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NUCLEAR REGULATORY COMMISSION

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Before the Atomic Safety and Licensing Board

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 PHILIP B. HERR AND  
CAPTAIN EDWIN J. MICHEL ON BEHALF OF  
SUFFOLK COUNTY REGARDING CONTENTIONS 67 and 24.I --  
EVACUATION OF PERSONS WITHOUT ACCESS TO AUTOMOBILES  
AND LACK OF AGREEMENTS WITH TRANSFER POINT OWNERS

Q. Please state your names and occupations.

A. My name is Philip B. Herr. I am an Associate Professor of City Planning in the Department of Urban Studies and Planning, Massachusetts Institute of Technology and the principal of Philip B. Herr and Associates. A statement of my qualifications is included in my direct testimony regarding Contention 65 - Evacuation Time Estimates, which was already admitted into evidence. (See Tr. 2909).

My name is Edwin J. Michel. I am a Captain assigned as Commanding Officer of the Communications Section, County of Suffolk Police Department. I was formerly assigned to the

Chief Inspector's Office and the Highway Patrol Bureau of the Department. A statement of my qualifications is included in the direct testimony of the Suffolk County Police Department regarding Contention 65 - Evacuation Time Estimates, which has already been admitted into evidence by the Board. See Tr. 2260.

Q. What is the purpose of this testimony?

A. The purpose of this testimony is to address Contention 67 which pertains to LILCO's inadequate provisions for the evacuation of persons (other than handicapped persons, school children, or persons in special facilities) who do not have access to automobiles.<sup>1/</sup> The main part of Contention 67 and its preamble read as follows:

Preamble to Contentions 60-83. 10 CFR Section 50.47(a)(1) requires a finding or reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. In addition, 10 CFR Section 50.47(b)(10) requires the development of a range of protective actions for the public; guidelines for the choice of protective actions must be consistent with Federal guidance. Such guidance includes the Manual of Protective

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<sup>1/</sup> See Suffolk County Testimony on Contentions 68-73 for a discussion of deficiencies in LILCO's proposals for evacuation of schools, hospitals, special facilities, and the elderly and handicapped from private residences.

Action Guides ("PAGs") (EPZ-520/1-75-001), which sets forth the threshold projected dose levels at which protective actions are to be commenced. The PAGs are embraced in NUREG 0654, Sections II.J.7 and J.9, and are referenced in the LILCO Plan, at Section 3.6, and OPIP 3.6.1. NUREG 0654, in Sections II.J.9 and J.10, requires that there be established "a capability for implementing protective measures based upon protective action guides and other criteria." (Emphasis added).

In Contentions 60-83, Intervenors contend that LILCO's Plan does not provide reasonable assurance that adequate protective measures can and will be implemented to protect the population from the potential health hazards of an accident at Shoreham. Thus, (a) there is no reasonable assurance that the measures proposed in the LILCO Plan would, if taken, provide adequate protection from the potential consequences of an emergency at Shoreham; and (b) there is no reasonable assurance that the proposed measures could or would in fact be taken in the event of an emergency.

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Contention 67. LILCO assumes that in the event an evacuation is ordered, most members of the population will attempt to leave using their personal vehicles. However, a substantial portion of the population in the EPZ does not own or have access to an automobile. LILCO proposes that people who do not have access to an automobile at the time of an evacuation order will be evacuated by buses running special evacuation routes, with bus stops purportedly no more than one-half mile from each such person's home. (Plan at 3.6-6; Appendix A, at III-35 and III-36, IV-76 to IV-163; OPIP 3.6.4). However, LILCO's proposal cannot be implemented, and LILCO's proposed evacuation of people without access to cars

would not provide adequate protection for such people, because the evacuation would take too long. As a result of the time necessary to complete the evacuation, persons may be exposed to health-threatening radiation doses. Thus, the LILCO Plan 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.

The Contention goes on to list in subparts A, C, and D specific reasons that LILCO's proposals could not be implemented or would result in inadequate protection for the public.

Q. Do you agree with Contention 67?

A. [Herr, Michel] Yes.

[Herr] LILCO's scheme for transporting people without access to automobiles out of the EPZ is flawed because LILCO has not accurately estimated the number of buses required to accommodate those people. Furthermore, LILCO's time estimates for evacuation of people without access to automobiles are flawed because LILCO has failed to account for traffic congestion that will exist in the event of a radiological emergency.

[Herr, Michel] Finally, LILCO's newly-designated transfer points are inadequate because they offer no shelter to people who must wait at those transfer points for buses to relocation centers. Since many transfer points are within the EPZ or near

its borders, people required to wait for buses to transport them from transfer points to relocation centers may be subject to radiological exposure as well as exposure to adverse weather.

