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-3 (Emergency Planning)
(Shoreham Nuclear Power Station, Unit 1)	

DIRECT TESTIMONY OF DAVID HARRIS AND MARTIN MAYER ON BEHALF SUFFOLK COUNTY REGARDING CONTENTIONS 24.J, 24.N, 60, 65, AND 72

I

INTRODUCTION

Q. Please state your names and positions.

A. My name is David Harris. I am the Commissioner of Health Services for Suffolk County, New York. My professional background and qualifications are set forth in Attachment 1 to Direct Testimony of David Harris on Behalf of Suffolk County Regarding Contention 25 -- Role Conflict. (See ff. Tr. 1218.)

My name is Martin Mayer. I am Deputy Director of Public Health for Suffolk County, New York. My professional background and qualifications are set out in Attachment 1 to Direct Testimony of David Harris and Martin Mayer on Behalf of

Suffolk County Regarding Contentions 24.G, 24.K, 24.P, 75 and 75.

Q. What are the purposes of this testimony?

A. The purposes of this testimony are to address Suffolk County Contentions 24.J, 24.N, 60, 63, and 72, and to express our concurrence with those contentions. We both have been involved in planning for and providing health services to persons in Suffolk County for many years. This experience has provided us with considerable familiarity with the health facilities available in Suffolk County, including their capabilities to respond to emergency situations. This experience has also provided us with familiarity with the types of persons who might require emergency assistance if there were an emergency at Shoreham, and what would be involved in providing such assistance. All the testimony which follows is jointly sponsored by both of us.

Q. Have you reviewed the LILCO Transition Plan?

A. We have reviewed, among others, those portions of the Plan that contain proposed protective actions for special facilities.

Q. What is your opinion of those provisions?

A. In our opinion, those provisions are unworkable for the reasons set forth in the contentions addressed by this testimony. An attempt to implement LILCO's proposals would likely result in increased morbidity and mortality; that is, some people would become more ill or disabled than they were before, and others might die as a direct result of an attempt to implement LILCO's proposals.

II

CONTENTIONS 24.J AND 24.N - LACK OF AGREEMENTS

Q. Are you familiar with Contentions 24.J and 24.N?

A. Yes. The LILCO Plan relies on the services of numerous non-LILCO organizations and individuals for implementation of its protective action proposals for patients and residents of special and health care facilities in and near the EPZ. Without the services and cooperation of such individuals and organizations, LILCO's proposals for special facilites could not be implemented.

Because to our knowledge there is no requirement that special facilities, health care facilities or their staffs cooperate with LILCO in the event of a Shoreham accident, the best,

and possibly the only way to assure their participation is through agreements of the proper scope and detail. Despite their importance, however, LILCO does not have the agreements necessary to assure implementation of these essential aspects of the Plan.

Q. Please state Contention 24.J.

A. Contention 24.J is as follows:

> Contention 24. LILCO has failed to obtain agreements from several of the organizations, entities and individuals for performance of services required as part of the offsite response to an emergency pursuant to NUREG 0654, as follows:
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> Contention 24.J. The LILCO Plan relies upon special facilities, nursery schools, and their employees to perform several functions necessary to a successful evacuation of such facilities according to the LILCO Plan. (See Appendix A II-28 to II-29, IV-166 to IV-178.) (The facilities involved are the nursing and adult homes and the nursery schools in and near the EPZ, Association for the Help of Retarded Children (AHRC) facilities, United Cerebral Palsy facilities, John T. Mather Memorial Hospital, St. Charles Hospital, Central Suffolk Hospital, Maryhaven Center of Hope facilities, and the BOCES Learning Center.) However, the Plan does not include agreements with the special facilities in the EPZ to implement the evacuation procedures set forth in the Plan, and thus the proposed evacuation of such facilities cannot and will not be implemented.

Q. Does LILCO have agreements with any of the special facilities named in Contention 24.J?

A. To our knowledge, LILCO has no such agreements. As a result there is no assurance that LILCO's evacuation proposals for such facilities would be implemented.

Q. Why?

A. If an evacuation were ordered, the staffs of special facilities are expected by LILCO to implement unworkable proposals about which they have inadequate information. LILCO's proposals for evacuating health care facilities are unworkable, because they ignore the medical problems involved in caring for the ill and disabled. In our opinion, because LILCO has no agreements with special facilities concerning the implementation of LILCO's proposals, it is highly unlikely that in the event of a Shoreham emergency the staffs of these facilities would attempt to implement LILCO's proposals. Instead, if they took any actions, they would be likely to take the steps which seemed most beneficial to them at the time. Thus, it is very likely that instead of the coordinated set of actions and results which LILCO's Plan sets forth on paper, each facility would choose and implement in its own way whatever course(s) of action it deemed appropriate. There is no

assurance that such an uncoordinated series of actions would protect the patients of the special facilities, and indeed it might interfere with the implementation of other aspects of the LILCO Plan.

