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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of)	
)	
LONG ISLAND LIGHTING COMPANY)	Docket No. 50-322-OL-6
)	(25% Power)
(Shoreham Nuclear Power Station,)	
Unit 1))	

LILCO'S BRIEF ON THE "SUBSTANTIVE RELEVANCE"
OF REMAINING EMERGENCY PLANNING
CONTENTIONS TO LILCO'S MOTION TO OPERATE AT 25% POWER

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On February 26, 1988, this Board instructed the parties to submit briefs on the impact of pending emergency planning contentions on its ability to make the "reasonable assurance" finding necessary to grant LILCO's motion to operate at 25% of full power.^{1/} Specifically, the parties were asked to address whether the remaining emergency planning contentions are "substantively relevant" to 25% operation. February 26 Order; see also January 7 Memorandum and Order at 9. As is explained below, LILCO believes that none of the remaining emergency planning contentions is substantively relevant to its motion to operate at 25% power, and hence that the motion should be granted.^{2/}

^{1/} LILCO submitted its motion to operate Shoreham at 25% power under 10 CFR § 50.57(c). That section, in turn, requires the Board to make the six findings specified in § 50.57(a) before granting the motion. With regard to LILCO's 25% motion, the Board has found that it need only resolve § 50.57(a)(3) in LILCO's favor in order to grant the 25% motion. Memorandum and Order (In Re: LILCO's Request for Authorization to Operate at 25% of Full Power) at 8-9 (January 7, 1988). Section 50.57(a)(3) provides:

There is reasonable assurance (i) that the activities authorized by the operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations in this chapter.

^{2/} In its "Request for Authorization to Increase Power to 25%" (hereinafter "Request for Authorization"), filed initially with the Commission on April 14, 1987 and

Assessing the substantive relevance of remaining emergency planning contentions involves the concepts of operation of Shoreham at 25% power, the risk of accidents at 25% power and the time available for offsite response. These technical factors are discussed in the first section of this brief. They are then used as the basis for considering the substantive relevance of the remaining emergency planning contentions in the second section of the brief.

I. The Factual Bases for LILCO's 25% Power Motion

LILCO's motion for authorization to operate at 25% power is clearly supported by a series of detailed analyses of the risks of accidents associated with operation of Shoreham at 25% power. These analyses include traditional design basis accidents as well as even more unlikely severe accidents.^{3/} Two important conclusions flow from

(footnote continued)

later attached to LILCO's "Motion for Authorization to Increase Power to 25%" (dated July 14, 1987), LILCO has already demonstrated that the remaining emergency planning contentions are not substantively relevant to operation at 25% power. To avoid unnecessary duplication, LILCO will not repeat those arguments in their entirety in this brief. Instead, those arguments will be summarized here and references will be made to the more detailed discussions and factual material contained in LILCO's earlier submissions. For the Board's convenience, the Request and its accompanying appendices are included with this filing. The Request and its accompanying appendices were served on the entire service list on April 14, 1987 and again on July 14, 1987. Because of the length of that material it is not being served (for what would be a third time) on the parties.

3/ LILCO's Request for Authorization contains three independent assessments to provide contextual meaning to the risks associated with operation at 25% power:

1. the results of the Shoreham-specific Level 3 PRA for 25% power have been compared to the rationale of NUREG-0396 originally used to establish the current 10-mile radius for the EPZ;
2. the individual exposure risk criteria developed for the Industry Degraded Core Rulemaking Program (IDCOR) have been applied to the results of the 25% power Level 3 PRA; and

(footnote continued)

these analyses.

First, the risks from Shoreham's operation at 25% power are sharply reduced relative to a licensing-basis 100% power analysis. Indeed, the risks associated with the operation at 25% power are so small that a radius of less than one mile would satisfy the original planning basis (NUREG-0396) for the regulatory 10-mile Emergency Planning Zone (EPZ).^{4/} The risks at 25% power are low because the probability of obtaining a severe release is significantly reduced from 100% power and the amount of fission products released to the environment during any such accident is very small. These reasons closely parallel the factual bases for 10 CFR § 50.47(d), which permits 5% power operation without an approved offsite emergency plan.^{5/} See 47 Fed. Reg. 30,233 col. 1 (1982).

Second, at 25% power, the small group of accidents that produce offsite releases progress more slowly from their initiating event^{6/} to the release of radiation to the

(footnote continued)

3. a showing has been made that, even with exceedingly pessimistic assumptions about various uncertainties (such as the evacuation assumptions), the Level 3 PRA source terms are of such a magnitude that the occurrence of injury-threatening doses beyond one mile from the plant is extremely unlikely.

Request for Authorization at 19, 60-74.

^{4/} LILCO's Request does not seek to reduce or shrink Shoreham's 10-mile EPZ. At 25% power operation, LILCO would maintain the 10-mile EPZ and continue to devote resources, training and planning for the full 10-mile zone.

^{5/} In promulgating § 50.47(d), the Commission based its conclusion that the degree of emergency preparedness necessary to provide adequate protection of the public health and safety at 5% power was significantly less than that required at 100% power on three factors. First, the fission product inventory was much less. Second, at 5% power there was a significant reduction in the required capacity of the systems needed to mitigate the consequences of accidents. Third, the time to identify accident causes and mitigate their consequences was "much longer" than at 100% power. 47 Fed. Reg. 30,233 col. 1.

^{6/} An "initiating event" is an individual incident or series of incidents that lead to challenges to the plant's capability to reach a safe and stable shutdown condition. In

(footnote continued)

environment.^{7/} As is shown in the attached Affidavit of Edward J. Youngling, over 96.7% of all accidents that lead to core melt at 25% power take seven hours or longer to progress from their initiating event to the release of radiation to the environment. The remaining 3.3% of all core melt accident sequences, which are comprised almost entirely of accidents caused by extraordinarily severe earthquakes that would also disrupt offsite emergency response, result in offsite releases within about one hour of their initiating event. If the severe earthquake-initiated accidents are removed from the universe of core melt accidents, then 99.5% of all severe accidents at 25% power would take seven or more hours to progress to release of radiation offsite. For the reasons discussed on page 10 *infra*, it is clear that the potential impact of such earthquakes need not be considered. San Luis Obispo Mothers of Peace v. NRC, 751 F.2d 1288 (D.C. Cir. 1984); Southern California Edison Co. (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-81-33, 14 NRC 1091 (1981).

