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)
	)	
(Shoreham Nuclear Power Station, Unit 1)	)	

TESTIMONY OF ROBERT M. KASCSAK FOR THE LONG ISLAND LIGHTING COMPANY ON SUFFOLK COUNTY CONTENTION 24 AND SOC CONTENTION 19(d) -- CRACKING OF MATERIALS

PURPOSE

This testimony shows that LILCO has been particularly sensitive to the problem of intergranular stress corrosion cracking. The requirements of NUREG-0313, Revision 1 have been fully incorporated into Shoreham and additional steps have been taken. NUREG-0619 requirements, including, but not limited to, the installation of a low-flow feedwater controller, have been implemented. Collectively these steps have minimized the potential for cracking of materials at Shoreham.

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ON SUFFOLK COUNTY CONTENTION 24
AND SOC CONTENTION 19(d) -- CRACKING OF MATERIALS

1. Q: What is your name and business address?

A: My name is Robert M. Kascsak. My business address is Long Island Lighting Company, 175 East Old Country Road, Hicksville, New York, 11801.

2. Q: By whom and in what capacity are you employed?

A: I am employed by LILCO and am currently Manager of the Nuclear Systems Engineering Division within the LILCO Nuclear Engineering Department. This Department is a Headquarters Engineering Organization that provides support to the Office of Nuclear. My Divisional responsibilities include overseeing an engineering staff organization capable of analyzing and coordinating activities associated with nuclear

plant design, operation, reliability and safety. My current responsibilities include approval of Architect Engineer designs, vendor designs and development of an in-house support organization associated with future plant modifications. A complete resume appears on pages 13-14.

3. Q: Are you familiar with SOC Contention 19(d) and SC Contention 24?

   A: Yes.

4. Q: What is the issue involved?

   A: The issue in SOC 19(d)(1) and SC 24(a) is whether the reactor recirculation system and stainless steel to carbon steel transition welds between the reactor water clean-up, core spray and residual heat removal systems meet the guidelines of NUREG-0313, Revision 1, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping" (October 1979).

5. Q: What requirements does NUREG-0313, Revision 1 establish?

   A: The NUREG provides methods to reduce intergranular stress corrosion cracking (IGSCC) susceptibility of BWR ASME III Code Class 1 and 2 pressure boundary piping and safe-ends, and methods to detect such cracking.

6. Q: Is IGSCC for BWR environments a new issue?

   A: No. IGSCC concerns in BWR environments arose in 1975 with cracking incidents at the Commonwealth Edison Dresden Unit 2.

7. Q: What did LILCO do to mitigate this problem at Shoreham?

   A: Since 1975, LILCO has instituted many actions to limit the potential for IGSCC at Shoreham. Steps were taken in three main areas: welding controls, material modifications, and solution heat treatment of certain shop welds. These steps include the following:

   1. Welding Controls

      a) Shoreham implemented welding procedures using lower heat inputs to reduce the potential for stress corrosion cracking.

      b) Grinding control was instituted to prevent the formation of tensile residual stresses on pipe inside diameter surfaces.

   2. Material Modifications

      a) Core spray lines and safe-end material have been changed to low alloy steel which is not susceptible to IGSCC.

b) The recirculation system discharge bypass lines were eliminated and existing weldolets were capped with 304L weld inlays which are not susceptible to IGSCC.

3. Solution Heat Treatment

a) All riser sections, including the suction and discharge risers, were solution heat-treated to reduce stress corrosion cracking in shop welds.

8. Q: Why were these specific changes instituted?

A: The IGSCC pipe cracking primarily occurs where low flow or stagnant areas exist. By these actions, LILCO has eliminated plant designs that potentially allow those conditions, and used materials not susceptible to IGSCC.

9. Q: Does Shoreham meet NUREG-0313, Revision 1 requirements?

A: Yes. NUREG-0313, Revision 1 establishes alternative sets of requirements: Part II requirements, and for plants which cannot meet Part II requirements, Part III requirements are given.

