LILCO, July 30, 1984

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)	)	Proceeding)
	)	

LILCO'S TESTIMONY ON CONTENTION 16.E (PUBLIC INFORMATION ON RADIATION)

PURPOSE

This testimony addresses whether the LILCO public education brochure contains "general information as to the nature and effects of radiation" in accordance with 10 C.F.R. Part 50, Appendix E, IV.D.2, and the guidelines of NUREG-0654. The testimony demonstrates (1) that the brochure does provide general information as to the nature and effects of radiation, (2) that it contains information to "prime" the public to perceive accurately the risk in a radiological emergency, (3) that additional, more detailed information about radiation and its effects is sent out each year under the LILCO plan, and (4) that a comparison of the LILCO-supplied information with 22 brochures for other nuclear plants around the country shows that LILCO is providing at least as much information about radiation as is provided in the other brochures.

add:
J. Horn
GCA

DS03

Attachments

Attachment 1	LILCO Public Emergency Procedures Brochure (Revision 3)
Attachment 2	Article from the Spring 1984 "Keeping Current" newsletter entitled "Radiation--Where it Comes From--and--How it Affects Us"

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(PUBLIC INFORMATION ON RADIATION)

1. Q. Will the witnesses please identify themselves?

A. [All witnesses] Our names are Carol A. Clawson, Matthew C. Cordaro, and Richard J. Watts. We have previously testified in this proceeding, and our statements of professional qualifications have already been entered into the record. We have previously been sworn.

2. Q. What is Contention 16?

A. [Clawson, Cordaro] Contention 16 reads as follows:

> Contention 16. LILCO has drafted a public education brochure entitled "Emergency Procedures: Shoreham Nuclear Power Station." The content of LILCO's public information brochure is misleading and incomplete and thus this aspect of the public information program fails to comply with 10 CFR Section 50.47(b)(7), 10 CFR Part 50, Appendix E, Section IV.D.2, and NUREG 0654, Sections II.G.1 and 2.

3. Q. What is subpart 16.E of Contention 16?

A. [Clawson, Cordaro] Subpart 16.E reads as follows:

> E. The LILCO brochure's discussion of radiation effects is limited to natural sources and very low levels of radiation. It does not adequately address the magnitude of doses that the public might receive during a severe accident, such as one requiring EPZ evacuation, nor the health-threatening consequences related to such releases. Such inadequate disclosure of essential facts renders the brochure incredible.

4. Q. What are the legal standards cited in Contention 16?

A. [Clawson, Cordaro] The legal standards cited in Contention 16 are the following:

10 C.F.R. § 50.47(b)(7)

> Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.

10 C.F.R. Part 50,
Appendix E, IV.D.2

> Provisions shall be described for yearly dissemination to the public within the plume exposure pathway EPZ

of basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency. Signs or other measures shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.

NUREG-0654, II.G.1

Each organization shall provide a coordinated periodic (at least annually) dissemination of information to the public regarding how they will be notified and what their actions should be in an emergency. This information shall include, but not necessarily be limited to:

a. educational information on radiation;

b. contact for additional information;

c. protective measures, e.g., evacuation routes and relocation centers, sheltering, respiratory protection, radioprotective drugs; and

d. special needs of the handicapped.

Means for accomplishing this dissemination may include, but are not necessarily limited to: information in the telephone book; periodic information in utility bills; posting in public areas; and publications distributed on an annual basis.

NUREG-0654, II.G.2

> The public information program shall provide the permanent and transient adult population within the plume exposure EPZ an adequate opportunity to become aware of the information annually. The programs should include provision for written material that is likely to be available in a residence during an emergency. Updated information shall be disseminated at least annually. Signs or other measures (e.g., decals, posted notices or other means, placed in hotels, motels, gasoline stations and phone booths) shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an emergency or accident occurs. Such notices should refer the transient to the telephone directory or other source of local emergency information and guide the visitor to appropriate radio and television frequencies.

5. Q. What precise issue does this testimony address?

A. [Clawson, Cordaro] The issue addressed by this testimony is that stated in the Licensing Board's "Memorandum and Order Ruling on LILCO's Motion for Summary Disposition of Contentions 16.E, J, K, L and M (Public Information Brochure)," dated June 28, 1984. The issue to be litigated, as stated on page 13 of that Memorandum and Order, is "limited to the adequacy of the brochure's treatment of magnitude of doses and health effects." The issue is "how much should an emergency brochure say about

the magnitude of radiation doses the public might receive in the event of a severe accident and the health effects of such doses" (page 7 of the Memorandum and Order). The Board expressly did not reopen for consideration "the issues raised by the last sentence of Subcontention 16.E--whether any failure to adequately discuss larger radiation doses and their health effects renders the brochure incredible" (page 7 of the Memorandum and Order).

6. Q. What is LILCO's public education brochure?

A. [Clawson, Cordaro] It is Attachment 1 to this testimony.

7. Q. Does the brochure contain general information as to the nature and effects of radiation?

A. [Clawson, Cordaro] Yes, on pages 14-16. Also, there are references to the nature of radiation on pages 2, 3, 4, and 5.

8. Q. Does LILCO plan to disseminate information about radiation in addition to the brochure?

A. [Clawson, Cordaro] Yes. An article in the Spring 1984 issue of our newsletter "Keeping Current" entitled, "Radiation--Where it Comes From--and--How

it Affects Us," explained the nature of radiation, the acceptable radiation exposure levels, and the effects of radiation, including radiation from both routine operations and accidents at nuclear plants. A copy of the article is Attachment 2 to this testimony. The LILCO "Keeping Current" article has already been mailed to every address that would receive the brochure.

9. Q. How often will the public education brochure and the article in "Keeping Current" be distributed?

A. [Clawson, Cordaro] The public education brochure will be distributed annually to residents of the EPZ. Additional material relating to radiation, such as the article in "Keeping Current," will also be distributed annually.

10. Q. Does the information in either of those sources discuss the "magnitude of doses that the public might receive during a severe accident"?

A. [All witnesses] Yes. The article in "Keeping Current" states that in a severe accident at a nuclear power plant people could be exposed to dangerously high levels of radiation. See page 3, column 1, of Attachment 2.

11. Q. Does the information in either of these sources discuss the health-threatening consequences related to releases of radiation in a severe accident?

A. [All witnesses] Yes. The article in "Keeping Current" states that "exposure to very large amounts of radiation over a short period of time (several minutes to several hours) can cause serious injury to cell tissues, and even death" (Attachment 2, page 2, column 3) and that "animal studies show that large doses can cause genetic damage which continues through several generations of offspring" (Attachment 2, page 3, column 1).

12. Q. Why don't you include in the brochure the level of detail found in the "Keeping Current" article?

A. [Clawson, Cordaro] We see little reason to do so. The two publications will be sent to precisely the same addresses by precisely the same means (U.S. mail). Both are sent in a special mailing, not as bill enclosures. People will receive both pieces of information each year.

The reason for not repeating more of Attachment 2 in Attachment 1 is that we have tried to keep the brochure reasonably concise and reasonably simple.

It is our opinion that the main focus of the brochure should be to give the public "action information"; we have tried to make the brochure a more practical document, emphasizing what people should actually do in preparation for and during an emergency.

13. Q. How much information about radiation should be in a public education brochure?

A. [All witnesses] The primary purpose of the brochure is to inform the public what to listen for and what to do in case of an emergency (for example, to prepare people to turn on their radios when they hear the warning sirens). To the extent that information about radiation is required, the important information to include is that radiation may be hazardous and that it may require protective actions. Such information is, in fact, in the LILCO brochure. The information in the brochure should be designed to prime the public to respond appropriately in an emergency. This means it should provide basic information to give people an accurate perception of the risk -- for example, information that the power plant cannot explode like a bomb (Attachment 1, page 3), that radioactive

materials may be airborne and could lead to exposure of individuals offsite (Attachment 1, page 4), and that radiation can be hazardous (Attachment 1, page 2).

