LILCO, April 26, 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)
	)	

AFFIDAVIT OF MICHAEL L. MIELE IN SUPPORT
OF LILCO'S MOTION FOR SUMMARY DISPOSITION
OF CONTENTIONS 16.E, J, K, L AND M
(PUBLIC EDUCATION BROCHURE)

Michael L. Miele, duly sworn, deposes and says as follows:

1. My name is Michael L. Miele. I am employed by the Long Island Lighting Company as the Radiation Protection Section Supervisor in the Nuclear Engineering Department. In this capacity, I have experience using dose control, dosimetry, and whole body counting.

2. The dose levels requiring evacuation (5 rem) are extremely unlikely and have never been experienced by the public as the result of activities of the commercial nuclear power industry in this country.

Michael L. Miele

Michael L. Miele

Subscribed and sworn to before me this 26 day of April, 1984.

My commission expires: 3/30/86
QUALIFIED SUFFOLK COUNTY STATE OF NY
REG. # 4669393

Christine M. Schubert
Notary Public

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 [illegible] 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.

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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.

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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 MOTION FOR SUMMARY DISPOSITION OF CONTENTIONS 16.E, J, K, L, AND M (PUBLIC INFORMATION BROCHURE), including an Annex and supporting affidavits of Carol A. Clawson, Edward B. Lieberman, and Michael L. Miele, 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.

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DATED: April 27, 1984