LILCO, October 12, 1982

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)
	)	(Emergency Planning --
(Shoreham Nuclear Power Station, Unit 1)	)	Phase I)
	)	

TESTIMONY OF NICHOLAS J. DI MASCIO AND EDWARD LIEBERMAN ON BEHALF OF THE LONG ISLAND LIGHTING COMPANY ON PHASE I EMERGENCY PLANNING CONTENTION EP 2(B) -- GROUND TRANSPORTATION TO HOSPITAL

PURPOSE

The purpose of this testimony is to respond to Suffolk County's Contention EP 2(B), which alleges that LILCO has not demonstrated that ground transportation will be adequate to transport contaminated injured people in a radiological emergency in light of traffic congestion. This testimony will demonstrate to the contrary that LILCO has made arrangements for transporting contaminated injured individuals in accordance with NRC requirements and guidance. In addition (although it does not appear that this showing is required by NRC regulations), the testimony will show that traffic congestion

should not be a problem, because the distances to be traveled are short and the routes are not expected to be congested with traffic.

Attachments to this Testimony:

2(B)-1	Resume of Nicholas J. Di Mascio
2(B)-2	Resume of Edward Lieberman
2(B)-3	LILCO Emergency Plan § 6.5.3
2(B)-4	SP 69.040.01, "Personnel Injury/Illness"
2(B)-5	Letter of agreement with Wading River Fire Department
2(B)-6	Map of site vicinity
2(B)-7	Sample schematic to show congested roads

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Q1. Will the witnesses please identify themselves?

A1. [Di Mascio] My name is Nicholas J. Di Mascio. My business address is Long Island Lighting Company, P.O. Box 628, Wading River, New York 11792. I am a Plant Engineer, Health Physics Section, employed by LILCO at the Shoreham Station. A copy of my professional qualifications is attached to this testimony as Attachment 2(B)-1.

[Lieberman] My name is Edward Lieberman. I am a Vice President and principal of KLD Associates, Inc., located at 300 Broadway, Huntington Station, New York 11746,

which has been retained by LILCO to study the traffic planning aspects of evacuation in the event of a radiological emergency at the Shoreham Station. A copy of my professional qualifications is attached as Attachment 2(B)-2.

Q2. What does Contention EP 2(B) say?

A2. [Di Mascio] Contention EP 2(B), which concerns ground transportation of contaminated injured individuals to Central Suffolk Hospital, reads as follows:

> B. Furthermore, LILCO has failed to adequately demonstrate that ground transportation (Plan at 6-16) is adequate for conveyance of contaminated injured individuals to Central Suffolk Hospital under the congested traffic or radiological conditions that are likely to exist during a radiological emergency. Thus, LILCO has failed to satisfy 10 CFR § 50.47(b)(12), 10 CFR Part 50, Appendix E, Item IV.E.6, and NUREG 0654, Item II.L.4.

Q3. What does 10 CFR § 50.47(b)(12) say?

A3. [Di Mascio] Section 50.47(b)(12) reads as follows:

> (b) The onsite and offsite emergency response plans for nuclear power reactors must meet the following standards [footnote omitted]:
>
> . . . .
>
> (12) Arrangements are made for medical services for contaminated injured individuals.

Q4. What does 10 CFR Part 50, Appendix E, Item IV.E.6, say?

A4. [Di Mascio] Item IV.E.6 says this:

> Adequate provisions shall be made and described for emergency facilities and equipment, including:
>
> . . . .
>
> 6. Arrangements for transportation of contaminated injured individuals from the site to specifically identified treatment facilities outside the site boundary; . . .

Q5. What does NUREG-0654, Item II.L.4, say?

A5. [Di Mascio] Item II.L.4 of NUREG-0654 (page 69) says this:

> 4. Each organization shall arrange for transporting victims of radiological accidents to medical support facilities.

Q6. Why does the County think the LILCO emergency plan does not meet these requirements and guidelines?

A6. [Di Mascio] The County contends that ambulances will not be able to travel to and from Shoreham because the roads will be congested with other traffic.

Q7. Is this contention related to other contentions?

A7. [Di Mascio] The County has said that it will file consolidated testimony on Contentions EP 2(B) and 5(B), both of which have to do with traffic congestion.

Q8. What potential issues are not raised by the contention?

A8. [Di Mascio] The contention does not appear to question the adequacy of the number of ambulances, their availability, or their capacity; it simply argues that no matter how adequate the vehicles, they will not be able to get through the traffic congestion. The contention does not seem to question the training or dedication of the ambulance personnel, nor does it suggest that their family ties will prevent them from doing their jobs (in contrast to, for example, Contention 5(A)). The contention does not appear to argue that ambulance personnel will be reluctant to enter the Shoreham site if it is contaminated. Consequently, these issues are not addressed in this testimony.

The words "or radiological conditions" in the contention suggest that the County may also be contending that the radiological plume will prevent ambulances from going where they need to go. We doubt that this potential issue has been fairly raised, but in case the County raises it in its direct testimony and the Board agrees it is a part of this contention, we address in this testimony the expected effect of the radiological plume on ambulances.

Q9. Where in the LILCO emergency plan are the medical treatment and transportation arrangements for contaminated injured personnel discussed?

A9. [Di Mascio] The LILCO plan in section 6.5.3 describes the transportation arrangements for contaminated injured personnel. A copy of this section of the plan, which includes the page 6-16 cited in the contention, is attached as Attachment 2(B)-3.

Q10. What implementing procedure deals with offsite medical assistance?

A10. [Di Mascio] Procedure SP 69.040.01, "Personnel Injury/Illness," is the relevant procedure. A copy of this procedure is Attachment 2(B)-4 to this testimony.

Q11. Where will the ambulances start from?

A11. [Di Mascio] Ambulances will be provided by the Wading River Fire Department. A copy of the letter of agreement with the fire department is Attachment 2(B)-5.

Q12. Will congested traffic conditions prevent the ambulances from getting from Wading River to the Station, or unduly delay them?

A12. [Lieberman] No. The ambulances travel westward along North County Road to the site, a distance of about 1 1/2 miles. This route is not expected to be used as a principal evacuation route, since it is toward the plant, while evacuating traffic will move away from the plant. Travel time should not exceed 5 minutes. A map of the site vicinity is Attachment 2(B)-6 to this testimony.

Q13. To what hospital will the ambulances take the injured people?

A13. [Di Mascio] To Central Suffolk Hospital, located about 10 miles southeast of the Shoreham site.