Q. Please state Contention 24.N.

A. That contention reads as follows:

> Contention 24. LILCO has failed to obtain agreements from several of the organizations, entities and individuals for performance of services required as part of the offsite response to an emergency pursuant to NUREG 0654, as follows:
>
> Contention 24.N. The LILCO Plan relies on the availability of non-LILCO facilities and medical institutions as relocation and reception centers for evacuees. (See Plan at 4.2-1; OPIP 4.2.1; Appendix A at IV-166 to IV-174.) However, LILCO has no agreements with the owners of the proposed identified facilities which provide that the facilities will be available as relocation centers in the event of a radiological emergency at Shoreham. See FEMA Report at 10 (noncompliance with NUREG 0654 Section II.J.10.h). In addition, the Plan does not even identify, much less include agreements with, the facilities to be used as relocation or reception centers for school children, patients in hospitals, handicapped individuals, or residents of any special facilities other than United Cerebral Palsey of Greater Suffolk, Inc. (Appendix A at IV-166 -- IV-174). In the absence of such agreements, the protective action of evacuation cannot and will not be implemented.

Q. Does LILCO have agreements with any reception centers?

A. No. We believe this is one of the most serious deficiencies in LILCO's Plan, and we discuss it further below with respect to Contention 72.C.1/ Special facility administrators are unlikely to agree to evacuate their facilities if there is no assurance that an identified and adequately staffed and equipped facility is available and has agreed to receive the evacuating patients. Consequently, without prearranged and agreed upon reception centers, LILCO's evacuation proposals could not be implemented.

Q. Does LILCO have agreements with the relocation centers it has identified in the Plan for use by the general public?

A. No. Although the Plan asserts that three facilities, the State University of New York ("SUNY") at Stony Brook, the BOCES facility in Islip, and the Ammerman Campus of Suffolk

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1/ Indeed, David Glaser, a LILCO consultant on the subject of nursing and adult homes, has testified that in order for an emergency plan for a nursing or adult home to succeed it is necessary to have agreements with facilities that will receive patients being relocated from nursing or adult homes. (See Deposition of David Glaser, March 17, 1984. ("Glaser Deposition") at 40, 41.)

County Community College ("SCCC") in Selden, are primary relocation centers (Plan at 4.2-1) and two facilities, SUNY at Farmingdale and St. Joseph's College in Patchogue are backup relocation centers (Plan at 4.2-1), to our knowledge LILCO has no agreements with the owners of any of those facilities for their use by LILCO in the event of an emergency at Shoreham. (See also Testimony of Robert Kreiling on Contention 24.C.) Use of those facilities as relocation centers would necessitate the disruption of their normal activities. Consequently, one just cannot assume that they would respond as envisioned by LILCO's Plan unless they have agreed to do so.

XII

CONTENTIONS 60 AND 63 - SELECTIVE SHELTERING AND SELECTIVE EVACUATION

Q. Are you familiar with Contentions 60 and 63?

A. Yes. Contention 60 states:

At page 3.6-5 of the LILCO Plan, LILCO states:

> Th[e] protective action [of selective sheltering] may be ordered at projected doses below the accepted PAGs to minimize radioactive exposure, particularly to pregnant women and children....
>
> The Sheltering option may be recommended as an effective option for individuals who

could not be safely evacuated. This would include individuals who have been designated medically unable to withstand the physical stress of an evacuation, as well as those individuals who require constant, sophisticated medical attention.

The Plan fails to set forth guidelines to be used by command and control personnel: (a) in choosing to recommend the protective action of selective sheltering; or (b) in determining the individuals who should or would be subject to such a recommendation. Rather, as quoted above, the Plan contains only generalized statements which, in fact, provide no guidance at all. In addition, there are no procedures which indicate the means by which such a recommendation would or could be implemented. The Plan thus fails to comply with 10 CFR Sections 50.47(a)(1), 50.47(b)(10) and NUREG 0654, Sections II.J.9 and J.10.

Contention 63 reads as follows:

The LILCO Plan states at page 3.6-6:

> Selective Evacuation may be implemented to evacuate from the affected area of the plume exposure EPZ members of the general public who might have a low tolerance to radiation exposure. Specifically, this would include pregnant women and children 12 years and under.

The Plan fails to set forth guidelines to be used by command and control personnel: (a) in choosing to recommend the protective action of selective evacuation; or (b) in determining, identifying and locating the individuals who should be subject to such a recommendation. In addition, there are no procedures which indicate the means by which such a recommendation could or would be implemented. The Plan thus fails to comply with 10 CFR Section 50.47(a)(1), 50.47(b)(10), and NUREG 0654 Sections II.J.9 and J.10.

Q. Do you agree with Contentions 60 and 63?

A. Yes. The LILCO Plan does not contain adequate planning for either selective sheltering or selective evacuation. First, there are no real standards in the Plan by which command and control personnel could decide to recommend either of these protective actions. The Plan contains no standards for recommending selective sheltering. And although the Plan states that selective evacuation "may be implemented for projected dose levels of 1 to 5 rems whole body or 5 to 25 rems to the thyroid, but not without consultation with the N.Y. State Commissioner of Health" (Plan at 3.6-6), this vague statement does not indicate the projected dose levels at which selective evacuation would be recommended.

Further, the assertions contained in the LILCO Plan that selective sheltering and selective evacuation have been adopted from the radiological emergency plan of the State of New York, and that neither would be recommended without consultation with the Commissioner of Health (Plan at 3.6-5, 3.6-6) are not standards. The statement that the New York Plan mentions these options contains no guidance whatsoever for LILCO's command and control personnel, and the assertion that neither would be recommended without prior consultation with the State is

meaningless. Whether it means that LILCO would not recommend selective sheltering or evacuation unless the State told it to, or that LILCO would merely inform the State of its decision, it does nothing to remedy the deficiency in LILCO's Plan. The assertion is not a substitute for adequate guidelines or standards to be used by the LILCO personnel who are responsible for making the decisions to recommend selective sheltering or selective evacuation.

