

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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Before the Atomic Safety and Licensing Board

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

In the Matter of)

LONG ISLAND LIGHTING COMPANY)

(Shoreham Nuclear Power Plant,
Unit 1))

Docket No. 50-322-OL-3
(Emergency Planning)

SUFFOLK COUNTY'S RESPONSE
TO LILCO'S MOTION TO STRIKE PORTIONS
OF THE TESTIMONY OF PETER POLK

I. Introduction

On November 18, 1983, Suffolk County filed its direct testimony on Contentions 65, 23 and 25 (the Group I issues). Among the witnesses submitting testimony on behalf of Suffolk County was Mr. Peter A. Polk, a transportation planner with PRC Engineering [hereinafter "PRC Voorhees"] of McLean, Virginia. Mr. Polk's direct testimony addresses Contention 23.D (the evacuation shadow phenomenon) and Contention 65.D (the effect of automobile accidents and running out of gas). Mr. Polk's testimony on Contention 23.D (the portion of Mr. Polk's testimony addressed by LILCO's motion to strike) is based in large part on evacuation time estimate analyses conducted by PRC Voorhees which consider the effect of the evacuation shadow phenomenon on evacuation from the Shoreham 10-mile EPZ. (See Attachment 3 to Polk Testimony).

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Those time estimates show that in the event of a radiological emergency at Shoreham, a complete evacuation of the full 10-mile EPZ would require about 18 hours in the summer and about 12 hours during the winter months, assuming favorable weather conditions.

On November 28, 1983, LILCO filed a Motion To Strike Portions Of The Testimony Of Peter A. Polk (the "Motion"), which requests that the Board strike all of Mr. Polk's testimony concerning the evacuation shadow phenomenon, as well as the time estimates on which part of that testimony is based. LILCO's November 28 motion to strike is grounded upon the assertion that Mr. Polk's testimony on the evacuation shadow phenomenon and the analysis on which it is based have exceeded the scope of Contention 23.D and the NRC regulations and thus are irrelevant. Motion at 6-10. LILCO further contends that, through Mr. Polk's testimony, the County is arguing to expand the size of the Shoreham EPZ, which constitutes an attempt to relitigate the admissibility of Contention 22. Id. at 10-13.

LILCO's arguments lack merit on both grounds. Mr. Polk's testimony is highly probative of the issues raised in Contention 23.D and concerns only an evacuation from the Shoreham 10-mile EPZ. Thus, Mr. Polk has carefully studied the numbers of people who may be within the 10-mile EPZ during the time when evacuation is recommended and has presented evidence concerning the time required to evacuate these people from the EPZ. Mr. Polk does not at all attempt to litigate issues rejected by the Board in

its denial of Contention 22. LILCO's assertion in this regard is a complete red herring which only serves to obscure the real issues in this proceeding. Thus, this Board should reject LILCO's motion to strike.

II. Background

To consider LILCO's motion in the proper perspective, it is important briefly to summarize what the evacuation shadow phenomenon is all about. The evacuation shadow phenomenon has been defined as the propensity for persons to evacuate from a perceived hazard although not advised to do so. In a radiological emergency, the evidence indicates that the evacuation shadow phenomenon may take on substantial proportions, thus posing unique problems for emergency planning.

The NRC's emergency planning regulations, as construed by this Board, focus on protective actions which may be required for persons who may be within approximately 10 miles of Shoreham. The shadow phenomenon, as described in Contention 23.D, is significant for this proceeding because the County's evidence will show that there will be many more people within the EPZ than LILCO has predicted. These voluntary evacuees within the EPZ, as well as those outside of the EPZ who cause congestion and thus delay people from leaving the EPZ, will substantially increase the time required to evacuate the EPZ. Thus, as stated in Contention 23.D:

Voluntary evacuation will result in a much larger number of people attempting to evacuate (and thus using the limited capacity of the existing road network) than is assumed by LILCO in its evacuation time estimates. The additional vehicles will create congestion within the EPZ and in the regions just outside the EPZ, which will cause queuing and will impede traffic evacuating from the EPZ. The additional congestion caused by voluntary evacuation will cause adverse health consequences to the public because (a) evacuees from beyond the 10-mile EPZ will impede the evacuation of those within the 10-mile EPZ who are ordered to evacuate, resulting in evacuees' receiving health-threatening radiation doses; and (b) those who choose to evacuate will be unable to do so safely and efficiently.

