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-4 (Low Power)
	)	
(Shoreham Nuclear Power Station, Unit 1)	)	

AFFIDAVIT OF MARVIN W. HODGES

I, Marvin W. (Wayne) Hodges, being duly sworn, state as follows:

1. I am a Section Leader in the Reactor Systems Branch of the Office of Nuclear Reactor Regulation. A copy of my professional qualifications is attached.

2. This affidavit is being filed in response to LILCO's Motions for Summary Disposition of Phases I and II Low Power Testing. It closely follows my Affidavit of April 3, 1984 in response to LILCO's Supplemental Motion for Low Power Operating License addressing the impact on the public health and safety of operation of Phases I and II. In addition to new Paragraphs 9 and 10, changes have been made in Paragraphs 4, 6, 7, and 8 of my earlier Affidavit.

3. In Phase I, fuel loading and precriticality testing, the reactor will not be taken critical. There will be no heat generation in

the core. There will be no fission products. Because there will have been no power generation and, consequently, no decay heat, there will be no need for cooling systems to remove decay heat.

4. In its supplemental motion, LILCO examined the 38 accident and transient events addressed in Chapter 15 of the FSAR. I have reviewed the 38 transients and accidents listed and I agree with LILCO that many of the events could not occur because of the operating conditions of the plant (e.g., a turbine trip or a load rejection transient cannot occur when the turbine is not in operation and there is no load on the generator). Of the events that could occur (e.g., loss of AC power), there are no safety concerns because of the absence of power generation in the core.

5. Phase II, cold criticality testing, will involve testing in the power range of .0001% to .001% of rated power at essentially ambient temperature and atmospheric pressure. Because of the low power level and the limited duration of testing, fission product inventory and decay heat will be very low.

6. As for Phase I, many of the Phase II transients and accidents analyzed in Chapter 15 of the FSAR cannot occur. For those transients and accidents which can occur, other than a loss-of-coolant accident, core cooling can be achieved, even without AC power, using the existing core water inventory and passive heat

loss to the environment. Therefore, there would be no threat to the health and safety of the public.

7. Because of the low pressure conditions, it is not reasonable to postulate a loss-of-coolant accident during Phases I and II operation. The NRC normally postulates breaks only in high energy lines; for Phases I and II, there are no high energy lines because the reactor system is at atmospheric pressure. However, even if a loss-of-coolant accident should occur during Phase II operation, there is plenty of time available for restoring offsite power should onsite power not be available.

8. If a loss-of-coolant accident should occur during Phase II testing, LILCO states that there would be time on the order of months available to restore make-up water for core cooling. At the decay heat levels which would exist under these conditions, heat transfer to the environment would remove a significant fraction of the decay heat. However, even if no heat transfer from the fuel rods is assumed and equilibrium fission products are assumed (i.e., infinite operation at .001% power), then more than 30 days are available to restore cooling prior to exceeding a fuel rod temperature of 2200°F. Therefore, even assuming the unavailability of onsite power sources, there is a high probability of restoring AC power and cooling the core.

9. I have examined the Statement of Material Facts submitted by LILCO with its Motion for Summary Disposition of Phase I. For the reasons given in this Affidavit, I agree with Statements 5-9.

10. I have examined the Statement of Material Facts submitted by LILCO with its Motion for Summary Disposition of Phase II. I believe Statements 6 and 7 are improperly worded. It is inaccurate to say 3 events require and 20 events do not require the assumption of loss or unavailability of offsite AC power; it is more correct to say that the loss of offsite power would adversely affect 3 events and not adversely affect the other 20. With that correction, I agree with Statements 5-13 for the reasons given in this Affidavit.

Marvin W. Hodges

Marvin W. (Wayne) Hodges

Subscribed and sworn to before me
this 13th day of June, 1984.

Notary Public

My Commission expires: 11/85

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. I am a registered Professional Engineer in the state of Maryland (#13446).

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.

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CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF RESPONSE TO LILCO MOTIONS FOR SUMMARY DISPOSITION OF PHASES I AND II" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class or, as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system, or, as indicated by a double asterisk, served by Express Mail, or, as indicated by triple asterisk, served by hand, this 13th day of June, 1984.

Judge Marshall E. Miller, Chairman*
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U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Judge Glenn O. Bright*
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****HAND DELIVERED TO WASHINGTON, D.C. OFFICE