Q14. Going from the Shoreham station to Central Suffolk Hospital, won't the ambulances encounter traffic congestion?

A14. [Lieberman] The preferred route from the Station to Central Suffolk Hospital will be eastbound along Sound Avenue to Roanoke Avenue, then south along Roanoke Avenue to the hospital. The total distance is approximately 13 miles. This route is expected to service at most a few vehicles, and no congestion is anticipated.

Q15. What if a radioactive plume is traveling toward the east, along South Avenue?

A15. [Lieberman] An alternate route would be turning South onto Wading River Manorville Road and traveling to the Long Island Expressway, then east to Route N.Y. 25, then east to Roanoke Avenue. Then turn North on Roanoke Avenue to the hospital. Because of expected evacuation traffic patterns, only moderate congestion is expected to be encountered on Wading River Manorville Road.

Q16. Suppose Wading River is evacuated and personnel are not available to man the Fire Department ambulances?

A16. [Di Mascio] Then the Suffolk County Medical Communications Center will request ambulances from other fire departments through the Mutual Aid Agreements. LILCO will project the location of the plume and identify those fire departments which will not traverse the plume on the trip to the Shoreham Station.

Q17. Explain how these ambulance drivers will be informed about traffic congestion and how to avoid it.

A17. [Di Mascio, Lieberman] KLD has done and is doing traffic studies, which will probably be before the Board in Phase II of the emergency planning issues. As a result of these studies, KLD will be able to provide

schematics (see Attachment 2(B)-7 for an example) that will identify the roads that are congested and the estimated extent of congestion, so that in the event of an evacuation, LILCO will be able to inform the drivers of the best routes to the site. In addition, ambulance drivers can communicate with the Suffolk County Police to identify the location of congested routes at the start of their trip and while en route to the Station.

Q18. Go back now to the regulatory requirements and guidelines you recited earlier. Has LILCO made arrangements for medical services for contaminated individuals?

A18. [Di Mascio] Yes.

Q19. Does LILCO's emergency plan then comply with 10 C.F.R. § 50.47(b)(12)?

A19. [Di Mascio] Yes.

Q20. Have "adequate" arrangements been made and described for transportation of contaminated injured individuals from the Shoreham site to specifically identified treatment facilities outside the site boundary?

A20. [Di Mascio, Lieberman] Yes.

Q21. Does the LILCO plan then comply with 10 C.F.R. Part 50, Appendix E, IV.E.6?

A21. [Di Mascio, Lieberman] Yes.

Q22. Has LILCO arranged for transporting victims of radiological accidents to medical support facilities?

A22. [Di Mascio] Yes.

Q23. Does the LILCO plan then conform to the guidance of NUREG-0460, Item II.L.4?

A23. [Di Mascio] Yes.

PROFESSIONAL QUALIFICATIONS

NICHOLAS J. DiMASCIO

Nuclear Plant Engineer - Health Physics Sections

LONG ISLAND LIGHTING COMPANY

My name is Nicholas J. DiMascio and my business address is Long Island Lighting Company, Shoreham Nuclear Power Station, Post Office Box 628, Wading River, New York 11792. I have been Assistant Health Physics Engineer at the Shoreham Nuclear Power Station since October 1978. In this capacity I am responsible for the development of many station radiation protection programs and activities.

I was initially assigned the responsibility of developing a specification for the purchase of a combined Whole Body Counting and Ge(Li) Isotopic Analysis System. My other duties include: supervision of the Health Physics Technicians; preparation of Health Physics procedures; development of a computerized Dose Records Keeping System; establishment of a Respiratory Protection Program which meets the requirements of Regulatory Guide 8.15 and NUREG-0041; initiation of a TLD System; preparation of Emergency Plan and site Emergency Plan Implementing Procedures for compliance with guidance of

NUREG-0654 Rev.1; and assisting the Health Physics Engineer as required.

I was awarded my Bachelors degree in Radiological Health Physics in 1974 from Lowell Technological Institute. I subsequently attended the University of New York at Stonybrook where I worked towards a Master of Science degree in Industrial Management. I earned the last twelve credits of a Master of Science degree in Nuclear Engineering at the Polytechnic Institute of New York. In addition, I successfully completed numerous training programs ranging from four days to twelve weeks. These programs include: Boiling Water Reactor Health Physics Technology (General Electric); Basic Power Plant Systems (Stone & Webster); Various Health Physics Workshops (Health Physics Society); Boiling Water Reactor Radiochemistry Technology (General Electric); Radiological Emergency Response Coordinators Course (United States Environmental Protection Agency); and Planning for Nuclear Emergencies (Harvard School of Public Health).

From November to June 1973 I was employed by the New England Electric Company for a summer internship program. I was assigned as Health Physics Assistant at the Yankee Rowe and Vermont Yankee Nuclear Power Stations and assumed the following duties: the performance of routine surveys and analyses; the use of radiation sources for the calibration of portable survey instrumentation; the provision of health physics coverage

during a refueling outage at Vermont Yankee; a detailed survey of normal gaseous effluent releases at the site boundary of Yankee Rowe; and the collection of offsite environmental samples--liquid, gaseous, and ground--for analyses of annual releases from Yankee Rowe.

From June 1974 to September 1978 I was employed by Stone & Webster Engineering Company as an Engineer in the Radiation Protection Department. My duties included performing the required accident analyses, evaluating radiation safety and determining adequate shielding for systems and components within nuclear power plants. I participated in a 10 CFR Part 50, Appendix I evaluation of effluent releases for Millstone Units 1 and 2. I developed specification for a digital radiation monitoring system for the Shoreham Nuclear Power Station as well as determining detector setpoints for the radiation monitoring system at North Anna Units 1 and 2. While still an employee at Stone & Webster, I was assigned to LILCO as a consultant at the Shoreham Nuclear Power Station for approximately fifteen months to assist the Health Physics Engineer in preoperational planning and procedure development.

Since October 1978 I have been a LILCO employee and, more specifically, have been assigned to the Shoreham Operating Staff as a Nuclear Plant Engineer in the Health Physics Section. During this period I have been assigned to On-Site Training I and II and training at Vallecito's Nuclear Training

Center commensurate with performing duties with the position of Assistant Health Physics Engineer. On-Site Training I included formal classroom lectures on components and operation of systems at the Shoreham Nuclear Power Station. On-Training II involved classroom lectures on operating procedures of each section of the Plant Staff, and familiarization of several emergency operating procedures. My assignment at General Electric's Vallecito's Nuclear Training Center included intensive formal classroom theory on BWR Health Physics Technology and practical applications through actual performance of normal routine surveys and calibrations.