14. Q. Does the LILCO brochure do this?

A. [All witnesses] Yes.

15. Q. Have you reviewed public information materials from other nuclear facilities, especially with respect to information provided about the nature and effects of a radiological release during a nuclear accident?

A. [Clawson] Yes, I have reviewed a number of public information brochures for nuclear plants across the country. The most recent ones I have examined are the following:

Plant	State
Diablo Canyon Nuclear Power Plant	California
Rancho Seco Nuclear Generating Station	California
Millstone Nuclear Power Plant	Connecticut
Crystal River Nuclear Power Plant	Florida
Turkey Point Plant	Florida
Zion Nuclear Plant	Illinois

Duane Arnold Energy Center	Iowa
Palisades Nuclear Plant	Michigan
Grand Gulf Nuclear Station	Mississippi
Oyster Creek Nuclear Generating Station	New Jersey
Salem Nuclear Generating Station	New Jersey
Indian Point Station	New York
Nine Mile Point/FitzPatrick Nuclear Station	New York
R. E. Ginna Nuclear Power Plant	New York
Brunswick Steam Electric Plant	North Carolina
Catawba Nuclear Station	South Carolina
Sequoyah Nuclear Plant	Tennessee
North Anna Power Station	Virginia
Surry Power Station	Virginia
Yankee Nuclear Power Station	Vermont
Kewaunee/Point Beach Nuclear Power Plant	Wisconsin
La Crosse Boiling Water Reactor	Wisconsin

These brochures were picked to cover a variety of locations around the country and to include the most recent brochures I had on hand.

Of the emergency plans addressed in these brochures, nine have been approved through FEMA's 44 C.F.R. Part 350 process. These are Brunswick, Crystal River, Grand Gulf, North Anna, Palisades,

Sequoyah, Surry, Turkey Point, and Zion. Two other plans, the plans for Indian Point and Millstone, have received FEMA's interim approval for up to 5 percent power.

16. Q. How does the public information provided by LILCO regarding the nature and effects of radiation compare to the public information provided in the brochures for the other nuclear plants listed above?

A. [Clawson] LILCO's information is typical of the information in such brochures. Indeed, two of the brochures for New York State plants (Indian Point and Nine Mile Point/FitzPatrick) include a discussion by Roger Linnemann virtually identical to the one in the LILCO brochure.

In no case have I found a brochure that specifies the magnitude of the worst possible release. The Zion brochure does say that "if the accident were serious, and could expose members of the public to 1000 millirem or more of radiation," state plans call for sheltering or evacuation of the public. Three others -- Kewaunee/Point Beach, Oyster Creek, and Salem -- refer to the possibility of a release of "substantial quantities" of radioactivity. A few brochures say that accidents can have a range

of consequences. For example, the Turkey Point brochure says that the "most serious accident imaginable would pose a wide range of consequences," depending on a number of factors.

None of the 22 brochures discusses cancer induction. (The Zion brochure does say that "200 millirem of radiation, over the course of a year, has been estimated to have roughly the same risk to life as smoking two to six cigarettes.") None gives a numerical figure for increased cancer risk from radiation. A handful of the brochures, such as the one for Salem, mention (as does the LILCO "Keeping Current" article) that radiation can cause damage to cells in the body.

The LILCO "Keeping Current" article (Attachment 2) includes more detail on the magnitude and effects of radiation doses than any brochure that I have reviewed.

Shoreham Nuclear Power Station

Public Emergency Procedures

Maps for Zone R

(Rev. 3)

LILCO
LONG ISLAND LIGHTING

SAVE THIS BOOK

Emergency Procedures

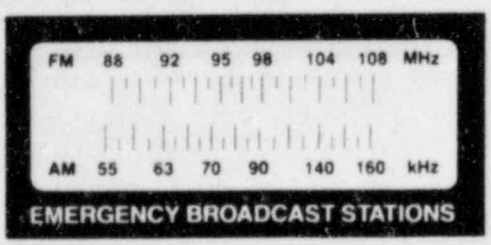
When you hear a siren sound
for three to five minutes:

1. Turn on your AM or FM radio
2. Tune to your local emergency broadcast station
3. Listen carefully for details and instructions about the alarm

You live in Zone R

SHOREHAM Nuclear Power Station

SAVE THIS BOOK



Contents

Summary Of Important Information

When you hear a siren sounding for three to five minutes:

1. Turn on your FM *or* AM radio.
2. Tune to your local Emergency Broadcast System station (graphic).
3. Listen for details and instructions about the alarm.
4. You will know just what to do if you listen to your local Emergency Broadcast System station.

If there is an accident at the Shoreham Nuclear Power Station, it will be classified by its degree of seriousness. The least serious will be called "unusual event." The most serious will be called "general emergency."

If public protection is required, you may be asked to "shelter." To shelter is to keep the family and pets indoors. Close off all outside openings. Shut doors and windows. Turn off air conditioning and heating systems which rely on outside ventilation.

If any locations are to be evacuated, it will be done by zone designation. (Your zone designation is on the cover of this booklet.) The ten mile area surrounding Shoreham is divided into nineteen zones. If your zone is not announced there is no need to leave your home. If your zone is announced, you should leave as soon as possible. If you are in a zone other than your home zone, follow the actions of local residents.

Relocation Centers have been established for you to go to, if needed. At these Centers you and your family can be cared for until you return home.

Special plans have been made for:

- people with handicaps
- people with special transportation needs

If you need special help, or if you know of someone who does, please fill out and return the postcard included in the back of this booklet.

Why Emergency Planning?

In 1980 more than 130,000 American families had to leave their homes because of emergencies. There were hurricanes, tornadoes, major accidents, explosions, and fires. To meet the needs of these people the American Red Cross set up thousands of temporary relocation centers.

Government and private agencies have improved their ability to handle emergencies. Plans are made to provide for safe and efficient care of families during emergencies. In 1979, the U.S. Government established the Federal Emergency Management Agency (FEMA). FEMA oversees the federal role in emergencies. State and County agencies are also responsible for planning for emergencies.

LILCO operates the Shoreham Nuclear Power Station under the very highest safety standards. Still, it is possible that the Shoreham Station could release hazardous material into the air. LILCO has carefully developed plans for handling all emergencies. These plans were developed under regulations issued by the Federal Government in 1980. They strengthen emergency procedures for all nuclear stations. They enable officials to handle any emergency situation that may arise.

Each person in the area should also be personally prepared. This booklet describes your role in dealing with a local emergency. Although this booklet was written for the Shoreham Power Station, many of the procedures can be applied when storms, fires, transportation accidents, or other emergencies strike.

Emergency plans have been developed for each of the nineteen separate zones. Each zone is an area that might need to take action in an emergency. The zones take in areas up to ten miles around the Shoreham Plant.

Shoreham Safety Systems

The Shoreham Station has been built to meet strict federal government regulations for nuclear power plants. There are many overlapping safety features that are designed into the plant to prevent a release of radiation to the air.

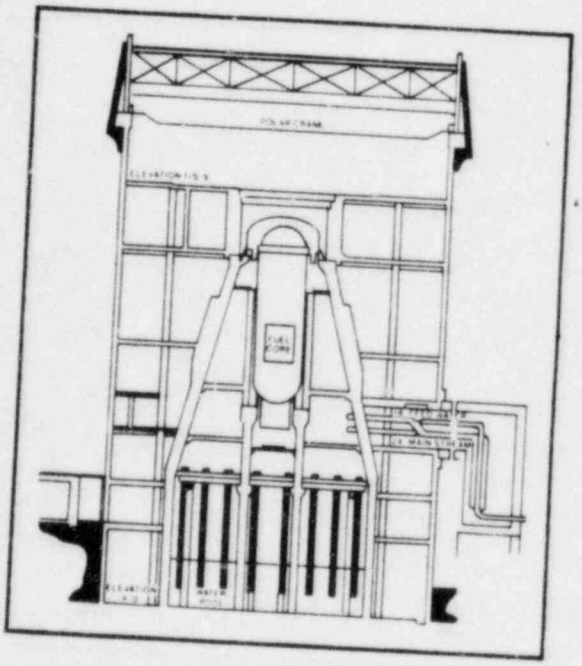
At Shoreham, the reactor is surrounded by a primary containment structure made of steel-lined, reinforced concrete from four to seven feet thick. A secondary containment structure, 220 feet high and 135 feet across with a two-foot reinforced concrete wall, surrounds the primary containment. The design is to prevent any release of radioactive materials. Even if an accident did occur, the material is likely to be retained inside the structure.