For emergency planning purposes, this slower rate of accident progression provides more time to implement protective actions and essentially assures that evacuation can be completed prior to the release of radiation. In situations like Shoreham, where State and local governments refuse to participate in advance emergency

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this filing, the initiating events from the 25% power PRA would very quickly lead an operator in the control room to classify the plant's condition as a "Site Area Emergency" or "General Emergency." As a result, offsite emergency response actions would begin within at most 15 minutes of the initiating event. (Under NUREG-0654, Appendix 1, the onsite organization is required to notify offsite authorities within 15 minutes of the operator's recognition of plant events that warrant the declaration of an emergency class. The LILCO onsite emergency response plan has been found by the NRC to comply with this requirement.)

^{7/} In this brief, "release of radiation" refers to radiological releases offsite which produce dose levels approaching the lower end of EPA's Protective Action Guides (PAGs) -- one rem whole body and five rems to the thyroid. Below these lower PAG dose levels, EPA guidance specifies that no planned protective actions are necessary. See LILCO Plan, OPIP 3.6.1, Att. 4.

planning, the slower rate also provides substantial additional time to coordinate offsite response with those governments when they do respond during an actual emergency, see 10 CFR 50.47(c)(1)(iii)(B) (state and local officials will use their "best efforts" in an actual emergency). The slower progression of accidents at 25% power again parallels one of the factual bases for the 5% power exemption contained in 10 CFR § 50.47(d). See 47 Fed. Reg. 30,233 col. 1.

These matters are discussed in more detail immediately below.

A. The Risks of Accidents at 25% Power

The risks of accidents at 25% power were analyzed using the traditional design basis accident analysis as well as a detailed probabilistic risk assessment. The effects of design basis accidents during 25% power operation were assessed in the same manner as those in Chapter 15 of the Shoreham Updated Safety Analysis Report (USAR), filed December 2, 1986.^{8/} The results of this analysis indicate that four design basis events have the highest offsite radiological consequences. These four events bound the consequences of the remaining 34 USAR licensing basis transients and accidents. Request for Authorization at 20-21. For these four events, the lower PAG dose limits, at which point some protective action is required, are never exceeded at distances beyond 0.8 mile from the reactor centerline.^{9/} Thus, the design basis accident rationale from NUREG-0396, NUREG-0396 at I-5, would be satisfied at less than one mile for Shoreham operating at 25% power.

^{8/} A detailed description of this analysis and its results are presented in LILCO's Request for Authorization at 20-21, 62-64 and Appendix 6.

^{9/} The two-hour whole body dose does not exceed one rem beyond the Exclusion Area Boundary, which at Shoreham is 311 meters from the reactor centerline. The two-hour thyroid dose does not exceed five rem beyond 1250 meter (0.8 mile) from the reactor centerline. Request for Authorization at 62-64.

LILCO has also performed a comprehensive assessment of the risk of non-traditional, severe accidents.^{10/} These analyses considered a number of physical and procedural changes that have been made at Shoreham to reduce core melt frequencies.^{11/} They also recognized that at 25% power:

- ° the fission product inventory is substantially less than during full-power operation;
- ° the system success criteria are significantly improved for 25% power (for example, containment venting is adequate to remove decay heat);
- ° the time available to operators to take action to prevent severe accidents is appreciably longer than at full power, resulting in a greater probability that the operator will

^{10/} The results of these analyses are presented in LILCO's Request for Authorization at 21-58 and Appendices 1 to 5.

^{11/} These changes include:

1. additional onsite AC power including one blackstart gas turbine, four mobile diesel generators and one Colt diesel;
2. procedures for using the diesel fire pumps as a cooling source for the Residual Heat Removal (RHR) System heat exchanger when utilized with the Reactor Core Isolation Cooling (RCIC) System in the steam condensing mode;
3. highly enriched boron to be used in the Standby Liquid Control (SLC) System to increase the allowable time for successful initiation for ATWS mitigation;
4. an Automatic Depressurization System (ADS) inhibit switch to provide an easy means for the operator to prevent activation of the ADS when it could make the accident more difficult to control;
5. procedural instructions to bypass the High Pressure Coolant Injection (HPCI) System suppression pool interlock to allow the operator to switch the HPCI system back to the Condensate Storage Tank (CST); and
6. emergency procedures allowing for the throttling of the low pressure Emergency Core Cooling System (ECCS) and of condensate during ATWS events.

Request for Authorization at 23-24.

correctly diagnose the problem and take appropriate corrective actions;

- ° the capacity margins of the mitigating systems required to perform safety functions are significantly greater at 25% power;^{12/} and
- ° the main condenser is effective as a heat sink for all turbine trip ATWS cases in which it can be maintained.

The important conclusions for the 25% power probabilistic risk assessment include:

- ° the frequency of core melt at 25% power is low;
- ° loss of containment (decay) heat removal accident frequencies are very low and significantly lower than those at 100% power;
- ° loss-of-coolant accidents are of very low frequency;
- ° loss of offsite power is a negligible contributor to core melt frequency; and
- ° successful accident mitigation is much more likely because of the additional time available, along with the reduced requirements for coolant injection and containment heat removal.

Having established the risks of accidents at 25% power, LILCO then analyzed the offsite radiological consequences of those accidents using several variations of the Calculation of Reactor Accident Consequences (CRAC) code.^{13/} These analyses revealed much lower dose-versus-distance probability distributions than those presented in NUREG-0396. See Request for Authorization at 60-68. Indeed, at 25% power, the probability of receiving a dose resulting in serious illness in the months following the accident (200 rem whole body) is very low, even at a fraction of a mile from the plant. Id. at 67. Most core melt accidents at 25% power would not produce doses in populated

^{12/} This is true not only for mitigating safety systems such as the Emergency Core Cooling System but also other systems, which provide a coolant injection source, such as the control rod drive system. Request for Authorization at 28.

^{13/} These analyses are presented in Appendix 5 to the Request for Authorization.

areas in excess of EPA's PAGs at distances beyond about one-tenth of a mile from the plant. Id. Doses would exceed PAG limits in populated areas one mile from the plant in less than 10% of all core melt accidents. Id. at 67 n.41.

