

LILCO, July 3, 1984

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

04-01-5 P2:07

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	)	Proceeding)
Station, Unit 1	)	

LILCO's SUPPLEMENTAL TESTIMONY ON  
CONTENTION 85 (RECOVERY AND REENTRY)

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

A: [Cordaro] My name is Matthew C. Cordaro. My business address is Long Island Lighting Company, 175 Old Country Road, Hicksville, New York 11801.

[Daverio] My name is Charles A. Daverio. My business address is Long Island Lighting Company, 175 Old Country Road, Hicksville, New York 11801.

[Watts] My name is Richard J. Watts. My business address is Impell Corporation, 225 Broad Hollow Road, Melville, New York 11747.

2. Q: Please state your professional qualifications.

A: Our professional qualifications and roles in emergency planning for the Shoreham Nuclear Power Station are detailed on pages 2 and 3 of our earlier

testimony on Contention 85 and in the document entitled "Professional Qualifications of LILCO Witnesses." These qualifications and roles have not changed since the filing of that testimony on March 21, 1984.

3. Q: Would you briefly describe the purpose and scope of this supplemental testimony?

A: This testimony addresses a newly developed implementing procedure, OPIP 3.10.2, Rev. 4, which sets forth a detailed method for calculating the total population dose. This procedure is responsive to a specific comment made by the Regional Assistance Committee of the Federal Emergency Management Agency in its Report dated February 10, 1984. In that Report, FEMA/RAC maintained that LILCO's Emergency Plan did not include a method for estimating total population exposure, as provided in NUREG-0654, II.M.4. See FEMA/RAC Report to the Nuclear Regulatory Commission at 50. This observation was also made in the Testimony of Gregory C. Minor on Behalf of Suffolk County on Contentions 85 and 88. This supplemental testimony, then, delineates the methodology that will be used by LERO to establish a total population dose.

4. Q: Does LILCO's Emergency Plan set forth a method or procedure for calculating the total population dose resulting from a radiological release?

A: Yes. LILCO's procedure for calculating total population dose is set forth in OPIP 3.10.2, Rev. 4. This procedure is appended to this testimony as Attachment 1.

5. Q: Please describe LILCO's procedure for calculating total population dose.

A: Pursuant to Section 5.3.1 of OPIP 3.10.2, Rev. 4, the Radiation Health Coordinator is responsible for calculating the total population dose. The total population dose is to be derived as follows: First, the zone population figure is multiplied by the whole body dose and thyroid dose rates to determine the hourly dose for each zone. These calculations are entered in the "dose" column of the Total Population Dose Calculation Worksheet, which is appended to OPIP 3.10.2 as Attachment 1. The figures in each of the dose columns may then be added to obtain the total dose, which is entered in column 34 of Attachment 1. Next, the applicable dose reduction factor, which is set forth in Attachment 3 of OPIP 3.10.2, is entered in column 35 of Attachment 1. The total dose (column 34) is then multiplied by the dose reduction factor

(column 35), yielding a value which is to be placed in column 36 of Attachment 1. The sum of the values set forth in column 36 represents the total population dose.

6. Q: Where does this procedure fit within the overall framework of recovery and reentry planning?

A: As stated in Step 3.0 of OPIP 3.10.2, there is no immediate need for a total population dose estimate in the event of a radiological emergency. This information may be used in assessing the potential long-term health consequences, if any, of the radiological release. Accordingly, LERO will determine population estimates and dose projections only after due deliberation within that organization and consultation with other offsite agencies.

7. Q: Does that conclude your supplemental testimony?

A: Yes.

EPC \_\_\_\_\_

Approved: \_\_\_\_\_

Effective Date \_\_\_\_\_

OPIP 3.10.2  
Page 1 of 4

## OPIP 3.10.2 TOTAL POPULATION DOSE

1.0 PURPOSE

This procedure provides a method for calculating total population dose (man-rem) received as a result of a radiological release.

2.0 RESPONSIBILITY

- 2.1 The Manager of Local Response is responsible for the accumulation of data during the emergency to enable the implementation of this procedure.
- 2.2 The Radiation Health Coordinator is responsible for the implementation of this procedure.
- 2.3 The Evacuation Coordinator is responsible for the acquisition of required population data.