Similarly, there is insufficient guidance in the LILCO Plan to permit the LILCO employees responsible for making protective action decisions to determine which people in the EPZ are sufficiently radiosensitive to warrant advice to shelter or evacuate. The Plan mentions pregnant women, children ages 12 and under, and individuals medically unable to withstand the stress of evacuation (Plan 3.6-5, 3.6-6). But it does not mention other radiosensitive groups, such as women of childbearing age who are not pregnant, or women who are in the early stages of pregnancy but do not yet realize their condition. And, it does not indicate whether the groups mentioned in the Plan are the only groups to be considered by LILCO's command and control personnel. Moreover, the Plan does not define those persons who could not withstand the stress of an evacuation. Because the LILCO Plan contains such incomplete

information, command and control personnel have no basis for making informed decisions about who should be advised to shelter or evacuate, should selective sheltering or selective evacuation be the chosen protective action.

Finally, the Plan includes no procedures by which such recommendations could be implemented. LILCO in effect has done nothing more than state that selective sheltering and selective evacuation are options; it has failed to plan for implementing those options. LILCO's proposal to recommend selective sheltering to protect those persons medically unable to evacuate is especially flawed. LILCO has not developed plans for implementing a recommendation that special facilities shelter patients unable to evacuate. Sheltering is not a viable alternative for many such persons in special facilities for several reasons.

First, the LILCO Plan contains some sketchy provisions about how the Health Facilities Coordinator would contact special facilities to inform them of a selective sheltering recommendation. (OPIP 3.6.5 at 8; Appendix A at II-18, IV-166, IV-173, IV-174.) Appendix A and OPIP 3.6.5 contain general statements that sheltering would be the primary protective action for hospitals (OPIP 3.6.5 at 1; Appendix A at II-28,

IV-172 to 173.), and that sheltering might be the preferred protective action for nursing and adult homes. (Appendix A at II-29.) But the closest LILCO's Plan comes to proposing how special facilities would implement such a recommendation are the following statements in Appendix A:

> The hospitals will be directed to implement their sheltering plans which include having patients either remain in place or relocate within the hospital....
>
> If sheltering is recommended, [nursing and adult homes] will be advised by the EBS message to institute standard sheltering procedures.

(Appendix A at IV-173, IV-174.) Thus, LILCO's selective sheltering proposal for special facility patients who could not be safely evacuated rests on the assumption that the hospitals and adult and nursing homes in or near the EPZ have developed sheltering plans which they could implement on notification from LILCO. This assumption is incorrect.

Our staff has contacted the special facilities included in the LILCO Plan to determine the status of their planning for sheltering. We have learned that LILCO representatives have visited the special facilities, toured the buildings, indicated that sheltering would be the preferred protective action because of the difficulties involved in implementing an

evacuation of patients, and given the facility administrators advice about how to shelter their patients. The administrators have been told by LILCO representatives what portions of their buildings LILCO believes would be the most suited to sheltering, and have been given instructions about the need to pull down window shades, and isolate ventilation and air conditioning systems in order to make sheltering effective. Despite LILCO's visits and advice, however, the special facilities have not developed "plans" for implementing a sheltering recommendation during a radiological emergency.

Indeed, all the administrators we have contacted have expressed doubt about the feasibility of sheltering their patients, and many have stated outright that they believe sheltering to be impossible. To begin with, in most institutions the areas with sufficient shielding characteristics are not large enough to hold the entire or even a large proportion of the patient population. For example, the administrator of the Sunrest Nursing and Health Related Facilities told us that of the 104 patients of his nursing facility, he could fit no more than 20 of them in the portions of his building LILCO representatives identified as the places where the patients should be sheltered. Similarly, the administrator of the Suffolk County Home and Infirmary believes that no more than 70 to 90 of his

215 patients could be accommodated in the basement areas LILCO representatives advised him to use for sheltering. The administrator of the Woodhaven Nursing Homes and Home for Adults also expressed the opinion that it would be impossible to fit all her patients in the basement areas designated by LILCO. Similar concerns were expressed by administrators of the three hospitals included in the LILCO Plan. Thus if sheltering were attempted at the special facilities in or near the EPZ, the staffs of many of those facilities could not fit all their patients into sheltering areas. Some patients would have to be left in unshielded areas, where they would not be effectively sheltered from radiation.

Second, LILCO employees have advised the administrators of nursing and adult homes to shelter their patients in areas such as hallways, chapels, kitchens and boiler rooms which, in many instances are not equipped for the proper care of ill people. LILCO seems not to have appreciated these practical difficulties.

For example, the Suffolk County Home and Infirmary has undersized doorways into its patient rooms, and therefore beds cannot be rolled out of the rooms. Because the facility does not have enough gurneys to accommodate all its patients, there

would not be enough beds available to accommodate all the patients in shielded areas, even if there were enough room in those areas for all the patients. Similarly, the Sunrest Nursing Facility could not implement LILCO's recommendation that it shelter its patients in its boiler room. Patients could not be cared for adequately in a room with heavy equipment. This problem would be even worse for a hospital, because many hospital patients are dependent on equipment, such as monitoring devices and outlets for oxygen, suction, and electricity, all of which are absent from common areas like hallways or basements. For example, in Central Suffolk Hospital oxygen and suction are provided through a central system. There are no outlets in the hallways or other common areas. Thus, those patients of Central Suffolk dependent on oxygen or suction could not be moved out of their rooms, unless the hospital had enough portable equipment to meet their needs. Central Suffolk Hospital does not have enough portable oxygen or suction equipment to move its patients out of their rooms, and the administrator of the hospital has no plans to obtain the extra equipment.