These results indicate that the risks to the general population living approximately one mile from Shoreham operating at 25% power are less than the risks identified at 10 miles in NUREG-0396.^{14/}

B. The Time Available for Offsite Response at 25% Power

A critical factor in assessing whether the remaining emergency contentions are of substantive relevance is the time available for offsite response. Pursuant to NUREG-0654, offsite emergency response plans are predicated on a standard emergency classification and action level scheme. NUREG-0654 § II.D and App. 1. This scheme not only provides criteria for notifying the public of an emergency, but also triggers the notification and mobilization of offsite response organizations.^{15/} Under the Shoreham offsite emergency response plan, the declaration of any emergency classification -- be it an Unusual Event or any of the three higher classifications -- requires the LERO Director of Local Response to contact appropriate state and local government officials to coordinate offsite response. Thus, the time available for offsite response depends on the speed at which accidents progress from the initial plant event that prompts the declaration of an emergency classification to the time radiation is released to the environment. The probabilistic risk assessment for 25% power operation is a useful source for obtaining this timing information.

^{14/} The risks from 25% power operation are based on the conservative assumption that immersion and inhalation doses from an exposure lasting 24 hours after the time of release. This assumption is used regardless of the time or duration of the release. Request for Authorization at App. 5 p. 12.

^{15/} For example, the Shoreham offsite emergency response plan provides that at an Unusual Event, seven key members of the Local Emergency Response Organization (LERO) are placed on standby; the remainder of LERO is unaffected. At an Alert, over 290 members of LERO report to their preassigned duty stations. At a Site Area or General Emergency, LERO is fully mobilized. LILCO Plan, OPIPs 2.1.1 and 3.3.3.

The Shoreham probabilistic risk assessment for 25% power represents the spectrum of core melt accidents by ten "plant damage states"^{16/} which are further subdivided into six "release categories."^{17/} The resulting groups represent all of the accident sequences that could lead to core melt.

Since each accident group contains accidents which possess common physical attributes, it is possible to select a "representative" accident sequence^{18/} for each group and then to determine for that sequence the time interval between the initiating event and the release of radiation to the environment. LILCO has conducted this analysis for each of the accident groups in the 25% power PRA.^{19/}

^{16/} A "plant damage state" is the end result of the analysis that defines an accident sequence and quantifies its probability of occurrence. It is comprised of similar accident sequences that lead to degraded core conditions. The "plant damage states" for the 25% power PRA are presented on pages 34-35 of the Request for Authorization.

^{17/} A "release category" is a set of release events (where a release event is a combination of a plant damage end state and a containment event tree end state) with similar risks. The principal attributes of a "release category" are: (1) the time from the initiating event to the release of radiation to the environment, (2) the duration of the radiological releases, and (3) the magnitude of those releases. The "release categories" for the 25% power PRA are discussed in more detail in the Request for Authorization at 42-43 and Tables II.C.3-2 and -3.

^{18/} A "representative accident sequence" is an accident sequence used to represent the spectrum of accident sequences that exist for a given release category and plant damage state. The representative sequence is chosen by identifying the primary containment event tree end state within a given release category and plant damage state and then by identifying the dominant plant damage state that leads to that primary containment event tree end state. The dominant plant damage state is determined on the basis of the frequency of contribution to that release category and plant damage state.

Since each given release category and plant damage state contains a multitude of severe accident sequences, each having an increasingly lower probability of occurrence, it is practical and appropriate to use representative accident sequences to characterize the group. Clearly, within a given group worst case accidents could be envisioned, however, their contribution to risk is so small as to be considered negligible. The use of representative accident sequences to characterize a group of severe accidents is consistent with the practice followed in WASH-1400.

^{19/} See Affidavit of Edward J. Youngling, ¶ 6.

The results reveal that 74% of the accidents leading to core melt (represented by release categories RC5 and RC6) require 48 hours or more to proceed from their initiating event to offsite radiation releases as determined by the representative sequences. An additional 22.7% of the accidents leading to core melt (represented as parts of release categories RC1, RC2, RC3 and RC4) require between 7 and 14 hours to produce offsite radiological releases. The remaining 3.3% of all core melt accidents proceed from initiating event to radiation release in about one hour. Affidavit of Edward J. Youngling, ¶ 7. By comparison, approximately 6% of all core melt accidents at 100% power progress from their initiating event to offsite radiation release in about one hour. Affidavit of Edward J. Youngling, ¶ 8.

When assessing the substantive relevance of remaining emergency planning contentions, it is important to note that at 25% power the small category of very fast accidents is caused almost entirely by seismic events which greatly exceed the safe shutdown earthquake (SSE) used in the design of the plant. Earthquakes of this severity are likely to cause such extensive damage in surrounding areas that emergency planning would be of little benefit in these circumstances. For this reason the Commission has long taken the position that the potential impact of such earthquakes on emergency planning need not be considered. See San Luis Obispo Mothers for Peace v. NRC, supra; San Onofre, supra. When the contribution of extraordinarily severe seismic events is excluded from consideration, only 0.5% of all core melt accidents at 25% power proceed from their initiating event to the offsite release of radiation in less than seven hours. Affidavit of Edward J. Youngling, ¶ 9. The probability of occurrence of the fast-breaking group of accidents is 1.4×10^{-7} per reactor year. See Request for Authorization, App. A, Table A.1-11.

II. The Substantive Relevance of the Remaining Emergency Planning Contentions

In considering the substantive relevance of the remaining emergency planning contentions in light of the risks and speed of accidents at 25% power, it is useful to bear in mind several general principles. First, emergency planning findings are different from other safety findings that Licensing Boards must make in the extent to which they are inherently predictive. Louisiana Power and Light Co. (Waterford Steam Electric Station, Unit 3), ALAB-732, 17 NRC 1076, 1103 (1983). Second, the reasonable assurance finding, required by NRC regulations, does not mean perfect assurance or zero risk. Indeed, an underlying assumption of emergency planning regulations, as recognized by the Commission, is that in the event of a serious accident some offsite individuals may receive harmful doses of radiation. Southern California Edison Co. (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-83-10, 17 NRC 528, 533 (1983). The objective of emergency planning is "maximum dose savings." Cincinnati Gas and Electric Co. (Wm. H. Zimmer Nuclear Power Station, Unit 1), ALAB-727, 17 NRC 760, 770 (1983). Finally, emergency planning requirements do not involve an inflexible set of protective actions. Instead, they provide for flexible, graded responses. Thus, the offsite release of radiation does not require the automatic evacuation of the entire 10-mile EPZ; instead, release characteristics and weather conditions could indicate that a much smaller zone (such as a 2-mile zone) be evacuated while the remainder of the EPZ could be instructed to shelter.