Moreover, while LILCO acknowledges that persons not specifically instructed to evacuate will, in fact, attempt to evacuate (Appendix A, at I-5), the LILCO evacuation time estimates ignore the number of vehicles which will be on the roads due to such voluntary evacuation. The LILCO evacuation time estimates thus are inaccurate for failing to take into account the numbers and locations of people who will evacuate voluntarily contrary to instructions. If voluntary evacuation were properly taken into account, the LILCO estimates would increase substantially, rendering evacuation an inadequate protective action for many accident scenarios. Thus, the LILCO Plan fails to comply with 10 CFR Sections 50.47(a)(1), 50.47(b)(10), Part 50 Appendix E Section IV, NUREG 0654 Sections J.8, J.9, J.10, and Appendix 4. (Footnotes omitted)

Suffolk County's testimony on Contention 23 presents evidence to prove that in the event of a radiological emergency at Shoreham, there will be a substantial amount of voluntary evacuation. In the case of a recommendation for evacuation of the 10-mile EPZ, it is estimated that hundreds of thousands of families

on Long Island would seek to evacuate. All but about 31,000 families would be evacuating from outside the EPZ. (See Testimony of Dr. Cole on Contention 23 at 14).

The effect of so many evacuees seeking to use the limited roadway network on Long Island would be to increase substantially the time required to effect an evacuation of the 10-mile EPZ. In many cases, voluntary evacuees would be using the same roads within the EPZ as evacuees whose trips originate in the EPZ, resulting in much greater demand on the limited available roadway capacity. To the west of the EPZ, which is densely populated, voluntary evacuation of the magnitude estimated by the County would result in long queues which could "spill back" into the EPZ, thus causing delays in people exiting the EPZ. The people residing to the east of the EPZ are likely to attempt to evacuate west. (Testimony of Drs. Zeigler and Johnson at 14). To do so, however, they will pass through the middle of the EPZ (on the Long Island Expressway) or along the EPZ's southern edge (the Sunrise Highway).^{1/} This means that many more people will be in

^{1/} LILCO states (Motion at 4, n. 2) that Mr. Polk's testimony erroneously suggests that the Sunrise Highway is within the EPZ. In fact, LILCO's own consultant, KLD Associates, stated in testimony filed with this Board that the Sunrise Highway runs "just inside" the EPZ. Cordaro, Weismantle and Lieberman Testimony on Contention 65, 23.C, 23.D and 23.H, Attachment 11. However, the fact is that the Sunrise Highway forms the southern border of the EPZ for a distance of about 8 miles. Given that large numbers of people will be traveling and queuing along this stretch of the Sunrise Highway, it is fruitless to quibble over whether the Sunrise Highway is just inside or on the edge of the EPZ boundary. The important point is that the Sunrise Highway

(footnote continued)

the EPZ during the course of an evacuation than have been considered by LILCO in its evacuation time estimates. As noted above, PRC Voorhees has considered all of the effects of the evacuation shadow phenomenon and concluded that the EPZ cannot be cleared of evacuees during the summer months prior to 18 hours after an evacuation advisory (12 hours in winter).

III. Discussion

A. Evacuation Time Estimates Must Consider All Persons In The EPZ, Not Just Those Who Originate In The EPZ

LILCO seeks to strike all of Mr. Polk's testimony on the evacuation shadow phenomenon on grounds that the PRC Voorhees analysis makes no distinction between evacuees whose trips originate from within the EPZ, and those whose evacuation trips, though taking them through the EPZ on the EPZ roadway network, originate outside of the EPZ. The latter category of persons, LILCO argues, should not be considered in deriving evacuation times:

The analysis displayed in Mr. Polk's testimony and its Attachment 3 does not distinguish in any way between persons evacuating from within the EPZ on instructions to evacuate, persons

(footnote continued from previous page)
comes into contact with the EPZ. Therefore, cars traveling over it must not be ignored in deriving evacuation time estimates. Indeed, the portion of the Sunrise Highway forming the southern boundary of the EPZ which was studied by Mr. Polk also is part of KLD's evacuation network. Thus, even in LILCO's time estimates, automobiles originating from within the EPZ are not considered to have finished the evacuation trip, i.e., to have exited the EPZ, before leaving that portion of the Sunrise Highway.

evacuating from within the EPZ voluntarily, and persons originating from outside the EPZ who are evacuating voluntarily. . . . Thus any car still on any roadway being modeled, regardless of its origin, is included in the Polk testimony calculations as part of an undifferentiated traffic stream.

