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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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Before the Atomic Safety and Licensing Board FEB 22 A11:46

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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)

DIRECT TESTIMONY OF EDWARD P. RADFORD
ON BEHALF OF SUFFOLK COUNTY REGARDING
LILCO'S PROFFERED EVIDENCE OF JANUARY 11

Q. Please state your name, occupation and professional background.

A. My name is Dr. Edward P. Radford. I am an Adjunct Professor of Epidemiology at the University of Pittsburgh. I received my M.D. degree from Harvard Medical School in 1946. One of my specialities is the subject of the health effects of ionizing radiation, which I have taught at the Harvard University School of Public Health, the University of Cincinnati School of Medicine, Johns Hopkins University School of Hygiene and Public Health, and the University of Pittsburgh. I have recently conducted research on new data that have been compiled regarding the health effects of the atomic explosions in Japan in 1945. My professional qualifications and background have previously been set forth in my curriculum vitae, which was Attachment 3 to the testimony of Fred C. Finlayson, Gregory C. Minor and me on behalf of Suffolk County regarding Contention 61.

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Q. What is the purpose of this testimony?

A. The purpose of this testimony is to address LILCO's proffered evidence of January 11, 1985.

Q. Are you familiar with the evidence proffered by LILCO?

A. Yes. I have reviewed LILCO's evidence, including the January 10, 1985 Affidavit of Elaine D. Robinson; the letter dated September 25, 1984 from William J. Catacosinos, Chairman and Chief Executive Officer, Long Island Lighting Company, to E.B. Sumerlin, Jr., General Manager, Nassau Veterans Memorial Coliseum; the letter dated October 23, 1984 from Matthew C. Cordaro, Vice President, Long Island Lighting Company, to Frank M. Rasbury, Executive Director of the Nassau County Chapter of the American Red Cross; and the map that is Attachment 4 to the Robinson Affidavit. Among other things, the evidence proffered by LILCO reveals that (1) the Nassau Coliseum is located in south-central Nassau County, approximately 43 miles from the Shoreham plant and 33 miles from the 10-mile EPZ's westernmost boundary (Robinson Affidavit, ¶ 5 and Attachment 4); (2) LILCO's use of the Coliseum will include "[p]erforming radiological monitoring and decontamination, if necessary, in the Coliseum and/or surrounding property in the event of a radiological emergency at Shoreham. . . ." (September 25 letter, at 1); and (3) "all [Shoreham] evacuees will be directed to go to the Coliseum" (October 23 letter, at 2).

Q. What is your professional opinion regarding LILCO's proposal to use the Nassau Coliseum to monitor and decontaminate Shoreham evacuees?

A. In my opinion, LILCO's proposed use of the Nassau Coliseum as a monitoring and decontamination center is inappropriate and, in the event of a radiological emergency involving the release of radioactive particulates, could well result in adverse health effects^{1/} which are more severe than if closer, more easily accessible center(s) were utilized. My opinion is based on the following factors.

First, as is clear from LILCO's proffered evidence, the Nassau Coliseum is located quite far from the EPZ. I am also aware that, in the opinion of Suffolk County's and New York State's traffic experts, including members of the Suffolk County Police Department and the New York State Department of Transportation, heavy traffic congestion must be expected during a radiological emergency at Shoreham. Such congestion is likely to reach beyond the EPZ, and, indeed, is likely to exist between the EPZ and the Coliseum. Thus, there will likely be substantial

^{1/} As noted in my earlier testimony regarding Contention 61, health effects resulting from exposure to radiation include acute and latent illnesses, as well as death, depending on the dose received. A 30 rem dose is considered the threshold of early injuries. People who receive 30 rem doses would probably not experience any acute effects (i.e., death or injuries occurring within 60 days after exposure), but their lifetime chances of developing cancer will increase by about 21 percent over the normal rate. Doses above 30 rems are more likely to cause early acute effects and result in even greater increases in the chances of developing cancer.

delays for evacuees attempting to reach the Coliseum. See generally testimony of Deputy Chief Inspector Richard C. Roberts and testimony of Charles E. Kilduff regarding LILCO's proffered evidence. Because of the excessive distance of the Nassau Coliseum from the EPZ, it is my understanding that it may take many hours to reach the Coliseum and begin the monitoring and decontamination process -- much longer than it would take if closer, more appropriate monitoring and decontamination centers were utilized.