Contention 67.A

Q. Please state the text of Contention 67.A.

A. That subpart is as follows:

Contention 67.A. According to LILCO's estimates, approximately 333 forty-passenger buses are required to transport those able-bodied persons who would need transportation out of the EPZ (see Appendix A, at IV-74b; OPIP 3.6.4). In fact, however, LILCO will either need more than 333 buses or those buses will have to make many more runs than anticipated by LILCO because LILCO has substantially underestimated the number of people who will need such transportation.

1. LILCO underestimates the significant number of people who belong to households with automobiles, but who may not have access to such vehicles because at the time of an evacuation order, the vehicles are in use by another member of the household. LILCO's proposal for evacuating persons without access to transportation must include adequate methods of evacuating the members of vehicle-owning households who may not have access to a car. LILCO's estimates of the number of buses required do not adequately take such people into account.

2. LILCO's estimates also fail to take into account those persons who rely on public transportation to get into the EPZ but who, in the event of an emergency, may not be able to rely on such means to evacuate.

3. LILCO assumes that its route buses will be filled to 75% capacity; however, there is no basis for this assumption. In fact, the route bus capacity factors are likely to be significantly lower than 75%, which will result in a need for many more buses to evacuate people without access to cars.

Q. Please explain how LILCO has underestimated the number of buses required to evacuate people without automobiles.

A. [Herr] According to LILCO's evacuation scheme, "route buses" are buses which will be dispatched from eleven different "transfer points" located both inside and outside the EPZ. The route buses are supposed to travel along predesignated routes (see Appendix A, Figures 9.1-27.1) to be flagged down by people requiring transportation. Upon completing its route, the bus returns to its transfer point where evacuees are discharged. The evacuees are then loaded onto "transfer buses" which take them to relocation centers. In most cases the route buses make multiple trips. (See generally Appendix A at IV-73 through IV-74x).



Table XIII of Appendix A, Revision 3 (pages IV-74e through IV-74x) sets out LILCO's estimates of the demand for bus transportation out of the EPZ by persons without access to automobiles. LILCO's estimates are as follows:

Passenger demand	11,097 persons
Route buses	236 buses
Transfer buses	97 buses
Total	<u>333</u> buses
Route trips	377 trips

(Source: Appendix A, Table XIII).

The basis for LILCO's estimates are not described in Appendix A; however, an internal memorandum authored by Reuben Goldblatt of KLD Associates, and dated June 22, 1983, which is Attachment 1 hereto, gives some indication of how LILCO reached its estimates. Note, however, that in June 1983, Mr. Goldblatt estimated that 282 route trips would be needed to evacuate persons without access to cars. Subsequently, LILCO's estimate of the required number of route trips has been revised upwards -- from 282 trips to the 377 trips which appears in the latest version of the Plan (i.e., Revision 3).

In my opinion, even LILCO's latest estimates are too low. An analysis which I have performed, based partly on LILCO's own information, indicates that LILCO has underestimated the number of people requiring bus transportation from the EPZ by at least 29 percent and the number of route bus trips required to transport the evacuating public to LILCO's transfer points by at least 31 percent.

Q. Please explain your analysis.

A. [Herr] I have identified and examined five components of demand for bus transportation in the event of an evacuation of the entire 10-mile EPZ -- that is, the types of people who would need such transportation. They are:

1. Persons in households without a motor vehicle.
2. Persons in households with one motor vehicle, but where that vehicle is unavailable.
3. Persons in households with two motor vehicles but where neither vehicle is available.
4. Persons who entered the EPZ by public transit and will require public transit to depart.



5. Additional persons counted to allow for uncertainty in these estimates.

Table 1 summarizes the results of my analysis.

Table 1

Demand for Buses

<u>Category</u>	<u>Persons</u>	<u>Route Bus Trips</u>
No household vehicle	7,759	268
Single-vehicle household	4,248	146
Multi-vehicle household	410	14
Workers using transit	1,920	66
Subtotal	14,337	494
30% contingency	4,301	148
Total	<u>18,638</u>	<u>643</u>

A comparison of the results of my analysis with LILCO's estimate is set forth in Table 2 which follows:

Table 2

<u>Category</u>	<u>Persons</u>	<u>Route Bus Trips</u>
LILCO estimate	11,097	377
LILCO shortfall v. subtotal	3,240	117
Shortfall % of LILCO estimate	29	31
LILCO shortfall v. total	7,541	266
Shortfall % of LILCO estimate	68	70

Q. How did you calculate the demand for buses for each of the five components listed in Table 1?

Households Without Autos

A. [Herr] The largest element of the population requiring bus transportation out of the EPZ is households with no vehicle available to them. I performed a series of calculations to arrive at an estimate of the number of route bus trips that would be necessary to evacuate persons in this category.