Motion at 5. Thus, LILCO argues that the passage of long streams of voluntary evacuees along the EPZ roadway network should be considered only to the extent that they affect the evacuation of residents of the EPZ.

The Commission's emergency planning regulations ascribe no significance to voluntary evacuation from areas not required to be evacuated, independent of its effect on appropriate protective actions -- i.e., evacuation being taken for the benefit of persons living within areas to be evacuated. (Emphasis added).

Motion at 14. Therefore, LILCO concludes, "[i]t follows that persons outside the EPZ need not be explicitly considered except insofar as they affect the feasibility of appropriate protective actions for persons inside the EPZ." Motion at 8. In other words, according to LILCO, the evacuation time clock should stop ticking when the last car belonging to a resident of the EPZ leaves the EPZ, despite the fact that many thousands of people, whose evacuation trips have now brought them into the EPZ, will still be on the roads inside or on the edge of the EPZ.

LILCO's argument is not only absurd and inhumane, but also constitutes a tortured "interpretation" of the NRC's regulations -- an interpretation which would be entirely contrary to the NRC's obligation to protect public health and safety. The pur-

pose of evacuation time estimates is to give persons in command and control of an emergency response accurate and reliable information concerning the time required to clear the EPZ of people. The purpose of an evacuation is to clear the EPZ (or at least a portion of it), and an EPZ of course is not clear until all evacuees have left it. The people who live east of the plant and travel into the EPZ are just as susceptible to the adverse health effects of radiation as people who reside in the EPZ. Yet, according to the logic of LILCO's argument, persons in command and control of an evacuation should order an evacuation without any consideration for whether people from the East End (or elsewhere) might still be on the EPZ roadway network (particularly the Long Island Expressway, which is only about 6 miles from the plant, and the Sunrise Highway, which is about 10 miles from the plant) at the time that the plume is projected to pass over the EPZ.^{2/}

In essence, LILCO seeks to establish two classes of people: those whose trips originate in the EPZ, whom LILCO asserts it will seek to protect; and those whose trips begin outside the EPZ

^{2/} LILCO states (Motion at 4, n. 2) that Mr. Polk's testimony could be mooted altogether by routing traffic from the East End down to the Montauk Highway, thus avoiding the EPZ altogether. This argument lacks merit. As the County claims in Contention 23.H, LILCO's plan will be ineffective in preventing travel into the EPZ by evacuees from the East End. See Testimony of Suffolk County Police Department concerning Contention 23.H. In any event, Montauk Highway is so inadequate to handle the expected volume of traffic from the East End that LILCO's suggestion can only be described as absurd.

but carry them through the middle of the EPZ or along its southern edge. As to the second class, LILCO asserts that there is no need to give them any consideration in making protective action recommendations or for other purposes. See LILCO Motion at 8. Such a distinction, however, is directly contrary to the purpose of the NRC's emergency planning regulations, which is to give reasonable assurance of protection. Protection does not mean protection only for some people, but rather for all people who may be within the defined zone of danger, i.e., on the EPZ roadway network. No reading of the regulations or NUREG 0654 supports the argument that only those within the EPZ at the time an evacuation is announced should be protected. LILCO is obligated to protect those whose evacuation trips cause them to enter the EPZ roadway network 30 minutes, 3 hours or more after an evacuation advisory, not just those who are in the EPZ at the time of an evacuation advisory.^{3/}

The failure of LILCO's evacuation time estimates to account for passage of voluntary evacuees on the Long Island Expressway and the Sunrise Highway means that LILCO has failed to recognize

^{3/} To give an example of LILCO's tortured reading of the regulations, consider a person who resides within the EPZ but who works outside of it or the person who resides outside the EPZ but has family within the EPZ. When an evacuation advisory is given, that person may travel into the EPZ to obtain household effects, to reunite with family, or for any other purpose. That person's trip will not originate within the EPZ. LILCO's theory then would hold that these people need not be considered in evacuation time estimates, even though they will be within the zone of potential danger.

reality. Indeed, LILCO has treated the requirement for evacuation time estimates as a paper exercise offering protection only to some. The County's estimates have avoided that pitfall by considering all traffic moving through the middle or along the edge of the EPZ, no matter what the origin of that traffic. The key, then, in the County's view is whether the person enters the EPZ roadway network. If he does, he then is someone who must be accounted for under the LILCO plan and in the time estimates on which that plan relies. The County's time estimates have accounted for these people and thus are far more realistic, accurate and reliable indicators than LILCO's of the time it will take to evacuate the EPZ.