Many people believe that a nuclear power plant can explode like a bomb. THIS IS FALSE. A nuclear power plant cannot explode. A nuclear reactor differs from a bomb in several ways. The most important way is in the concentration of the fuel. The fuel in a nuclear power plant contains only about 3% enriched uranium-235. For an explosion to occur, there must be nearly 100% enriched uranium-235.

In the United States and throughout the world reactors have been operating safely for a long time. In fact, if you were to add together all the years that these reactors were operating, you would come to 2,000 years. During all that time, no accident has ever occurred that has hurt the public, not even at Three Mile Island.

At Three Mile Island the containment building prevented a major release of radiation. This is what it was built to do.

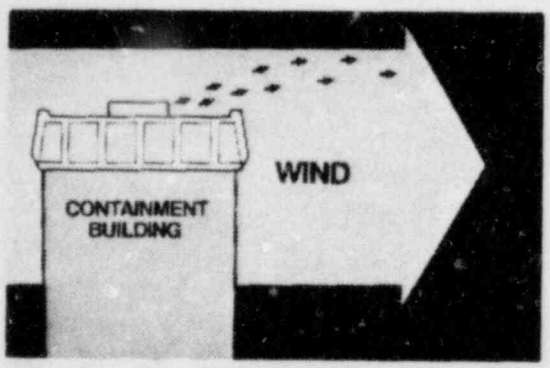
Yet another safety precaution of the Shoreham Station is the emergency plan. This plan has been designed to protect the public in the event there is a release of radiation into the air. The plan covers the area within about 10 miles of the plant. This is the area for which the federal government requires planning.



WHAT CAN OCCUR

Due to the many safety systems designed and built into Shoreham, there is very little likelihood that an accident would occur that would require area residents to take protective action.

Occasionally, nuclear power plants do fail to perform properly. The pumps, valves and pipes inside the plant can fail to work correctly. Some failures may result in a leak of radioactive material into the containment building. The building was designed to hold the radiation inside.



A serious accident at Shoreham could result in the release of radioactive materials into the air. If radiation is released, it could occur all-at-once or over a period of time. In most cases, the release would not begin for several hours after the problem was discovered.

The release into the air would most often be relatively small, and it would move with the wind until diluted to such a low level that it would not be a hazard.

Radiation is not visible, and it does not have an odor. But it can easily be detected by scientific equipment.

If a serious accident occurs which results in the release of radiation into the air, you may be asked to take protective actions. You will know how serious an accident is by the classification system.

How Are Events Or Accidents Classified?

Four classes of emergency have been established for a nuclear plant accident. From least to most serious they are

- Unusual Event
- Alert
- Site Area Emergency
- General Emergency

■ **UNUSUAL EVENT:** This is a condition which does not cause serious damage to the plant. It may not even require a change in operation. There is no release of radioactive material. No response is required beyond the immediate site of the Shoreham plant.

LILCO will inform all government authorities and the media of the **Unusual Event** condition.

The Shoreham plant staff will respond to the event.

■ **ALERT:** This is a condition in which overall plant safety is reduced. There is little chance of any radioactive release. If a release of radiation occurred it would be minimal outside the plant site and would not be a hazard. An **Alert** condition assures that the emergency staff is readily available to respond if the situation should become more serious.

LILCO will inform all government agencies of the **Alert** condition.

LILCO will also activate the Emergency News Center (ENC) in Ronkonkoma to provide press briefings.

The Shoreham plant staff will activate the on-site Technical Support Center (TSC)

The Emergency Operations Facility (EOF) in Hauppauge would be activated to direct LILCO response activities.

The Local Emergency Response Organization (LERO) will activate the Emergency Operations Center (EOC) in Brentwood to assure adequate resources for public protection. Monitoring teams will go into the community to measure any changes in radiation levels.

■ **SITE AREA EMERGENCY:** This condition indicates that radioactive releases could occur, or have already occurred. This condition may require people living within about two miles of the plant to take protective action.

LILCO will notify all government agencies and the media of the emergency condition.

The Emergency Operations Facility (EOF) in Hauppauge will be directing LILCO response activities.

Local Emergency Response Organization (LERO) workers will be ready to do their jobs. They will be directed from the Emergency Operations Center (EOC) in Brentwood.

The 89 sirens within the 10-mile emergency planning area will be sounded to alert the public to listen to their local Emergency Broadcast System radio station.

The Emergency Broadcast System will be on local radio stations with messages to keep the public informed.

■ **GENERAL EMERGENCY:** This is the most severe of accident classifications. It involves possible fuel core damage. Radioactive releases could result which may require people living within 10 miles of the plant to take protective actions.

LILCO will notify all government agencies and the media of the emergency condition.

All emergency facilities will be activated.

The Local Emergency Response Organization (LERO) will be ready to help the public.

The 89 sirens within the 10-mile emergency planning area will be sounded to alert the public to listen to their local Emergency Broadcast System radio station.

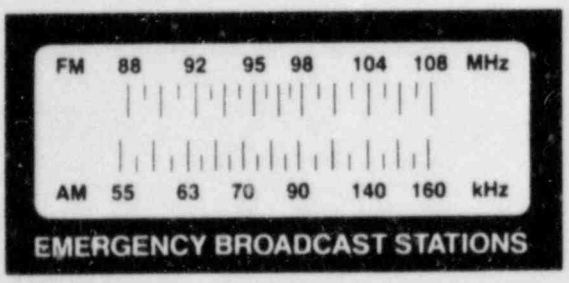
The Emergency Broadcast system will be on local radio stations with messages to keep the public informed.

How You Would Be Told

Eighty-nine sirens have been installed in the ten-mile zone around the Shoreham Plant. The sirens sound similar to fire sirens but there is a difference. The Shoreham sirens make a sound lasting from three to five minutes. (Fire alarms make a wailing sound for about two minutes. Their sound pulsates up to ten times in the two minutes.) If you hear the long siren sound:

- Turn on your radio
- Tune in to your local Emergency Broadcast System radio station.
- You will receive instructions from the Local Emergency Response Director.

In addition to the sirens and your own radios, there are more than 100 tone-alert radios in the area. These radios automatically turn on when an Emergency Broadcast Message comes on the air.



These tone-alert radios have been placed in schools, hospitals, nursing homes, and other buildings.

The Emergency Broadcast System will provide details about the reason for an alarm. You will always be advised what to do. You should stay tuned in to your local Emergency Broadcast System radio station until the emergency is declared over.

IF YOU ARE HEARING IMPAIRED

People who are hearing impaired should arrange for a family member or neighbor to notify them if the sirens sound.

If you are hearing impaired and would need special assistance in the event that the sirens are sounded it is important for you to register with the Local Emergency Response Organization (LERO).

If the sirens are sounded due to an emergency at the Shoreham Nuclear Power Station, a LERO worker will come to your house to notify you personally of the emergency condition.

To register with LERO, please complete the post card in the back of the brochure and mail it to us today.

EBS STATIONS

(To be completed prior to mailing to public)

Public Protective Actions

In the event of a serious accident at the Shoreham Nuclear Power Station, public protective actions may be recommended for some or all of the people living in the 10-mile emergency planning area.

This area is divided into 19 zones, each with a letter designation, going from Zone A through Zone S. If you received this brochure at your home or business, you are located in the 10-mile emergency planning area. The zone in which you are located is printed on the cover of this brochure. It is important for you to know what zone you are in because public protective actions would be recommended for specific zones.