Operation at 25% power provides dose savings in two ways. First, for most severe accidents the area where evacuation is likely to be recommended will be substantially less than the entire 10-mile zone. Thus, the evacuation of those persons at risk will be completed substantially more quickly than if a larger area was evacuated.^{20/}

^{20/} For example, an evacuation of the entire Shoreham 10-mile EPZ under normal summer weather conditions takes approximately five hours. LILCO Plan, OPIP 3.6.1, Att. 2. The comparable evacuation of a 2-mile zone would take just over 3 hours. Id.

Second, given the slower speed of accidents at 25% power, it is much more likely that evacuation can be totally completed prior to any significant offsite releases of radiation. As a result, in more cases, the offsite response organization would be able to prevent the public from receiving any dose of radiation and would not be forced to choose between the lesser population dose from sheltering or evacuation.

A. Legal Authority

Eight contentions concerning LILCO's "legal authority" to perform a variety of activities called for by the LILCO Plan remain at issue for full-power licensing. These activities include such functions as traffic control, making protective action recommendations for the public, notifying the public of an emergency at the Shoreham station, and performing access control.

The issues raised by these contentions have changed since their initial filing in 1983. Originally, the contentions argued that LILCO lacked legal authority to perform certain functions specified in the LILCO Plan, and that therefore the Plan was fatally deficient. However, LILCO's legal authority to carry out the Shoreham offsite emergency response plan is no longer the focus of these contentions. In CLI-86-13, Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), 24 NRC 22 (1986), the Commission adopted the "realism principle" which recognizes that in a real emergency, governments would carry out their duty and use their best efforts to protect the public health and safety. In November 1987, the Commission codified and further explained the "realism principle" by amending 10 CFR § 50.47(c) to specifically address situations in which state and local governments refuse to cooperate in emergency planning and preparedness. 52 Fed. Reg. 42,078 (November 3, 1987). The new regulation requires licensing boards to apply two principles:

1. State and local government officials will exercise their best efforts to protect the health and safety of the public.
2. These officials will be assumed to generally follow the utility plan. However, this presumption may be rebutted by the good faith and timely proffer of "an adequate and feasible" governmental emergency plan.

See id. at 42,086 col. 1-2.^{21/} In light of the new regulation, this Board has reformulated the eight "legal authority" contentions to now raise the basic issue of "whether the LILCO Plan with a best efforts or other response [by state and local governments] meets the regulatory requirements." Confirmatory Memorandum and Order at 2-3 (February 29, 1988). In its Order, the Board added:

a lack of legal authority cannot be raised under the regulation as a response against LILCO's Plan, nor can simple protestations that the State and County will not use LILCO's Plan. Acceptable rebuttals to the Plan must include positive statements of the projected behavior of the Governments. A determination to respond ad hoc would be acceptable only if accompanied by specification of the resources available for such a response, and the actions such a response could entail including the time factors involved. A failure on the part of the Governments to present a positive case for our analysis and evaluation could result in a finding of default and hence in an adverse ruling on the contention to which is applies.

Id. at 4. So framed, the eight contentions do not have "substantive relevance" at 25% power as is explained below.

1. **Traffic Control**

Contentions 1, 2 and 4 relate to traffic control during an actual emergency. Contentions 1 and 2 concern implementation of the traffic control plan contained in the LILCO Plan. This traffic control plan was previously approved by this Board -- a decision that has since been affirmed by the Appeal Board and denied further review by

^{21/} The lower courts' decisions in Cuomo v. LILCO, which held that LILCO lacked "legal authority" to implement its emergency plan, have been reversed by New York State's highest court, the Court of Appeals, as nonjusticiable. Cuomo v. LILCO, No. 3, ___ NYS 2d ___ (February 17, 1988).

the Commission. Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), LBP-85-12, 21 NRC 644, 793 (1985), aff'd, ALAB-832, 23 NRC 135, 143 (1986). As a result, the remaining question for full-power operation is whether a best effort response by Suffolk County would impede the implementation of this already acceptable plan.^{22/}

Consistent with a best-effort response, Suffolk County, when notified of a Shoreham emergency, would either dispatch police officers to team with trained LERO Traffic Guides, or authorize LERO Traffic Guides themselves to control traffic. To aid this coordination effort, the LILCO Plan now provides for the dispatch of a trained LERO coordinator to the Suffolk County Police headquarters in Yaphank. This coordinator will carry diagrams explaining the traffic control movements at each point specified in the LILCO Plan. LERO Traffic Guides will also be dispatched to each traffic control point with dosimetry and the appropriate equipment (including traffic control diagrams) for carrying out (or instructing police officers to carry out) the traffic control strategies specified for that control point.

Given the extended time between the initiating event and the release of radiation for accidents at 25% power, the necessary mobilization and coordination to carry out the traffic control plan could be easily accomplished. In addition, given the generally smaller offsite consequences of accidents at 25% power, any protective action recommendations advising evacuation are likely to be for areas smaller than the entire 10-mile Shoreham EPZ -- most likely, for the area within two miles of the plant. As a result, reduced populations would need to be evacuated,^{23/} thus reducing the traffic

^{22/} During the future litigation of Contentions 1 and 2, Intervenor will have the opportunity to present an alternative plan for the direction of evacuating traffic. However, given that the LILCO traffic control plan has already been found to meet NRC requirements and that the realism rule requires any alternative plan to be "adequate and feasible," 10 CFR § 50.47(c)(1)(iii)(B), it follows that whatever plan Intervenor may present, it must meet NRC requirements in order to be acceptable under the new regulation.

^{23/} An evacuation of a 2-mile area around the Shoreham station would affect approximately 20,000 residents, while a 10-mile evacuation would affect 160,000. See LILCO Plan, App. A, p. III-2.

measures that would need to be implemented and evacuation times. For these reasons, Contentions 1 and 2 are not substantively relevant for operation at 25% power.