First, I calculated the number of households in the EPZ by dividing the total EPZ population (157,601) assumed in the Goldblatt memo (Attachment 1 at 1) by the number of persons per household derived from 1980 U.S. Census data.<sup>2/</sup> Then, using

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<sup>2/</sup> Here and elsewhere in the analysis, we have used U.S. Census data whenever possible since they are based on the

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the percent of households having no access to automobiles (6.4) from 1980 U.S. census figures, I calculated the "dependent population" -- or how many people would be without cars -- by multiplying the number of households without cars by 2.5. as estimated by LILCO. It represents the average number of persons in households without access to automobiles and is based on the results of a telephone survey conducted by the National Center for Telephone Research (hereinafter NCTR survey) for LILCO's consultant KLD. (See Attachment 1 at 1).<sup>3/</sup> Finally, I calculated the number of 40-passenger bus trips required to accommodate this portion of the "dependent population" by dividing the dependent population result by an average loading factor of 29

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largest possible sample. Because there are no census data for the EPZ as an entity, we have examined the town of Brookhaven and Suffolk County figures, and chosen intermediate figures. The disparities between Brookhaven and Suffolk County figures were in no case more than 6 percent, reinforcing the validity of approximating the characteristics of the EPZ by use of data from two areas, one larger than and including the EPZ, the other smaller than and largely included within the EPZ. For example, Brookhaven was reported by the Census to have 3.26 persons per household, Suffolk County, 3.25

3/ Using a person/household figure for households without autos (2.5) that is lower than the community average for all households (3.5) is, consistent with findings of other surveys, reflecting, among other things, the high incidence of elderly in this category.

persons per bus trip. The 29 persons per bus trip loading factor was chosen because it is the actual loading rate resulting from the LILCO scheme as summarized in Table XIII of Appendix A, reflecting an optimistic estimate of actual bus utilization.

The results of my analysis of the number of route bus trips necessary to evacuate persons in households without automobiles are summarized in Table 3 below:

Table 3

No-Auto Household Analysis

EPZ households	48,493
Percent no vehicle available	6.4
Dependent population	7,759
Total trips needed at 29/bus	268

Single Auto Households

In some cases, it can be expected that while a household may have an automobile, that automobile may be in use and not available for evacuation purposes. I estimated the route bus demand generated by this portion of the population by another series of calculations. First I calculated the number of single-auto households in the EPZ by applying the percentage of

single-auto households (34%) from 1980 U.S. Census data, to the number of households derived from LILCO's figures. Using LILCO's estimate of the percentage of commuter households in the EPZ (83%), based on the NCTR survey, I calculated the number of single auto commuter households (83 percent of 34 percent). Then, I calculated the dependent population by multiplying the number of single auto commuter households by the number of persons per household of that type (3.5) as estimated by LILCO (unavailable in U.S. Census data), minus one. One was subtracted from the average number of persons/household to account for the one member of the household who is with the automobile and therefore not with the household.

The results of that analysis of the number of persons in single auto households potentially without access to cars are summarized in Table 4 which follows:

Table 4

Single-auto household analysis

Percent single-auto households	34
Single-auto households	16,487
Percent commuter households	83
Single auto commuter household	13,684
Dependent population	34,212

The number of bus trips required to accomodate a portion of this segment of the EPZ population is based on the distribution explained below.

The Goldblatt memo indicates that LILCO did attempt to account for single auto families who, for whatever reason, may not have access to their automobiles, but did so only to a very limited extent. Based on the NCTR survey, LILCO determined that 7 percent of the commuters within the EPZ must travel 60 minutes or more to get to work. LILCO arbitrarily assumed that none of the automobiles driven by such commuters would be available to assist a household in an evacuation, but that 100 percent of the automobiles from the EPZ commuting less than 60 minutes would be available. (Attachment 1 at 2). Thus, LILCO's distribution for single-auto households requiring transportation assistance looks like this.<sup>4/</sup>

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<sup>4/</sup> Note that estimates made by LILCO subsequent to the Goldblatt memo were even more restrictive, assuming that

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Table 5

LILCO Distribution -- Single-Auto Households.

Travel time	Percent Commuters	Percent no car avail.	No. need help	Joint percent
less than or equal to 5	10.1	0	0	0.00
6-10	11.8	0	0	0.00
11-15	12.9	0	0	0.00
16-20	15.4	0	0	0.00
21-25	6.9	0	0	0.00
26-30	13.5	0	0	0.00
31-45	13.2	0	0	0.00
46-60	9.2	0	0	0.00
61-90	4.6	100	1574	4.60
greater than 90	2.4	100	821	2.40
Total	100		2395	7.00

(Source: Attachment 1).

