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BY HAND

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Commissioner James K. Asselstine
Commissioner Frederick M. Bernthal
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Commissioner Lando W. Zech, Jr.
U. S. Nuclear Regulatory Commission
1717 H Street, N. W.
Washington, D. C. 20555

Re: Additional Comments Concerning "Board Notification 85-009 Exemption from General Design Criterion 17 Regarding Low Power Operation of the Shoreham Nuclear Power Station"

Dear Members of the Commission:

Suffolk County submits these additional comments which relate to the significance of Board Notification 85-009. We have been authorized by the Special Counsel to Governor Cuomo to state that the State of New York agrees with the content of this letter.

There is a critical threshold issue which the Commission must address: the problem concerning the single failure criterion that was raised by the Staff's Board Notification of February 1, 1985, directly contradicts specific findings of the Miller Board and the facts within the evidentiary record of this proceeding. This new information is clearly material to the safety of Shoreham and to the Miller Board's October 29, 1984 Decision. The question of compliance with the single failure criterion was a significant factor in the Miller Board's "as safe as" determination.

The evidentiary record in the proceeding is closed. Therefore, to consider the new data in the context of LILCO's exemption request pending before the Commission, the Commission would have to reopen the record, either sua sponte or in response to a motion by the Staff or some other party. If the record were reopened, all parties would then have to be given a fair opportunity to confront the new facts, assess these facts, and present their views to the decisionmaker under normal adjudicatory procedures.

It is essential to follow such a reopening procedure so that the State and County have the opportunity to gain an understanding of the implications of the "solution" which was proposed by the Staff and LILCO outside the closed evidentiary record. In short, given the clear relevance of the Board Notification, it would be improper for the Commission to take any action concerning this matter without first assuring that the record is reopened and the rights of the parties are protected.

The County and State also bring the following related points to the NRC's attention:

1. Attached hereto is an affidavit prepared by Gregory C. Minor, a Suffolk County consultant who has degrees in electrical engineering.[1/] In the short time since he received the Board Notification, Mr. Minor has reviewed the underlying data which are available and has set forth his preliminary views of the situation. The affidavit demonstrates that the data in the Notification and in LILCO's January 29 letter are significant, thus emphasizing that if the Commission wants to evaluate this matter, either it or LILCO and/or the Staff will have to reopen the record in accordance with 10 C.F.R. Part 2.

2. Part of the "solution" proposed by LILCO to the Breaker 460 problem is to utilize the Wildwood substation to reroute power from the 20 MW gas turbine to the emergency 4 KV bus. The Wildwood substation is located about one mile south of the Shoreham plant. LILCO stated as follows:

> [E]ven if a fault occurred as postulated in the breaker number 460 it is still possible for the 20 MW gas turbine to supply power to Shoreham. In such an event, the EMD diesels could not be connected to the failed bus 11 and the failure of breaker number 460 would also cause a trip of the RSST protective relays which would trip all 7 RSST 4 KV breakers, the 69 KV switchyard supply breaker 640 and the 20 MW gas turbine breaker. The Plant Operator can open ABS 623 and the 4 KV switch gear breaker 450 thereby isolating bus number 11 and the faulted 4 KV breaker 460. The Plant Operator can then reset the RSST lock out relay 86T4B, thereby allowing the 20 MW gas turbine to start in a dead line mode. The System Operator, by rearranging system breakers, can reroute power from the gas turbine via the 69 KV system and the 138/69 KV step up transformer at the Wildwood substation on the Shoreham property to the Shoreham 138 KV

1/ An executed version of the affidavit will be submitted shortly. Mr. Minor is attending meetings in Bethesda today and thus was unavailable to execute the final copy.

switchyard. Power is then connected to the emergency 4 KV bus from the normal station service transformer.

LILCO SNRC-1140, Jan. 29, 1985. In the Notification, the Staff mentions this purported ability. However, there are multiple problems with this portion of the "solution," each of which can only be dealt with properly on the record rather than in the present extra-record context.

