

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

RELATED CORRESPONDENCE

ATOMIC SAFETY AND LICENSING BOARD  
Before Administrative Judges

James A. Laurenson, Chairman

Dr. Jerry R. Kline

Mr. Frederick J. Shon

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In the Matter of )

LONG ISLAND LIGHTING COMPANY )

(Shoreham Nuclear Power )  
Station, Unit 1) )

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

March 8, 1984

MOTION OF GOVERNOR MARIO CUOMO, REPRESENTING  
THE STATE OF NEW YORK, FOR LEAVE TO FILE REBUTTAL  
TESTIMONY ON CONTENTION 65, EVACUATION TIME  
ESTIMATES

AND

REBUTTAL TESTIMONY OF DR. DAVID T. HARTGEN AND  
FOSTER J. BEACH III ON BEHALF OF THE STATE OF  
NEW YORK PERTAINING TO EMERGENCY PLANNING  
CONTENTION 65, EVACUATION TIME ESTIMATES

Pursuant to 10 C.F.R. 2.743(a) and the Board's oral ruling  
of February 24, 1984 (T. p. 3876, lines 15-18) and related  
discussion (T. p. 3762, lines 21-23; T. p. 3764, lines 7-15),  
the State of New York hereby moves for leave to file rebuttal  
testimony regarding Contention 65 - Evacuation Time Estimates.

This rebuttal testimony is sponsored by Dr. David T. Hartgen  
and Foster J. Beach III. These two witnesses, along with  
Richard D. Albertin and Robert G. Knighton, previously submitted  
direct testimony to the Board on January 24, 1984 (T. p. 3065,  
lines 12, 13). In response to the State's direct testimony,  
LILCO submitted supplemental testimony, dated February 10, 1984.  
During the hearing on February 23, 1984, the State's witnesses  
were prepared to introduce photolog films, maps, tables and

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charts in response to LILCO's supplemental testimony, but the Board indicated that "the State might very well be able to present this in the form of rebuttal testimony." (T. p. 3762, lines 21-22). Therefore, the purpose of this rebuttal testimony, including its appendices, is to proffer relevant, important, noncumulative information in three narrowly focused areas that is responsive to LILCO's supplemental testimony.

On page 3 of LILCO's supplemental testimony, in response to question 4, Messrs. Cordaro, Weismantle, Lieberman, and Mileti state: "In general, the State's testimony expresses only general, unquantified concerns about the evacuation time estimates. In many cases, the State witnesses' concerns are presented in broad concepts of transportation planning and traffic engineering, including such concepts as 'capacities or levels of service,' 'side friction' and 'calibration/validation.' They have further clouded the issues in this proceeding by applying these concepts to the broad field of transportation planning rather than the specific situation in question -- an evacuation of the Shoreham EPZ. Had the State witnesses focused on the issues raised by evacuation planning for the Shoreham EPZ, most if not all of their concerns would have disappeared." LILCO's statement is erroneous. Therefore, this rebuttal testimony presents evidence which shows that the State's concerns are indeed focused on "the specific situation in question -- an evacuation of the Shoreham EPZ."

The State's testimony first addresses the roadway capacities, or levels of service, likely to prevail during a radiological emergency, particularly the effect of 2-way directional flow. 2-way directional flows can be expected in a Shoreham evacuation scenario. For example, traffic consisting of school buses, emergency vehicles and vehicles carrying "mobilizing" individuals will be traversing the EPZ in all directions for reasons other than exiting the EPZ. Accordingly, the State investigated the effect of such 2-way directional flow on capacity by analyzing 23 specifically identified roadway sections within the Shoreham EPZ. Part of the investigation consisted of viewing a 20-minute photolog film of one of those 23 roadway sections: Link 11-36 (Rt. 25A Eastbound, from N. Rocky Pt. Landing Rd. to Ridge Rd.). Photolog films are made by the New York State Department of Transportation by periodically taking motion pictures of most state highways. In addition, the State prepared a map which graphically depicts the location of these roadway sections. The calculations of the 23 roadway section capacities are presented in tabular form in Appendix A of the rebuttal testimony. The map is presented as Appendix D of the rebuttal testimony and the photolog is presented as Appendix E of the rebuttal testimony.