In my opinion, LILCO's assumptions, as reflected in Table 5, are not realistic. Rather, it must be assumed that a percentage of the automobiles belonging to single-auto households will not be available for evacuation even though the commuting

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only commuters with 75 minute or longer commutes would fail to return to unite with families. (See Joint Attachment to the Testimony of Matthew C. Cordaro, John A. Weismantle, and Edward B. Lieberman on Behalf of Long Island Lighting Company on Phase II Emergency Planning Conventions 65 and 23.C., D., and H., Attachment 10 at 4).

time for the commuter in that household may be less than 60 minutes. Some cars may be inoperative, or under repair. Some drivers may be on a trip of longer-than-usual distance. As commuting distance increases, an increasing percentage of drivers will judge it imprudent or impractical to attempt to return home. Thus, the following Table 6 depicts a more realistic distribution:

Table 6

More Realistic Distribution -- Single-Auto Households.

Travel time	Percent Commuters	Percent no car avail.	No. need help	Joint percent
less than or equal to 5	9.5	1	33	0.10
6-10	11.1	1	38	0.11
11-15	12.2	1	42	0.12
16-20	14.5	2	99	0.29
21-25	6.5	3	67	0.20
26-30	12.7	6	261	0.76
31-45	12.4	12	509	1.49
46-60	8.7	25	744	2.18
61-90	4.3	100	1471	4.30
greater than 90	2.3	100	787	2.30
Don't know	5.8	10	198	0.58
Total	100		4248	12.42
Total trips needed at 29/bus			146	

Thus, 146 bus trips are required to accommodate this portion of the public.

### Two-Auto Households

In some cases, it will also be true that while a household may own two automobiles, both automobiles will be unavailable. While the percentage of two-auto households affected will be small, the absolute number of persons who may be affected is significant. The results of the analysis for this portion of the population are summarized as follows:

Table 7

#### Two Auto Households

Percent two-auto households	44
Two-auto households	21,337
Non-user population	26,564

Travel time	Percent Commuters	Percent no car avail.	No. need help
less than or equal to 5	9.5	0.12	3
6-10	11.1	0.12	4
11-15	12.2	0.12	4
16-20	14.5	0.25	10
21-25	6.5	0.37	6
26-30	12.7	0.75	25
31-45	12.4	1.49	49
46-60	8.7	3.10	72
61-90	4.3	12.42	142
greater than 90	2.3	12.42	76
Don't know	5.8	1.24	19
Depend. pop.	100		410
Total trips needed at 29/bus			14

As above, the percentage of two auto households is from the 1980 U.S. Census, the number of households is from the LILCO population estimate and the census population per household. Non-user population "left behind" per household was estimated at 1.5 persons, reflecting 2 drivers away from the household. The figures in the column of Table 7 marked "Percent no car available" are equal to 12.4 percent of the same column in Table 5. The basis for this distribution is that Table 6 shows there is a 12.4 percent chance that the first car in the household will not be available, and it is assumed that the distribution of the availability of the second car is also 12.4 percent. Thus, both cars would not be available to 12.4 percent x 12.4 percent, or 1.53 percent, of the households in the EPZ owning two automobiles. As Table 7 demonstrates, this portion of the population will require an additional 14 bus trips.

#### Transit-Dependent Workers

As subpart 2 of Contention 67.A observes, LILCO has failed in its estimates to account for people who commute into the EPZ by bus and therefore will be dependent upon bus transportation to get out of the EPZ. The needs of transit-dependent workers are summarized in Table 8 below:

Table 8

Transit-Dependent Workers

Jobs located in EPZ	49,000
Percent transit commuters	3.9
Number transit commuters	1,920
Total trips needed at 29/bus	66

The number of jobs located within the EPZ is estimated from 1980 U.S. Census data on the percentage of Suffolk County population in the work force (45%), times LILCO's estimated EPZ population (157,601), times the percentage, from 1980 U.S. census data, of Suffolk County residents working in Suffolk County. The estimated percentage of transit-dependent commuters (3.9) was set at 80 percent of the figure from LILCO's NCTR survey, reflecting judgment of the differential between transit dependency of resident commuters (the NCTR universe) and of those who work within the EPZ. As shown in Table 8, 66 additional bus trips are required to evacuate the transit-dependent population.