Third, LILCO's sheltering proposals could not be implemented at many special facilities where it is impossible to keep outside air out of the buildings. For example, the

Suffolk County Home and Infirmary is an old building, which, in the opinion of its administrator, simply could not be sealed up adequately. The air conditioning units at the Riverhead Nursing Home and Health Related Facility cannot be isolated from outside air, and therefore would have to be turned off. Furthermore, this building has many vents and windows, all of which, according to the administrator, could not possibly be sealed. Oak Hollow Nursing Center and Crest Hall Health Related Facility also rely on outside air for their air conditioning. To cut off outside air, their air conditioning systems would have to be shut off.

The air conditioning system for a special facility simply cannot be turned off at certain times of year. In hot weather, people would die if that were done. It is unrealistic to suggest that elderly people should be expected to stay for several hours in a stuffy, hot basement with no circulation. Those conditions would be unbearable. Indeed, anyone who has been involved in the nursing home industry long enough to remember the days before air conditioning was widely used, also remembers that in those days nursing home patients frequently died prematurely in hot weather directly because of the heat. And those deaths occurred when the patients were in rooms with open windows and when every effort was being made to maximize

the circulation of outside air. By contrast, if sheltering were attempted, every effort would be made to minimize outside circulation. The elderly are especially vulnerable to heat stroke and heat exhaustion. In addition, many nursing home patients are prescribed drugs that reduce the ability of their bodies to handle heat. Thus the health threat involved in LILCO's sheltering proposal is very real for nursing home patients.

Fourth, LILCO's selective sheltering proposal also ignores the need for adequate staff. Preparing and moving all the patients in an institution, with necessary equipment, to sheltering areas requires a large number of staff. In addition, personnel grow tired and need to be relieved. If an emergency occurred during the night shift, there would not be enough staff on hand to handle the emergency. They would need reinforcements. Indeed, the staffing problem would be made even more serious by the fact that many staff members would not report for duty because of role conflict. (See Direct Testimony of David Harris Concerning Contention 25 -- Role Conflict ff. Tr. 1218.) Despite these needs, however, LILCO's Plan contains nothing about the need for reinforcing the staffs of special facilities.

Even if people could be found who would be willing to report for work during a Shoreham accident, the reinforcements may be contaminated on their trip to the special facility. If contaminated workers were allowed into the sheltering area, contamination would be spread throughout it. However, at most special facilities there would not be any equipment for determining whether or not newly arrived staff members were contaminated, and the staff would not be trained in decontamination techniques. As a result of these problems, staff would become ineffective through fatigue, and the patients would suffer.

Fifth, even if sheltering were possible for special facilities, OPIP 3.6.1 does not contain shielding information or sheltering capabilities relating to any special facilities. Consequently, LILCO's command and control personnel would not have enough information with which to make an informed decisions as to whether selective sheltering would provide adequate protection for special facilities patients. The situation would be even worse for the administrators of the special facilities, because they would know nothing about the situation except what LILCO revealed to them. OPIP 3.6.5 says that a hospital would be evacuated if the administrator desires it. (OPIP 3.6.5 at 1.) But an administrator could not really

choose between sheltering and evacuation, if LILCO were the only source of information, and if the administrator had received no detailed plans or standards ahead of time.

LILCO's proposal to selectively shelter persons unable to evacuate is equally inadequate with respect to handicapped individuals at home. It is likely that many of these individuals would be unable to withstand the stress of an evacuation, but many of these individuals probably could not be sheltered as an alternative to evacuation. First, the Plan does not provide for qualified personnel to determine whether an invalid who resides at home could or could not be evacuated. LILCO command and control personnel could not do that, nor could LILCO expect that an EMT or AEMT could examine a homebound individual about whose medical history he knows nothing and make such a determination. EMTs and AEMTs are not trained to make that sort of evaluation.

Furthermore, even if a correct decision were made that the person could not be evacuated, such an individual who is so sick that he could not be moved could not close the fire place flue, pull the drapes, or move to the basement. Furthermore, there is no assurance that the home of any given homebound individual would be suited for sheltering. The physical jobs

involved in sheltering would be impossible for people who were too disabled to be able to withstand an evacuation. As a result, regardless of the protective action recommendation, professional assistance would be necessary at the residences of severely disabled individuals. And, elderly people who reside at home are just as vulnerable to heat stroke and heat exhaustion as elderly people in nursing homes. Therefore, in hot weather elderly homebound persons in many cases could not turn off their air conditioning or cut off their circulation of outside air. LILCO's Plan ignores these practical difficulties.

