

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)

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Docket Number 50-322

NRC STAFF TESTIMONY OF MARVIN W. (WAYNE) HODGES
REGARDING REDUCTION OF SRV CHALLENGES

SC Contention 28(a)(vi)
SOC Contention 7(a)(6)

OUTLINE OF TESTIMONY

Intervenors contend that Applicant has failed to resolve certain generic safety issues resulting from the TMI-2 accident by attempting to reduce challenges to safety/relief valves by procedural techniques rather than by systems modification. This allegation is incorrect. The Applicant will utilize a new two-stage design to replace the three-stage pilot operated valves used in the past. In addition, emergency procedures, operator training, and an improved pneumatic control system to the safety relief valves will be implemented by Applicant to reduce SRV challenges.

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SC CONTENTION 28(a)(vi) AND SOC CONTENTION 7(a)(6)

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

A. My name is Marvin W. (Wayne) Hodges. I am employed by the U.S. Nuclear Regulatory Commission as a Section Leader in the Reactor Systems Branch in the Division of Systems Integration. A copy of my professional qualifications is attached.

Q. What is the purpose of your testimony?

A. The purpose of this testimony is to respond to SC Contention 28(a)(vi) and SOC Contention 7(a)(6) which states:

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).

* * *

(6). LILCO hopes to accomplish a reduction in challenges to safety/relief valves (NUREG-0737, Item II.K.3.16) by procedural techniques, rather than by system modifications. But the reliability of the SRV's chosen for Shoreham has been historically poor. Thus, LILCO has not demonstrated SRV compliance with 10 CFR Part 50, Appendix A, Criterion 30.

Q. How does LILCO propose to reduce challenges to safety/relief valves?

A. Most of the failures of safety/relief valves reported are attributable to the three stage pilot operated valves.

The original three-stage pilot operated safety/relief valve design was changed to two stages to improve valve performance. The Applicant states that the advantages of the new two-stage design are the following: (1) the probability of spontaneous valve opening due to pilot valve leakage has been reduced, (2) the possibility of setpoint changes due to bellows leakage has been reduced, and (3) the probability of air operator diaphragm failures has been reduced. Shoreham safety/relief valves are manufactured by Target Rock Corporation.

In addition to this, LILCO intends to implement emergency procedures and operator training to provide the Low-Low Set "equivalent manual action" called for in the Emergency Procedures Guidelines, Rev. 1, which will reduce the total number of SRV challenges by limiting

the number of second and subsequent SRV openings via operator action. The above combination should effectively achieve a reduction in challenges.

In addition to the above, an improved pneumatic supply control system to the safety valves will be implemented on Shoreham. This should result in an additional improvement in the frequency of challenges.

Q. What are your conclusions concerning this contention?

A. Contrary to Intervenor's allegations, systems modifications (rather than just procedural techniques) are being utilized by Applicant to reduce challenges to safety/relief valves. As point out, the Applicant will utilize a new two-stage pilot operated valves used in the past. In addition, emergency procedures, operator training, and an improved pneumatic control system to the SRV will be implemented by Applicant to reduce SRV challenges.

Marvin W. (Wayne) Hodges
Professional Qualifications
Reactor Systems Branch
Division of Systems Integration
U. S. Nuclear Regulatory Commission

I am employed as a Section Leader in Section B of the Reactor Systems Branch, DSI.

I graduated from Auburn University with a Mechanical Engineering Degree in 1965. I received a Master of Science degree in Mechanical Engineering from Auburn University in 1967.

In my present work assignment at the NRC, I supervise the work of 6 graduate engineers; my section is responsible for the review of primary and safety systems for BWRs. I have served as principal reviewer in the area of boiling water reactor systems. I have also participated in the review of analytical models use in the licensing evaluations of boiling water reactors and I have the technical review responsibility for many of the modifications and analyses being implemented on boiling water reactors post the Three Mile Island, Unit-2 accident.

As a member of the Bulletin and Orders Task Force which was formed after the TMI-2 accident, I was responsible for the review of the capability of BWR systems to cope with loss of feedwater transient and small break loss-of-coolant accidents.

I have also served at the NRC as a reviewer in the Analysis Branch of the NRC in the area of thermal-hydraulic performance of the reactor core. I served as a consultant to the RES representative to the program management group for the BWR Blowdown/Emergency Core Cooling Program.

Prior to joining the NRC staff in March, 1974, I was employed by E. I. DuPont at the Savannah River Laboratory as a research engineer. At SRL, I conducted hydraulic and heat transfer testing to support operation of the reactors at the Savannah River Plant. I also performed safety limit calculations and participated in the development of analytical models for use in transient analyses at Savannah River. My tenure at SRL was from June 1967 to March 1974.

From September 1965 to June 1967, while in graduate school, I taught courses in thermodynamics, statics, mechanical engineering measurements, computer programming and assisted in a course in the history of engineering. During the summer of 1966, I worked at the Savannah River Laboratory doing hydraulic testing.