30 Percent Adjustment Factor

Going back to Table 1, it can be seen that my analysis, using the four demand factors analyzed above, shows a demand for buses by 14,337 persons who will require 494 bus trips to

accommodate them all. The number of persons estimated to require transportation is 29 percent more than LILCO has estimated (11,097) and the number of trips required is 31 percent more than LILCO's estimate (377). Mr. Goldblatt's June 22, 1983 memo suggests, however, that demand estimates should be increased by 30 percent to account for uncertainties. (Attachment 1 at 3). Presumably, LILCO's estimates in Appendix A are based on such an uncertainty factor. If the 30 percent uncertainty factor is meant to account for segments of the population I have analyzed, then it is justifiable, for purposes of comparison to LILCO's calculations, to apply that factor to my own estimates. Applying the 30 percent uncertainty factor to my estimates shows a total demand of 18,638 persons within the EPZ, or 68 percent more people than LILCO's estimate of 11,097. This will require 643 bus trips -- 70 percent more than LILCO has estimated.

Q. How many buses will LILCO therefore require to complete the 643 bus trips?

A. [Herr] Using the information presented in Table XIII of Appendix A, I have calculated that LILCO's scheme involves 1.6 route trips per bus. At that rate, 643 route trips will require 402 route buses, not the 236 route buses estimated by



LILCO. If the 30 percent uncertainty factor is not applied, then the 541 route bus trips I have estimated absent that figure will require 309, rather than 236 route buses.

Q. What is the significance of LILCO's underestimation of the demand for transportation from the EPZ?

A. [Herr] It is essential that estimates of bus requirements for an evacuation not be too low. If anything, they should err on the high side to assure adequate capacity. Clearly, LILCO's estimates provide no assurance of adequacy. The consequence of its underestimation would be that there would not be enough buses available to provide timely evacuation of people without access to automobiles in the event of an emergency at Shoreham requiring evacuation.

Contention 67.C and 67.D

Q. Please state Contentions 67.C and 67.D.

A. [Herr, Michel] Those contentions state:

Contention 67.C. The staggered departures and multiple bus runs necessary under LILCO's plan to evacuate the people in each zone (Appendix A, at IV-76 to IV-163; OPIP 3.6.4, at 11-32), even using LILCO's estimates of the number of people likely to need such evacuation, will result in evacuation travel times far longer than those set forth in Appendix A at V-8a.

Specifically, the LILCO Plan provides that the bus routes will terminate at designated "transfer points" with each bus in many cases required to make more than one run. As noted in Contention 67.D, several transfer points are in the EPZ. Transfer buses will transport the evacuees from the transfer point to relocation centers. LILCO's estimated route times begin and end with the assumed transfer points. (See Appendix A, at IV-76 to IV-163; V-8a; OPIP 3.6.4). LILCO's estimated evacuation times, however, assume that route buses will be dispatched from transfer points and return to the transfer points at specific intervals (or "headways") and that there will be little or no waiting at the transfer points for buses to the relocation centers. Furthermore, the last transfer buses are assumed to clear the EPZ 15 minutes after leaving the transfer points. (Appendix A at V-7). These assumptions are erroneous, however, since they do not consider the severe traffic congestion that will exist, for reasons set forth in Contention 65 at the same time that the route and transfer buses are attempting to make their trips. Thus, the route times for each route bus will be longer than estimated by LILCO. In addition, it is likely to take far longer than 15 minutes for the last transfer buses to clear the EPZ after leaving the transfer points.

Contention 67.D. The eleven new transfer points designated by LILCO do not appear to have adequate structures which could provide shelter from adverse radiological or weather conditions for evacuees while they are waiting to be transferred to relocation centers. Furthermore, four of the eleven transfer points are inside the EPZ and one is on the EPZ boundary. In addition, of the remaining six transfer points, three are located approximately one-half mile or less beyond the EPZ boundary, one is approximately one mile from the

EPZ boundary and two are approximately two and a half miles beyond the boundary. Under the LILCO Plan, people are likely to be kept waiting for substantial time periods because of delays, congestion, etc., before they are transported from transfer points to relocation centers. Leaving people at the eight transfer points within or very close to the EPZ will not provide protection for them. Leaving them at the other three transfer points, all less than five miles beyond the EPZ boundary, conflicts with the intent of NUREG 0654, Section II.J.10.h, and could result in these people also receiving health-threatening radiation doses.

Q. What is the concern behind Contention 67.C?

A. [Herr] As stated above, LILCO's evacuation times for people without cars are based on the assumption that buses will be dispatched from and returned to "transfer points" at specified intervals (or "headways") and that, once arriving at a transfer point, there will be almost no waiting for transfer buses to take people to relocation centers. Table XIII of Appendix A sets out the schedule of runs for all of the route and transfer buses expected by LILCO to service the EPZ.

