UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION



BEFORE THE ATOMIC SAFETY AND LICENSING BOARD



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| In the Matter of | ) | |
| | ) | |
| LONG ISLAND LIGHTING COMPANY | ) | Docket No. 50-322-OL-4 |
| | ) | (Low Power) |
| Shoreham Nuclear Power Station | ) | |



TESTIMONY OF THEODORE R. QUAY

Q1. Mr. Quay, please state your name, address and position with the Nuclear Regulatory Commission.

A1. My name is Theodore R. Quay. My business address is U. S. Nuclear Regulatory Commission, Washington, D. C., 20555. I am a Section Leader in the Accident Evaluation Branch, Division of Systems Integration within the Office of Nuclear Reactor Regulation of the Nuclear Regulatory Commission.

Q2. Have you prepared a statement of your professional qualifications?

A2. Yes, I have prepared the statement of my professional qualifications. It is appended to this testimony.

Q3. Please state the purpose of your testimony and identify your responsibilities therein.

A3. The purpose of my testimony is to discuss the effect of the loss of the Standby Gas Treatment System (SGTS) on the radiological conseqeunces of certain accidents.

Q4. Please state the purpose of the SGTS.

A4. The SGTS is a post accident mitative system designed to reduce the quantity of radioactive iodine released to the environment following certain postulated accidents.

Q5. What accidents is the SGTS used to mitigate?

A5. The SGTS is used to mitigate the consequences of the Loss-of-Coolant Accident and the fuel handling accident.

Q6. What is the effect of the loss of the SGTS on these two accidents?

A6. As discussed in the staff's Shoreham SSER 5, the most limiting case predicts that power could be lost for 55 minutes without fuel failures occurring. As indicated in this SSER no more than 30 minutes will be needed to restore power to the ECCS pumps from alternate ac sources. As a result, without fuel failures, there is no need for the SGTS.

With respect to the fuel handling accident, those fission products which are in the fuel-cladding gap are subject to release from fuel assemblies damaged during handling, but not the fission products which remain in the fuel itself. At 5% power, not only is the total fuel inventory 20 times smaller than at full power (5% versus 100%), but also the fraction of that inventory that has left the fuel and entered the gap is at least 20 times smaller as well. This reduction of fission products in the fuel-clad gap alone compensates for a loss of the SGTS due to unavailability of the onsite diesels (This system was assumed in the SER to reduce the post-accident release of iodine fission products by a factor of

20). Although the loss of the SGTS is more than compensated for by the reduced fuel-cladding fission product gap inventory and the Staff does not believe additional measures are necessary, the consequences of postulated fuel-handling accidents could further be mitigated by imposing a technical specification restriction on movement of irradiated fuel. Restricting the movement of irradiated fuel for a period of 40 days would more than compensate for the iodine removal capability of the SGTS. The decay allowed for by the forty day period would also produce more than a factor of 20 reduction in radioactive iodine released during a postulated accident.

THEODORE R. QUAY

PROFESSIONAL QUALIFICATIONS

OFFICE OF NUCLEAR REACTOR REGULATION

U. S. NUCLEAR REGULATORY COMMISSION

I am a Section Leader in the Accident Evaluation Branch, Division of Systems Integration, U.S. Nuclear Regulatory Commission, Washington, D.C. My duties are to provide technical supervision and review the work of personnel assigned to my section. My responsibilities include planning, coordinating, and reviewing the fission product attenuation of accident mitigative features of plants under review for construction permits and operating licenses, and modifications to operating facilities. I am also responsible for the development of technical positions for reactor standards, codes, and criteria associated with programs assigned to the section.

I received a BS degree in Nuclear Science from the Maritime College of the State University of New York in 1966. I received a MS degree in Nuclear Engineering from North Carolina State University in 1972 and also completed all the requirements for a PhD in Nuclear Engineering at that same University with the exception of the dissertation.

My professional experience in the nuclear power industry includes over three years of work with an architect-engineering firm where I was the nuclear group leader on a power plant under construction. My

responsibilities included supervision of the nuclear design group, a group of nuclear engineers responsible for the design of all the reactor nuclear systems, and review and coordination of all the inputs to the Safety Analysis Report. I was also a member of the Test Working Group, a group which dealt with problems associated with design and construction of the facility.

I joined the Nuclear Regulatory Commission as a Policy Analyst in the Office of Policy Evaluation late in 1975. My responsibilities included the review and analysis of existing and proposed Commission policy statements, review and analysis of portions of the Commission's budget, preparation of the technical aspects of Congressional testimony or speeches for the Commissioners, and the review of proposed projects and programs from a policy standpoint.

Prior to assignment to my present position, I was the Senior Reviewer for Site Hazards for the Systematic Evaluation Program (SEP), a program which reviewed safety aspects of a number of older operating reactors. My responsibilities included review and coordination of the inputs for topics dealing with meteorology, hydrology, external hazards and accident consequences for the SEP Plants.