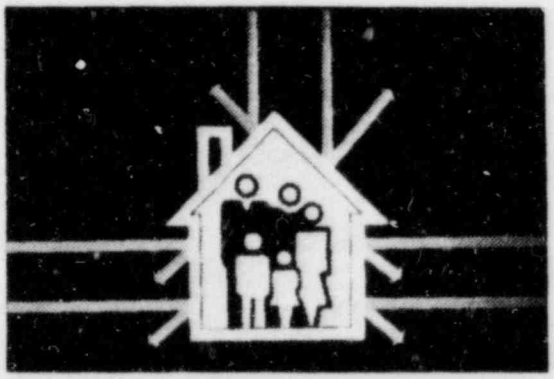
A public protective action recommendation would be based on (1) the amount of radiation which is or could be released into the air from the plant and (2) the weather conditions which are occurring or are anticipated.

SHELTERING

People could be asked to shelter because buildings block some of the outside radiation.

Sheltering is to remain indoors with outside ventilation sources closed off. If the emergency broadcast system radio messages recommend that people in your zone shelter, you should:

- Remain calm
- Ignore all rumors. STAY TUNED TO YOUR LOCAL EMERGENCY BROADCAST SYSTEM RADIO STATION FOR OFFICIAL INFORMATION.
- Keep your family and pets indoors
- Shelter your livestock. Place them on stored feed
- Close all doors and windows
- Extinguish fires in fireplaces
- Avoid driving anywhere (you will be safer staying inside a building)
- Go to the basement, if you have one
- Avoid using the telephone. Lines should be available for emergency calls.



EVACUATION

Some people may be asked to evacuate for a few days. This decision will be made when there is a possibility of a release of radiation over a long period of time. If the emergency broadcast system radio messages recommend that people in your zone evacuate, you should:

- Remain calm. You will have enough time to leave
- Ignore all rumors. STAY TUNED TO YOUR LOCAL EMERGENCY BROADCAST SYSTEM RADIO STATION FOR OFFICIAL INFORMATION
- Avoid using the telephone. Lines should be available for emergency calls
- Offer a ride to a neighbor who may not have transportation. Perhaps one of your neighbors needs special assistance. You could help

- Gather the items you would need for a few days away from home including:
  —blankets and sleeping bags for everyone
  —prescription medicines, if needed
  —changes of clothing for several days
  —personal items such as shaving kits, soaps and cosmetics
  —formulas and other needs of infants and children
  —checkbooks, credit cards and important papers
  —a portable radio with fresh batteries
  —this booklet
- Place a damp common cotton handkerchief or bathroom towel over your nose and mouth when you leave your house.
- Leave by the specific route for your location shown on page 10A of this booklet.
- Follow the blue and white pathfinder signs. They are located on every major roadway in the 10-mile emergency zone. The signs will direct you along predesignated routes out of the zone.
- Follow the directions of the traffic guides. They are there to help speed evacuation.
- If you do not have a ride, walk to the nearest point on the emergency bus route map which is located on page 10B of this brochure. Buses will pick you up along this route and take you to a relocation center outside the zone.

IF YOU ARE DISABLED

Arrangements have been made for handicapped people who are unable to follow the directions given in this booklet. People needing special help because of physical disabilities, confinement, or old age should fill out the advance registration card in the pocket of this booklet **now** and mail it. Those who cannot mail the card for themselves should have someone do it for them. The cards will be used to compile a list of area residents who need special assistance due to blindness, hearing loss, wheelchair confinement, or inability to move because of age. The disabled who need help will be properly cared for. Persons who mail the card will hear from us soon after we receive the card.

Who Goes Where?

If it is recommended that people in your zone leave the area, it is best for you and your family to leave the emergency area as quickly as possible.

The recommended route was selected to satisfy the following conditions:

- allow you to leave the emergency area as rapidly as possible
- move you in a general direction away from the nuclear plant
- disperse traffic so that the available roadway capacity is fully utilized and congestion is minimized.

While the route may not be the shortest route to your destination, it will provide you with the safest and fastest way out of the emergency planning area.

You have a choice as to where you will go.

Going to stay with a friend or a relative outside of the zone would be best. However, if that is not possible, relocation centers will be set up outside of the zone. There will be workers from the American Red Cross at the centers. YOU ARE IN ZONE R. The relocation center for your zone is:

- THE BOCES ISLIP OCCUPATIONAL CENTER COMPLEX, ISLIP, N.Y.

Other relocation centers for other zones include:

- The Suffolk County Community College, Selden Campus
- The State University at Stony Brook

If more space is needed we will have additional centers located at:

- The State University at Farmingdale
- St. Joseph's College, Patchogue

You will find it easy to get to your relocation center if you travel along the recommended route. All the services that you might need will be at the center. Everything will be done for your safety and comfort.

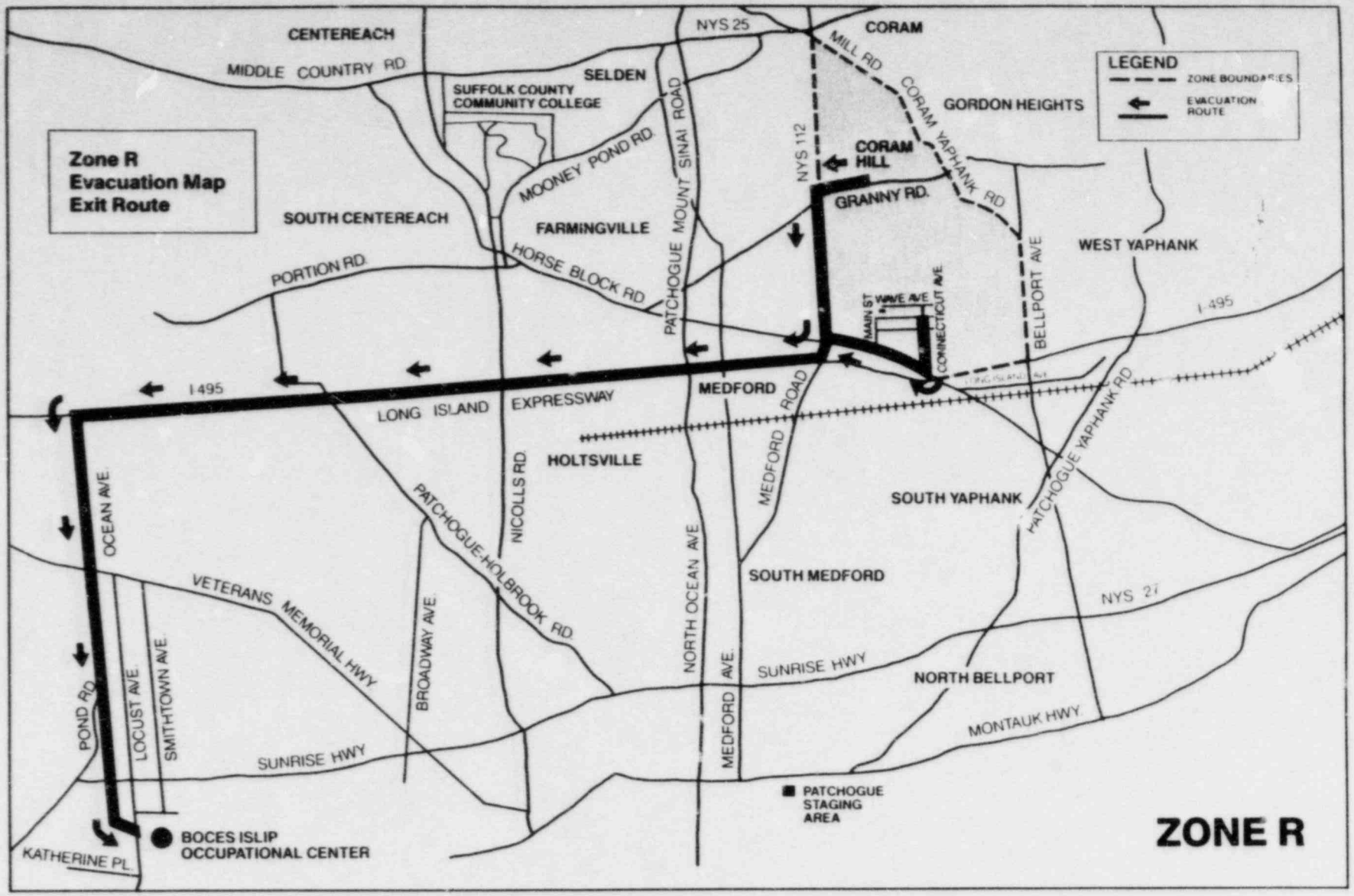
The relocation center can be a meeting place. It can also serve as a message center for you, your family and your friends.