(a) The initiating event which is postulated under the deterministive analyses of the Staff for Shoreham low power operation is a LOOP/LOCA event. In a LOOP/LOCA, there is no basis for the Staff or LILCO to assume that it will be possible to reroute power to the Wildwood substation, located about a mile from the Shoreham plant. Rather, in a loss of offsite power event, it is necessary to assume that it is impossible to use the offsite grid.

(b) Our preliminary assessment is that the rerouting, if feasible, will be a complex operation requiring detailed training and procedures. Minor Affidavit, ¶ 5. Thus, in order to test the adequacy of this proposed solution, it is necessary to assess what, if any, procedures and/or training exist for this rerouting of 20 MW gas turbine power to the emergency busses via Wildwood. Has the Staff reviewed any such training or procedures? Has the Commission? How long will it take? The County and State have a right to test the adequacy of such procedures and training before any reliance is placed on this part of the "solution."

3. The other part of the proposed "solution" involves "racking out" Breaker 460. This is the third or fourth situation that has needed to be altered due to single failure problems -- the first since the record closed. See Minor Affidavit, ¶ 3. This, again, raises multiple problems.

(a) The belated discovery of a single failure criterion deficiency highlights the fact that no systematic analyses of the potential for such faults has yet been conducted. This is unacceptable, given the recent revelation that the instant problem was discovered by the Shoreham Project Manager during, presumably, a nontechnical review of the alternate AC power configuration. As set forth in Mr. Minor's affidavit (¶ 4), there is a need for systematic failure analysis before anybody considers licensing action.

(b) Concerning Breaker 460 itself, there are many unanswered questions about the "racking down" solution: what procedures have been prepared and training provided to ensure that this new configuration is effectively implemented; can operators alter the "racked out" position of Breaker 460 under certain conditions; if not, why not; and if so, what assurance is there that an electrical fault will not then occur, disabling the

ability to supply power from the gas turbine and EMD diesels by normal routes? See Minor Affidavit, ¶ 5. Answers to these questions must be provided before any licensing action can be contemplated.

(c) The Breaker 460 "solution" means that if the EMD diesels do not function, Bus 11 loads can be served by the gas turbine only via the Wildwood rerouting, which is suspect for its own reasons. See items 2(a) and 2(b), supra. Has the Staff or LILCO assessed the Bus 11 loads to determine the significance of failing to supply power to them in a timely manner? Minor Affidavit, ¶ 5(d). Again, all of these questions need to be answered in the reopened proceeding.

4. It is obvious that there is no need to perform Phase III/IV testing of Shoreham. As the Commission knows, the State and County believe a "critical path" analysis is both inappropriate and impossible here, because there is such great uncertainty that Shoreham will ever qualify for a full power license. However, even assuming, arguendo, that the Commission eventually were to authorize a full power license, there are so many milestones to be overcome[2/] that one cannot reasonably predict such a decision before 1986. Nevertheless, during the Commission's questioning of the Staff and LILCO on Friday, it was suggested by those parties that perhaps low power testing should be considered on a "critical path" due to the possibility of problems during low power testing.

The speculation about low power testing problems is just that -- speculation. At a Staff briefing this morning, Mr. Jeff Smith of LILCO stated that even assuming problems during low power testing, LILCO expects to complete it in "about 6 weeks." Further, last summer, in an attachment to a June 15, 1983 letter to Congressman Markey, the Commission reviewed plants that had received licenses since the TMI accident. The longest period between initial criticality and exceeding 5 percent power was less than three months; 6 plants took less than one month. Thus, there is no basis to "justify" testing Shoreham now to avoid potential delays due to problems with the plant that might be revealed during testing. Indeed, if Shoreham were to encounter problems of the magnitude that would affect the nearly year-long "critical path" to full power operation, the Commission would

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2/ The milestones include: a favorable decision to LILCO on all contested emergency planning and TDI diesel issues; a decision favorable to LILCO on all State law legal authority issues pending in New York State Supreme Court; the scheduling of, planning for, and successful completion of a FEMA-graded exercise, which would be conducted over the objections of the State and County, contrary to the policy of President Reagan, probably only following a separate lawsuit to halt such an exercise; the conduct of post-exercise administrative litigation, and a decision favorable to LILCO; and a 30-day immediate effectiveness review.

have another Diablo Canyon on Long Island. Surely, the Commission does not expect this, given the seals of approval that the Licensing Board and Appeals Board affixed to LILCO's QC/QA programs.