3.0 PRECAUTIONS

This procedure should be implemented after more immediate actions required of LERO are underway. In addition, completion of this procedure will require data on dose projections, environmental surveys and population estimates which will be developed upon consultation with other cognizant members of LERO, LILCO, or other offsite agencies.

4.0 PREREQUISITES

- 4.1 A radiological release has taken place from SNPS.
- 4.2 Necessary dose rate and population data is gathered during the emergency to the extent practicable.
- 4.3 The radiological release has affected populated areas within the EPZ.

## 5.0 ACTIONS

### 5.1 The Radiation Health Coordinator will:

- 5.1.1 Fill in population data, column 3 on Attachment 1, with seasonal population data from Attachment 2.
- 5.1.2 When a protective action is recommended to the public via EBS, note the affected zones in column 2 of Attachment 1.
- 5.1.3 When a radiological release begins, fill in both the whole body and thyroid dose rate for all zones. These data are based upon either field measurements or dose projections.
- 5.1.4 Repeat Step 5.1.3 for each hour that the radiological exposure continues. If ten hours is exceeded, use additional sheets.

### 5.2 If an evacuation is recommended, the Evacuation Coordinator will:

- 5.2.1 Estimate the population for each zone periodically and fill in the appropriate column on the worksheet. Sources of information for this determination are:
  - o Results of phone survey done by Marketing Evaluations.
  - o Reports from Traffic Guides, Evacuation Route Spotters, and Transfer Point Coordinators upon their return from the field.
  - o Estimated evacuation times from Section V of Appendix A.

5.2.2 If sheltering is the recommended protective action, then the total population for each zone will be used for each hour. If significant amounts of voluntary evacuation are reported, then estimate the number and subtract it from the zone totals.

5.3 The Radiation Health Coordinator will:

5.3.1 Calculate the total population dose as follows:

- a. Multiply the zone population by the whole body and thyroid dose rates to determine the hourly dose for each zone.
- b. Add the dose columns horizontally to obtain a total dose in column 34 of Attachment 1.
- c. Place applicable dose reduction factor from Attachment 3 in column 35 of Attachment 1.
- d. Multiply column 34 and 35 of Attachment 1 and place results in column 36.
- e. Sum all values in column 36 and place total at bottom. This is the total population dose received.

5.3.2 Forward the results to the Health Services Coordinator.

## 6.0 ATTACHMENTS

1. Total Population Dose Calculation Worksheet
2. Distribution of Projected 1985 Population by Zone
3. Dose Reduction Factors



# TOTAL POPULATION DOSE CALCULATION WORKSHEET

1 ZONE	2 PAR	3 TOT. POP.	1ST. HOUR *			2ND. HOUR			3RD. HOUR			4TH. HOUR			5TH. HOUR			6TH. HOUR			7TH. HOUR			8TH. HOUR			9TH. HOUR			10TH. HOUR			34 TOT. DOSE	35 SHEL DOSE	36 ZONE TOT. DOSE
			POP.	WB DR THY DR	DOSE	POP.	WB DR THY DR	DOSE	POP.	WB DR THY DR	DOSE	POP.	WB DR THY DR	DOSE	POP.	WB DR THY DR	DOSE	POP.	WB DR THY DR	DOSE	POP.	WB DR THY DR	DOSE	POP.	WB DR THY DR	DOSE	POP.	WB DR THY DR	DOSE						
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\* SUBSTITUTE POPULATION AND DOSE RATES FOR OTHER PERIODS IF IT IS NOT PRACTICAL TO ESTIMATE HOURLY VALUES.