Remember, wherever you choose to go, stay calm and drive carefully along the route shown on your map. Follow the blue and white pathfinder signs which are located on every major road in the 10-mile emergency planning area. The signs will direct you out of the area.

WHAT TO DO WITH YOUR PETS

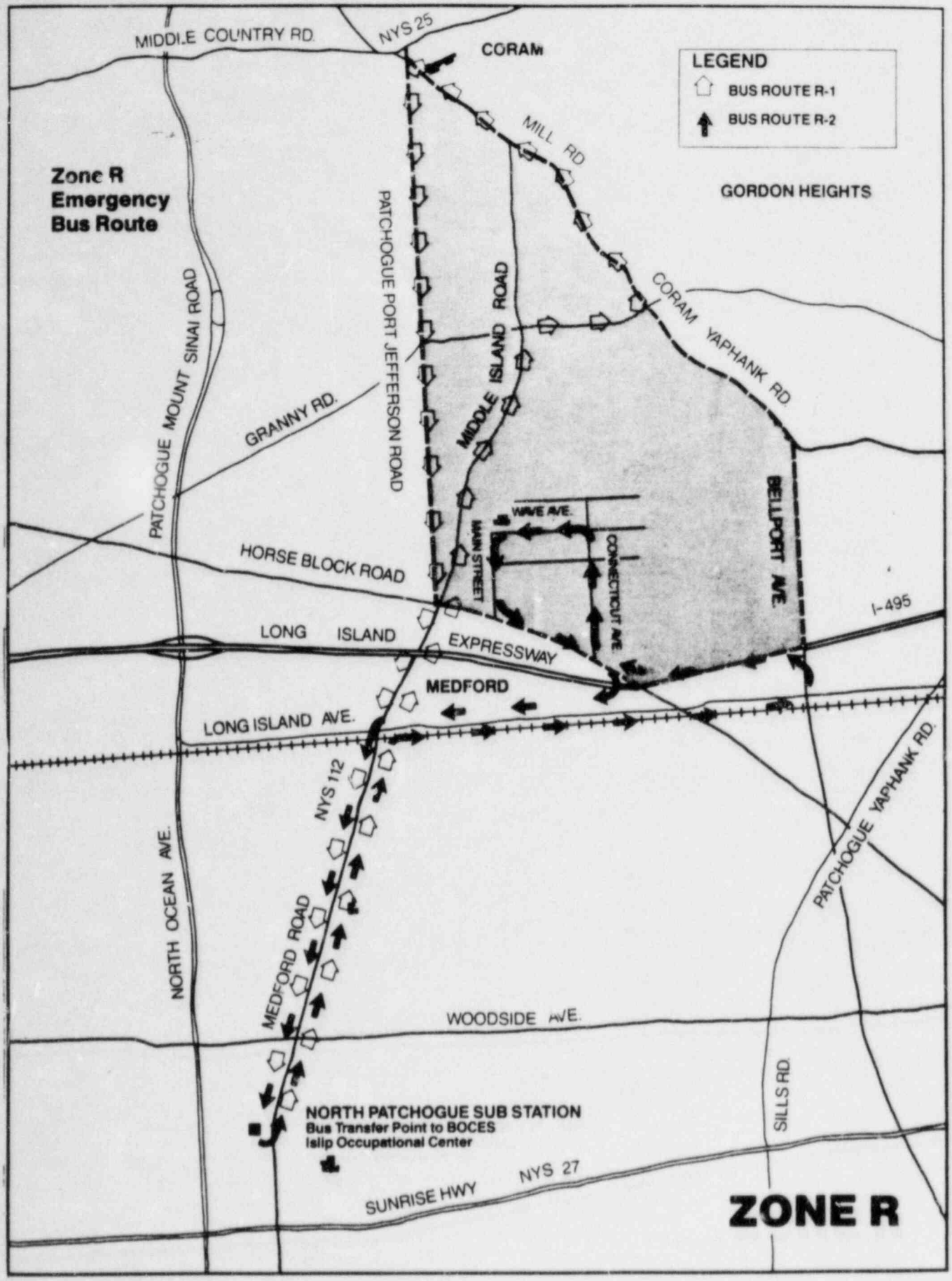
It is not possible to accept pets into relocation centers. However, the American Red Cross has made special arrangements with local animal shelters for the care of your household pets. Before coming to the relocation center, you should take your pet, along with any special food or medication, to one of the following animal shelters:

Town of Huntington Animal Shelter
Town of Islip Animal Shelter
Town of Babylon Animal Shelter
Town of Southampton Animal Shelter
Town of Brookhaven Animal Shelter
Town of Smithtown Animal Shelter



ZONE R

DESCRIPTION:	Zone R is south of Coram-Yaphank Road/Mill Road, east of Rt. 112, west of Bellport Avenue, and north of Horseblock Road (CR 16) and the Long Island Expressway (Rt. 495).	ROUTING ASSIGNMENTS:	Most convenient to Rt. 112; Rt. 112 south to the Long Island Expressway (I-495, Exit 64); Rt. I-495 west to exit 59S (Ocean Avenue); Ocean Avenue south to Locust Avenue and the BOCES center.
RELOCATION CENTER:	BOCES Islip Occupational Center		


Zone R
Emergency
Bus Route
LEGEND
BUS ROUTE R-1
BUS ROUTE R-2
MIDDLE COUNTRY RD.
NYS 25
CORAM
MILL RD.
GORDON HEIGHTS
PATCHOGUE MOUNT SINAI ROAD
PATCHOGUE PORT JEFFERSON ROAD
MIDDLE ISLAND ROAD
CORAM YAPHANK RD.
GRANNY RD.
WAVE AVE.
MAIN STREET
CONNECTICUT AVE.
BELLPORT AVE.
HORSE BLOCK ROAD
I-495
LONG ISLAND EXPRESSWAY
MEDFORD
LONG ISLAND AVE.
NYS 112
NORTH OCEAN AVE.
MEDFORD ROAD
PATCHOGUE YAPHANK RD.
WOODSIDE AVE.
SILLS RD.
NORTH PATCHOGUE SUB STATION
Bus Transfer Point to BOCES
Islip Occupational Center
SUNRISE HWY
NYS 27
ZONE R

Children In School

There are 17 school districts, two Boces districts, two parochial schools and 12 nursery schools located in the 10-mile emergency planning zone circling Shoreham.

Some of these districts have schools which are located outside the 10-mile zone.