The concern expressed in Contention 67.C is that while on paper LILCO's intricate scheme may appear reasonable and practical, in reality LILCO would confront conditions that would render its dispatching and routing schedules useless and its estimates inaccurate. Major impediments to the effective

operation of the bus scheme include problems involved in mobilizing buses and bus drivers which, as noted in the testimony of the Suffolk County Police Department on Contention 27, is likely to take hours longer than the 120 minutes LILCO estimates. (Appendix A at IV- 74b). Furthermore, the route buses and transfer buses traveling through the EPZ would encounter severe traffic congestion as described in the County's testimony on Contention 65. These conditions would not only delay the buses and increase evacuation times, but, further, would prevent the buses from traveling their routes at regularly staggered intervals. As a result, people will be left standing along bus routes and at transfer points for substantial periods of time, thus risking greater radiological exposure in the event of an accident at Shoreham.

[Herr, Michel] A related concern is expressed in Contention 67.D. In Revision 3 of its Plan, LILCO substituted eleven new transfer points for the twelve transfer points proposed in previous Revisions.<sup>5/</sup> The new transfer points are:

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<sup>5/</sup> The transfer points that had been proposed by LILCO in all its previous versions of the Plan were school buildings. The change was apparently necessitated by LILCO's realization that as stated in the original version of Contention 24.I, LILCO had no agreements with the appropriate school officials authorizing LILCO to use the buildings. See also discussion below of Contention 24.I with respect LILCO's new proposed transfer points.

<u>Transfer Point</u>	<u>Location</u>	<u>Distance from SNPS (miles)</u>
Brookhaven National Lab (Visitor's Center)	William Floyd Pkwy.	7
<u>A&amp;P, Miller Place</u>	<del>LILCO-Right-of-Way-(ROW)</del> <del>North-of</del> Rt. 25A <u>and</u> <u>Miller Place Road</u>	6
Middle Island Shopping Center	Rt. 25 and Middle Island Road	7
LILCO Brookhaven Substation	North of the LIE off Weeks Ave.	7
<u>Coram Drive-In Plaza</u> <u>Shopping Center</u>	Middle Country Rd. & Rt. 112	10
LILCO Property	Between Norwood Ave. & Nesconset Hwy., west of Terryville Rd.	10
North Bellport Restaurant	Bellport Ave., southwest of Sunrise Hwy.	13
<u>Shirley Mall Shopping</u> <u>Center</u>	Montauk Hwy. <u>west</u> <del>east</del> of William Floyd Pkwy.	11
Eastport Substation	Rt. 27A in Eastport	11
Warehouse	Doctors Path & Old Country Rd.	12
North Patchogue Substation	Medford Ave. & <u>Shaber Rd.</u>	14

These transfer points are plotted on the map which is Attachment 2 to this testimony. As is evident from reviewing Attachment 2, several of the transfer points are in or very near the EPZ. Yet, most of the transfer points are open areas, which afford no shelter (either from radiological exposure or inclement weather) to evacuees waiting to be transferred to relocation centers.

[Michell] I personally supervised the taking of aerial photographs of ~~some of~~ LILCO's transfer points on February 1 and March 20, 1984. Some of those ~~These~~ photographs are Attachments 3-8 3-9 to this testimony.

[Herr, Michell] As Attachments 3-8 3-9 show, many of LILCO's transfer points do not have buildings or shelters capable of accommodating the hundreds or thousands of people expected at each transfer point. Note, for instance, that the transfer points located at ~~LILCO's right-of-way at Miller Place Road-(Attachment-3)~~, the Brookhaven substation (Attachment 4), the and Norwood Avenue property (Attachment 6), and the North Patchogue substation (Attachment 9) have no buildings available for shelter. LILCO estimates that these transfer points will be handling ~~2037~~, 410, and 1768 and 552 evacuees, respectively.



The Brookhaven substation is well within the EPZ while the Norwood Avenue property is just outside the border of the EPZ. (Appendix A at IV-74g and h). Furthermore, ~~the transfer points at the Shirley and Coram Drive Ins (Attachments 5 and 7) offer no shelter other than the small refreshment stands located in the middle of each location. LILCO estimates that the Shirley Drive In will handle 1484 evacuees while the Coram Drive In will handle 2030 evacuees. As displayed in Attachment 2, two of the above five locations (the Miller Place Road right-of-way and the Brookhaven Substation) are within the EPZ and the other three are on or just outside the EPZ boundary. while LILCO has entered into lease agreements with the owners of seven of the eight non-LILCO-owned transfer points (there is, as yet, no agreement with the owners of the Coram Plaza), none of the agreements appear to permit the use of buildings on the properties. Thus, for example, the agreement with the Shirley Mall refers only to use of "the Western-most portion of the parking lot. . . ."~~ No shelter is provided at these sites for evacuees. As a result, many people will be forced to wait within or near the EPZ for prolonged periods, without adequate shelter from either radiological contamination or inclement weather.