5. During questioning at the February 8 oral argument about the "as safe as" standard, there were questions about whether the single failure problem might be deemed immaterial in the context of the NRC's licensing decision. As noted at the outset of this letter, this cannot be done. Some additional points must be set forth.

(a) The "as safe as" standard was articulated in the May 16 Order as a deliberate requirement of the Commission. The "as safe as" standard is unambiguous: compare a fully qualified system and LILCO's alternative to see how they match up. It would be unacceptable -- indeed unlawful -- for the Commission now to change that mandated standard (as the Miller Board did) into a "safe enough" standard. The NRC may not conduct a proceeding on one theory and then decide it on another. Such a change would be lawful only if the Commission provided fair notice to the parties and gave them an opportunity to put in evidence the new theory. See Public Service Co. of Indiana (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 186 (1978), citing Niagara Mohawk Power Co. (Nine Mile Point Nuclear Station, Unit 2), ALAB-264, 1 NRC 347, 353-55 (1977). Accord, Pennsylvania Power and Light Co. (Susquehanna Steam Electric Station, Units 1 and 2), LBP-82-30, 15 NRC 771, 781-82 (1982).

(b) The fact that assumed compliance with the single failure criterion is crucial to the Miller Board's "as safe as" decision must be stressed. In addition to the portion of the Initial Decision quoted in my February 7 letter (Decision at 50-51), please note also the following statement by the Miller Board:

> The Board has reviewed all of the pertinent parts of the record in this proceeding. We have concluded that the enhanced offsite system has the required redundancy, meets the single failure criterion and has sufficient capacity, capability and reliability to supply adequate emergency power for low power operation of the Shoreham unit. We find that there is adequate assurance that the enhanced system can supply sufficient power within 55 minutes in the event of a concurrent LOCA and loss of offsite power. We therefore further find that the enhanced system provides a comparable level of protection as a fully-qualified system would and thus meets the "as safe as" standard set by the Commission in CLI-84-8.[3/]

3/ Decision at 54-55 (footnotes omitted; emphasis added).

And the Board later stated:

> The gas turbine and the EMDs are considered a system (Smith, Tr. 2482) whose two parts (turbine, EMDs) are adequately independent of one another for compliance with the single failure criterion (Staff Ex. 2, SSER 6, ff Tr. 721 at 8-5, 8-6).4/

In addition, the Commission should review the Staff's Appeal Board Brief of January 22, 1985 (especially pages 17-19) wherein the Staff urges affirmance of the Miller Board Decision, particularly because of alleged compliance with the single failure criterion. For example, the Staff states:

> The second argument advanced by the State and County is that alternate configuration is itself vulnerable to single failures. Brief at 40. This claim would be significant if true. The State and County provide no basis for this claim other than a brief cite to their findings below. . . . Moreover, the proposed findings are simply inaccurate; they ignore the license conditions that will be imposed by the Staff to ensure that the alternate configuration does in fact meet the single failure criterion. . . . The Board's finding that the alternate configuration meets the single failure criterion (Initial Decision at 50-51, 54) is supported by the record; the County and State provide no basis to question that determination.

Staff Brief at 18 (citations omitted; emphasis added). Again, therefore, it is clear that compliance/noncompliance with the single failure criterion is a material question in determining whether the "as safe as" standard is met. This must be dealt with in a reopened proceeding.

