

12/18/78

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION



Before the Atomic Safety and Licensing Board

In the Matter of)
LONG ISLAND LIGHTING COMPANY)
(Shoreham Nuclear Power Station,)
Unit 1))

Docket No. 50-322

Motion for Summary Disposition of SC
Contention 14a

1. Suffolk County (SC or County) contention 14a was accepted by the Board only for purposes of discovery because it was insufficiently particularized. Tr. 75, 121. This contention reads as follows:

14a. Intervenors contend that the Applicant has not adequately demonstrated that the Shoreham nuclear plant meets the requirements of 10 CFR Part 50, Appendix A, Criteria [sic] 4, Environmental and Missile Design Bases, with regard to turbine orientation and/or missile shields.

SC's Amended Petition to Intervene at 18 (Sept. 16, 1977).

2. This contention has been clarified in SC's Response to Applicant's Second Set of Interrogatories at 32-33 (Jan. 31, 1978) and SC's Particularized Contentions at 14-1 to 14-4 (Nov. 30, 1978). In these filings the County alleged:

a. That Regulatory Guide (Reg. Guide) 1.115 requires that the turbine generator be oriented in a certain way with respect to the reactor;

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b. That the orientation of Shoreham's turbine generator violates this alleged regulatory guide requirement; and

c. That a thorough probability analysis should be performed for Shoreham's turbine missiles.

3. These allegations raise no genuine issues of fact for the following reasons:

a. Contrary to SC's first allegation, set out above, Reg. Guide 1.115 does not require that the turbine generator be oriented in a particular manner with respect to the reactor. Turbine orientation is but one of three acceptable methods set out in Reg. Guide 1.115^{1/} for ensuring that the risk to an essential system from turbine missiles is acceptably low. The other two are (1) protecting essential systems that are in the missile strike zones with barriers and (2) demonstrating that any unprotected essential systems are so small or far away from the turbine that the sum of the probabilities of those systems being damaged, assuming the release of a low-trajectory missile, is less than 10^{-3} (one in 1000 per year). Although the Staff stated that turbine orientation was the preferred method of protecting essential systems, it acknowledged that "plants with less than favorable turbine orientation have been found acceptable." Reg. Guide 1.115 at 1.115-3.

^{1/}Reg. Guide 1.115 provides guidelines for protecting the plant against low-trajectory turbine missiles, which travel in essentially a straight line from the turbine to the point of impact. These missiles are distinct from high-trajectory missiles, which travel over an arcing course.

b. Shoreham's essential systems are adequately protected under both the missile barrier and low probability methods. See Affidavit of Robert M. Kascsak at ¶¶ 3-4. Thus Shoreham complies with Reg. Guide 1.115 and Criterion 4.

c. A thorough turbine missile probability analysis has been performed for Shoreham. That analysis is set out in FSAR § 10.2.3 and shows that the risk from turbine missiles at Shoreham is acceptably low. See Affidavit of Robert M. Kascsak at ¶¶ 2-4. Therefore, no further analysis is warranted.

d. Furthermore, great care was taken in the design of the turbine generator to minimize the potential for turbine missiles. This was accomplished by selecting the best materials and by providing redundant controls to minimize the possibility of dangerous overspeeds. See Affidavit of Robert M. Kascsak at ¶ 5.

4. For the above reasons, SC's contention 14a raises no genuine issue of fact. Accordingly, under 10 CFR § 2.749, it is ripe for summary disposition in favor of the Applicant. We request that disposition.