Likewise, it should be noted that many of the new transfer points are unpaved including ~~the-LILCO-right-of-way-at-Miller Place-Road-(Attachment-3)~~, the Brookhaven Substation (Attachment 4), ~~the-LILCO-property-off-Norwood-Avenue-(Attachment-6)~~, and the warehouse located at Doctors Path (Attachment 8), and the North Patchogue substation located at Medford Road and Shaber Road (Attachment 9).<sup>6/</sup> This is relevant with respect to the concern about delays raised in Contention 67.C since, in inclement weather, these transfer points would become extremely muddy. Buses stuck in the mud would obviously delay evacuation times and increase the public's risk of exposure to health-threatening doses of radiation.

Contention 24.I.

Q. What is the concern expressed in Contention 24.I?

A. [Herr] In essence, Contention 24.I. alleges that LILCO has no agreements with the owners of the non-LILCO property which LILCO's Plan proposed for bus transfer points.

Q. Do you agree with Contention 24.I?

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<sup>6/</sup> A small portion of the North Patchogue substation is paved, however the vast majority of the property is not.

A. [Herr] Yes. There are eight proposed transfer points which LILCO does not own. ~~at-least-five-bus-transfer-points~~ ~~for-which-there-is-no-evidence-of-ownership-by-LILCO.~~ They are Brookhaven National Lab, the Middle Island Shopping Center, the Miller Place A&P, the warehouse located at Doctor's Path and Old Country Road, the Coram Drive-In, Coram Plaza, the Shirley Drive-In Mall, and the North Bellport Restaurant and the North Patchogue Substation. While LILCO proposes to use the Coram Plaza as a substitute for the Coram Drive-In, it does not have an agreement with the Coram Plaza. Also, LILCO's agreement with the owners of the North Bellport Restaurant property only permits the use of the property in drills, not an actual emergency. (See Attachment 22.E to LILCO's Testimony on Contention 24). In addition, as noted above, LILCO's agreements appear to permit use of parking lots only and do not provide for buildings on these properties to be used as shelters. In fact, the agreements for the Middle Island Shopping Center, the Miller Place A&P and the Shirley Plaza explicitly limit the lease agreements to the parking lots around those facilities. None of the agreements for the non-LILCO transfer points provide that buildings on the respective properties will be available for the purpose of sheltering evacuees. ~~Also, we are at this time unsure of the ownership of the warehouse located at~~