10. Q: Does Shoreham meet all Part II guidelines?

A: No, certain materials do not meet Part II guidelines. The guidelines provide, however, for exemption from Part II compliance when it would result in "undue hardship." Shoreham is exempt because it was well under construction when NUREG-0313, Revision 1 was published in 1979. Shoreham must therefore comply with Part III.

11. Q: What are the Part III requirements?

A: These requirements are for augmented leak detection and inspection programs that go beyond those specified in 10 CFR 50.55a(g) and in NRC Standard Technical Specifications. The degree of augmentation depends upon whether the lines are "service-sensitive" or not. Service-sensitive lines are those lines having a history of cracking, and they are inspected more frequently than non-service-sensitive lines.

12. Q: Does Shoreham meet all the requirements of Part III?

A: Yes. All nonconforming welds will be inspected according to Part III requirements. LILCO has determined that presently it has no "service-sensitive" lines.

13. Q Why did LILCO reach that determination?

A. Part III(B) identifies potential "service-sensitive" lines. Only two potential service-sensitive lines exist at Shoreham: the recirculation riser lines and the recirculation inlet-nozzle to thermal-sleeve welds. LILCO solution heat-treated the sections of the recirculation risers that had evidenced cracking in nuclear power plants in Japan. This treatment removes IGSCC as a concern. No other in-service evidence of cracking exists on these risers. For the recirculation inlet-nozzle to thermal-sleeve welds, LILCO's design is markedly different from the Duane Arnold design that exhibited cracking. Designs similar to Shoreham (e.g., Fitzpatrick) have been inspected and no evidence of cracking has been detected. Accordingly, no service-sensitive lines exist at Shoreham.

14. Q: Has the NRC accepted LILCO's position regarding NUREG-0313, Revision 1 compliance?

A: Yes. Initially, in Open Item 18 of the Safety Evaluation Report (SER), the NRC reserved judgment on whether Shoreham met NUREG-0313 requirements. In LILCO's response, SNRC-566 (May 15, 1981), the nonconforming items were identified and the

augmented in-service inspection program was established according to Part III guidelines. In response to SNRC-566, Open Item 18 was resolved.

15. Q: Let's move on to SOC Contention 19(d)(2). What is the issue?

A. SOC first contends that the augmented in-service inspection program, discussed earlier, is insufficient and, second, disagrees with the classification of the recirculation riser lines and inlet lines at the safe-ends as non-service-sensitive.

16. Q: What is the particular issue with regard to the inspection program?

A: SOC contends that the inspection program is insufficient because the inspection of some items have been conditioned "to the extent practicable." SOC further contends that LILCO has failed to identify the number and the location of the items and the justification for the limited inspection of those items.

17. Q: Is the inspection program adequate?

A: Yes. The inservice inspection program for Shoreham meets the ASME Code and requires that all Class I welds be inspected. NUREG-0313 increases the frequency of inspections. All welds will receive

either a full, or in a very small number of cases, a partial inspection. A program is underway to remove where practicable interferences that preclude complete inspection. When this program is complete, welds receiving partial inspections will be identified.

18. Q: You mentioned earlier that SOC objects to the classification of recirculation riser lines and inlet lines at the safe-end as being non-service-sensitive, and claims that Shoreham, therefore, does not meet NUREG-0313. Is SOC correct in that regard?

A: No. First, as stated earlier, the recirculation riser lines and recirculation inlet lines at the safe-ends have been demonstrated not to be service-sensitive lines.

Second, solution heat-treating of all of the riser sections will eliminate IGSCC as a concern, except for the field welds at header and inlet nozzles. The NUREG recognizes the efficacy of this process at reducing IGSCC.

19. Q: Let's move on to the third part of the Contention. What is the issue involved with SOC 19(d)(3)?

A: The Part III guidelines discussed above provide

that when there is no conformance with Part II guidelines, there must be an enhanced leak detection program. SOC contends that the Shoreham program is inadequate.