Contention 4 involves the removal of impediments from roadways during an evacuation of affected zones. The 12 tow trucks provided in the LILCO Plan have already been found to be an adequate number for an evacuation of the entire 10-mile EPZ. LBP-85-12, 21 NRC at 811. Because the areas to be evacuated as a result of accidents at 25% power are likely to be much smaller than the 10-mile EPZ, these 12 tow trucks will provide a large excess of removal capacity. Furthermore, as this Board recognized when it granted LILCO's motion for summary disposition on the provision of fuel trucks, it is inconsistent with the "best efforts" assumption to assume that Suffolk County would intervene at the height of an emergency to prevent the use of emergency equipment LERO has provided. See Memorandum and Order (Granting LILCO's Summary Disposition Motion on Contention 9) at 11 (March 11, 1988). Finally, the slow speed of accidents at 25% power will allow more time for these tow trucks to be mobilized and dispatched to field locations in accordance with the LILCO Plan. Thus, Contention 4 is not substantively relevant for operation at 25% power.

2. Protective Action Recommendations

Contentions 6, 7 and 8 involve making protective action recommendations for the plume exposure and ingestion pathways and decisions on recovery/reentry, respectively. Making protective action recommendations for the plume exposure pathway requires three basic decisions: (1) deciding on the appropriate protective action given plant and weather conditions, (2) informing the public of that decision through an appropriate EBS message and (3) actually alerting the public by sounding the sirens and broadcasting the EBS message. Given a best-effort response, governmental officials will notify the public to take appropriate actions if so recommended by LERO officials and plant personnel in an actual emergency. The question for full-power operation thus

becomes how long that action would take. For 25% power operation, this is not a significant issue.

In all cases it can be concluded (from the "best efforts" principle) that governmental officials would act promptly to protect the public health and safety. 10 CFR § 50.47(c)(1)(iii)(B). As described in Section I.B above, virtually all (99.5%) accidents at 25% power operation take seven or more hours to progress from their initiating event to the actual offsite release of radiation. Even if one makes the unjustifiably conservative assumption that it will take two hours for LERO and governmental officials to agree on a protective action recommendation and notify the general public,^{24/} at least five hours would still remain for the public to evacuate the zone at risk. Evacuation time estimates for the Shoreham EPZ reveal that the entire 10-mile EPZ can be evacuated in approximately five hours during normal, summer conditions.^{25/} Thus, the coordination of protective action recommendations would not affect public health and safety. Accordingly, Contention 6 is not substantively relevant to LILCO's 25% power motion.

The provisions of the LILCO Plan concerning protective actions in the ingestion pathway have already been litigated and approved. LBP-85-12, 21 NRC at 875-76.

^{24/} Under NUREG-0654, the onsite organization is required to notify offsite authorities within 15 minutes of the operator's recognition of plant events that warrant the declaration of an emergency class. NUREG-0654, App. 1. The offsite organization is then required to make a "prompt" decision on protective action recommendations, see NUREG-0654 § II.E.6, and to notify the public of that decision by the use of an alerting signal and an instruction message within 15 minutes of the decision, NUREG-0654 App. 3 ¶ B.2.c. The two-hour decisional period, used as an example, corresponds to these two 15 minute requirements plus 1½ hours for making the "prompt" decision about protective action recommendations.

^{25/} As described above, the consequence analyses for 25% power operation reveal that it is an extremely rare event that would require such an extensive evacuation. In the vast majority of cases evacuation would not be required beyond one mile from the plant. Even if it is conservatively assumed that a two-mile zone around the plant is evacuated, then the time to evacuate falls to just over three hours.

Protective action recommendations for the ingestion pathway occur well after the initiating event. As a result, substantial time exists for LERO to coordinate its ingestion pathway activities with governmental officials.^{26/} Accordingly, Contention 7 is not substantively relevant to 25% operation.

Similarly, protective action recommendations for recovery and reentry activities are not substantively relevant to LILCO's 25% motion. By definition, these decisions are made after EPZ residents have been evacuated and are safe. Thus, substantial time exists for deciding on these actions and integrating offsite response.

3. Notification of the Public

Contention 5 involves the activation of sirens and broadcast of emergency broadcast system (EBS) messages. The contention involves the mechanical activation of the 89 sirens located throughout the Shoreham EPZ, the physical transmission of an EBS message to the lead EBS station and the subsequent broadcast of that EBS message to the public. The Shoreham siren system can be activated by LILCO or by LERO at three independent locations. All that is required is for the appropriate governmental entity to direct the activation of that system. This can be done in a matter of moments once a protective action recommendation has been agreed upon. It was just demonstrated that ample time exists to make protective action recommendations. Under the "best efforts" assumption of the realism rule, it can be presumed that the appropriate governmental entity would than direct activation of the public notification system.

^{26/} New York State officials recently participated in a "full-participation" ingestion pathway exercise at the Ginna nuclear power plant on October 27-29, 1987. New York State witnesses have admitted in the OL-3 proceeding that the State's performance received "very favorable remarks from FEMA." Affidavit of Papile, Czech and Baranski at 28, attached to Intervenors' Answers to LILCO's Summary Disposition Motions (February 10, 1988).

The Shoreham Plan includes a local EBS network that has WPLR-FM as the lead station. In addition, New York State has an established EBS network for Long Island that is triggered by WCBS.^{27/} Either system could be used to broadcast EBS messages to the general public. Given a best-effort response, one of these two systems would certainly be used during a Shoreham emergency, with no delay in public notification. Thus, Contention 5 is not substantively relevant to 25% operation.

4. Access Control

Contention 9 raises issues about the implementation of access control at the LERO EOC, reception centers and at the perimeter of the EPZ. Access control at the LERO EOC and at reception centers raises no litigable issues since they are private facilities owned by LILCO. There is no issue about LILCO's right to control access to its own facilities.

Access control at the perimeter of the EPZ is not required by the LILCO Plan while an evacuation is taking place. The reason is straightforward: entry into the EPZ during this period should not be forbidden because people are returning to the EPZ to reunite with their families before evacuating. Accordingly, the LILCO Plan requires traffic guides to discourage, but not prohibit or screen, entry into the EPZ. These provisions have previously been accepted by this Board.^{28/}

The later access control of evacuated areas also provides no litigable issue since these actions would take place many hours after state and local governments would

^{27/} Should the responding governments choose to use the State EBS network, the LILCO Plan provides that WPLR will simply rebroadcast that message simultaneously over the local Shoreham EBS network. Thus, the general public could receive emergency instructions either from those stations identified in the public information materials they will receive or from an even broader group of stations not listed in that information.

^{28/} Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), LBP-85-12, 21 NRC 644, 804-05 (1985).

first become involved in a best-effort response. Arrangements for this access control could be agreed upon while the evacuation was in progress and could easily be implemented following its completion.^{29/} In any case, this coordination should be easier for accidents at 25% power since the evacuated areas are likely to be smaller.