Sincerely yours,

KIRKPATRICK & LOCKHART

By: Lawrence Coe Lanpher (MSM)
Lawrence Coe Lanpher

Attorneys for Suffolk County

cc: Judge Marshall E. Miller
Judge Glenn O. Bright
Judge Elizabeth B. Johnson
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Howard Wilber
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Remainder of Shoreham Service List

4/ Decision at 91 (emphasis added).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Commission

In the Matter of	)	
LONG ISLAND LIGHTING COMPANY	)	Docket No. 50-322-OL-4 (Low Power)
(Shoreham Nuclear Power Station, Unit 1)	)	

AFFIDAVIT OF GREGORY C. MINOR
CONCERNING SINGLE FAILURE CRITERION
AND SHOREHAM EMERGENCY POWER SUPPLIES

1. My name is Gregory C. Minor. I am Vice President of MHB Technical Associates ("MHB"). My education background is in electrical engineering (with a power systems option) in which I received a Bachelor of Science and Master of Science degrees. I have over 24 years of experience in the nuclear industry, including design and testing of systems for use in nuclear power plants. Since 1976, I have been employed by MHB and have acted as a consultant to domestic and foreign government agencies and other groups on nuclear power plant safety and licensing matters. Between 1965 and 1976, I was employed by the GE Nuclear Engineering Division as a design engineer and manager of engineering design organizations. My responsibilities included the design, testing, qualification, and pre-operational testing of safety equipment and control rooms for use in nuclear power plants.

2. General Design Criterion 17 requires that emergency power systems for nuclear power plants meet the single failure criterion. It specifically states:

> The onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

Therefore, the alternative means of supplying emergency power proposed by LILCO, in order to be as safe as the safety-related system originally proposed for Shoreham, must also meet the single failure criterion.

3. During the low power proceeding conducted before Judge Miller, testimony was provided by LILCO, the NRC Staff and Suffolk County regarding single failure vulnerability of the alternate sources of power proposed by LILCO. In the NRC's testimony of John Knox and Edward Tomlinson, the NRC stated that the proposed system does meet the single failure criterion and independence which would be required for the normal safety-related diesel generators located at an operating nuclear power plant. Testimony of Knox and Tomlinson, at page 6. Their testimony included their view that the supplemental power sources were not connected to each other and therefore were independent of each other. The Staff also relied on their SER to conclude that the electrical cross-connections between the two alternate proposed power sources had been sufficiently corrected to preclude a single event or single failure causing failure of both sources of power. SSER 6, at 8-5. The Board in making its decision regard-

ing low power operation for Shoreham accepted the NRC's position with regard to the single failure criterion. Board Decision at 50-51, 54-55, 91. However, the configurations proposed by LILCO as alternate power sources were not acceptable as first proposed. The NRC in their brief review of this system disclosed at least several potential single failure points which needed to be modified. The first was to leave open breakers which interconnect busses 11a and 12a, 11b and 12b, 11c and 12c, and 11d and 12d, as shown on FSAR Figure 8.2.1-1. The Staff also required that the Technical Specifications for Shoreham be revised to require verification that these breakers are open once every 12 hours. An additional possible interconnection which represented a potential single failure was discovered by the Staff at the point where two breakers feed the 4.16 kV emergency busses, numbered 101, 102 and 103. To resolve this problem, the Staff required that the automatic transfer between the pairs of breakers on these busses be eliminated. This prevented failures in the automatic transfer system or related wiring from causing a single event or single failure which would cause failure of both sources of alternate power. Here again, the Shoreham Technical Specifications were changed to reflect the absence of the automatic transfer system and therefore to eliminate the need for testing that system. Another single failure vulnerability related to fire was identified by the Staff and resulted in the requirement of physical separation of circuits near the RSST and the NSST. SSER 6, at 8-5, 8-6.

