

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
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LONG ISLAND LIGHTING COMPANY)
(Shoreham Nuclear Power Station, Unit 1))
)
_____)

Docket No. 50-322 O.L.

DIRECT TESTIMONY OF ROBERT W. CAPSTICK, JR.

ON BEHALF OF SUFFOLK COUNTY REGARDING

SUFFOLK COUNTY CONTENTION NO. 17(a) - FIRE PROTECTION

April 13, 1982

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SUMMARY OUTLINE OF SUFFOLK COUNTY

CONTENTION 17(a) TESTIMONY

Suffolk County has contended that LILCO failed to demonstrate adequate means to detect and warn of a toxic gas hazard in the Shoreham control room. There exist sources of toxic gas in the control room (primarily electrical cable insulation) which could present a hazard to control room operators. The concern was that in the absence of a toxic gas detection and warning system in the control room, LILCO would fail to comply with 10 CFR 50 Appendix A, General Design Criteria 3 and 11.

This testimony states the basis for Suffolk County's Contention 17(a) and points out that LILCO has responded to that concern by committing to provide for toxic gas monitoring in the control room. This contention is resolved pending LILCO's documentation that the toxic gas detection system LILCO has committed to install in the Shoreham control room is both capable of detecting the types of toxic gases potentially released in a fire in the control room (essentially those from electrical cable insulation), and capable of warning operators of the presence of these toxic gases before they reach a hazardous level.

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REGARDING SUFFOLK COUNTY CONTENTION 17(a) -

FIRE PROTECTION

My name is Robert W. Capstick, Jr., and my business address is 400-1 Totten Pond Road, Waltham, Massachusetts. I am the Research Analyst for the Energy Research Group, Inc. I received my Bachelors Degree in Physics and Political Science from Boston College in 1975 and a Masters Degree in Public Administration from Suffolk University in 1980. I have also done

graduate work in both Physics (Boston College - 1976) and Political Science (University of Massachusetts - 1977). Prior to joining Energy Research Group, Inc., I was the Assistant Director of the Science Resource Office of the Massachusetts Legislature. My responsibilities at the Science Resource Office included: performing and directing research on a broad range of scientific and technical issues for members, committees, and staff of the Massachusetts Legislature; acting as senior research coordinator for the Legislature's visiting scientist program; and directing research for the Legislature's "Special Committee Relative to Safety Regarding Transportation, Storage and Siting of Storage Facilities of Liquified Natural Gas and Other Liquified Energy Gases". At Energy Research Group, Inc., my professional work has consisted primarily of conducting research in technical and public policy areas. These areas include energy technology assessment, risk assessment and safety analysis, and regulatory/licensing analysis. I am a member of the Massachusetts Engineers Council, the American Association for the Advancement of Science, the International Association of Energy Economists, and the Society for Risk Analysis.

Suffolk County Contention 17(a) reads as follows:

LILCO has not demonstrated that Shoreham meets 10 CFR 50, Appendix A, GDC 3 and 19, due to the lack of a toxic gas detection warning system in the control room. The Shoreham control room contains many items, especially cable and ventilation-duct insulation material, which present a potential toxic gas hazard. Because one of the largest problems during the Browns Ferry fire was the toxic gas given off by burning cable materials, and because Shoreham has no detection or warning equipment for toxic gas in the control room, GDC's 3 and 19 have not been met.

This contention is based on the fact that the Shoreham control room contains potential sources of toxic gases, but has no toxic gas detection or warning system to alert control room operators of a toxic gas hazard. The predominant combustible in the control room is electrical cable.^{1/} Electrical cable insulation fires associated with safety related areas are significant where there is a concentration of cables (namely the control room).^{2/} Electrical cable insulation fires release toxic gases: "An associated problem at Browns Ferry was the corrosive and toxic gases and dense smoke given off by burning cable materials."^{3/}

Electrical cable insulation of the type used at Shoreham is fire retardant and thus burns slowly.^{4/} Because the insulation is self-extinguishing ("...the fire should go out when the fault is cleared"^{5/}), the potential exists for toxic gases to be released from smoldering cable insulation without timely detection and warning; particularly if such detection and warning is solely reliant upon operators and ionization detectors in the control room.

This concern was partially resolved when it was documented that LILCO agreed to install smoke detectors in the control room.^{6/} However, until recently there was still no assurance that the control room would be provided with adequate detection and warning capability for toxic gas hazards.

^{1/} The Shoreham Fire Hazard Analysis Report, Table 1, dated 7/28/80 cites over one and one half tons of electrical cable in the control room.

^{2/} The Shoreham Final Safety Analysis Report, p. 9.5-2.

^{3/} NUREG-0050 "Recommendations Related to Browns Ferry Fire (February 1976), p. 18.

^{4/} Shoreham Final Safety Analysis Report, p. 9.5-25.

^{5/} Ibid.

^{6/} NUREG-0420 Supplement No. 1, Safety Evaluation Report related to the operation of Shoreham Nuclear Power Station Unit No. 1, (September 1981), Section 9.5.5.1.

LILCO responded to the Suffolk County Contention 17(a) interrogatories by committing to provide toxic gas monitoring in the control room.^{7/} LILCO has not explicitly committed, however, to undertake a systematic survey of combustion sources in the control room to determine the types of toxic gases that could be released in a fire in the control room (essentially those from electrical cable insulation). Such a survey is important to ensure that the detector LILCO has agreed to install in the control room will be adequate to detect and warn operators of the presence of these toxic gases before they reach a hazardous level. Therefore, this contention is resolved pending LILCO's documentation that the toxic gas detection system it has committed to install in the Shoreham control room is both capable of detecting the types of toxic gases released in a fire in the control room and capable of warning operators of the presence of these toxic gases before they reach a hazardous level.

^{7/} Response of LILCO to Suffolk County Interrogatories, March 26, 1982, page 26.