V

CONTENTION 72 - EVACUATION OF SPECIAL FACILITIES

Q. Please state Contention 72.

A. Contention 72, as admitted by the Board, states:

> Contention 72. The LILCO Plan proposes to evacuate all hospitals, nursing homes and other special health care facilities in the EPZ, using buses, ambulances, and ambulettes. (Plan, Appendix A at II-28 to 29; IV-166 to 168; IV-172 to 178; OPIP 3.6.5). This aspect of the Plan cannot be implemented; accordingly, people in special facilities will not be adequately protected in the event of an emergency and the LILCO Plan fails to comply with 10 CFR Sections 50.47(a)(1), 50.47(b)(3), 50.47(b)(8), 50.47(b)(10) and NUREG 0654, Sections II.A.3, C and J for the following reasons:
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> Contention 72.A. Assuming the necessary vehicles were available to LILCO and were mobilized, the time necessary, following mobilization, to accomplish the proposed evacuation of special facilities will be too long to provide adequate protection from health-threatening radiation doses. Evacuation will take too long as a result of: the large number of trips necessary to transport persons individually to relocation centers; the other mobilization and evacuation traffic congestion which the evacuation vehicles will encounter; and the time necessary to load and unload passengers from ambulances. Thus, the Plan fails to comply with 10 CFR Sections 50.47(a)(1) and 50.47(b)(10).
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> Contention 72.C. The Plan fails to identify any relocation or reception centers for persons evacuated from any

hospitals, nursing homes, or other special health care facilities other than the United Cerebral Palsy of Greater Suffolk Inc.

Contention 72.D. The LILCO Plan recognizes that under certain circumstances the evacuation of John T. Mather Memorial, St. Charles and Central Suffolk Hospitals might be necessary, and that LILCO may recommend such an evacuation. (Appendix A at II-28, IV-172; OPIP 3.6.5 at 8). However, the Plan fails to specify adequately or accurately the circumstances that would necessitate an evacuation of the hospitals, and does not include adequate procedures to permit the person in command and control to make an accurate determination as to whether or not such an evacuation is needed. Thus, the Plan fails to comply with NUREG 0654 Section II.J.10.m and 10 CFR Section 50.47(b)(10).

Contention 72.E. Instead of planning to provide adequate protection to hospital patients in the event of such an evacuation, the LILCO Plan simply provides that "LERO will evacuate these facilities using an ad hoc expansion of transportation resources that are presently committed to other aspects of evacuation." (Appendix A at II-28, IV-172). Apparently, this ad hoc plan will not be developed until an emergency actually occurs. (See Appendix A at II-28; II-172, 173). The ad hoc plan will utilize the vehicles assigned to implement the evacuation of other segments of the population, but such vehicles will be supplied for the purpose of evacuating hospital patients only "on an as available basis," and only "as the rest of the affected population evacuation nears completion." (Appendix A at IV-173). Thus, there is no assurance that adequate protective measures could or would be taken for hospital patients and LILCO has thus failed to satisfy the requirements of 10 CFR Sections 50.47(a)(1) and 50.47(b)(10), and NUREG 0654, Section II.J.10.d.

Q. Do you agree with Contention 72?

A. Yes, we do. LILCO's proposed evacuation plans for special facilities would not work for several reasons. Indeed, any attempt to implement them probably would result in increased incidences of morbidity and mortality. The two most important reasons that LILCO's proposals could not work are those identified in subparts C and E of Contention 72.

First, as we noted above with respect to Contention 24.N, the LILCO Plan does not identify reception centers for any special facilities except the United Cerebral Palsey facilities. Apparently, these reception centers have yet to be determined. (See OPIP 3.6.5, Attachment 2.) In our opinion, given this crucial defect in LILCO's Plan, its proposed evacuation of the special facilities could not be implemented.

Q. Why?

A. We do not believe that physicians, nurses or administrators would consent to the movement of patients committed to their care if there were no adequately staffed and equipped facility waiting to receive them. Similarly, ambulance or ambulette crews would be unlikely to assume responsibility for patients if there were no health care facility to which to take

them. Indeed, command and control personnel probably could not even recommend evacuation if there were not a sufficient number of hospitals or other facilities able to receive the evacuees. Without identified and available reception centers, all the provisions of LILCO's Plan concerning evacuation are words on paper and nothing more.

Moreover, regardless of whether or not LILCO has tried to make adequate arrangements and obtain agreements with reception facilities, it would be very difficult for LILCO to find an adequate number of facilities within a sufficiently reasonable distance of the EPZ to make their use practical, which could handle the numbers of evacuating patients expected under LILCO's proposals. According to LILCO's estimates, the handicapped institutions in or near the EPZ have approximately 74 non-ambulatory residents. (Appendix A at II-18). The nursing homes which will receive evacuation help from LILCO have about 900 residents. (Appendix A at IV-175.) And, the three hospitals covered by the LILCO Plan on average have approximately 630 patients. That is, a total of over 1500 individuals might have to be evacuated from these facilities. Although a few patients in handicapped facilities, hospitals, and nursing homes might be able to go to regular relocation centers, most of the census of such facilities would require

special relocation centers providing a level of medical care comparable to the institutions from which they came.

In earlier versions of the Plan, LILCO proposed to utilize Kings Park State, Pilgrim State, St. Johns, Northport V.A., Eastern Long Island and Southhampton hospitals, as well as the Central Islip Psychiatric Center and the Suffolk Developmental Center as reception centers. Conversations our staff had with the administrators of these facilities confirmed that these facilities together could not handle 1500 evacuees or, indeed, anywhere near that number. Although most hospitals have casualty influx plans, a hospital with a total bed capacity of approximately 200 to 400 beds, which is typical of hospitals in Suffolk County, probably could free up only about 50 to 60 beds in order to handle a sudden influx of new patients. The absence of receiving facilities makes LILCO's Plan unworkable.