I am a member of the Health Physics Society and the Greater New York Chapter of Health Physics Society.

My experience with radiation is extensive. In time increments ranging from twelve weeks to two years, I gained experience at Vermont Yankee, Yankee Atomic, Stone & Webster, General Electric and Lowell Technological Institute working with isotopes and their related types of uses. This experience included working with Co-60 and Cs-137 isotopes for calibration and check sources; mixed corrosion, mixed fission, and mixed activation products isotopes for use involving reactor coolant, radwaste, plant radiation, plant contamination and class experiments; noble gases isotopes for use as gas effluent samples and class experiments; and a Tritium isotope for liquid samples usage.

The training I received at Vermont Yankee, Yankee Atomic, Stone & Webster, General Electric and Lowell Technological Institute consisted of either on-the-job or formal training sessions. Ranging from three weeks to four years, the types of training I received involved: principles and practices of radiation protection; radioactivity measurement standardization and monitoring techniques and instruments; mathematics and calculations basic to use and measurement of radioactivity; and biological effects of radiation.

PROFESSIONAL QUALIFICATIONS

EDWARD LIEBERMAN

Vice President

KLD ASSOCIATES, INC.

My name is Edward Lieberman and my business address is KLD Associates, Inc., 300 Broadway, Huntington Station, New York 10007. I am presently Vice President of KLD Associates, Inc.

I received my Bachelor of Science degree in Civil Engineering in 1951 from Polytechnic Institute of Brooklyn. I was awarded my Master of Science degrees in Civil Engineering in 1954 from Columbia University and in Aero Engineering in 1967 from Polytechnic Institute of Brooklyn. I subsequently worked on a Doctorate degree in Transportation Planning at Polytechnic Institute of New York. I am a member of Chi Epsilon Honorary Fraternity.

With almost 30 years of professional experience, I have managed numerous major projects. I pioneered the development and application of traffic simulation models, making major innovations in the state-of-the-art in the Traffic Engineering profession. I have also been responsible for many engineering studies involving data collection and analysis and design of traffic control systems to expedite traffic flow and relieve congestion.

I have developed simulation models to study traffic performance on urban networks, freeways, and freeway corridors. I am currently working on a traffic simulation model for two-lane, two-way rural roads. These programs include consideration of pedestrians' interaction with vehicular traffic, truck and bus operations, special turning lanes, and vehicle fuel consumption and emissions; both pretimed and actuated traffic signal controls are represented.

I was responsible for the theoretical development of DYNEV, a DYnamic Network EVacuation model. The DYNEV model consists of two major components: an equilibrium traffic assignment model and a macroscopic dynamic traffic simultation model designed for all types of roadway facilities (urban streets, freeways, rural roads).

DYNEV is designed to be used as a tool to develop and organize evacuation plans needed as part of general disaster preparedness planning. DYNEV was used to analyze an existing evacuation scenario at the Con Edison Indian Point Nuclear Power Station and is currently being used to develop an extensive evacuation plan for the LILCO Shoreham Nuclear Power Station on Long Island, New York.

In developing this evacuation plan for LILCO's Shoreham Nuclear Power Station, my activities include definition of evacuation scenarios, definition of the evacuation network,

development of traffic control treatments and of traffic routing patterns, analysis of trip tables, analysis of simulation results, optimization of evacuation strategies and the preparation of formal documentation.

I was also responsible for the designs of the NETSIM microscopic urban traffic simulation model (formerly UTCS-1) and of the SCOT freeway traffic simulation model. The NETSIM microscopic traffic simulation model developed for the Federal Highway Administration, enables agencies to evaluate traffic operations in urban environments. The SCOT model was developed for the Transportation Systems Center of the Department of Transportation. This program includes a dynamic traffic assignment algrithm which routes traffic over a network in response to changing traffic flow characteristics to satisfy a specified origin-destination table. In addition, I have developed advanced traffic control policies for urban traffic for the FHWA-sponsored UTCS Project, as well as a bus preemption policy to enhance the performance of mass transit operations within urban environs.

I designed and programmed the advanced "Third Generation" area-wide, cycle-free control policies for moderate and congested traffic flow for computer-monitored real-time systems. I also developed a cycle-based, off-line computational procedure named SIGOP-II, to optimize traffic signal timing patterns to minimize system "disutility."

I led a group of traffic engineers and systems analysts in developing a system of macroscopic traffic simulation models designed to evaluate Transportation Systems Management (TSM) strategies. This software system, named TRAFLO, also includes an equilibrium traffic assignment model. This model has been distributed to other agencies including FEMA.

I designed an "Integrated Traffic Simulation System," named TRAF, which will eventually incorporate all the best traffic simulation models available. Using structured programming techniques, TRAF will integrate: NETSIM, TRAFLO, INTRAS (a microscopic freeway traffic simulation model), and a microscopic rural-road simulation model.

I served as Principal Investigator on NCHRP Project 3-20 entitled, "Traffic Signal Warrants." This project involved both field data collection and the application of the NETSIM model to study intersection delay as a function of traffic volume, type of control and geometrics. In turn, I developed and documented new signal warrants which wll be incorporated in the next version of the Manual on Uniform Traffic Control Devices (MUTCD).

Under NHTSA sponsorship, I directed a research study to evaluate a Driver Vehicle Evaluation Model named DRIVEM. This model simulates the resonse of motorists to hazardous events. The effort included analysis of the model formulation and

software and sensitivity testing. A workshop was designed, organized, scheduled and conducted by myself and other KLD professionals; experts from all over the U.S. were invited to recommend specific NHTSA research activities for the further development of the model. A recommended research program constituted the major output of the contract.

Over the years I have been involved in a number of other studies to evaluate traffic operations on large-scale road networks, using one or more of the models described above.

Prior to 1960 I applied my skills to the areas of stress analysis, vibrations, fluid dynamics and numerical analysis of differential equations. These analyses were programmed for the IBM 7090 and System 360, CDC 6600 and 7600, G.E. 625 and UNIVAC 1108 digital computers in assembly language, FORTRAN and PLI. I also designed the logic and real-time programming for a sonar simulator built for the Department of Navy and monitored by a PDP-8 process-control digital computer.