B. Mr. Polk's Testimony Is Within The Scope Of Contention 23.D and Does Not Reargue The Issues Raised In Contention 22

LILCO claims (Motion at 6-7) that it has always understood Contention 23.D to relate only to the effect of voluntary evacuation, by persons originating from outside the EPZ, on evacuation by persons originating within the EPZ. As noted above, LILCO's attempted distinction between evacuees is without basis. In any event, the plain meaning of Contention 23.D demonstrates that Mr. Polk's testimony is consistent with the language of Contention 23.D, which states clearly that the evacuation shadow phenomenon "will result in a much larger number of people attempting to evacuate (and thus using the limited capacity of the existing

roadway network) than is assumed by LILCO in its evacuation time estimates." Thus, the evacuation shadow phenomenon "will impede traffic evacuating from the EPZ." Since the origin of that traffic is not specified in Contention 23 to be only persons within the EPZ, LILCO cannot rely on the contention to support its theory that there should be an arbitrary distinction between evacuees. If LILCO has misread the contention, the fault lies with LILCO, not the County.

Indeed, LILCO's alleged misunderstanding of the contention really cannot be accepted as reasonable under any circumstance. In footnote 5 of Contention 23.D, the County stated:

The numbers of people expected to evacuate voluntarily, the locations from which they will evacuate, and the circumstances under which they will evacuate are set forth in a survey and studies which the County has provided to all parties. (See "Basis" section of this contention.) (emphasis supplied).

The County studies which are referenced and which LILCO has had for over a year make clear that the origins of the evacuees will, in many cases, be from outside of the EPZ. Thus, it is not acceptable to argue that there has been some sort of surprise in the County's position that all persons in the EPZ need to be accounted for in evacuation time estimates.

LILCO also claims (Motion at 10) that Mr. Polk's testimony "is inherently based on portions of Contention 22 which have been rejected by the Board." Again, LILCO's argument is wide of the mark and really constitutes a red herring to cloud the legitimacy

of the County's testimony. In Contention 22, the County and other intervenors questioned the size of the Shoreham EPZ, contending that the local conditions on Long Island warranted a larger EPZ. One of the reasons set forth by the County was the voluntary evacuees from the East End whose evacuation, the County argued, should be planned for and taken into account in areas outside of a traditional 10-mile EPZ. The Board denied Contention 22 on grounds that the regulations require an EPZ of approximately 10 miles and that any contention seeking to expand the size of the EPZ was an impermissible challenge to the regulations. Special Prehearing Conference Order (August 22, 1983) at 8-12.

It is clear, however, that Mr. Polk's testimony does not address the issue raised in Contention 22 -- that is, whether a 10-mile EPZ is appropriate for Shoreham. Rather, Mr. Polk's testimony is restricted to his analysis of the 10-mile EPZ and discusses the time it will take to clear that EPZ of all evacuation traffic.^{4/} Thus, LILCO's claim that the County is attempt-

^{4/} LILCO discusses at length the PRC Voorhees modeling process which traces some evacuees from points far East of the Shoreham EPZ. See LILCO Motion at 3-5. This discussion is irrelevant and misleading. While the PRC Voorhees study did analyze the effect of traffic coming from areas beyond the EPZ, Mr. Polk's testimony and the PRC Voorhees time estimates concern only the time it takes for traffic to clear the 10 mile EPZ -- a matter squarely within Contentions 23.D and 65. Furthermore, while it is true that the Voorhees analysis does look at the time it will take for traffic to travel further west of the EPZ, that time is in addition to the time it will take to clear the EPZ.

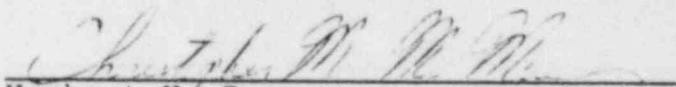
ing to reintroduce the issues raised in Contention 22 is totally without merit.

IV. Conclusion

For the reasons set forth above, the Board should deny "LILCO's Motion To Strike Portion Of The Testimony Of Peter A. Polk."

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Before the Atomic Safety and Licensing Board

Docket No. 50-322-OL-3
(Emergency Planning)

CERTIFICATE OF SERVICE

I hereby certify that copies of SUFFOLK COUNTY'S RESPONSE TO LILCO'S MOTION TO STRIKE PORTIONS OF THE TESTIMONY OF PETER POLK, dated December 8, 1983, have been served to the following by U.S. mail, first class, except where noted, this 9th day of December 1983.

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