Second, as stated in Contention 72.E, although LILCO admits that an evacuation of hospitals might be necessary under some circumstances, LILCO does not have a detailed plan which can readily be implemented to cover such a possibility. Instead LILCO intends to evacuate the three hospitals included in its Plan "using an ad hoc expansion of transportation resources that are presently committed to other aspects of evacuation."

(Appendix A at IV-172). Concerning this expansion, the Plan states:

> The sources of [the] vehicles [to be used to evacuate hospitals] will be the companies who are supplying vehicles for the evacuation of other segments of the population. Those vehicles will be supplied on an as available basis as the rest of the affected population evacuation nears completion.

(Appendix A at IV-173.) LILCO thus virtually admits that under its Plan hospital patients will be ignored unless and until everyone else in the EPZ has been evacuated. Then, if resources are "available," LILCO will turn to the hospital patients. This aspect of LILCO's Plan is unacceptable, since there is no assurance at all that a timely evacuation of hospital patients, if required by the seriousness of an accident at Shoreham, could ever be accomplished.

These two reasons set forth in Contentions 72.C and 72.E alone render LILCO's evacuation proposals for special facilities unacceptable. In the following testimony, we will address additional deficiencies in LILCO's proposals for evacuation of special facilities.

As asserted in Contention 72.A, one of the fundamental reasons why the proposed evacuation of special facilities is

unlikely to work as expected by LILCO is that it would take too long. LILCO's time estimates assume that in normal weather the last evacuation vehicle carrying special facility patients would leave the EPZ seven hours and fifty minutes after the start of an evacuation. (Appendix A at IV-177, IV-178). LILCO's time estimates, however, are too optimistic, and in fact, the patients of special facilities probably could not be evacuated in that amount of time.

Other witnesses have addressed the fact that serious traffic congestion is likely to occur throughout the EPZ once an accident at Shoreham reaches the point that an evacuation is ordered, and the effect that such congestion would have on the time necessary to complete an evacuation. Our testimony will not address traffic conditions, but instead will focus on the time necessary to begin the evacuation process and to prepare, load and unload the patients. The point concerning traffic that one must bear in mind is that the aspects of an evacuation that we will examine by themselves probably would take too long, even without considering the effects of traffic congestion on actual travel time. With crowded conditions on the roadways, the total time necessary to complete an evacuation would be even longer.

Q. Why will LILCO's evacuation plans for special facilities take too long?

A. The reasons fall into two categories. First, the process by which LILCO employees at the EOC would attempt to "coordinate" the evacuation would take too much time and would in fact cause further delay by creating confusion. In addition, the tasks that would have to be performed at special facilities in order to accomplish an evacuation would take a very long time.

Q. Why would LILCO's plans for coordinating the evacuation take too long?

A. First, because accomplishing the tasks specified by the LILCO Plan as necessary to coordinate the evacuation would require a substantial amount of time. If an evacuation were ordered, under OPIP 3.6.5, Section 5.2.2., the Health Facilities Coordinator is given a very difficult task. He is expected to telephone the four organizations that operate facilities for the handicapped, the ten nursing or adult homes, and the three hospitals included in the LILCO Plan. He is supposed to inform each facility of the need to evacuate, and then collect from each institution information about transportation and special medical care needs. Then he is supposed to relay

the transportation information to the LILCO Ambulance and Bus Coordinators. In addition, he is supposed to contact an unspecified number of reception centers (that are not identified in the Plan), inform their staffs of the pending evacuation, and relay to them the information from the evacuation facilities about special care needs. Obtaining and relaying that much information to and from that many facilities would take the one person LILCO has assigned the job a long time. Even if other persons assisted the Health Facilities Coordinator (and no such assistance is set forth in the Plan) it is quite likely that the necessary communications could not be accomplished prior to the predicted arrival of ambulances and ambulettes at special facilities, a little more than two hours after an evacuation order.

In addition, the information that must be transmitted through LILCO's coordination process must to be relayed a number of times to several different parties. That information might very well become garbled as it was transmitted from person to person. Consequently, when received by the last recipient, it could be inaccurate. The people who had to act in reliance on this inaccurate information might unknowingly act inappropriately and cause delays.

Q. Are the flaws in LILCO's provisions for coordinating the evacuation the only reason that LILCO's evacuation plans for special facilities would take too long?

A. No. The second major problem, as asserted in Contention 72.A, is that performing the tasks necessary to implement an evacuation of special facility patients also would take a long time.

Q. But why would the special facilities not be able to perform these tasks in a timely manner by implementing the disaster plans they already have?

A. It is true that hospitals and nursing homes have "disaster" plans of some sort. However, those plans are for situations such as fires and storms, and are inapplicable to the actions LILCO expects special facilities to perform in a Shoreham emergency. Existing plans generally do not envision relocating all or most of the patients in a hospital or nursing home to another facility miles away, and they do not include details for how to accomplish such a total relocation. The existence of these plans does not, therefore, eliminate the problems involved in implementing LILCO's evacuation proposals in a timely manner.

Q. Please explain the reasons why the evacuation process would take too long.

A. First, the LILCO Plan appears to ignore completely the amount of time that would be necessary to prepare patients for evacuation. Preparing the occupants of a health care facility for evacuation and relocation is not simply a matter of giving the patients their clothing and an extra blanket. Each patient's records and medication would have to be collected and brought to the patient for use at the reception center. Moreover, the condition of each patient would have to be individually assessed by professional personnel. This would be necessary in order to allow the staff both to determine the order in which patients would be moved, and to allocate scarce equipment.