SCHOOL LISTINGS

SHOREHAM WADING RIVER SCHOOL DISTRICT
All within the 10-mile zone.
- Briarcliff Road School
- Miller Avenue School
- Wading River School
- Shoreham Wading River Middle School
- Shoreham Wading River High School

LITTLE FLOWER UNION FREE SCHOOL DISTRICT
Within the 10-mile zone.
- Little Flower Elementary School

ROCKY POINT UNION FREE SCHOOL DISTRICT
All within the 10-mile zone.
- Joseph A. Edgar School
- Rocky Point Elementary School
- Rocky Point Junior-Senior High School

MIDDLE ISLAND CENTRAL SCHOOL DISTRICT
All within the 10-mile zone.
- Ridge Elementary School
- West Middle Island Elementary School
- Coram Elementary School
- Charles E. Walters Elementary School
- Middle Island Junior High School
- Longwood High School

MILLER PLACE UNION FREE SCHOOL DISTRICT
All within the 10-mile zone
- North Country Road School
- Andrew Muller Primary School
- Sound Beach School
- Miller Place High School

MOUNT SINAI UNION FREE SCHOOL DISTRICT
Both within the 10-mile zone.
- Mount Sinai Elementary School
- Mount Sinai Junior High School

PORT JEFFERSON UNION FREE SCHOOL DISTRICT
Both within the 10-mile zone.
- Port Jefferson Elementary School
- Port Jefferson Junior High School

Outside the 10-mile zone.
- Earl L. Vandermeulen High School.

COMSEWOGUE UNION FREE SCHOOL DISTRICT
Both within the 10-mile zone.
- Clinton Avenue Elementary School
- Comsewogue Senior High School

Outside the 10-mile zone.
- Boyle Road Elementary School
- Terryville Elementary School
- Comsewogue Secondary School
- Norwood Avenue Elementary School
- John F. Kennedy Junior High School

MIDDLE COUNTRY CENTRAL SCHOOL DISTRICT
Outside the 10-mile zone.
- New Lane Memorial Elementary School
- Bicycle Path Elementary School
- Hawkins Path Elementary School

Holbrook Road Elementary School
Jericho Elementary School
North Coleman Road Elementary School
Oxhead Road Elementary School
Stagecoach Road Elementary School
Eugene Auer Memorial Elementary School
Unity Drive Selden Junior High School Annex
Dawnwood Junior High School
Selden Junior High School
Centereach High School
Newfield High School

PATCHOGUE-MEDFORD UNION FREE SCHOOL DISTRICT
Within the 10-mile zone.
Eagle Elementary School

Outside the 10-mile zone.
Tremont Elementary School
Barton Elementary School
Bay Elementary School
Canaan Elementary School
Medford Elementary School
River Elementary School
Oregon Middle School
Saxton Middle School
South Ocean Middle School
Patchogue-Medford High School

SOUTH HAVEN UNION FREE SCHOOL DISTRICT
Outside the 10-mile zone.
South Haven Elementary School

SOUTH MANOR UNION FREE SCHOOL DISTRICT
Both within the 10-mile zone.
South Street School
Dayton Avenue School

EASTPORT UNION FREE SCHOOL DISTRICT
Outside the 10-mile zone.

RIVERHEAD CENTRAL SCHOOL DISTRICT
Both within the 10-mile zone.
Riley Avenue Elementary School
Pulaski Street Elementary School

Outside the 10-mile zone.
Roanoke Avenue Elementary School
Aquebogue Elementary School
Phillips Avenue Elementary School
Riverhead Junior High School
Riverhead High School

WILLIAM FLOYD UNION FREE SCHOOL DISTRICT
Outside the 10-mile zone.
William Floyd Kindergarten
John S. Hobart Elementary School
Moriches Elementary School
Tangier Smith Elementary School
William Floyd Elementary School
Nathaniel Woodhull Elementary School
William Pace Junior High School
William Floyd High School

CENTER MORICHES UNION FREE SCHOOL DISTRICT
Outside the 10-mile zone.
Center Moriches Elementary School
Center Moriches High School

WEST MANOR SCHOOL DISTRICT
No schools in district.

BOCES #1
Facilities utilized may be inside the 10-mile zone.

BOCES #2
Facilities utilized may be inside the 10-mile zone.

PAROCHIAL SCHOOLS
Both within the 10-mile zone.
St. Isidore School
Infant Jesus School

Outside the 10-mile zone.
- St. John the Evangelist School
- St. David School
- Mercy High School

NURSERY SCHOOLS
All within the 10-mile zone.
- Alphabetland Child Enrichment Center
- Brookhaven Country Day School
- Central Brookhaven Head Start
- Coram Child Care Center
- Kids-R-Us Day Care Learning Center
- Middle Island Nursery School
- St. Anselm's Nursery School
- St. John's Pre-School
- Sound Beach Pre-School Co-op
- Step-by-Step Early Learning Center
- Trinity Lutheran Nursery School
- Wading River Cooperative Play School

Outside the 10-mile zone.
- North Shore Christian School

All school districts, parochial schools and nursery schools which are located inside the zone or which may draw students from inside the zone will be kept up to date on conditions at Shoreham in the event of an accident at the nuclear plant.

Schools will be advised to implement emergency procedures at the earliest possible stage.

In the event of an Alert Condition at the Shoreham plant which results in no protective action recommendations for the general public, school districts, parochial schools and nursery schools listed in this brochure will be advised to dismiss their students early.

In the event of a Site Area or General Emergency Condition at the Shoreham plant which results in the protective action recommendation of sheltering anywhere in the 10-mile emergency planning zone, all schools listed in this brochure will be advised to shelter their students. Students who live within the zone but who attend school outside the zone will be asked to remain at school when the school day ends.

In the event of a General Emergency Condition at the Shoreham plant which results in the protective action recommendation of evacuation anywhere in the 10-mile emergency planning zone, all schools listed in this brochure will be advised to relocate their students to reception centers outside the zone. Students who live within the zone but who attend school outside the zone will be asked to remain at school when the school day ends.

What You Should Know About Radiation

(To help you understand radiation here is a report based on information by Roger Linnemann, M.D. He is a Professor of Radiology at the University of Pennsylvania School of Medicine. He is also President of the Radiation Management Corporation.)

NATURAL RADIATION Radiation has been with us since the beginning of time. We are constantly exposed to radiation from the atmosphere's cosmic rays. In addition, radioactive elements, such as radium and uranium, are scattered in harmless quantities throughout our world. This creates an environment on Earth that is always "radioactive." Our soil, the wood and brick that we use to build our homes, the food we eat, the water we drink are all radioactive. Even the air we breathe contains materials that are naturally radioactive.

Through most of our history we were unaware of natural radiation being released around us billions of times a second. But in the century since radiation was discovered, it has become one of the most widely studied and best understood processes in all of nature.

A standard measurement of radiation is called the "rem." Since most exposures result in only small fractions of a rem, they are often described in terms of the "millirem"—or one-thousandth of a rem.

EASILY DETECTED Radiation is easily detected and measured. We have instruments that can find even a few radioactive atoms among billions of non-radioactive ones. We can measure the precise amounts of radiation that we are exposed to. Radiation comes from nature and other sources like medical and dental x-rays.

EXPOSURE LEVELS How many millirem are you now receiving? It depends on several factors. It depends on your diet, and the building materials of your home and workplace. Also the amount of medical x-rays you receive, and even the elevation of your home. Higher altitudes receive more natural radiation.

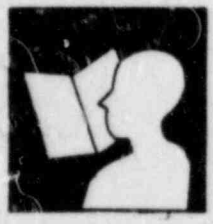
In 1979 a report on radiation was written by the U.S. Department of Health, Education and Welfare, the Environmental Protection Agency and other federal agencies. It found that Americans receive about 100 millirem a year from natural radiation in our environment.

Most Americans receive about 44 millirem a year from the atmosphere's cosmic radiation. Also, about 18 millirem from natural radioactivity in the water, food and air. And about 40 millirem come from natural radioactivity in soil and rocks.

In addition, most Americans are exposed to almost that much merely from medical and dental procedures. A single chest x-ray adds about 20 millirem. A dental x-ray about 3. Adult Americans receive about 90 millirem a year from medical sources.

Government scientists estimate that fallout from nuclear weapons adds 5 millirem. Some consumer products, like luminous watches, color television sets, and smoke detectors with small radioactive components give off additional exposure. Altogether, the total exposure of most New Yorkers to natural and man-made radiation is probably a little over 200 millirem each year.

Some Americans receive more radiation. If you live in Denver, for example, you would receive about 25 millirem more than if you lived at sea-level. The



higher elevation would expose you to additional cosmic rays. If you make trips by airplane you receive 1 to 2 additional millirem for each 2,500 miles. The higher flying altitudes put you closer to the cosmic rays.

