

RELATED CORRESPONDENCE

LILCO, June 4, 1984

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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Before the Atomic Safety and Licensing Board

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In the Matter of	)	
	)	
LONG ISLAND LIGHTING COMPANY	)	Docket No. 50-322-OL-3
	)	(Emergency Planning Proceeding)
(Shoreham Nuclear Power Station,	)	
Unit 1)	)	

SURREBUTTAL TESTIMONY OF EDWARD B. LIEBERMAN  
ON BEHALF OF LONG ISLAND LIGHTING COMPANY  
ON PHASE II EMERGENCY PLANNING CONTENTION 67

1. Q. Please state your name and business address.
 

A. My name is Edward B. Lieberman. My business address is KLD Associates, Incorporated, 300 Broadway, Huntington Station, New York, 11746.
  
2. Q. Could you briefly summarize the purpose of this surrebuttal testimony?
 

A. Yes. In his surrebuttal testimony, Professor Herr asserted that the distribution of travel times for commuters within the EPZ was "very much higher if one examined 1980 census data than if one used the NCTR results." Tr. 8486. This was the first time that Professor Herr had questioned the travel time distribution obtained from NCTR survey. A closer examination of the travel time distribution obtained by Professor Herr from the 1980 census data<sup>1/</sup> reveals that it is not directly

<sup>1/</sup> The distribution is presented in Suffolk County Exhibit EP-42, Table ANR-1, column 2. SC Ex. EP-42, ff. Tr. 8522.

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comparable to the distribution of travel times from the NCTR survey which is currently in the record.<sup>2/</sup>

The purpose of this testimony is to demonstrate that had Professor Herr used the census data and NCTR survey results to produce comparable data sets, he would have found that differences between the sets are not statistically significant. Thus, rather than changing the number of transit-dependent persons, the use of 1980 census data as a source of commuter travel times would only have confirmed the analyses presented in LILCO's direct and rebuttal testimony on Contention 67.

3. Q. Why isn't the distribution of travel times for commuters obtained by Professor Herr from the 1980 census data comparable to the distribution from the NCTR survey?

A. The distributions that are currently in the record are different in three respects:

- 1) the distributions present data for different population groups. The census data reported by Professor Herr are for Suffolk County, while the NCTR survey results are specific to the population within the Shoreham EPZ;
- 2) the census data used by Professor Herr contain travel time information for all workers not working at home. This information includes travel times for workers using any of four commuting means: (1) automobile or truck,

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<sup>2/</sup> See Attachment 9, Table 8 to the Joint Attachments for 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 Contentions 65 and 23.C., D., and H.

(2) public transportation, (3) bicycle or walking, and (4) motorcycle or other means. The NCTR results are based only on the first of these four categories, namely, workers who commute to work by car; and

- 3) the distributions have been reported in terms of different time intervals.

Of these three differences, the last is the most significant. A comparison of the time intervals used to report the census and NCTR data indicates that multiples of 5 minutes form the lower bounds of the census intervals while they form the upper bounds of the NCTR intervals.

Time Intervals Reported

<u>Census data (min.)</u>	<u>NCTR results (min.)</u>
0-4	5 or less
5-9	6-10
10-14	11-15
15-19	16-20
20-29	21-25
30-44	26-30
45-59	31-45
60 plus	46-60
	61-90
	greater than 90

The practical effect of this difference in the reporting of time intervals is to create the illusion of a higher distribution of travel times for the census data than for the corresponding NCTR data. To better illustrate this point one needs to examine Attachment 1 to this testimony, which is a printout of 1980 census data for

travel times of workers for the Town of Brookhaven presented on a minute-by-minute basis.<sup>3/</sup> These data indicate that people tend to answer questions regarding their travel times by responding with times that are some multiple of five minutes. Thus, it is the travel times expressed as multiples of five minutes that are the critical data points in comparing time intervals.

4. Q. How do these three differences affect the comparison of the two travel time distributions?

A. I will address each of the differences in turn. First, Professor Herr has presented census data for travel times for all workers in Suffolk County. These data are also available on township and census tract-by-census tract bases. We have obtained those data for the Town of Brookhaven and for the Shoreham EPZ, using the same process of summing census tract data that was used in LILCO Exhibit EP-32.