I am a member of the American Society of Civil Engineers, the Institute of Transportation Engineers, the Association of Computing Machinery and the Transportaton Research Board (TRB). I am also a member of the Capacity Committee and of the Traffic Flow Theory and Characteristics Committee of the TRB. I am a licensed Professional Engineer in New York, Maryland, and Florida.

The following list comprises selected publications of my studies and findings:

"DYNET - A Dynamic Network Simulation of Urban Traffic Flow," Proceedings, Third Annual Simulation Symposium, 1970.

"Simulation of Traffic Flow at Signalized Intersections: the SURF System," Proceedings, 1970 Summer Computer Simulation Conference, 1970.

"Dynamic Analysis of Freeway Corridor Traffic," ASME paper, Trans. 70-42.

"Simulation of Corridor Traffic: The SCOT Model," "Highway Research Record No. 409, 1972.

"Logical Design and Demonstration of UTCS-1 Network Simulation Model," Highway Research Record No. 409, 1972 with R. D. Worrall and J. M. Bruggerman).

"Variable Cycle Signal Timing Program: Volumes 1-4," Final Report of Contract DOT-FH-11-7924, June, 1974.

"Traffic Signal Warrants," KLD TR-51, Final Report on NCHRP Project 3-20/1, December 1976 (with G. F. King and R. Goldblatt).

"Rapid Signal Transition Algorithm," Transportation Research Record No. 509, 1974 (with D. Wicks).

"Subnetwork Structuring and Interfacing for UTCS Project-Program of Simulation Studies," KLD TR-5, January, 1972.

"Development of a Bus Signal Preemption Policy and a System Analysis of Bus Operations," KLD TR-11, April 1973.

"SIGOP-II - Program to Calculate Optimal, Cycle-Based Traffic Signal Timing Patterns, Volumes 1 and 2," Final Report, Contract DOT-FH-11-7924, KLD TR-29 and TR-30, December 1974. Summary report in Transportation Research Record 596, 1976 (with J. Woo).

"Developing a Predictor for Highly Responsive System-Based Control," Transportation Research Record 596, 1976 (with W. McShane and R. Goldblatt).

"A New Approach for Specifying Delay-Based Traffic Signal Warrants," Transportation Research Special Report 153 - Better Use of Existing Transportation Facilities, 1976.

"Network Flow Simulation for Urban Traffic Control Systems," Vols. 1-5, PB230-760, PB230-761, PB230-762, PB230-763, PB230-764, 1974 (with R. Worrall). Vols. 2-4 updated 1977, KLD TR-60, TR-61, TR-62 (with D. Wicks and J. Woo).

"Extension of the UTCS-1 Traffic Simulation Program to Incorporate Computation of Vehicular Fuel Consumption and Emissions," KLD TR-63, 1976 (with N. Rosenfield).

"Analysis and Comparison of the UTCS Second- and Third-Generation Predictor Models," KLD TR-35, 1975.

"Urban Traffic Control System (UTCS) Third Generation Control (3-GC) Policy," Vol. 1, 1976 (with A. Liff).

"Design of TRAFIC Operating System (TOS), KLD TR-57, 1977.

"Revisions to the UTCS-1 Traffic Simulation Model to Enhance Operational Efficiency," KLD TR-59, 1977 (with A. Wu).

"The Role of Capacity in Computer Traffic Control," in Research Directions in Computer Control of Urban Traffic Systems, ASME, 1979.

"Traffic Simulation: Past, Present and Potential," in Hamburger, W.S. and Steinman, L., eds., Proceedings of the International Symposium of Traffic Control Systems, Unversity of California, Berkeley, 1979.

"TRAFLO: A New Tool to Evaluate Transportation System Management Strategies," presented at the 59th Annual Meeting of the Transportation Research Board, 1980 (with B. Andrews).

"Determination of the Lateral Deployment of Traffic on an Approach to an Intersection," presented at the 59th Annual Meeting of the Transportation Research Board, 1980.

"Service Rates of Mixed Traffic on the Left-Most Lane of an Approach," presented at the 59th Annual Meeting of the Transportation Research Board, 1980 (with W. R. McShane).

"Development of a TRANSYT-Based Traffic Simulation Model," presented at the 59th Annual Meeting of the Transportation Research Board, 1980 (with M. Yedlin).

"Hybrid Macroscopic-Microscopic Traffic Simulation Model," presented at the 59th Annual Meeting of the Transportation Research Board, 1980 (with M. C. Davila).

"A Model for Calculating Safe Passing Distance on Two Lane Rural Road," presented at the 60th Annual Meeting of the Transportation Research Board, 1981.

If the release has resulted in extensive offsite contamination such that evacuation of the general public is being implemented, monitoring and decontamination prior to exit from the assembly areas would be superfluous in light of the potential for recontamination. Under these circumstances, personnel will be monitored for contamination as provided in the emergency plans of the affected jurisdictions.

In the event where personnel are evacuated to offsite assembly areas, monitoring and decontamination will be performed along the site access road near the LILCO 69KV Substation.

Personnel found to be contaminated will be issued protective clothing and directed to the EOF decontamination facility for further monitoring and decontamination. The same material and equipment utilized in onsite decontamination will be utilized at the EOF. Provisions will be available for radionuclide analysis of the personnel contamination in order to determine the amount of radioiodine present. Personnel contamination that cannot be removed by normal Health Physics Procedures will be referred to a medical specialist in personnel radiation accidents.

6.5.3 First Aid and Medical Treatment

The First Aid Room is located onsite in the Service Building Annex in close proximity to both the Health Physics Office and the Personnel Decontamination Room. First aid supplies will be provided as needed from this room. Stretchers and first aid kits will be located in a strategic manner throughout the plant. Two persons on each shift will be trained in first aid techniques. The First Aid Room will be equipped with medical equipment and supplies to adequately care for injuries not requiring hospitalization.

The LILCO Medical Director located in Hicksville, will be on-call to aid in any emergency. In addition, an on-call physician from Radiation Management Corporation, per attached Letter of Agreement, will be available to provide medical services at the plant site as required. The LILCO Medical Director and the Emergency Room physician will be trained in the handling and treatment of patients involved in radiation accidents.

Personnel injury involving possible radioactive contamination will be initially handled in the Personnel Decontamination Room or First Aid Room, if possible. Prompt attention will be given to life endangering injuries such as extensive burns, serious wounds, in preference to decontamination. If the injury involves contamination, all reasonable efforts will be made to decontaminate the injured onsite. If decontamination is impossible, the injured will be covered in such a manner as to avoid spread of contamination until medical aid can be obtained or hospitalization made.