Q. Why must there be a predetermined order?

A. Because some patients, inevitably, would be in worse condition than others. Indeed, some patients would be too ill to be moved. These individuals would have to be identified, and arrangements would have to be made for their care, including the assignment of staff to remain behind. Of those patients who could be moved, the most seriously ill assigned to any one vehicle would have to be loaded last and unloaded

first, so that they would spend less time outside the hospital or nursing home rooms. It would be unacceptable simply to load patients in any convenient order without considering their relative conditions. The process of evaluating patients would be time consuming.

In addition, many patients depend on special equipment such as traction, suction and respirators. Provisions would have to be made to have the right equipment available for each patient during the move. Because special facilities have a limited amount of portable equipment and therefore probably could not provide such equipment to all patients who needed it, the staff of a health care facility would have to wait until the conditions of all the patients had been evaluated and the order of evacuation determined, before they could allocate limited pieces of equipment. Patients could not be moved near outside doors and away from permanently installed equipment in their rooms until this preparatory work had been completed. And, because most nursing homes do not have a gurney or wheelchair for every patient, some patients could not be moved from their rooms ahead of time. That is, in some facilities the staff could not create a little staging area near the outside door for all the patients, but instead would have to move many patients from their rooms after vehicles arrive. This would lengthen the loading process significantly.

Second, LILCO has not considered the problem of staffing. The work that would have to be performed by the staffs of special facilities to evacuate their patients would be overwhelming. If the patients of these facilities were to be evacuated, it would require the efforts of nearly everyone on the staffs, including physicians, nurses, orderlies, laboratory staff, office personnel, administrators, and maintenance personnel. However, even without considering the reduction in available staff that will be caused by role conflict (see Direct Testimony of David Harris Concerning Contention 25), it is possible that enough workers would not be available to assist in these efforts on a timely basis. At a typical health care facility, after normal business hours there are almost no clerical personnel or laboratory personnel, very few administrative or maintenance personnel and few doctors on duty. Even the nursing staffs are reduced by about 50 percent in a typical hospital at night. The staffing reductions at night at nursing homes and other special facilities are even greater than at hospitals. Consequently, if an evacuation were ordered at night, special facilities would have to contact many additional employees and request that they report to work. It could easily be hours before a facility had a relatively full staff on hand, assuming that all the staff would attempt to report.

Although the limited nighttime staff could begin evacuation preparation tasks, until off-duty personnel reported, only a limited amount of work could be performed.

In addition, many of the health care personnel at any given facility would not be available to assist in the evacuation efforts. At the time an evacuation were ordered, some professionals might be involved in surgical operations that could not be interrupted once they have begun. Consequently some professional staff could be unavailable in the early stages of an evacuation. And, as LILCO itself recognizes, some patients are so critical that they could not be moved at all. (Plan at 3.6-5.) If patients were to be left behind, medical personnel would have to stay with them in order to minister to their needs. Because the patients to be left behind would be the most critical, they would require intensive care. Consequently, a portion of the health care personnel would be tied up providing care to seriously ill patients and would not be available to help in the evacuation.

In sum, LILCO's evacuation proposals would take too long because there would be too much work to be done. LILCO's Plan contains no recognition of the awesome amount of work that would be necessary to evacuate the special facilities. Moving

ill and injured human beings is not like moving merchandise, and, for a host of reasons, this task could not be accomplished in a few hours, as LILCO expects.

All the problems we have described so far have involved the problems of the special facility staffs attempting to prepare, move and care for their patients. The time necessary to evacuate the special facilities will be increased because LILCO has underestimated the number of vehicles needed to conduct the evacuation.

Q. Why do you say that?

A. LILCO explains its assumptions about the number of vehicles and the amount of time needed to evacuate the EPZ at pages IV-175 to IV-178 of Appendix A. It is apparent from these pages that LILCO has made some serious errors.

One flaw in LILCO's estimates of the number of necessary vehicles is its reliance on ambulettes. An ambulette is a van that is equipped to accommodate people in wheelchairs. Such a vehicle has a lift for loading and unloading wheelchairs, and it has space to accommodate perhaps four wheelchairs. But, as LILCO has been informed by its own contractors, ambulettes do not provide their own wheelchairs. (See Plan at Appendix B-48,

49.) Thus, in an evacuation, LILCO apparently expects the special facilities to provide enough wheelchairs for all the patients whom LILCO expects to evacuate in ambulettes. Moreover, LILCO's estimates assume that almost all the non-ambulatory patients of nursing homes (with the exception of the Suffolk County Home and Informary), would be evacuated by ambulette. (Appendix A at IV-175.) It is unlikely that a nursing home or hospital would possess enough wheelchairs to accommodate almost all its non-ambulatory patients. Particularly in the early stages of an evacuation a special facility could not let many wheelchairs leave the facility with evacuating patients, because most of the wheelchairs are likely to be needed to move patients within the facility and to vehicles. Therefore, if an attempt were made to implement LILCO's proposals, a large number of ambulettes would be of no use, because of a lack of wheelchairs. As a result, ambulances would have to make many additional runs to pick up the slack. A great amount of time would be lost in the process.

