

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
LONG ISLAND LIGHTING COMPANY) Docket Number 50-322
(Shoreham Nuclear Power Station,)
Unit 1))

NRC STAFF TESTIMONY OF THYAGARAJA CHANDRASEKARAN
REGARDING IODINE MONITORING

(SOC Contention 7.A(3))
(SC Contention 28(a)(iii))

OUTLINE OF TESTIMONY

Suffolk County and Shoreham Opponents Coalition contend that Applicant has failed to comply with General Design Criteria 13 and 64 in that Applicant does not have a satisfactory program for the monitoring of iodine releases. As stated in the Contention, NUREG-0737, Item II.F.1 sets forth an acceptable program for iodine monitoring through vent release sampling. Applicant has now committed to such a vent release sampling program as provided for in NUREG-0737, Item II.F.1. The Staff therefore considers the Contention to be moot.

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SOC CONTENTION 7.A(3) AND SC CONTENTION 28(a)(iii)

Q. Please state your name and position with the NRC.

A. My name is Thyagaraja Chandrasekaran. I am a Nuclear Engineer in the Effluent Treatment Systems Branch, Division of Systems Integration, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. A copy of my professional qualifications is attached.

Q. What is the purpose of this testimony?

A. The purpose of my testimony is to address SOC Contention 7.A(3) and SC Contention 28(a)(iii) which read:

SOC [and SC] contend[] that the NRC Staff has not adequately assessed and LILCO has not adequately resolved, both singularly and cumulatively, the generic unresolved issues applicable to a BWR of the Shoreham design. As a result, the Staff has not required the Shoreham structures, systems, and components to be backfit to current regulatory practices as required by 10 CFR § 50.55(a), § 50.57, and § 50.109, with regard to the following:

A. LILCO has failed to resolve adequately certain generic safety items identified as a

result of the TMI-2 accident and contained in NUREG-0737, Clarification of TMI Action Plan Requirements (1980).

* * *

(3) The monitoring of iodine releases in the TMI-2 accident was both untimely and complicated by the iodine sampling and measuring techniques used. The equipment needed for continuous on-line iodine gaseous effluent monitoring is not presently available at Shoreham. NUREG-0737, Item II.F.1 allows the alternative of vent release sampling, provided it is powered by vital bus power and is accessible during an accident. The Shoreham design does not satisfy either of these alternatives. LILCO proposes instead to measure two other streams, those from the turbine building and radwaste building, while assuming the reactor building ventilation contribution is zero. These two sampling instruments are not powered by vital bus power. Thus, LILCO's iodine measurement system cannot account for leakage, incomplete isolation, or system misoperation and thus may not be capable of accurately assessing the quantity of iodine released in the station vent. The design is, therefore, not in compliance with 10 C.F.R. Part 50, Appendix A, Criteria 13 and 64.

Q. What are the NRC regulatory requirements relating to monitoring of post-accident iodine releases via gaseous effluent from the plant to the environs?

A. General Design Criterion 64 to 10 C.F.R. Part 50, Appendix A, requires that each effluent discharge path from the plant to the environs should be monitored for post-accident releases of radioiodine. TMI Action Plan II.F.1, Attachment 2 of NUREG-0737 specifically states that the monitoring requirement for radioiodine during an accident can be met by continuous sampling of the plant gaseous effluent for radioiodine during the accident.

Q. Does Shoreham meet the above requirement?

A. Yes. The Applicant has committed to comply with the above requirement through submittals to NRC dated January 7, and February 17, 1982 (Revision 25 to the Final Safety Analysis Report for Shoreham, Unit No. 1).

Q. What is the NRC Staff's position relating to the sampling of the station vent at Shoreham for post-accident releases of radioiodine via the vent?

A. The Staff finds the Applicant's commitment given in the above mentioned submittals relating to sampling of the Station Vent acceptable since it complies with NRC Regulatory requirements.

Q. Can you describe briefly the Staff's basis in accepting the Applicant's sampling techniques for the Station Vent during an accident?

A. In Supplement No. 1 of the Safety Evaluation Report for the Shoreham Nuclear Power Station (NUREG-0420, September 1981), the Staff stated that the Applicant's proposed methods for post-accident sampling of the Station Vent for radioiodines and particulates would be acceptable only if the Applicant provided detailed technical justification for not complying explicitly with the requirements of NUREG-0737. The methods proposed at that time were the methods questioned by the SOC and SC Contentions, specifically sampling the turbine building and radwaste building streams, while assuming the reactor building vent contribution is zero.

Subsequently, through the submittals dated January 7 and February 17, 1982, the Applicant has committed to new methods for post-accident sampling of the Station Vent. These entail installing

equipment that will (1) sample the Station Vent directly, (2) be in a location (the turbine building) that will be accessible after any accident, and (3) be powered from the vital instrument bus. The Staff evaluated the new methods and found them to be in compliance with the applicable NRC regulatory requirements. The Staff's evaluation has been documented in Supplement II to the Shoreham SER (p. 22-4).

Q. Could you give a brief conclusion to your testimony?

A. The Staff contends that the issues raised by SOC and SC have become moot as a result of the Applicant's current commitments.

PROFESSIONAL QUALIFICATIONS

Dr. Thyagaraja Chandrasekaran
U. S. Nuclear Regulatory Commission
Division of Systems Integration
Effluent Treatment Systems Branch

My name is Thyagaraja Chandrasekaran. I am a Nuclear Engineer in the Effluent Treatment Systems Branch, Division of Systems Integration, Office of Nuclear Reactor Regulation.

I received a B.S. degree in Physics from Annamalai University in India in 1948, a M.S. degree in Physics from the University of Maryland in 1968, and a Ph.D. degree in Nuclear Engineering from the University of Maryland in 1974. I co-authored two papers relating to my M.S. and Ph.D. thesis work which were published in the Physical Review and the Journal of Chemical Physics. I am a registered Professional Engineer in the State of Virginia.

Prior to joining the NRC, I worked as a Senior Nuclear Engineer for Bechtel Power Corporation in Gaithersburg, MD during the period 1972-1980. In that position, I performed work relating to radioactive waste systems such as calculation of releases of radioactivity from nuclear power reactors and on-site and off-site radiation doses and prepared relevant sections in the Applicant's Safety Analysis Reports. In addition, my work included analyses of design bases accidents for several reactors.

I have been working as a Nuclear Engineer in the Effluent Treatment Systems Branch, U.S NRC, since May 1980. In this position, I am responsible for the review and evaluation of radioactive waste systems and for the calculation of releases of radioactivity from nuclear power reactors during normal operation including anticipated operational occurrences. I am also responsible for determining the adequacy of instrumentation provided for monitoring and/or sampling the radioactive discharges for those nuclear power plants for which I have review responsibilities.