Further medical treatment beyond first aid, requiring the services of a physician or hospitalization, will be determined by the nature and extent of the injuries. If there is no radiation injury or

radioactive contamination, medical treatment will be handled by the regular procedure designated by LILCO.

Hospital service will be provided by the Central Suffolk Hospital located about nine miles southeast of the site. In the event hospitalization of a contaminated patient is required, a LILCO employee, trained and qualified in health physics procedures and equipped with appropriate survey instruments will accompany the patient to the hospital and provide monitoring for the patient and hospital premises. In addition, the Central Suffolk Hospital has been equipped with a private entrance to an isolated emergency room containing the appropriate instrumentation and equipment needed capable of providing emergency medical, as well as decontamination services, to contaminated/injured individuals should the need arise. Provisions for protective clothing have also been made.

Arrangements for back-up hospitals have been made with the University Hospital in Philadelphia, PA, through a contract with Radiation Management Corporation.

Transportation for minor injuries will be accomplished by means of Company and/or privately owned vehicles as conditions warrent. Major injuries shall be transported to Central Suffolk Hospital by ambulance service provided by the Wading River Fire Department. Transportation to the University Hospital in Philadelphia, PA shall be by helicopter provided by Radiation Management Corporation.

Further information regarding decontamination and treatment of a radioactively contaminated patient at the Central Suffolk Hospital may be found in the EPIP.

Room, if possible. Prompt attention will be given to life endangering injuries such as extensive burns, serious wounds, in preference to decontamination. If the injury involves contamination, all reasonable efforts will be made to decontaminate the injured onsite. If decontamination is impossible, the injured will be covered in such a manner as to avoid spread of contamination until medical aid can be obtained or hospitalization made.

Further medical treatment beyond first aid, requiring the services of a physician or hospitalization, will be determined by the nature and extent of the injuries. If there is no radiation injury or radioactive contamination, medical treatment will be handled by the regular procedure designated by LILCO.

3< Hospital service will be provided by the Central Suffolk Hospital located about ten miles southeast of the site. In the event hospitalization of a contaminated patient is required, a LILCO employee, trained and qualified in health physics procedures and equipped with appropriate survey instruments will accompany the patient to the hospital and provide monitoring for the patient and hosptial premises. In addition, the Central Suffolk Hospital has been equipped with a private entrance to an isolated emergency room containing the appropriate instrumentation and equipment needed , capable of providing emergency medical, as well as decontamination services, to contaminated/injured individuals should the need arise. Provisions for protective clothing have also been made.

3< Arrangements for back-up hospitals have been made through a contract with Radiation Management Corporation (RMC). RMC maintains a radiation medicine definitive care center at the Hospital of the University of Pennsylvania (HUP) in Philadelphia, Pennsylvania. This care facility offers sophisticated treatment and evaluation of any serious radiation injury. Long-term hospitalization and rehabilitation services are also available at this center.

Capabilities at this institution include fully equipped decontamination suite, reverse isolation units, facilities for white cell transfusion, bone marrow transplant, chromosome analysis, sperm analysis and radiopathology. Medical consultation is available from specialists in a variety of related disciplines.

MC-1

Submitted: A. J. D'Mascio

Reviewed/OQA Engr.: Robert L. Gluvna

Approved/Plant Mgr.: J. Rivello

SP Number: 69.Ø4Ø.Ø1
Revision: Ø
Date Eff.: 7/09/82
TPC
TPC
TPC

PERSONNEL INJURY/ILLNESS

1.0 PURPOSE

To describe the actions to be taken by station personnel in the event of an injury or illness at SNPS.

2.0 RESPONSIBILITY

The Health Physics Engineer is responsible for ensuring compliance with this procedure.

3.0 DISCUSSION

3.1 All injuries/illnesses should be reported to the Control Room so that proper measures can be performed consistent with the extent of the injury/illness.

3.2 A minor injury/illness is defined as one not requiring immediate offsite medical assistance.

3.3 A major injury/illness is defined as one requiring immediate offsite medical assistance.

3.4 This procedure gives guidance for handling personnel injury/illness, including instructions for cases requiring offsite medical assistance.

3.5 For injuries occurring in a high radiation area, implement SP 69.Ø8Ø.Ø1, Search and Rescue.

3.6 Topics covered in this procedure:

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8.1	Reporting injury/illness to the Control Room	3
8.2	Control Room Actions	3
8.3	Initial Fire Brigade/Health Physics Actions	4
8.4	Treatment of all Minor Injuries/Illnesses	4
8.5	Treatment of Non-contaminated Major Injury	4
8.6	Treatment of Contaminated Major Injury	6

4.0 PRECAUTIONS

Only personnel qualified in first aid shall administer first aid to an injured/ill individual.

5.0 PREREQUISITES

A person has become injured or has become ill.

6.0 LIMITATIONS AND ACTIONS

6.1 For severe or life threatening injuries, immediate medical treatment is of the highest priority and radiological controls are considered secondary.

6.2 A contaminated injured individual requiring transportation to an offsite medical facility is an Emergency Action Level and requires declaration of an UNUSUAL EVENT in accordance with SP69.Ø1Ø.Ø1 Classification of Emergency Action Levels

7.0 MATERIALS AND TEST EQUIPMENT

N/A

8.0 PROCEDURE

8.1 Reporting Injury/Illness to the Control Room

8.1.1 Station personnel who discover another individual having an injury/illness should immediately notify the Control Room of the situation using the quickest mode of communications available.

8.1.2 Station personnel having incurred an injury/illness should notify the Control Room if able to do so.

8.2 Control Room Actions

8.2.1 Upon receipt of a report of an injury/illness, the Control Room Operator shall ascertain from the individual reporting the incident whether immediate medical assistance is required and as much of the following information as necessary:

8.2.1.1 Number of affected individuals;

8.2.1.2 Location of injured individuals;

8.2.1.3 Possibility of contamination;

8.2.1.4 Description of injury

8.2.2 If immediate medical assistanct is required, Watch Engineer or designee, perform the following:

8.2.2.1 Activate the "SIREN" tone using the multi-time generator.

8.2.2.2 Announce the following over the page/party system:

"Attention, Fire Brigade (and Health Physics Technician - if contamination is suspected) report to (give location) immediately."

Repeat this announcement twice.