Respectfully submitted,

LONG ISLAND LIGHTING COMPANY

F. Case Whittemore

F. Case Whittemore

W. Taylor Reveley, III
Hunton & Williams
P. O. Box 1535
Richmond, Virginia 23212

DATED: December 18, 1978

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 NUCLEAR REGULATORY COMMISSION

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In the Matter of)	
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AFFIDAVIT OF ROBERT M. KASCSAK

Robert M. Kascsak, being duly sworn, states as follows:

1. I am Project Engineer of the Shoreham Nuclear Power Station. A statement of my professional qualifications is attached.
2. A thorough analysis of the probability of a turbine missile damaging an essential system at Shoreham has been performed. This analysis, which is set out in FSAR § 10.2.3, demonstrates that the probability of a turbine missile damaging an essential system is negligible.
3. Reg. Guide 1.115 states that an essential reactor plant system in the missile strike zone, as defined in Reg. Guide 1.115 at 1.115-2, is adequately protected against low-trajectory turbine missiles "if no missile can compromise the final barrier protecting an essential system." Reg. Guide 1.115 at 1.115-4. Shoreham's only essential systems in the missile strike zone are those systems in the reactor building and the screen well.

FSAR Fig. 10.2.3-1. There is a total of nine feet of concrete between the turbine and the systems in the reactor building, and six feet of concrete protect the systems in the screen well. Id. at 10.2-7. These concrete barriers were analyzed in accordance with the criteria recommended by Bush,^{1/} which include the angle of impact on the affected structure and the thickness of concrete between the turbine and the essential system. Id. at 10.2-6. In both cases the concrete barriers are so thick that they would not be compromised. Id. at 10.2-7. Therefore, the Shoreham design meets the criteria in Reg. Guide 1.115 for protecting essential systems with missile barriers.

4. Reg. Guide 1.115 also states that all essential systems that are not shielded by a missile barrier will be considered adequately protected if they are so small and far away from the turbine that the sum of the probabilities of a low-trajectory missile damaging such systems, assuming the release of such a missile, is less than 1×10^{-3} . Reg. Guide 1.115 at 1.115-4. Shoreham meets this criterion because there are no essential systems located in the missile strike zone that are not protected by a missile barrier. See paragraph 2 above.

5. Great care has been taken in the design of the turbine generator to minimize the possibility of material failures. Also, the turbine generator unit is protected against dangerous

^{1/}Bush, S.H., "Probability of Damage to Nuclear Components due to Turbine Failures," Nuclear Safety, Vol. 14, No. 3, May-June 1973. This authority was cited by the Applicant on page 10.2-11 of the FSAR and by the Staff in Reg. Guide 1.115 note 1.

overspeed by redundant speed control systems. The electrohydraulic control (EHC) system controls the speed during normal and transient conditions. If the EHC system speed control fails, either a mechanical overspeed or a backup overspeed system shuts down the turbine generator unit. FSAR §§ 10.2.2, 10.2.7.

Robert M. Kascsak

Subscribed and sworn to before me
this 15TH day of December 1978.

Gerald J. Lane
Notary Public

My Commission Expires: March 30, 1979

NOTARY PUBLIC
New York
Qualified in the County of
Commission Expires March 30, 1979

QUALIFICATIONS OF ROBERT M. KASCSAK

My name is Robert M. Kascsak. My business address is Long Island Lighting Company, Shoreham Nuclear Power Station, P. O. Box 618, Wading River, New York.

I am currently Project Engineer of the Shoreham Nuclear Power Station, which position I have held since January 1976. As such, I am responsible for the review and approval of design activities prepared by our Architect/Engineer, Nuclear Steam Supply System Vendor, and LILCO in-house engineering departments.

I graduated from Manhattan College in 1969 with a Bachelor of Mechanical Engineering degree. In 1977 I received a Masters of Science degree in Nuclear Engineering from Polytechnic Institute of New York. I have completed training courses in BWR and PWR technology.

In 1969 I joined Long Island Lighting Company as an Assistant Engineer in the Mechanical and Civil Engineering Department. I worked in various fossil fuel power station projects in the capacity of Associate and Senior Engineer. In particular I was involved in the late stages of the Northport Power Station Unit 3 and the early stages of the Northport Power Station Unit 4 mechanical engineering design.

From July 1974 to March 1975 I served as LILCO Lead Mechanical Engineer for the Shoreham Nuclear Power Station and the Jamesport Nuclear Power Station. In March 1975 I

joined the Shoreham Project Group as an Assistant Project Engineer, after which I assumed my present position.

I am a registered Professional Engineer in New York State and a member of the American Society of Mechanical Engineers.