

Gentlemen:

In accordance with the subject request, the Long Island Lighting Company (LILCO), wishes to comment on the draft Regulatory Guide. LILCO's comments on the draft are contained in Attachments I and II to this letter.

LILCO has been committed to EDG reliability for its Trans-America/DeLaval,Inc. (TDI) diesel generators in accordance with the DR/QR maintenance/surveillance program developed by the TDI Owners Group . Further, we endorse the efforts of the NUMARC Working Group in its present program to revise Appendix D - EDG Reliability Program, of NUMARC 87-002.

1/ This program has been endorsed by NRC through a revision to SNPS Operating License NPF-36.

2/ "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors," NUMARC 87-00, November 1987. LILCO's Shoreham Nuclear Power Station will follow the methodology of NUMARC 87-00 in its response to 10 CFR 50.63 - The Station Blackout Rule. VPNO 89-034 Page 2

Therefore, it is our belief that an EDG Reliability Program, acceptable to the NRC, should be the outcome of this work. We concur with NUMARC's position that:

Although NUMARC believe(a) it appropriate for the NRC to review and endorse industry consensus standards such as IEEE Std 387-1984, these endorsements should be independent of other issues which may be mandated by federal regulations. EDG reliability as it relates to 10 CFR 50.63, Loss of All Alternating Current Power, should be treated separately.

In this connection, see our Comment 1 of Attachment II to this letter.

LILCO welcomes the opportunity to comment on this draft Regulatory Guide 1.9 (Revision 3). Should you have any questions or wish to discuss the matters in this letter, please do not hesitate to contact my office.

Very truly yours,

John D. Leonard, Jr. Vice President - Nuclear Operations

MJG:ck

Attachments

cc: S. Brown W. T. Russell F. Crescenzo

3/ NUMARC letter to Administrative Contacts from Joe F. Colvin, January 23, 1989 ATTACHMENT I VPNO 89-034 Page 1

Comments on Rev. 3 to Reg. Guide 1.9

General Comments

- The reporting criteria on EDG failures do not account for the unit's EDG configuration and system reliability. A unit with a backup EDG is very likely to have a system reliability that is much higher than that of any other unit without backup EDG's.
- Reliability goals should be set for unit EDG systems and not for individual EDG's. A unit with backup EDG's or a high level of redundancy should not be penalized for problems encountered with 1 or more EDG's if the system reliability remains above an acceptable level.
- 3. Performance monitoring of EDG's can not be specified generically. The TDI owners group has developed EDG performance monitoring criteria after years of thorough study of the problems encountered by owners. If the system reliability at a unit falls below its specified target, then the unit should be required to assess whether performance monitoring would help to minimize the failure rates of the dominant failure modes.
- 4. The imposition of a management control system on a unit's existing EDG reliability and maintenance program would be both costly and inefficient. It would act to slow down the process of correcting problems encountered with the EDGs and produce excessive paperwork. Until a unit's existing management system is shown to be ineffective, there is no justification for changing it.
- 5. The reliability program that is described in Section 18 is a complex and very costly Reliability Centered Maintenance (RCM) program. The program described is not likely to be successfully applied for the following reasons.
 - A. The program requires the identification of all critical failure modes and aging mechanisms. Each utility will have to obtain proprietary design information from the EDG manufacturer or engage the manufacturer to do the analysis. The manufacturer may not have the personnel to do the work or have little interest in revealing the weaknesses of his product.
 - B. The regulatory guide reflects a lack of understanding of RCM, in that it extends its application beyond the identification and control of functional failure modes. It is extremely difficult to identify all critical failure modes especially when many critical failure modes involve the coupling of various failure mechanisms

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which can act to degrade a number of components simultaneously.

A number of utilities, such as those in the TDI Owner's Group, have implemented programs which have improved both the <u>quality</u> and <u>reliability</u> of the EDGs. The quality of each vendor's parts is monitored and upgraded as needed. These programs, which have been proven to be successful, should be described in the Reg. Guide 1.9 and offered as alternatives to the RCM program that is described in Section 18. ATTACHMENT II VPNO 89-034 Page 1

Comments on Specific Sections of Revision 3 to Reg. Guide 1.9

Comment 1: The draft Reg. Guide endorses IEEE Std. 387-1984, "IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations." As has been customary in the nuclear industry for ongoing design and construction programs, we assume that EDG units and configurations which were designed prior to the publication of the draft Reg. Guide but whose construction and tie-in is in progress at the time of publication of the draft Reg. Guide will be governed by standards such as the IEEE Std. 387-1977, then in force when the new, backup, EDG unit design was formulated for Shoreham.