RADIATION AND NUCLEAR PLANTS

The operation of a nuclear power plant is a minor factor in radiation exposure. Even the people who live nearest a plant receive at most only 1 to 2 millirem a year! This is less than the radiation one gets during one coast-to-coast airplane flight.

What about radiation released as a result of a reactor accident? There are more than 75 nuclear-powered commercial electric plants operating around the country. Yet, there has never been an accident that has exposed the public to the level of a year's natural radiation. At Three Mile Island the containment building prevented a major release of radiation. This was what it was built to do.

Radiation and health experts calculated at Three Mile Island the most radiation that anyone could have received. Even those standing in the highest radiation area outside the plant for 10 days received a dose of only 70 millirems. They reported that the average exposure for the population within 5 miles of the plant was only about 1 millirem.

RADIATION GUIDELINES Two organizations of prominent scientific experts on radiation and health—The International Commission on Radiological Protection and the National Council on Radiation Protection and Measurements—were established in the 1920s. They recommend public health and safety standards for radiation exposure. After more than 50 years' experience, they today recommend that exposure to workers in the nuclear industry be limited to a maximum of 5,000 millirem a year. For members of the public, the recommendation is a maximum of 500 millirem above natural and medical exposure.

We know that radiation can be hazardous at high levels. However, at the levels of these standards, if there is an effect on health, it is so small that we cannot even detect it.

Typical Radiation Sources[1]

Sources and amount of annual radiation exposure, according to U.S. government health and environmental experts.

Source	Millirem
Cosmic rays	44
Natural radioactivity in water, food and air	18
Natural radioactivity in soil and rocks	40
Medical and dental x-rays	90
Consumer products such as TV, luminous clock dials	less than 1
Fallout from weapons test	5
Nuclear power plants routine operation	less than 1

[1]"The Report on the Inter-Agency Task Force on the Health Effects of Ionizing Radiation," issued by the U.S. Department of Health, Education and Welfare, June 1979.

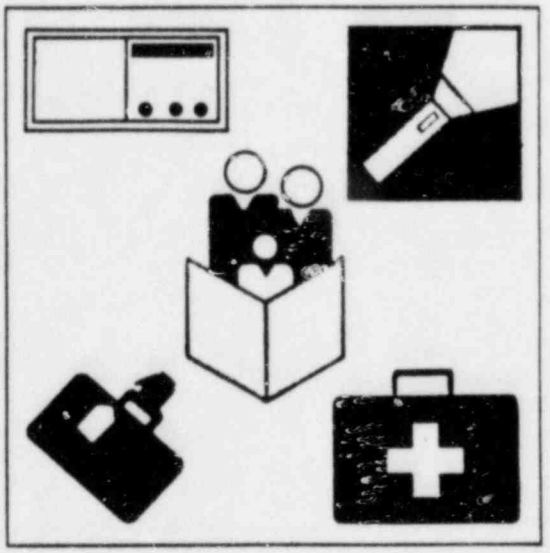
Be Prepared

To be sure that your family is prepared for any emergency, you should:

- Have your family read this booklet.
- Talk about it with the family. Be sure that everyone knows what to do.
- Find your emergency Relocation Center on the map (page 10). Note how you would get from your house to the Relocation Center.
- If the Local Emergency Response Organization Director recommends that people in your zone should leave home, go quickly. Plan now where you will go. Will you go to your Relocation Center? Or will you go to a friend's or relative's house outside the 10-mile emergency area?
- Each family should decide now how they will get together.
- Do you think you will need special help? If you do, mail the enclosed card to us. We will write back telling how we will help. Do you know of someone else who needs help? If you do, tell us that too.
- It is a good idea to keep a portable radio and extra batteries on hand. A flashlight and a first-aid kit are good to have with you too.
- Keep this booklet. Put it in a place that you will not forget.
- Any questions? Please feel free to write to:

  Local Emergency
  Response Organization
  P.O. Box 624
  Wading River, NY 11742

We want to help.



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO 00000

POSTAGE WILL BE PAID BY ADDRESSEE

Local Emergency Response Organization
Shoreham Nuclear Power Station
P.O. Box 624
Wading River, New York 11792

FOR SPANISH SPEAKING RESIDENTS

1. Para los de habla española:
Si Ud. solamente habla español, tenga la bondad de marcar con una cruz aqui _____ y escriba su nombre y domicilio debajo, en el numero 7 y le enviaremos esta informacion en español.

2. **FOR DEAF PEOPLE:** If you are deaf or hearing impaired will a family member or neighbor notify you that the emergency siren has sounded? (Please don't answer the question if you can hear.)

[ ] **YES** [ ] **NO**

3. If an evacuation is recommended, can your family obtain transportation (either your own or with a neighbor) or walk a few blocks to an emergency bus?

[ ] **YES** [ ] **NO**

4. If you answered no to either question 2 or 3 please describe your special needs.

_____

5. If you know of someone living within 10 miles of Shoreham who has special emergency needs, and may not have received or responded to this notice, please write down their name and address.

_____

6. If you need additional copies of this notice and the public information brochure for members of your family or for tenants in your apartment or home, please tell us how many _____

7. If you answered questions 1,4,5 or 6 above, please print your name, address, and telephone number below and mail back this card so we may respond. _____

_____

THANK YOU

Keeping Current

An open line for neighbors of the Shoreham Nuclear Power Station

Spring 1984

LONG ISLAND LIGHTING COMPANY

Brookhaven National Laboratory's Radiological Assistance Program team members setting up equipment.

Community Groups Participate in Emergency Planning for Shoreham

There are a variety of groups and organizations in the local area that are prepared to help the public if there is an accident at the Shoreham Nuclear Power Station.

These groups range from government agencies to private citizens. The level of response would depend upon the seriousness of the accident and whether public protective actions would be necessary.

To determine any potential public consequences from an accident at Shoreham, the Local Emergency Response Organization (LERO) would rely heavily on a federal government program that has been in existence for 30 years.

The United States Department of Energy's Radiological Assistance Program (RAP) has worked with both local or state governments and nuclear plant licensees in radiological monitoring and assessment services throughout the country since the 1950's.

For the Long Island area, the federal government RAP team is based at Brookhaven National Laboratory (BNL) and is comprised of senior staff members of the lab and the Federal Department of Energy. Most are health physicists who have graduate degrees in nuclear physics. Others are chemists, industrial hygienists, nuclear engineers and medical doctors. Many live close to Brookhaven Lab and to the Shoreham Nuclear Power Station.

As a facility that uses radiological materials for a variety of research purposes, Brookhaven National Laboratory routinely performs radiological monitoring and assessment activities for its own facilities. BNL personnel also observe and evaluate nuclear plant emergency plan drills and exercises. In addition, the Department of Energy RAP team would monitor, assess and interpret data in the event of a release of radiation at Shoreham or at any other nuclear plant in the northeast.

In fact, the RAP team from Brookhaven was the first such group at Three Mile Island in 1979. The Department of Energy sent more than 100 radiation specialists from throughout the country to Three Mile Island to monitor and assess radiation during the nuclear plant accident. The Brookhaven RAP team was also on a stand by status in the event it was needed to respond to the 1982 accident at Ginna Nuclear Station in Rochester.

Continued on pg. 2

Emergency Planning for Shoreham continued from page 1

If an emergency occurred at Shoreham, the Department of Energy's RAP team at Brookhaven would be available to respond at any time, day or night. After a careful assessment of the emergency, the RAP team captain on duty at Brookhaven could quickly organize emergency response teams. Each team would be comprised of the appropriate personnel for the particular incident. The initial response team would consist of at least six people.

Some members of the team would go out into the field to actually measure the amount of radiation in the atmosphere and the environment. Others would remain at the Lab to assess the measurements. And, in the case of Shoreham, still others would act as advisors to the Local Emergency Response Organization.