8.2.3 If immediate medical assistance is not required, Watch Engineer or designee, perform the following:

8.2.3.1 Contact the injured person and direct him to report to the first aid room or contact the person reporting the injury and direct him to accompany the injured person to the first aid room for further treatment and release.

8.2.3.2 Contact the Health Physics Engineer and inform him that an individual proceeding to the first-aid room might be contaminated.

8.2.4 Notify LILCO Medical Director using Appendix 12.3

8.3 Initial Fire Brigade/Health Physics Actions

NOTE: The fire brigade consists of five persons - two of which are qualified to administer multi-media first-aid.

8.3.1 Fire brigade members, obtain first-aid kit, communications equipment, and other material/equipment as necessary and proceed as directed by the announcement over the page/party system.

8.3.2 Health Physics Technician, obtain decontamination kit, survey instruments, and proceed as directed by the announcement over the page/party system.

8.3.3 First-aid team members, determine extent of medical injuries and administer first-aid.

8.3.4 Health Physics Technician, determine levels of contamination and sources of radiation on or near the injured individual.

8.3.5 Fire brigade chief, assume direction and control of all activities at the scene. Establish communications with the Control Room and update the Watch Engineer/designee of the situation.

8.3.6 Implement section 8.4, 8.5 or 8.6 of this procedure consistent with the extent of the injury/illness and/or contamination:

Section 8.4 - Treatment of all Minor Injuries/Illnesses
Section 8.5 - Treatment of Non-Contaminated Major Injury
Section 8.6 - Treatment of Contaminated Major Injury

8.4 Treatment of all Minor Injuries/Illnesses

8.4.1 Injured individual, either by himself or accompanied by person reporting injury or first aid team members, proceed to first-aid room for subsequent medical treatment. First-aid team members or first-aid room attendant fill out Body Map (Attachment 12.1) showing injured areas.

8.4.2 Health Physics Technician decontaminate injured individual in accordance with SP62.Ø4Ø.Ø1 Personnel Decontamination (if applicable). Record contamination levels and location of contamination on the Radiological Survey Sheet, SPF 62.Ø1Ø.Ø1-1.

8.5 Treatment of Non-contaminated Major Injury

8.5.1 Watch Engineer or designee:

8.5.1.1 From communications with the Fire Brigade Chief prepare a Personnel Injury Fact Sheet (Appendix 12.2).

8.5.1.2 Notify the Wading River Fire Department using the Personnel Injury Call List (Appendix 12.3) and read Part

I of the Personnel Injury Fact Sheet (Appendix 12.2).

8.5.1.3 Notify the Shift Security Supervisor of the pending arrival of the ambulance. Include the gate at which the ambulance will enter.

8.5.1.4 Notify Central Suffolk Hospital and Suffolk County using the Personnel Injury Call List (Appendix 12.3) and read Part II of the Personnel Injury Fact Sheet (Appendix 12.2).

8.5.2 Fire Brigade Chief:

8.5.2.1 Coordinate the efforts of all personnel at the scene.

8.5.2.2 Determine specific location for the ambulance to pickup injured/ill person and inform the Shift Security Supervisor of this.

8.5.2.3 Upon arrival of the ambulance, initiate communications with the WRFD Chief and direct the transfer of injured/ill person to the ambulance.

8.5.2.4 Upon loading the injured person into the ambulance, inform the Shift Security Supervisor that the ambulance is about to depart. Give names of attendents.

8.5.3 First-Aid Members:

8.5.3.1 Direct all request for assistance to the Fire Brigade Chief.

8.5.3.2 Prepare the injured/ill person for transfer to the ambulance.

8.5.4 Security (under direction of Shift Security Supervisor):

8.5.4.1 Collect ID's from ambulance personnel and issue emergency personnel visitor dosimetry to ambulance attendants.

8.5.4.2 Based upon information from Fire Brigade Chief, escort ambulance to designated pick-up location.

8.5.4.3 Remain with ambulance and provide escort to the exit gate upon transfer of injured/ill person into ambulance.

8.5.4.4 Return ID's to ambulance attendants and Health Physics Technician at the security fence for quick egress from the site.

8.6 Treatment of Contaminated Major Injury

8.6.1 Watch Engineer or designee:

8.6.1.1 From communications with the Fire Brigade Chief prepare a Personnel Injury Fact Sheet (Appendix 12.2).

8.6.1.2 Notify the Wading River Fire Department using the Personnel Injury Call List (Appendix 12.3) and read Part I of the Personnel Injury Fact Sheet (Appendix 12.2).

8.6.1.3 Notify the Shift Security Supervisor of the pending arrival of the ambulance. Include the gate at which the ambulance will enter.

8.6.1.4 Notify Central Suffolk Hospital and Suffolk County using the Personnel Injury Call List (Appendix 12.3) and read Part II of the Personnel Injury Fact Sheet (Appendix 12.2).

8.6.1.5 Declare an Unusual Event in accordance with SP69.Ø1Ø.Ø1 Classification of Emergency Action Levels.

NOTE: If an emergency classification exist, do not perform this step.

8.6.2 Fire Brigade Chief:

8.6.2.1 Coordinate the efforts of all personnel at the scene.

8.6.2.2 Determine specific location for the ambulance to pickup injured/ill person and inform the Shift Security Supervisor of this.

8.6.2.3 Upon arrival of the ambulance, initiate communications with the WRFD Chief and direct the transfer of injured/ill person to the ambulance.

8.6.2.4 Upon loading the injured person into the ambulance inform the Shift Security Supervisor that the ambulance is about to depart. Give names of attendents and Health Physics Technician.

8.6.3 First-Aid Members:

8.6.3.1 If the injury has occured in a contaminated area, don protective clothing as required by Health Physics.

NOTE: For severe or life threatening injuries and/or high radiaiton areas, time is of the utmost importance. Use judgement when performing Step 8.6.3.1. Immediate medical treatment is of the

highest priority and radiological controls are secondary.

8.6.3.2 Implement appropriate first-aid techniques making efforts to prevent contaminating or spreading any contamination which might be on the injured/ill person.

8.6.4 Security

8.6.4.1 Collect ID's from ambulance personnel and issue emergency personnel visitor dosimetry to ambulance attendants.

8.6.4.2 Based upon information from Fire Brigade Chief, escort ambulance to designated pick-up location.

8.6.4.3 Remain with ambulance and provide escort to the exit gate upon transfer of injured/ill person into ambulance.

8.6.4.4 Return ID's to ambulance attendants and collect ID from the individual accompanying the injured person (qualified in health physics monitoring) at the security fence for quick egress from the site.