Appendix A of the rebuttal testimony shows that the State's capacity estimates, which take into account 2-way directional flow, are different than KLD's capacity estimates. The State at least partially attributes these differences to KLD's failure to account for the effects of 2-way directional flow. The State further attributes these differences to LILCO's undue reliance on intersection capacities. (See Mr. Lieberman's answer to the fifth question in the supplemental testimony.) Consequently,

the generally lower capacity estimates of the State indicate that KLD's capacity figures are overestimated and KLD's evacuation times are underestimated. The issue of evacuation times certainly is an issue of relevance and decisional importance in this proceeding.

The State's proposed rebuttal testimony next addresses the effect that side friction has on capacities or levels of service of highways. Contrary to the assertions of Mr. Lieberman in his answer to the seventh question in the supplement testimony, side friction can be expected to have an adverse effect on evacuation times in the event of an evacuation from the Shoreham EPZ. Many of the evacuation routes are characterized by numerous side streets, driveways and commercial roadside development and other interference. Accordingly, the State compiled a nonexhaustive listing of State routes inside the EPZ characterized by moderate to heavy side friction. Part of the investigative work consisted of reviewing a 20-minute photolog film of one of the major State routes: Route 25A. In addition, the State prepared a map which graphically depicts the location of these State routes. The listing is presented in Appendix B of the rebuttal testimony. The map and photolog film have been referred to above (Appendices D and E of the rebuttal testimony).

Appendix B of the rebuttal testimony shows that there are many specifically identifiable routes within the EPZ which are characterized by side friction. The photolog film (Appendix E of the rebuttal testimony) demonstrates this point. The State believes that the effects of side friction will reduce the capacities of roadway sections within the Shoreham EPZ. Consequently, KLD's

capacity figures, which fail to account for the effects of side friction, are overestimated and KLD's evacuation times are underestimated. As evacuation times increase, the time of exposure to health-threatening ionizing radiation also increases. The issue of evacuation times is certainly an issue of relevance and decisional importance in this proceeding.

Finally the State's testimony focuses on the failure of KLD's network to be detailed enough to answer questions about multiple, alternative evacuation routes. On pages 20 and 21 of LILCO's supplemental testimony, Mr. Lieberman stated that "the configuration of the evacuation network for the Shoreham EPZ has been defined with great care" and that the "280 links include all expressways, primary, and secondary roads as well as many tertiary roads," and that "the delineation of the evacuation network was undertaken as the result of many field surveys, a detailed study of large scale maps and a careful review of the early Suffolk County Plan." In response to this statement and in response to Mr. Lieberman's statements at the hearing on February 24, 1984 (T. pp. 3837-3843 and 3845-3846), the State compiled a list of examples of specifically identified roads that are not in KLD's evacuation network but which must be considered for inclusion. In addition, the State prepared a map which graphically depicts the location of these roads. The State also reviewed a 20-minute photolog film of Rt. 25A to verify that the KLD network does not show nodes at 2 signalized intersections and that complex arrangements in the area of Rts. 347 and 112

have been reduced to just a single node. The listing is presented in Appendix C of the rebuttal testimony. The map and photolog film have been referred to above (Appendices D and E of the rebuttal testimony).

The State believes that the roads in Appendix C of the rebuttal testimony would be used by residents as vehicle escape routes during an emergency, especially if other major routes are congested, as they would be during an evacuation. With respect to the signalized and complex intersections specifically identified above and in the rebuttal testimony, the State believes that such simplifications raise serious concerns about the representativeness of the entire network. KLD's network, as specifically evidenced by Appendices C, D and E of the rebuttal testimony, is not dense enough to fully assess evacuation behavior. Accordingly, KLD's evacuation times are suspect and may be underestimated significantly. The issue of evacuation times is relevant and of decisional importance in this proceeding.


In conclusion, the State seeks to introduce rebuttal testimony which is directly responsive to, and directly focused upon, LILCO's supplemental testimony and the testimony of its witnesses at trial. The State's rebuttal testimony is also timely, relevant, important and noncumulative. The State therefore submits that there is good cause for the acceptance of the State's rebuttal testimony.

Respectfully submitted,

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Albany, New York  
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