The added time between exposure and decontamination is significant because the dose one receives during a radiological accident is a function not only of the "severity" of the release, i.e., the amount of radioactive materials released in an accident, but also of the time one is exposed to such radioactive materials. In the event of an accident releasing radioactive particulates, it is likely that persons caught in the plume may have some of that material deposited on them. Further contamination would result from contact with particulates deposited on the ground or other surfaces. While it is impossible to determine for a future accident exactly what proportion of the total dose received by a person in the EPZ would result from material deposited on the body, it is quite possible that it would be significant. Moreover, the longer the radioactive material remains deposited on the body, the greater the total dose will be. Therefore, it is important to commence monitoring and decontamination procedures as quickly as possible following exposure.

LILCO's proposal to use the Nassau Coliseum to monitor and decontaminate evacuees, however, will likely lead to delays in the implementation of monitoring and decontamination procedures, resulting in increased doses to contaminated persons. The incremental increase in adverse health effects would, of course, depend on the severity of the release and the actual delay in implementation of the decontamination process. However, in my opinion, the considerable distance of the Nassau Coliseum from the EPZ, coupled with the extensive congestion that would likely exist enroute to the Nassau Coliseum, create conditions likely to increase the adverse health effects stemming from an accident at Shoreham.

Q. Do you have any other concerns about LILCO's proposed use of the Nassau Coliseum as a monitoring and decontamination center?

A. Yes. According to the information provided by LILCO, (see the October 23, 1984 letter from Cordaro to Rasbury), "all evacuees" will be directed to go to the Nassau Coliseum for monitoring and, if necessary, decontamination. In the event of an evacuation from the full 10-mile EPZ, this could mean that tens of thousands of persons from the EPZ alone would converge on the Nassau Coliseum. See LILCO Plan, Appendix A, at III-2. I find nothing in the evidence proffered by LILCO which provides assurance that the Nassau Coliseum and LILCO could accommodate this number of people. Indeed, I find it difficult to believe

that the Nassau Coliseum has the capacity and facilities, and that LILCO has the personnel and resources, to handle such an influx of people. At a minimum, therefore, there would be an increase in the time between exposure and decontamination, thus further aggravating potential health effects.

My concern is further heightened by the fact, as explained in further detail in the testimony of James H. Johnson regarding LILCO's proffered evidence, that many thousands of people from outside the EPZ will also seek to evacuate in the event of a radiological emergency at Shoreham. A substantial number of these evacuees are bound to seek monitoring and decontamination at the Nassau Coliseum. Unless LILCO intends to bar such "voluntary evacuees" from the Nassau Coliseum, it is thus likely that they will place a further strain on the Coliseum's facilities and LILCO's limited resources. Obviously, the more people demanding to be monitored, the longer the process will take. For the reasons stated above, if contaminated evacuees must, as a result, wait longer for monitoring and decontamination, there is likely to be an increase in adverse health effects.

I understand that Suffolk County has not been given an opportunity to conduct discovery on issues relating to LILCO's proposed use of the Nassau Coliseum. Nevertheless, it is clear that LILCO is proposing to use the Nassau Coliseum to handle an enormous influx of people; yet LILCO has provided no assurance

that the Coliseum or LILCO's personnel can accommodate such an influx. Consequently, there can be no assurance that LILCO can provide adequate monitoring and decontamination of the public, as required by 10 CFR §50.47(b)(10) and NUREG 0654, Section II.J.12.

Q. Please summarize your conclusions regarding LILCO's proffered evidence.

A. In my opinion, LILCO's proposal to use the Nassau Coliseum to monitor and decontaminate evacuees is inappropriate, since its considerable distance from the plant and the traffic congestion that will be encountered will unacceptably delay the monitoring and decontamination process, thereby resulting in increased doses to contaminated persons. Furthermore, there is no assurance that the Nassau Coliseum has the capacity and facilities, or that LILCO has the personnel and resources, to accommodate all the evacuees expected to converge on the Coliseum.

Q. Does that conclude your testimony?

A. Yes.