B. Role Conflict Among School Bus Drivers

Whether regular school bus drivers would perform their jobs during a radiological emergency has been remanded to this Board, in the OL-3 docket, for the consideration of additional evidence. This issue is not substantively relevant to LILCO's 25% power motion. To ensure that enough school bus drivers are available to evacuate all schools in the 10-mile EPZ, LERO has recruited 565 additional school bus drivers to serve in the place of any regular school bus driver who fails to perform his job in an actual emergency.^{30/}

In addition, at 25% power, only the schools less than a mile of the plant would be at the same level of risk as people within the 10-mile EPZ are currently judged to be "at risk" under NUREG-0396 criteria. Only six schools of the 38 schools in the 10-mile EPZ are located even within two miles of the Shoreham plant. Five of those schools belong to the same school district -- Shoreham-Wading River School District. That school district has always stated that it has ample resources to evacuate its own students and cooperates actively with LILCO in emergency planning. The sixth school, Little Flower Elementary, is also cooperating in emergency planning.^{31/}

^{29/} See Special Prehearing Conference Hearing Order (Ruling on Contentions) at 15, 20 (August 19, 1983) (refusing to admit Contentions 24.Q and 53 on lack of letters of argument with police for providing security in evacuated areas.)

^{30/} It has always been LILCO's position that no role abandonment will occur among school bus drivers. Thus, these additional LERO bus drivers provide an ample basis for reaching a "reasonable assurance" finding.

^{31/} Request for Authorization at 101 and n.86.

C. Hospital Evacuation Time Estimates

The accuracy of LILCO's evacuation time estimates for the three hospitals located essentially on the outer boundary of the 10-mile EPZ is also still before this Board in OL-3 docket. This issue is not substantively relevant to LILCO's 25% power motion. Given the results of the severe accident analyses performed for operation at 25% power, particularly when coupled with the shielding provided by these facilities, the probability that a PAG level dose could be accumulated by hospital patients is vanishingly small.

The only remaining issue involves the accuracy of LILCO's evacuation time estimates.^{32/} It is settled NRC case law that there are no requirements for minimum evacuation times. Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), CLI-86-13, 24 NRC 22, 30 (1986). Thus, the remaining issue does not raise significant public health and safety issues that must be resolved before LILCO's 25% power motion can be granted.

D. EBS System Coverage

Following the close of the litigation on the adequacy of the LILCO offsite emergency response plan, the lead EBS station for the Shoreham EBS network (WALK-AM) withdrew from participation in the LILCO Plan. LILCO has replaced WALK with WPLR-FM. As a result in this change in lead EBS stations, the Commission granted a motion by Intervenors to reopen the record on this issue. New contentions were

^{32/} The evacuation time estimates for hospitals are based on the use of ambulances and ambulettes currently under contract to LILCO. In a real emergency, where Suffolk County would be participating with its best effort, additional ambulances and ambulettes would be provided by Suffolk County fire and rescue squads. The result would be lower hospital evacuation times.

Dr. Thomas Urbanik, a consultant to the NRC Staff, has previously filed an affidavit which concludes that LILCO's evacuation time estimates for hospitals are reasonable. Affidavit of Dr. Thomas Urbanik II attached to NRC Staff Response to LILCO's Motion for Summary Disposition of the Hospital Evacuation Issue (January 15, 1988).

submitted by Intervenor on the adequacy of the present Shoreham EBS network and on February 24, 1988, the Board admitted five subparts of Intervenor's proffered contention. Memorandum and Order (Board Ruling on Contentions Relating to LILCO's Emergency Broadcast System) (February 24, 1988). The admitted contentions, pending before this Board in the OL-3 docket, all relate to the coverage area of WPLR's signal and of the entire Shoreham EBS system. These contentions do not raise issues of substantive relevance to LILCO's 25% power motion.

First, if New York State and Suffolk County believe that the Shoreham EBS network has insufficient coverage then under a best-effort assumption, they should be assumed to use the New York State EBS network for notifying people within the Shoreham EPZ. As noted above, the slower development of accidents at 25% power would provide government officials ample time to make this decision, and contact WCBS the lead station in this EBS network. Thus, using the normal New York State EBS network would not have an adverse impact on public health and safety.

Second, a sworn affidavit submitted by a qualified broadcast engineer demonstrates that WPLR, alone, has sufficient signal strength to cover the entire 10-mile EPZ during both day and night. Affidavit of Ralph E. Dippell, Jr. attached to LILCO's Motion for Summary Disposition of WALK Radio Issue (November 6, 1987) (OL-3 docket). Despite months of opportunity, Intervenor has produced no evidence to refute these detailed engineering studies.

E. Exercise Issues

The litigation of the results of the February 13, 1986 exercise of the Shoreham offsite emergency response plan was completed on February 1, 1988 with the OL-5 Licensing Board's issuance of its second Initial Decision.^{33/} The conclusions of the

^{33/} The Board's first Partial Initial Decision, Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), LBP-87-32, 26 NRC ____ (December 7, 1987), held that the

OL-5 Board will undoubtedly be cited by Intervenor as creating unresolved public health and safety issues that must be litigated before this Board can grant LILCO's motion to operate at 25% power. For the reasons detailed below, that argument is incorrect.

First, Intervenor is likely to argue that there must be a full participation exercise within the meaning of 10 CFR Part 50, Appendix E, ¶ IV.F.1, before Shoreham may be authorized to operate at above 5% of rated power. However, this argument is incorrect because it ignores the effect of the Licensing Board's January 7, 1988 Memorandum and Order. In that decision, the Licensing Board determined that no waiver of, or exemption from, the Commission's emergency planning regulations is needed in connection with LILCO's showing that any remaining deficiencies in emergency planning are "not significant for the plant in question" under 10 CFR § 50.47(c). January 7 Memorandum and Order at 6.^{34/}

(footnote continued)

FEMA-supervised offsite emergency preparedness exercise for the Shoreham plant, while as comprehensive as any exercise ever performed in FEMA Region 2, had not been sufficient in scope to serve as the basis for issuance of a full-power operating license for the plant. As the remainder of this Brief demonstrates, an exercise is not a prerequisite to operation of Shoreham at 25% power and the exercise results are not a material consideration to granting LILCO's 25% power motion. It therefore follows that any deficiencies in the scope of the February 13, 1986 exercise are not substantively relevant to 25% power operation.