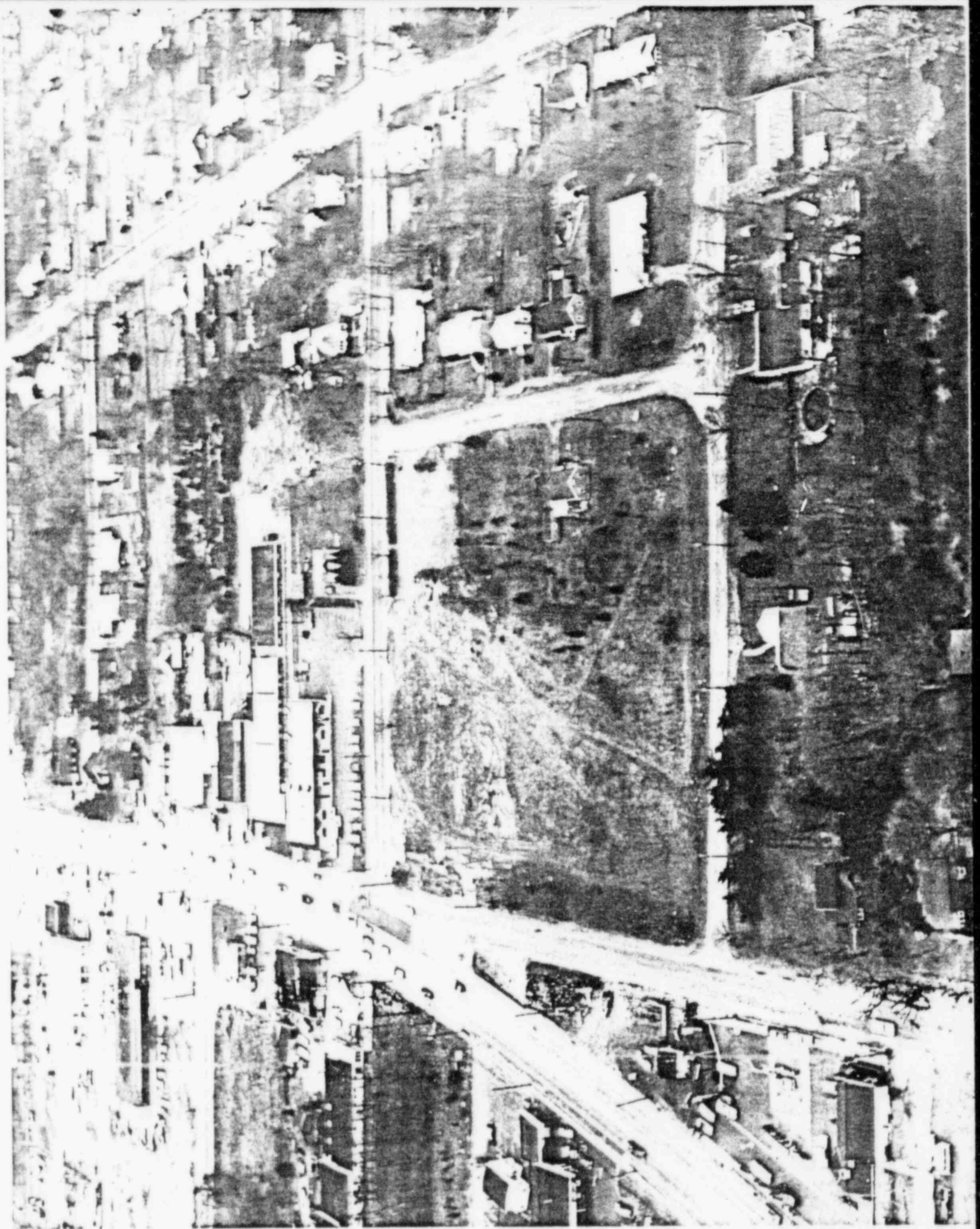
Becker's Path and Old Country Road. -- LILCO's Plan does not contain agreements with any owners of these properties to use those properties during a radiological emergency. -- Therefore, there is no assurance that those transfer points will be available to LILCO in the event of an accident at Shoreham.

Q. Please summarize your testimony.

A. [Herr] LILCO has substantially underestimated the number of buses that would be required to evacuate people who will not have access to automobiles during a radiological emergency. Furthermore, LILCO's evacuation time estimates for people without access to automobiles are too low because, under the conditions that would exist in an emergency, the buses LILCO expects to be driving routes and transferring evacuees to relocation centers would be delayed by long mobilization times and heavy traffic congestion. As a result, people would be left waiting for route buses or transfer buses for long periods of time, thus increasing their chances of being exposed to health-threatening doses of radiation. Also, LILCO has no agreements with ~~any of~~ the owners of the Coram Plaza Shopping Center and the North Bellport Restaurant, ~~non-LILCO properties~~ which LILCO's Plan proposes to use as transfer points, to use those properties during a radiological emergency.

[Herr, Michel] Finally, it is clear from Attachments 3-8 3-9 and LILCO's lease agreements that many of LILCO's transfer points offer no shelter to the public and, with many of the transfer points being in or very close to the EPZ, the public's chances of being exposed to health-threatening doses of radiation would be substantially increased.





ATTACHMENT 9



UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

\_\_\_\_\_  
In the Matter of )  
 )  
 )

LONG ISLAND LIGHTING COMPANY )

(Shoreham Nuclear Power Station, )  
Unit 1) )  
\_\_\_\_\_ )

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

CERTIFICATE OF SERVICE

I hereby certify that copies of SUFFOLK COUNTY MOTION TO AMEND DIRECT TESTIMONY REGARDING CONTENTIONS 67 and 24.I and DIRECT TESTIMONY OF PHILIP B. HERR AND CAPTAIN EDWIN J. MICHEL ON BEHALF OF SUFFOLK COUNTY REGARDING CONTENTIONS 67 AND 24.I -- EVACUATION OF PERSONS WITHOUT ACCESS TO AUTOMOBILES AND LACK OF AGREEMENTS WITH TRANSFER POINT OWNERS dated April 30, 1984, have been served to the following this 30th day of April 1984 by U.S. mail, first class, except as otherwise noted.

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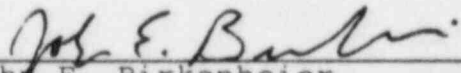
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Dated: April 30, 1984

\* By Hand  
# By Federal Express  
## Motion by Telecopier;  
Testimony by Federal Express