Comment 2: Section 10.1 specifies a minimum of twenty-three (23) pre-operational tests on each diesel generator following assembly and installation at the site. The test should demonstrate the required reliability by means of any sixty-nine (69) consecutive valid tests on a per plant basis with no failures.

- 2.1 What documentation of the test parameters and measured data is required for each of the pre-operational tests?
- 2.2 Since automatically initiated demands, including inadvertent and actual demands, are required to be counted as pre-operational tests, the documentation of inadvertent and actual demands may be incomplete, and the utility may have considerable difficulty in ascertaining from the available data whether or not a test was a valid success or a valid failure. Therefore, the new definition of valid tests should apply only to test data obtained after Revision 3 of Reg. Guide 1.9 is issued.

Comment 3: Section 10.2.2 specifies that the maximum time between tests be reduced to seven (7) days when the diesel generator unit has experienced two (2) or more failures in the last twenty (20) demands.

3.1 The maximum time between tests is assumed to apply only when the EDG is operational. No testing should be done until the cause of the failure has been identified and corrective action taken as required. Accelerated testing should only be required for the EDGs that are failing. ATTACHMENT II VPNO 89-034 Page 2

- 3.2 If the diesel generator fails to satisfy start requirements, the frequency of start demands should increase, but the frequency of load demands should not be increased. Excessive load tests can result in premature wear-out or fatigue failures of the load bearing parts.
- 3.3 Since valid load demands include actual loads equal to or greater than 50% of the diesel generator's continuous load rating, accelerated load tests in which the diesel powers loads above its 50% load rating should be counted as valid load tests.

<u>Comment 4</u>: Section 10.2.3 calls for fast-start and load tests every six (6) months in which the diesel generator must reach its rated speed in ten (10) seconds or less and be loaded to its rated continuous load within its total design accident loading sequence time.

- 4.1 Fast starts that are normally performed in a few seconds should not exceed the frequency that is recommended by the manufacturer. The frequency should be based on a statistical analysis of accelerated life test data and field life data to identify the wear-out failure modes and associated cycles to failure.
- 4.2 A real or inadvertent fast-start demand should be counted as a valid fast-start test. Also, a real or inadvertent fast-start and load to at least 50% of the rated continuous load should be counted as a valid fast-start and load test.
- 4.3 Allowances need to be incorporated into this section to account for special circumstances. As an example, all planned starts of diesel generators such as Shoreham's shall be preceded by a prelube of the turbochargers in accordance with the manufacturer's recommendations.

Comment 5: Section 17.1.2 calls for accelerated testing when a diesel generator's reliability falls below its specified level.

5.1 What is the specified level? Section 17.1.1 refers to minimum reliability goals of 0.95 and 0.975. Yet, Section 10.2.2 requires accelerated testing only when the short term reliability (last 20 demands) has fallen to 0.90. ATTACHMENT II VPNO 89-034 Page 3

> 5.2 It is not clear what action is required when the diesel generator reliability falls below its minimum reliability goal. Is the minimum reliability goal the normal reliability alert level per Section 18.1?

<u>Comment 6</u>: Section 17.1 provides a model for calculating diesel generator reliability which is required to be maintained above the plant's designated reliability level per Section 18.1.

- 6.1 The Shoreham Nuclear Power Station will have six (6) EDGs - three (3) TDIs and three (3) Colts. A station modification is in progress to tie-in to each division or emergency bus a Colt EDG that parallels the existing TDI EDG. One EDG on each bus will be selected as the lead diesel generator and the other will serve as the backup EDG. LILCO intends to analyze the reliability of the combined standby power supplies on each bus. (See general comments 1 and 2.)
- 6.2 The target reliability should be conpared with each unit's EDG system reliability which takes into account common mode failure probabilities (see Attachment 1, Page 1, General Comment 2).

<u>Comment 7</u>: Section 18.1 calls for the establishment of diesel generator reliability alert levels based on the generators failure history.

7.1 The regulatory guide should provide criteria or models that can be applied to the failure history to determine the reliability alert level.

<u>Comment 8</u>: Section 18 presents reliability program requirements that include manhour intensive activities which contribute very little to the actual reliability of a unit with redundant EDGs on each safety-related AC bus. Since SNPS will have two (2) EDGs on each bus, the reliability of each bus will be maintained very close to one without the elaborate reliability program described in Section 18. The reliability program requirements should be based on the EDG redundancy of the unit.

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