The Board's later Initial Decision, Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), LBP-88-2, 27 NRC ____ (February 1, 1988), approved in large part LERO's performance during the February 13, 1986 exercise but found that the exercise demonstrated three "fundamental flaws" relating to (1) communications within the EOC, among field workers, and at the ENC; (2) timely staffing of traffic control posts; and (3) the training of LERO workers.

LILCO believes that the Licensing Board committed significant legal and factual error in both of its decisions. Those decisions are now being appealed to the Atomic Safety and Licensing Appeal Board. Nevertheless, as is demonstrated below, the deficiencies identified in these decisions are not substantively relevant to operation of Shoreham at 25% power in any event.

^{34/} The correctness of that ruling is demonstrated by the Commission's Statement of Considerations for its 1985 amendment to 10 CFR § 50.12(a), the rule regarding specific exemptions. See 50 Fed. Reg. 50,764, 50,765 (1985).

The exercise requirement in ¶ IV.F.1 is simply an amplification of the requirement in 10 CFR § 50.47(b)(14), which requires periodic exercises and drills. Thus, there is no basis for any distinction between the regulatory requirements in 10 CFR § 50.47(b) and those in 10 CFR Part 50, Appendix E, ¶ IV.F.1. In short, the Board's decision clearly establishes that LILCO does not need a waiver or exemption from the exercise requirement in order to demonstrate that any alleged deficiency regarding that requirement is not significant for operation of Shoreham at 25% power.

Second, the litigation of exercise results is not a prerequisite for the granting of LILCO's 25% power motion. An opportunity for an exercise hearing must be provided only if the Commission deems exercise results to be a material consideration in its licensing decision. In Union of Concerned Scientists v. NRC, 735 F.2d 1437 (D.C. Cir. 1984), cert. denied, Arkansas Power & Light Co. v. Union of Concerned Scientists, 469 U.S. 1132 (1985), the D. C. Circuit required a hearing on an emergency preparedness exercise solely because the NRC had concluded that exercise results could be a material consideration in the decision before it, namely, the issuance of a full-power license. In so holding, the court expressly noted that "the NRC has great discretion to decide what matters are relevant to its licensing decision" and that it was not limiting that discretion. Id. at 1446, 1448.

At 25% power, exercise results are plainly not material to a decision on LILCO's motion. As explained above, the risks of operation at 25% power are significantly lower than those at 100% power and indeed significantly less than the planning basis document NUREG-0396. Therefore, LILCO's 10-mile planning basis provides a large margin over the planning basis that would be adequate for the low risks of 25% power operation. When state and local government resources are added to this existing oversized planning basis as part of a best effort response, the margin becomes even greater. In addition, in virtually all (99.5%) accident sequences at 25% power where emergency

planning will have an effect on public health and safety, seven or more hours exist for making and then implementing protective action recommendations. There is reasonable assurance that this lengthy time period would permit the successful implementation of protective action recommendations even if the offsite organizations had not practiced as fully as would be optimally preferred. Thus, exercise results are not a material consideration in ruling on LILCO's 25% power motion.^{35/}

Third, the fundamental flaws identified by the OL-5 Licensing Board go, with one exception,^{36/} to LERO's performance on the day of the exercise and not to defects in the LILCO Plan itself. Closer inspection of the Board's findings reveals that the "fundamental flaws" involved shortcomings in performance of a few individuals. This type of performance deficiency has traditionally been left to the NRC Staff and FEMA to resolve through appropriate remedial actions. Thus, they do not pose issues of substantive relevance to LILCO's 25% power motion.^{37/}

^{35/} As described in footnote 56 to Request for Authorization, the immateriality of exercises for 25% power operation is demonstrated by a series of ad hoc disaster evacuations that have been successfully complete with little or no prior planning or practice.

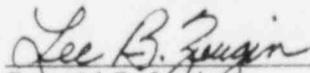
^{36/} The exception involves the LILCO Plan's failure to provide for lateral communications among field workers to deal with unexpected occurrences, such as major traffic accidents which block entire roadways. LBP-88-2 slip op. at 50, 53. The radios used by LERO field workers have the physical capability to permit this lateral communication. Furthermore, nothing in the LILCO Plan prevents field workers from communicating with each other should a situation so dictate. In addition, a "best effort" response by local governments would include police manning traffic control posts. Thus, additional lateral communication capabilities would exist.

^{37/} An exercise of the LILCO offsite emergency response plan is currently scheduled for the week of June 13. Any of the remaining concerns about the fundamental flaws found by the OL-5 Board as they relate to 25% power operation could be removed by the FEMA Post-Exercise Assessment of that exercise.

III. Conclusion

For the reasons detailed above, the Board should find that none of the remaining emergency planning contentions are substantively relevant to LILCO's 25% power motion. That motion should be granted pursuant to 10 CFR § 50.57(c).

Respectfully submitted,



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DATED: April 1, 1988

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of)
)
LONG ISLAND LIGHTING COMPANY) Docket No. 50-322-OL-6
) (25% Power)
(Shoreham Nuclear Power Station,)
Unit 1))

**AFFIDAVIT OF EDWARD J. YOUNGLING IN SUPPORT OF LILCO'S
BRIEF ON THE "SUBSTANTIVE RELEVANCE" OF REMAINING EMERGENCY
PLANNING CONTENTIONS TO LILCO'S MOTION TO OPERATE AT 25% POWER**

STATE OF NEW YORK)
) To Wit:
COUNTY OF SUFFOLK)

Edward J. Youngling, being duly sworn, says:

(1) My name is Edward J. Youngling. My business address is Long Island Lighting Company, Shoreham Nuclear Power Station, Wading River, New York 11792.

(2) I am currently Manager, Nuclear Engineering Department, for the Long Island Lighting Company, a position I have held for almost four years. I have been employed by the Long Island Lighting Company for 19 years and have served in a number of positions, including Startup Manager, responsible for pre-operational testing activities at Shoreham; Nuclear Services Supervisor, responsible for coordination of major station modifications, design reviews and long-range planning; and Chief Technical Engineer at Shoreham, responsible for the activities of the Instrumentation and Control, Health Physics, Radiochemistry and Reactor Engineering sections of the plant operating staff.

(3) Prior to my employment to LILCO, I was employed by General Electric as a Mechanical Test Engineer at the Knolls Atomic Power Laboratory (S3G Submarine Reactor Prototype).