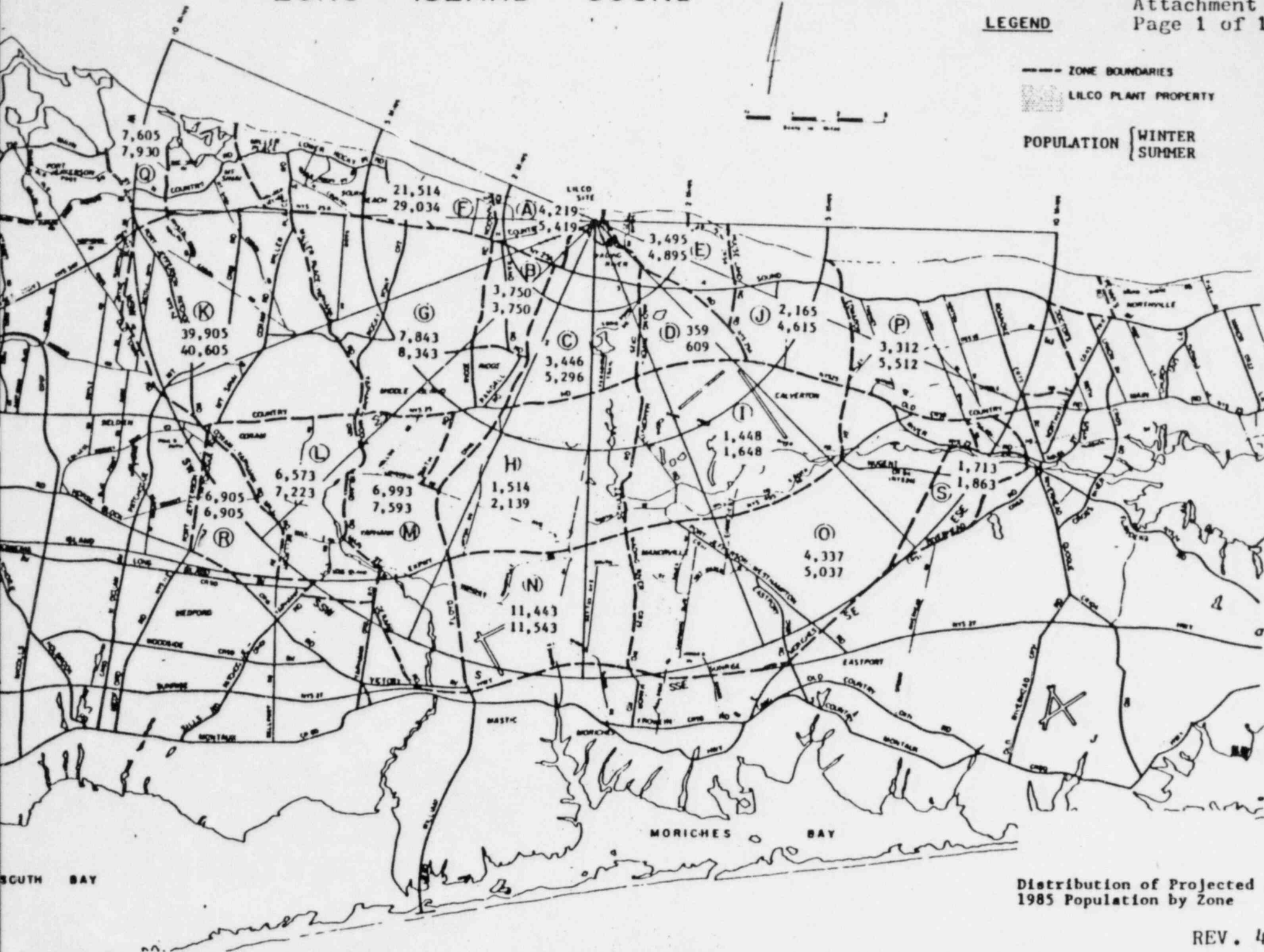
# LONG ISLAND SOUND

OP 3.10.2  
Pa. 3b of 4  
Attachment 2  
Page 1 of 1

## LEGEND

--- ZONE BOUNDARIES  
 LILCO PLANT PROPERTY

POPULATION { WINTER  
 SUMMER



Distribution of Projected  
 1985 Population by Zone

REV. 4

## DOSE REDUCTION FACTORS

<u>Protective Action</u>	<u>DRF</u>
1. Evacuation	1.00
2. Sheltering	
Whole Body Dose	0.70
Thyroid Dose --	
Release Duration:	
1.0 hour	0.50
2.0 hours	0.75
3.0 hours	0.83
4.0 hours	0.86
5.0 hours	0.90
6.0 hours	0.92
7.0 hours	0.93
8.0 hours	0.94
9.0 hours	0.94
10.0 hours	0.95
11.0 - 15.0 hours	0.96
16.0 - 20.0 hours	0.97