In addition, LILCO assumes in its Plan that six ambulettes could be loaded simultaneously in fifteen minutes, and that six ambulances could be loaded simultaneously in twenty minutes. (Appendix A at IV-175.) However, if LILCO means that six vehicles could be loaded at a time at any one special facility, as

opposed to six throughout the EPZ, LILCO is probably wrong. Although six ambulances could be lined up in a parking lot, at many facilities, six vehicles could not park simultaneously immediately outside the doors suited for loading patients.

More importantly, however, LILCO's fifteen and twenty minute time estimates are too short. Perhaps they would be reasonable if the patients all could be bundled up and waiting by the outside doors. But as we discussed above, the patients of some facilities would not be near entrances to the buildings. Instead, they would have to be moved from their rooms to entrances and then out to vehicles. That process, with the constraints of available personnel, elevators, gurneys, and wheelchairs, would take longer than fifteen or twenty minutes per vehicle.

Q. Other than the reasons you have already discussed with respect to nursing homes and handicapped facilities, are there any additional reasons why LILCO's refusal to plan for an evacuation of hospitals makes such an evacuation impossible?

A. First, as asserted in Contention 72.D, the LILCO Plan contains inadequate standards to be used by LILCO command and control personnel who are assigned the responsibility of determining whether to recommend evacuation. And, if LILCO

intends to leave the decision up to the hospital administrators, without necessary factual information about the shielding characteristics of the hospitals, and evacuation procedures that could provide an estimate of how long it would take to evacuate the hospitals, an administrator would have no basis upon which to determine whether an evacuation of his patients was necessary, desirable, or possible.

Moreover, as asserted in Contention 72.E, LILCO's proposal to evacuate the hospitals if necessary on an ad hoc basis is unlikely to succeed. First, because LILCO plans to assign vehicles to the hospitals only as they finish their other assignments, it would be several hours before the evacuation of the hospitals could even begin. According to LILCO's estimates, 3 hours and 25 minutes after the start of an evacuation one ambulance and one ambulette would be leaving the EPZ. (Appendix A at IV-177.) After these two vehicles drove to reception centers and were unloaded, they could then proceed to the hospitals in order to help in the evacuation of those facilities, assuming that they were not needed for additional trips to the other special facilities. According to LILCO's numbers, it would be almost eight hours before the last of the ambulances and ambulettes involved in the remainder of the evacuation of special facilities left the EPZ. (Id.) And

these time estimates assume normal weather conditions. In reality, it would take even longer than LILCO estimates to begin the evacuation of the hospitals, because, as we discuss above with respect to Contention 72.A, LILCO has seriously underestimated the time that would be needed to evacuate the other special facilities. Since, under the LILCO Plan, evacuating hospital patients would not begin until the vehicles involved in evacuating the rest of the population had completed that task, hospital patients would be exposed to greater risk of exposure to radiation than everyone else in the EPZ because their evacuation could not even begin until several hours after an evacuation order.

Second, because of the long delay at the start of the evacuation, the degree of confusion involved in attempting to implement an evacuation would be even greater at hospitals than at the other facilities. Immediately after the evacuation recommendation, staff and patients would anxiously attempt to prepare. The urgency of the situation would be apparent to everyone. But people in the hospitals would know they were to be the last evacuated, and several hours would pass before the first vehicles arrived to begin to transport patients out of the danger zone. Under those circumstances people almost certainly would become even more anxious and frightened. In

addition, the situation at Central Suffolk Hospital could be particularly bad, since it is expected to care for contaminated injured persons in the event of a Shoreham emergency. The arrival of a contaminated patient at the hospital, while the staff is attempting to evacuate its other patients to avoid being exposed to contamination, is likely to heighten anxiety levels even more.

Q. Please summarize your testimony concerning the evacuation of the special facilities in the EPZ.

A. LILCO's proposals for evacuating special facilities could not and would not be implemented for a number of reasons. First, the coordinating procedures that LILCO has developed to oversee the whole evacuation would be too time consuming. In particular, the Health Facilities Coordinator could not do his or her job fast enough for the evacuation to get underway quickly or to proceed smoothly. In addition, LILCO's proposals would take too much time to implement, and the patients of special facilities therefore might not receive adequate protection. LILCO has made unwarranted assumptions about the amount of work involved in such an evacuation. LILCO has not estimated conservatively needs or resources, such as the numbers of necessary vehicles, wheelchairs, or portable medical

equipment. LILCO has not addressed major contingencies such as the possibility of an evacuation recommendation at night when staffing is low. LILCO has not been realistic in its expectations of human behavior, for example the likely reactions of hospital staffs and patients.

Despite all the problems that are likely to render an attempted evacuation of the other special facilities unworkable, however, the situation is much worse with respect to hospitals. LILCO has failed to plan at all for an evacuation of the three hospitals covered by the LILCO Plan, notwithstanding LILCO's acknowledgement that such an evacuation could become necessary The result is that any attempt to evacuate the hospitals would suffer not only from all the flaws involved in LILCO's proposals for evacuating the other special facilities, but also from a complete lack of planning.

Finally, LILCO's plan for special facilities evacuation could not be implemented, because LILCO has not arranged for reception centers for the patients of those facilities. There is not enough available space at health care facilities near the EPZ to accommodate the likely number of evacuating patients, and no evacuation could or would be implemented in the absence of identified facilities with the capacity and capabilities of caring for the evacuees.

Q. Does that conclude your testimony?

A. Yes.