If additional federal RAP personnel were needed, experienced team members could be sent from Department of Energy facilities such as the Environmental Measurements Laboratory in New York City, Knolls Atomic Laboratory in Schenectady or the Bettis Atomic Laboratory in Pittsburgh.

Both LILCO and the Local Emergency Response Organization would rely heavily on the knowledge and expertise of the Department of Energy's RAP team in the event of an accident at the Shoreham Nuclear Power Station. Recommendations for specific protective action, such as sheltering or evacuation, would be based on the information and assessments provided by the team. United States Department of Energy's Radiological Assistance Program, located at Brookhaven National Laboratory, is just one facet of local community participation in emergency planning for the Shoreham Nuclear Power Station.

Radiation — Where it Comes From — and — How it Affects Us

Radiation has been with us since the beginning of time. We are constantly exposed to radiation from the atmosphere's cosmic rays. In addition, radioactive elements such as radium and uranium exist throughout the world. This creates an environment on earth that is always "radioactive." Our soil, the stone and bricks we use to build our homes, the food we eat, and the water we drink are all radioactive. Even the air we breathe contains materials that are naturally radioactive.

Understanding Radiation

Through most of our history we were unaware of natural radiation being released around us billions of times a second. But in the century since radiation was discovered, it has become one of the most widely studied and best understood processes in all of nature.

Radiation is easily detected and measured. There are instruments that can find even a few radioactive atoms among billions of non-radioactive ones. We can measure the precise amounts of radiation to which we are exposed.

A standard measurement of radiation is called the "rem." Since most exposures result in only small fractions of a rem, they are often described in terms of the "millirem" — or one-thousandth of a rem.

Exposure Levels

The amount of radiation each of us receives depends on diet, the building materials and elevations of our homes and workplaces, and the amount of medical X-rays we receive. Studies by government and private sector scientists have found that, on an average, Americans receive about 100 millirem a year from natural radiation in our environment and about another 100 millirem from medical and dental procedures.

In addition, government scientists estimate that fallout from past tests of nuclear weapons adds 5 millirem. Some consumer products, like luminous watches, color television sets, and smoke detectors with small radioactive components, give off additional exposure. Altogether, the total **average** exposure of most Americans to natural and man-made radiation is about 200 millirem each year.

Some Americans receive more radiation. If you lived in Denver, for example, you would receive more cosmic radiation than if you lived at sea-level, because higher altitudes receive more natural radiation.

Here on Long Island, the average exposure of each person to natural and man-made radiation is about 138 millirem per year. This is less than the national average because we are close to sea-level. Of this 138 millirem, about one-half is from natural sources and the other half is from man-made sources.

Effects of Radiation

Using the most current and sophisticated techniques available, scientists can find no apparent effects from exposures to low levels of radiation like those discussed.

We do know that exposure to very large amounts of radiation over a short period of time (several minutes to several hours) can cause serious injury to cell tissues, and even death.

Continued on pg. 3

Large doses of radiation to pregnant women can impact the development of an unborn child. Although there is no comparable evidence for humans, animal studies show that large doses can cause genetic damage which continues through several generations of offspring.

What do we mean by "large doses of radiation?" A person must be exposed to at least 25,000 to 50,000 millirem within a short period of time before it is possible to observe any minor yet reversable blood changes. This exceeds the federal limits on public radiation exposure by 50 to 100 times. It would require a massive dose of radiation — 350,000 millirem — within a short period of time to cause serious illness or death.

There are very few sources of radiation from which people might receive doses high enough to result in noticeable effects. These sources are not present as a routine part of our lives. Exposure to radiation from the explosion of nuclear weapons is one such source. Treatment of disease with radiation therapy, although a highly controlled procedure, is another source of high levels of exposure. In a severe accident at a nuclear power plant — one in which all the nuclear fuel would melt and all of the many barriers designed to prevent radioactive material from entering the environment would fail — people could also be exposed to dangerously high levels of radiation. The chance of this happening is **extremely remote.**

Radiation and Nuclear Plants

What levels of radiation exposure do people receive from nuclear power plants? The routine operation of a nuclear power plant is actually a minor factor in radiation exposure. Even the people who live nearest a plant receive less than 1 millirem a year. This is less than the radiation one gets during a coast-to-coast airplane flight.

What about radiation released as a result of an accident like the one at Three Mile Island? At Three Mile Island the containment building prevented a major release of radiation. This was what it was built to do.

Radiation and health experts calculated the most radiation that anyone could have received at Three Mile Island. Even standing in the highest radiation area outside the plant for 24 hours a day during a 10 day period, a person would have received a dose of only 80 millirem. The average exposure for the population within 5 miles of the plant was only about 1 millirem. There has never been an accident at a nuclear power plant in the United States, not even at Three Mile Island, that has exposed the public to the level of even a year's natural radiation.

Radiation Guidelines

Based on the recommendations of the International Commission on Radiological Protection and the National Council on Radiation Protection and Measurements, the federal government has established public health and safety standards for radiation exposure. After more than 50 years' experience, they recommend today that exposure to workers in the nuclear industry be limited to 5,000 millirem a year. For members of the public, the recommendation is a limit of 500 millirem above the exposure received from natural and medical sources.

A majority of the scientists and university professors who are experts on radiation conclude that these federal limits on radiation exposure are probably very conservative and offer an ample margin of protection.

Protective Action Guidelines have also been established by the Environmental Protection Agency for protecting the general public in the event of an accident at a nuclear power plant. These guidelines, which include sheltering (staying indoors) and/or evacuation, are initiated when the projected dose to the general population is expected to be between 1,000 and 5,000 millirem, levels well below those known to result in any effects on human health.

TYPICAL RADIATION SOURCES ON LONG ISLAND

Sources and amount of annual radiation exposure, according to U.S. government health and environmental experts.

Source	Millirem
Cosmic rays from the sun	23
Natural radioactivity in water, food and air	23
Natural radioactivity in soil and rocks	23
Medical and dental X-rays	64
Fallout from weapons tests	3-4
Routine operation of nuclear power plants	less than 1
Total	137-138

CERTIFICATE OF SERVICE

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

I certify that copies of LILCO'S TESTIMONY ON CONTENTION 16.E (PUBLIC INFORMATION ON RADIATION) were served this date upon the following by first-class mail, postage prepaid, or (as indicated by one asterisk) by hand, or (as indicated by two asterisks) by Federal Express.

James A. Laurenson,
Chairman*
Atomic Safety and Licensing
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U.S. Nuclear Regulatory
Commission
East-West Tower, Rm. 402A
4350 East-West Hwy.
Bethesda, MD 20814

Dr. Jerry R. Kline*
Atomic Safety and Licensing
Board
U.S. Nuclear Regulatory
Commission
East-West Tower, Rm. 427
4350 East-West Hwy.
Betnesda, MD 20814

Mr. Frederick J. Shon*
Atomic Safety and Licensing
Board
U.S. Nuclear Regulatory
Commission
East-West Tower, Rm. 430
4350 East-West Hwy.
Bethesda, MD 20814

Eleanor L. Frucci, Esq.*
Attorney
Atomic Safety and Licensing
Board Panel
U. S. Nuclear Regulatory
Commission
East-West Tower, North Tower
4350 East-West Highway
Bethesda, MD 20814

Secretary of the Commission
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Atomic Safety and Licensing
Appeal Board Panel
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory
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Washington, D.C. 20555

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MHB Technical Associates
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San Jose, California 95125

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Albany, New York 12223

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Commission, Staff Counsel
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Washington, D.C. 20472

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Executive Coordinator
Shoreham Opponents' Coalition
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Smithtown, New York 11787

Martin Bradley Ashare, Esq.
Suffolk County Attorney
H. Lee Dennison Building
Veterans Memorial Highway
Hauppauge, New York 11788

Renee R. Falzone

Hunton & Williams
707 East Main Street
Post Office Box 1535
Richmond, Virginia 23212

DATED: July 30, 1984