4. Despite the fact that the Staff felt the system met the single failure criterion during the low power hearings, the latest disclosures of yet another single failure point detract from this finding and in fact render it incorrect. Breaker 460 between the RSST and bus 11 is yet another point whose single failure could interconnect with the alternate power sources and cause both of them to fail in the event of a short. None of the single failures which have been identified to date and addressed by changes to the Technical Specifications or plant requirements has been part of a formalized, detailed and documented analysis of potential single failures of the alternate configuration proposed by LILCO. Absent such a formalized and documented study, it is impossible to say that these single failures, discovered at different periods of time, represent all the single failures in the system created by the unothordox addition of external power sources to replace inoperative safety-related emergency diesel generators.

5. The "fix" proposed in Board Notification 85-009 is to rack out or effectively remove breaker 460. This solution does appear on the basis of preliminary review to solve the identified single failure problem, but there is insufficient analysis to show that the "fix" has not created additional problems. In fact, the documentation provided to date indicates that several problems do exist. These are described in the following sub-paragraphs.

(a) There is no evidence that the procedures which govern operator action during a loss of offsite power (LOOP) have been modified to reflect a change created by removing breaker 460. Thus, the procedures presume that there is a path which would allow the operator to connect RSST to bus 11, when in fact this cannot be accomplished through the ordinary breaker techniques. If the operator is to follow alternate procedures in order to power bus 11, such procedures have apparently not been written and have not been reviewed by the NRC.

Further, the use of revised procedures specifically created to get around the single failure problems introduced by the alternate power sources, would have no meaning during and in fact may be misleading for full power operation. Under full power operation, it is assumed that safety-related emergency diesel generators will be available and such expedient and system degrading techniques as racking out breakers and removing automatic transfer functions would not be tolerated. Thus, the procedures for full power should be different procedures than the ones that would be created for low power. Thus, the experience gained by operators in using the alternate AC power system will in fact be counter productive in terms of training for later higher levels of power.

(b) Training of the operators to use the procedures created for low power operation also appears not to have been completed at this time. Once the procedures are prepared and reviewed by the NRC, there will need to operator training in their use in order to have any assurance that the procedures will be followed during emergency conditions.

(c) In the event of a need to power bus 11 during a LOOP event, one option is to re-rack breaker 460 and close it in to bring power from the RSST to the bus 11. If this action were taken and a short were to occur during the re-racking or closing of breaker 460, the single failure and shorted condition could cause a loss of both alternate power sources. In such an event, the alternative routing proposed by Shoreham would be to go through the Wildwood Substation and reenter the plant through the NSST. This routing involves additional procedures which have not been developed at this time, and would require a longer time because of the greater number of steps, the necessary precautions, and the involvement of system operators.

(d) The loads on bus 11, according to the FSAR, appear to be mainly 4160 volt, normal station service motor loads. Most of these loads probably would not be needed during the initial phases of an emergency, but may be useful at later stages. However, because LILCO

has presented no study showing whether they are needed or not and if they are, how they would be powered in the event the EMDs did not start, there is no assurance that the operators will not attempt to power bus 11 from alternate sources.

6. The modification proposed by LILCO of racking down breaker 460 removes one fundamental element of flexibility from the system as proposed in the FSAR. Originally, the system consisted of two sources (RSST and NSST) and two load centers (bus 11 and bus 12), connected both directly and by cross-linking through breakers. This is a classic configuration of connecting two loads to two sources. However, by elminating the one cross-tie possibility (breaker 460), the system has lost flexibility and is therefore not of the same degree of reliability or safety in the event of an emergency at Shoreham. At the same time, by eliminating some of the system versatility, there has been an element of uncertainty introduced into the operation of the system due to the unknown method the operator will use to recreate that path if called upon to do so. When alternate paths are used to replace the routes otherwise provided by breaker 460, other systems, other busses, and even other substations may have to be called into play. These actions could well introduce new problems which have not been discovered to date. Until there has been a thorough study, detailed procedures, and operator training, the "fix" proposed by LILCO for this single failure problem

may actually have introduced additional problems, possibly even single failure problems, which are yet to be discovered.

_____
Gregory C. Minor

Sworn to before me this ___ day
of February 1985.

_____
Notary Public

My commission expires:_____