(4) I achieved a Senior Reactor Certification from the General Electric Company on the Duane Arnold Energy Center BWR. I hold a Bachelor of Science Degree in Mechanical Engineering from Lehigh University. I have taken credits towards a Master of Science in Nuclear Engineering from Union College and have attended numerous nuclear training courses.

(5) As Manager, Nuclear Engineering, I am responsible for all aspects of engineering for the Shoreham Nuclear Power Station. I provided overall supervision of the engineering analyses that support this brief. Personnel under my direction and control were directly involved in preparing the analyses supporting the timing data presented in the attached Table 1.

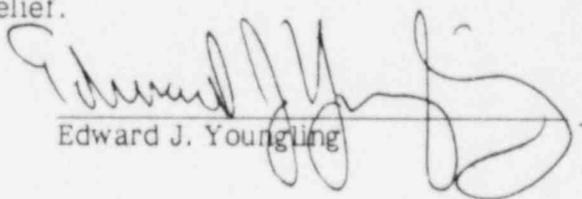
(6) Analyses were performed in which the representative severe accident sequence was selected for each plant damage state and corresponding release category on the basis of its frequency contribution, severity of radiological release and time of release. The selection of the representative severe accidents sequence was based on the results of the 25% power PRA and an engineering assessment of the applicability of the chosen sequence to the release category and plant damage state.

(7) The results of the analyses reveal that 74% of the accidents leading to core melt (represented by release categories RC5 and RC6) require 48 hours or more to proceed from their initiating event to radiation releases offsite. An additional 22.7% of the accidents leading to core melt (represented as parts of release categories RC1, RC2, RC3, RC4) require from 7 to 14 hours to produce offsite radiological consequences. Finally, 3.3% of all core melt accidents proceed from the initiating event to an offsite radiological release in about one hour.

(8) By comparison, similar analyses performed for Shoreham operating at 100% power reveal that approximately 6% of all core melt accidents progress from their initiating event to offsite radiation release in about 1 hour.

(9) The results of the analyses also reveal that when the contributions of large seismic events (well beyond the safe shutdown earthquake) are excluded from consideration (portions of Plant Damage State IB and virtually all of Plant Damage State IID), 0.5% of all core melt accidents at 25% power require less than seven hours to proceed from their initiating event to offsite radiation releases.

(10) I have reviewed the engineering analyses developed in support of this brief. I, and personnel under my supervision and control, are personally familiar with the technical facts contained in the engineering analyses, and these facts are true and correct to the best of my knowledge and belief.


Edward J. Youngling

STATE OF NEW YORK)
)
COUNTY OF SUFFOLK)

Subscribed and sworn to report to me this 31st day of March 1988.

My commission expires: March 30, 1990

LINDA A. CRATTY
NOTARY PUBLIC, State of New York
No. 4816207
Qualified in Suffolk County
Commission Expires March 30, 1990

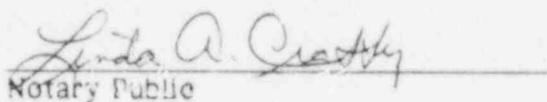

Notary Public

Table 1

SHOREHAM NUCLEAR POWER STATION -- 25% POWER

PLANT DAMAGE STATE RELEASE CATEGORY DISTRIBUTION
(PERCENT OF CORE MELT)

RELEASE CATEGORY	PLANT DAMAGE STATE									
	IA	IB	IC	ID	II	IIIB	IIIC	IIID	IV	V
RC1	1.9E-02 (7.0)	1.9E-02 (7.0)	5.0E-06 (7.0)	2.4E-05 (7.0)	1.8E-07 (7.0)	3.1E-05 (7.0)	3.7E-06 (7.0)	8.1E-03 (0.5)	2.3E+00 (7.0)	4.3E-04 (1.0)
RC2	5.3E-02 (7.0)	8.2E-01 (7.0)	1.4E-05 (7.0)	7.3E-05 (7.0)	1.0E-07 (7.0)	8.4E-05 (7.0)	1.1E-03 (7.0)	3.7E-02 (0.5)	1.0E+00 (7.0)	3.4E-02 (1.0)
RC3	2.8E-01 (7.0)	3.8E-02 (7.0)	7.2E-05 (7.0)	3.5E-04 (7.0)	8.2E-07 (7.0)	4.4E-04 (7.0)	5.3E-05 (7.0)	2.8E-02 (0.5)	7.9E+00 (7.0)	
RC4	2.4E-01 (11.0)	7.3E+00 (14.0)	6.3E-05 (11.0)	6.5E-02 (11.0)	4.7E-07 (11.0)	3.9E-04 (11.0)	1.0E-02 (11.0)	3.2E+00 (1.0)	3.0E+00 (11.0)	9.2E-03 (1.0)
RC5	3.1E+01 (48.0)		2.0E-04 (48.0)	1.5E+01 (48.0)		7.8E-03 (48.0)	2.3E+00 (48.0)			
RC6	2.4E+01 (60.0)		2.0E-03 (60.0)	1.8E+00 (60.0)		7.9E-02 (60.0)	2.8E-01 (60.0)			
TOTAL	5.5E+01	8.2E+00	2.4E-03	1.7E+01	1.6E-06	8.7E-02	2.5E+00	3.3E+00	1.4E+01	4.4E-02

NOTES: The bracketed numbers below each value of percent of core melt represent the time (hrs.) from the initiating event to the release of radiation to the environment for the representative severe accident sequence of that group.

The summation of the percent contributions of each group total slightly higher than 100% because of round-off.

LILCO, April 1, 1988

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USNRC

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CERTIFICATE OF SERVICE

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

In the Matter of
LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station, Unit 1)
Docket No. 50-322-OL-6

I hereby certify that copies of LILCO'S BRIEF ON THE "SUBSTANTIVE RELEVANCE" OF REMAINING EMERGENCY PLANNING CONTENTIONS TO LILCO'S MOTION TO OPERATE AT 25% POWER were served this date upon the following by Federal Express as indicated by one asterisk, or by first-class mail, postage prepaid.

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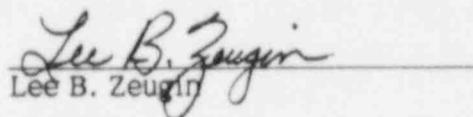
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DATED: April 1, 1988