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<sup>3/</sup> While it would be preferable to have this information on a Shoreham EPZ-specific basis, the census tapes at this level of detail are available only on a town basis and not on a census tract-by-census tract basis. Therefore, the information for the Town of Brookhaven was chosen as the best approximation for EPZ-specific data.

Travel Time Distributions from 1980 Census

<u>Time Interval (min.)</u>	<u>Suffolk County (%)</u>	<u>Town of Brookhaven (%)</u>	<u>Shoreham EPZ (%)</u>
0-4	2.1	2.0	2.7
4-9	9.8	9.3	9.4
10-14	13.5	13.0	12.3
15-19	13.4	13.3	13.2
20-29	17.4	17.4	18.8
30-44	17.7	18.0	17.4
45-59	7.7	8.2	7.9
60 plus	18.4	18.8	18.3

A review of these data shows that while there are some variations among the distributions for Suffolk County, the Town of Brookhaven and the Shoreham EPZ, these variations are not significant and the three distributions are basically identical.

Second, the census distribution for Suffolk County presented by Professor Herr as well as those for the Town of Brookhaven and the Shoreham EPZ presented above contain travel time distributions for all workers and are not directly comparable to the NCTR distribution which describes just those commuting by automobile. Since the group of transit-dependent individuals that are at issue are those belonging to automobile-owning households where the automobile will not be available should an evacuation be ordered, it follows that the NCTR data base is the more proper one. Comparable information can be obtained from the census data if one goes back to the detailed census tapes which include the

original individual responses. Attachment 1 contains the detailed census information for the Town of Brookhaven.<sup>4/</sup> A comparison of travel time distributions for all workers and for those workers who travel to work by car indicates a significant difference in the percentage of commuters traveling 60 minutes or more.

Travel Time Distributions from 1980 Census  
for the Town of Brookhaven

<u>Time Interval (min.)</u>	<u>All Workers (%)</u>	<u>Workers Traveling By Car, Truck, or Van (%)</u>
0-4	2.0	1.4
5-9	9.3	9.1
10-14	13.0	13.3
15-19	13.3	13.7
20-29	17.4	18.4
30-44	18.0	19.1
45-59	8.2	8.7
60 plus	18.8	16.3

This difference is due to the fact that over 55% of the workers traveling more than 90 minutes do so by means of public transportation.<sup>5/</sup>

Third, if one uses the same intervals to report the census data and NCTR results the comparability of the two data set becomes obvious. This comparison can be made either by translating the NCTR data into the same

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<sup>4/</sup> As noted in footnote 3 above, it would have been preferable to present this information for the Shoreham EPZ.

<sup>5/</sup> It is interesting to note that only 4.5% of the workers in the Town of Brookhaven travel to their jobs by means of public transportation.

time intervals as the census data or vice versa. To present a comprehensive comparison of the data, we have done both, using census data for the Town of Brookhaven since that is the only census data base we have that is detailed enough to permit this permutation. (Remember that the NCTR data are for the EPZ, which lies predominantly in the eastern part of Brookhaven township, with about 10% of the EPZ population in Riverhead township).

Comparison of Travel Time Distributions  
Using Census Data Time Intervals

<u>Time Interval</u> <u>(min.)</u>	<u>Census Data</u> <u>(%)</u>	<u>NCTR Results</u> <u>(%)</u>
0-4	1.4	3.4
5-9	9.1	8.7
10-14	13.3	10.6
15-19	13.7	12.5
20-29	18.4	21.9
30-44	19.1	20.8
45-59	8.7	7.1
60 plus	16.3	15.1

Comparison of Travel Time Distributions  
Using NCTR Data Time Intervals

<u>Time Interval</u> <u>(min.)</u>	<u>Census Data</u> <u>(%)</u>	<u>NCTR Results</u> <u>(%)</u>
0-5	9.0	10.1
6-10	13.8	11.8
11-15	14.2	12.9
16-20	13.5	15.4
21-25	5.2	6.9
26-30	12.0	13.5
31-45	13.7	13.2
46-60	9.7	9.2
61-90	6.5	4.6
greater than 90	2.3	2.4

These two tables clearly demonstrate that the data from the 1980 census and from the NCTR survey are closely comparable and that Professor Herr's assertion that the census data reveal "very much higher" travel times is simply incorrect. To provide further substantiation for this conclusion, we performed a Kolmogorov-Smirnov statistical test on these data. This test revealed that at the 99% confidence level the hypothesis that there is no statistically significant difference between the NCTR data and the 1980 census data cannot be rejected.