8.6.5 Health Physics Technician

8.6.5.1 Survey injured/ill person for contamination, and record the levels both on the Body Map (Appendix 12.1) and the Radiological Survey Sheet (SPF62.Ø1Ø.Ø1-1). Also indicate the injured areas on the Body Map. Ensure that the Body Map and the Contamination Sheet accompanies the individual when transported to the hospital.

8.6.5.2 Attempt to remove any contaminated clothing. Ensure that the removal of contaminated clothing does not aggravate the injury or cause cross-contamination.

8.6.5.3 Request that plastic sheets, absorbent pads, blankets, and other necessary equipment be dispatched to injured person's location by contacting the Fire Brigade Chief.

8.6.5.4 Assist the first-aid team members in loading injured person unto the stretcher (if required) insuring medical and contamination control measures are followed.

8.6.5.5 Inform the Brigade Chief of impact of either having the injured person removed from the area versus having ambulance attendents enter area and pick-up injured person.

8.6.5.6 Ensure that appropriate personnel dosimetry has been provided to ambulance attendents.

8.6.5.7 Ensure that the ambulance has been lined with precut herculite or blotting paper, and that the attendents have been provided any required protective clothing.

8.6.6 A person qualified in Health Physics monitoring shall accompany the injured person in the ambulance. The individual should have a G-M tube survey instrument, a dose rate instrument, a completed Body Map (Appendix 12.1) and Radiological Survey Sheet (SPF62.Ø1Ø.Ø1-1). Additionally this individual shall:

8.6.6.1 Assist hospital and ambulance personnel in transferring the person to the treatment room.

8.6.6.2 Roll up any blotting paper that was laid down between the ambulance and the treatment room. Place this blotting paper in plastic bags for transfer back to SNPS for disposal.

8.6.6.3 Indicate wound areas and levels of contamination to attending hospital staff.

8.6.6.4 Perform periodic survey of patient.

8.6.6.5 Assist hospital staff in any way possible.

8.6.6.6 Recommend appropriate protective clothing to persons entering the treatment rooms and assist these personnel with removal of protective clothing and monitoring when leaving the room.

8.6.6.7 As time permits, monitor ambulance personnel for contamination. If contamination in excess of 50 cpm above background found, these personnel should be decontaminated at the hospital, otherwise, they may be released. Document the results of this survey on the Radiological Survey Sheet (SPF62.Ø1Ø.Ø1-1). Collect dosimeters from ambulance personnel.

8.6.6.8 Monitor all fixed equipment, floors, tables, and any other surfaces that may have been contaminated. Decontamination of contaminated equipment and surfaces will be performed by LILCO personnel at the direction of hospital personnel and health physics supervision to levels less than detectable, prior to release to other uses. Document all surveys on the Radiological Survey Sheet (SPF62.Ø1Ø.Ø1-1).

8.6.6.9 Collect dosimetry, protective clothing, and any other potentially contaminated waste for transport back to the station.