20. Q: Is the leak detection program adequate?

A: Yes. The primary containment leakage detection and collection systems comply fully with Regulatory Guide 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems." NUREG-0313, Revision 1 states that such systems are adequate. See FSAR, Appendix 3B 1.45. The systems will detect unidentified leakage to the primary containment and will provide acceptable detection capability for reactor coolant pressure boundary leakage.

21. Q: How effective is the design at detecting leakage?

A: Very effective. There are no design structures within the drywell that act as reservoirs which must be filled before flow to the floor drain occurs. The floor drain system collects leakage utilizing flush-mounted deck drains. Thus, the possibility of temporary collection prior to leakage reaching the sumps is minimized.

22. Q: Are you familiar with Suffolk County Contention 24(b)?

A: Yes.

23. Q: What is the thrust of the contention?

A: Suffolk County contends that the recommendation made in NUREG-0619 "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking" (April 1980), have not been implemented because a low-flow controller to control feedwater flow has not been installed.

24. Q. What is the function of the low-flow feedwater control system?

A. Its function, along with certain operating procedures, is to minimize thermal fatigue of the feedwater nozzle. It further ensures that crack growth, if cracking occurs, would be minimized.

25. Q: Has Shoreham implemented the guidelines of NUREG-0619?

A: Yes. Shoreham has installed a low-flow feedwater controller and has taken several other steps recommended by the NUREG. Compliance with NUREG-0619 was Open Item 13 in the SER. LILCO's response was presented in SNRC-566, and Open Item 13 was resolved.

26. Q: Will the low-flow feedwater controller installed at Shoreham meet NUREG-0619 requirements?

A: Yes. Shoreham's low-flow feedwater control system consists of two low-flow control valves in parallel with split-range control. The split-range control enables control within the 0.5% to 10% rated flow specified in the NUREG.

27. Q: How will LILCO verify that the Shoreham low-flow feedwater control design will comply with the specifications of NUREG-0619?

A: Low-flow feedwater controller operation will be verified by tests which monitor feedwater nozzle fluid temperatures during start-up, shutdown and hot standby. The results of this test will be used to generate a crack growth analysis using the same methodology as that contained in NEDE-21821-A. Low-flow feedwater control system design modifications and/or system operating procedures modifications will be made as necessary.

28. Q. Will you summarize your position regarding cracking of materials at Shoreham?

A: Shoreham has also implemented several steps to minimize the potential for stress corrosion cracking of materials including: implementation of welding

controls, modification of materials and solution heat treatment of materials. Shoreham has followed the guidelines established in NUREG-0313, Revision 1 and to the extent it cannot make material modifications, will follow the augmented inspection and leak detection guidelines. The low-flow feedwater controller and other recommendations of NUREG-0619 have been implemented. Cracking of materials at Shoreham should not be a problem.

PROFESSIONAL QUALIFICATIONS

Robert M. Kascsak

Nuclear Systems Engineering Division Manager

Long Island Lighting Company

My name is Robert M. Kascsak. My business address is Long Island Lighting Company, 175 East Old Country Road, Hicksville, New York. I am currently the Nuclear Systems Engineering Division Manager. My responsibilities include overseeing an engineering staff organization capable of analyzing and coordinating activites associated with nuclear plant design, operation, reliability and safety, including approving Architect Engineer designs and vendor designs and developing an in-house support organization associated with future plant modifications.

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

I joined LILCO in 1969 as an Assistant Engineer in the Mechanical and Civil Engineering Department. I worked on various fossil fuel power station projects in the capacity of Associate and Senior Engineer, including the Northport Power

Station Unit 3 and Unit 4 mechanical engineering designs. From July 1974 to March 1975, I served as LILCO Lead Mechanical Engineer for Shoreham and for the Jamesport Nuclear Power Station. In March 1975 I joined the Shoreham Project Group as an Assistant Project Engineer, after which I assumed the responsibilities of Project Engineer. From March 1975 to January 1979, I was Project Engineer for Shoreham. In this position I was 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 am a registered Professional Engineer in New York State and a member of the American Society of Mechanical Engineers.