Accordingly, it is my continuing belief that use of the NCTR survey data is a proper means for estimating the number of transit-dependent persons within the Shoreham EPZ and that the later use of 1980 census, which did not become available until almost one year after the NCTR survey, would not have produced a significantly different result.



MCD 310, COUNTY 103, STATE 36

II-4 MEANS OF TRANSPORTATION & CARPOOLING OF WORKERS NOT WORKING AT HOME BY TRAVEL TIME

	ALL WORKERS NOT WORKING AT HOME	CAR, TRUCK, OR VAN	PUBLIC TRANSPORTATION	BICYCLE OR WALKED ONLY	MOTORCYCLE OR OTHER MEANS
TOTAL, TRAVEL TIME	135077	124057	6015	4050	955
1 MINUTE	503	130	0	360	13
2 MINUTES	984	579	20	385	0
3 MINUTES	875	700	0	168	7
4 MINUTES	335	270	10	55	0
5 MINUTES	10739	9525	18	1055	141
6 MINUTES	228	214	14	0	0
7 MINUTES	907	867	0	40	0
8 MINUTES	627	627	0	0	0
9 MINUTES	63	63	0	0	0
10 MINUTES	16409	15395	155	691	168
11 MINUTES	42	42	0	0	0
12 MINUTES	852	803	8	29	12
13 MINUTES	191	191	0	0	0
14 MINUTES	24	24	0	0	0
15 MINUTES	17497	16589	210	612	86
16 MINUTES	65	65	0	0	0
17 MINUTES	153	153	0	0	0
18 MINUTES	247	215	0	24	8
19 MINUTES	0	0	0	0	0
20 MINUTES	16800	16301	120	262	117
21 MINUTES	22	22	0	0	0
22 MINUTES	79	79	0	0	0
23 MINUTES	147	134	0	13	0
24 MINUTES	42	42	0	0	0
25 MINUTES	6248	6125	39	40	44
26 MINUTES	0	0	0	0	0
27 MINUTES	0	0	0	0	0
28 MINUTES	113	113	0	0	0
29 MINUTES	0	0	0	0	0
30 MINUTES	15201	14802	190	119	90
31 MINUTES	0	0	0	0	0
32 MINUTES	5	5	0	0	0
33 MINUTES	0	0	0	0	0
34 MINUTES	0	0	0	0	0
35 MINUTES	3810	3711	24	43	32
36 MINUTES	14	14	0	0	0
37 MINUTES	0	0	0	0	0
38 MINUTES	70	70	0	0	0
39 MINUTES	10	10	0	0	0
40 MINUTES	5195	5055	103	21	6
41 MINUTES	0	0	0	0	0
42 MINUTES	16	16	0	0	0
43 MINUTES	14	14	0	0	0
44 MINUTES	0	0	0	0	0
45 MINUTES	8303	8032	94	30	97
46 MINUTES	0	0	0	0	0
47 MINUTES	0	0	0	0	0
48 MINUTES	19	19	0	0	0
49 MINUTES	0	0	0	0	0
50 MINUTES	2229	2215	7	7	0
51 MINUTES	0	0	0	0	0
52 MINUTES	0	0	0	0	0



LILCO, June 4, 1984

CERTIFICATE OF SERVICEDOCKETED  
USNRC

In the Matter of  
 LONG ISLAND LIGHTING COMPANY  
 (Shoreham Nuclear Power Station, Unit 1) JUN -5 A10:46  
 (Emergency Planning Proceeding)  
 Docket No. 50-322-OL-3

OFFICE OF SECRETARY  
DOCKETING & SERVICE

I certify that copies of LILCO'S MOTION TO FILE SURREBUTTAL TESTIMONY ON PHASE II EMERGENCY PLANNING CONTENTION 67 and SURREBUTTAL TESTIMONY OF EDWARD B. LIEBERMAN ON BEHALF OF LONG ISLAND LIGHTING COMPANY ON PHASE II EMERGENCY PLANNING CONTENTION 67 were served this date upon the following by first-class mail, postage prepaid, or by hand (as indicated by one asterisk) or by Federal Express (as indicated by two asterisks).

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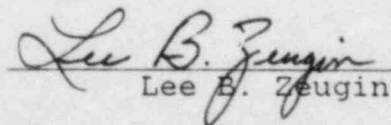
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