9.0 ACCEPTANCE CRITERIA

N/A

10.0 FINAL CONDITIONS

10.1 Injured victim has been transported to the hospital for further medical assistance.

10.2 Hospital facilities and the ambulance have been cleared for further use.

10.3 Notifications have been completed in accordance with SP69.009.01, Notifications.

11.0 REFERENCES

11.1 Shoreham Nuclear Power Station Emergency Plan.

11.2 SP 62.040.01, Personnel Decontamination.

12.0 APPENDICES

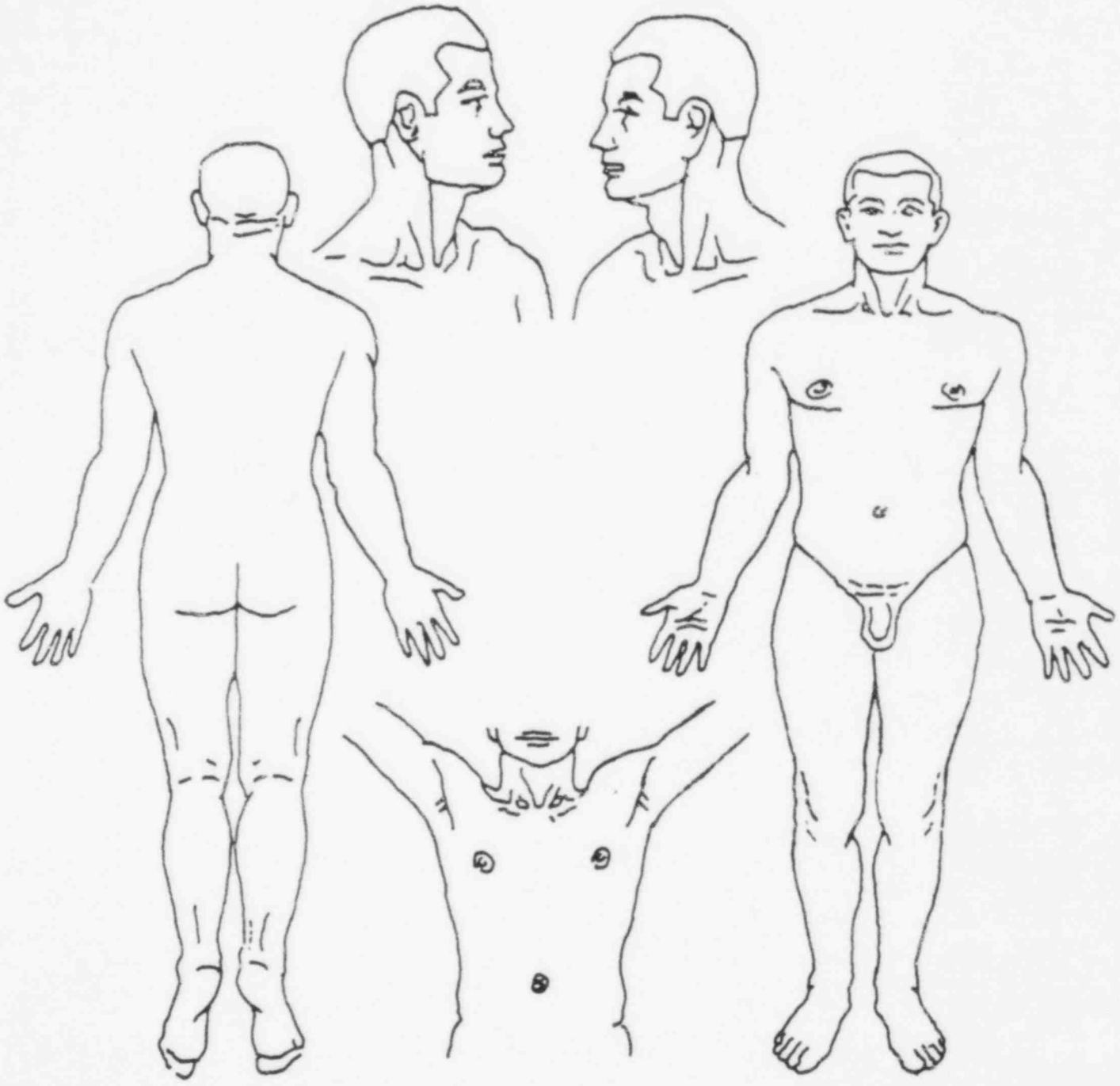
12.1 Body Map, SPF 69.040.01-1

12.2 Personnel Injury Fact Sheet, SPF 69.040.01-2

12.3 Personnel Injury Call List, SPF 69.040.01-3

BODY MAP

INDICATE WOUNDS AND/OR CONTAMINATED AREAS
(USE ADDITIONAL SHEETS AS NECESSARY)



NAME: _____

COMPANY/DEPT. _____/_____

TIME/DATE: _____/_____

PERSONNEL INJURY FACT SHEET

PART I

Notification for Ambulance Assitance (Usually Wading River Fire Department)

1. This is the Shoreham Nuclear Power Station. An injury involving _____ person(s)
(number)

has occured onsite which required ambulance service. The individual(s)

_____ contaminated and will be transported to
(are/are not)

_____
(hospital - usually Central Suffolk Hospital

2. _____
(brief description of injuries)

3. Enter the station through the _____ gate.
(east/west)

PART II

Notification to: 1. Receiving Hospital (Usually Central Suffolk Hospital)

2. Suffolk County Emergency Operations Center

1. This is the Shoreham Nuclear Power Station. An injury involving _____ person(s)
(number)

has occurred onsite which requires medical treatment. The individual(s)

_____ contaminated and are being sent to
(are/are not)

_____ for treatment.
(hospital - usually Central Suffolk Hospital)

2. (Same as Item #2, Part I above)

3. The estimated time of arrival at the hospital is _____ hours.
(time - use 24 hr. clock)

SPF 69.040.01-2 Rev. 0

PERSONNEL INJURY CALL LIST

INDIVIDUAL/ ORGANIZATION	AGENCY CONTACTED TIME/INITIAL	COMMUNICATIONS MODE PRIMARY/ ALTERNATE	NAME OF PERSON CONTACTED	MESSAGE RECEIVED AND VERIFIED TIME/INITIALS
1. Wading River Fire Department	___/___	1. Phone	_____	___/___
2. Central Suffolk Hospital	___/___	1. Phone	_____	___/___
3. Suffolk County Emergency Operations Center	___/___	1. Phone	_____	___/___
4. LILCO Medical Director	___/___	1. Phone 2. Beeper	_____	___/___

SPF 69.040.01-3 Rev. 0

AGREEMENT
BETWEEN
THE WADING RIVER FIRE DISTRICT
AND
LONG ISLAND LIGHTING COMPANY
ON
EMERGENCY PLANNING

In order to provide for efficient and timely implementation of protective actions should they ever be required at the Shoreham Nuclear Power Station, the Wading River Fire District (WRFD) and Long Island Lighting Company (LILCO) hereby agree to the following undertakings:

(A) The WRFD will respond to a request from LILCO for assistance in fighting any fires at the Shoreham site.

(B) At LILCO's request, the WRFD will transport any injured persons, irrespective of the nature or cause of injury, including personnel who may be radiologically contaminated, from LILCO's Shoreham site to a nearby hospital.

In consideration of the foregoing commitments by the WRFD, LILCO agrees:

(A) To provide training to the active members of the WRFD in respect to the performance of the undertakings set forth in this Agreement. This training will be reinforced by periodic drills to maintain a proficient crew of volunteer personnel in the WRFD.

(B) To provide an individual qualified in Health Physics to accompany personnel from the WRFD whenever they are requested to provide assistance at the Shoreham Station.

(C) To provide dosimeters, breathing apparatus and protective clothing, when necessary, to the members of the WRFD who are supplying assistance at the Shoreham Station.

(D) To maintain records, in accordance with 10 CFR 20, showing the radiation exposures of all WRFD personnel who require radiation monitoring as a result of their presence at the Shoreham Station.

(E) To make a record of any equipment or personal belongings of the WRFD or its personnel that becomes unusable due to contamination at the Shoreham Station and to replace or otherwise compensate the WRFD or its personnel for the loss of such equipment or personal belongings.

(F) To establish a Committee, with the Shoreham Station's Plant Manager as Chairman, to answer questions and provide information to the WRFD concerning the contents and execution of this Agreement.

(G) To provide radio communication equipment to personnel of the WRFD at the time they supply assistance at the Shoreham Station.

(H) To obtain, prior to fuel-load at the Shoreham Station, insurance that will provide coverage against radiation damage to fire department personnel and equipment in connection with the WRFD's response to any incident at the Station and,

after such insurance is secured, supply evidence thereof to the WRFD.

FOR THE WADING RIVER FIRE DISTRICT

Carl J. Fiano Jr. Date May 21, 1980

Title CHAIRMAN
WADING RIVER FIRE DISTRICT

FOR LONG ISLAND LIGHTING COMPANY

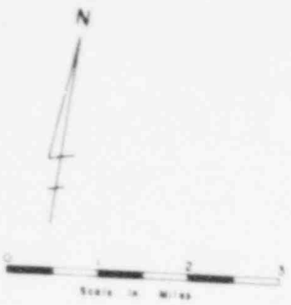
J R Gummersall Jr Date 5/5/80

John R. Gummersall, Jr.

Title Vice President

LONG ISLAND

SOUND



LEGEND

ZONE BOUNDARIES

LILCO PLANT PROPERTY

POLICE

FIRE

PRIVATE AMBULANCE CO.

MANORVILLE

MORICHES BAY

FIG. 7

EMERGENCY SERVICES

EVACUATION NETWORK

DELAY PER VEHICLE-MILE