

LILCO, August 3, 1984

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-3
) (Emergency Planning Proceeding)
(Shoreham Nuclear Power Station,)
Unit 1))

DOCKETED
USNRC

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OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

AFFIDAVIT OF ELIAS P. STERGAKOS AND JOHN A. RIGERT

ELIAS P. STERGAKOS and JOHN A. RIGERT, being duly sworn,
depose and say as follows:

1. [Stergakos only] My name is Elias P. Stergakos. I am employed by the Long Island Lighting Company as Manager of the Radiation Protection Division; I report directly to the Manager of Nuclear Engineering Department. I have the overall responsibility for the Corporate overview and technical direction of all aspects of radiological protection and the design of radwaste systems. My business address is Long Island Lighting Company, Shoreham Nuclear Power Station, North Country Road, Wading River, New York, 11792.

2. [Rigert only] My name is John A. Rigert. I am employed by Long Island Lighting Company as Manager, Nuclear Systems Engineering Division of the Nuclear Engineering Department. My business address is Long Island Lighting Company, Shoreham Nuclear Power Station, North Country Road, Wading River, New York, 11792.

[Both affiants declare Paragraphs 3 through 9, as follows:]

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3. We make this affidavit in response to the July 24, 1984 "Memorandum and Order Determining that a Serious Safety Matter Exists" of the NRC Licensing Board in the Shoreham emergency planning hearings. The purpose of this Affidavit is to provide support for the proposition that 24 or more hours after initiation of the descent to cold shutdown from full power following normal operating procedures -- a process which takes less than 24 hours -- there is no postulated abnormal event that could result in radiological consequences in excess of EPA's Protective Action Guidelines of 1 rem to the whole body and 5 rem to the thyroid. This conclusion is based upon a review of the events described in Chapter 15 of the Shoreham FSAR. The EPA PAGs have been utilized in NRC licensing proceedings to help determine the need for off-site radiological emergency response capability.

4. Chapter 15 of the Shoreham FSAR provides the results of analyses for the spectrum of accident and transient events that must be accommodated by the Shoreham plant to demonstrate compliance with the NRC's regulations. This portion of the safety analysis is performed to evaluate the ability of the plant to operate without undue risk to the health and safety of the public. The Shoreham FSAR was submitted to the NRC Staff for its review and was approved in the Staff's Safety Evaluation Report for Shoreham (NUREG-0420).

5. A number of the Chapter 15 events need no longer be postulated because of the different plant configuration and system lineup under cold shutdown versus operating conditions. In particular, the MSIVs would be closed; the reactor would be fully depressurized; and only low level decay heat would be produced. As a result of these plant conditions, even events which are theoretically possible are of little concern since they are unlikely to occur. Should they nonetheless occur, the available time for automatic or manual mitigation of the event would be greatly increased; the capacity requirements of the mitigation systems would be greatly reduced; and the radioactive inventory of the core and plant systems would be reduced thus reducing the potential radiological consequences.

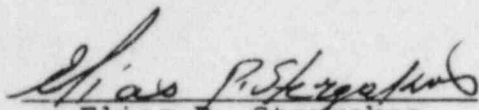
6. The review of the Chapter 15 analysis revealed that of the 38 accident or transient events addressed in Chapter 15, 21 of the events could not occur physically during cold shutdown because of the operating conditions of the plant. An additional 14 events could physically occur, but the offsite radiological consequences would be inconsequential or non-existent. The remaining 3 events are possible at cold shutdown but have offsite radiological consequences below the PAG limits. One of the 21 events which could not occur during cold shutdown could, however, occur during the refueling mode. This event is the fuel handling accident that is discussed separately in Paragraph 9 below. Attachment 1 identifies the category into which each Chapter 15 event falls.

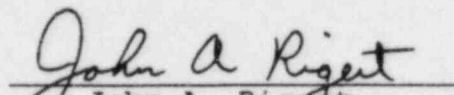
7. Of the four events which may produce an offsite radiological effect three produce doses which are at least an order of magnitude below the PAG limits even at full power operations. Event 29 represents occasional miscellaneous spills and leaks which may occur outside the primary containment. The offsite consequences are described in FSAR §§ 11.2 and 11.3 and are trivial (approximately 0.001 rem/year). Event 31 is postulated to occur due to the failure of one of the off-gas system charcoal absorber tanks during system operation. The offsite consequences are described in FSAR § 15.1.31 and the whole-body dose is approximately 0.02 rem. The consequences during cold shutdown would be significantly reduced since the off-gas system would be out of service. Event 32 entails the simultaneous failure of all liquid radwaste tanks as described in FSAR § 11.2.3.4.2 and results in a whole-body dose of less than 0.0004 rem and a thyroid dose of less than 0.5 rem.

8. Our review of Chapter 15, described above, confirms that no accident could occur during a cold shutdown condition which would result in any undue risk to the public health and safety.

9. If fuel handling operations or other operations requiring access to the core are conducted following cold shutdown, a fuel handling accident (Event 36), not possible during cold shutdown, may occur. The offsite consequences of this type of accident vary depending on fuel burnup and on the time that has passed since the attainment of cold shutdown. As time passes following cold

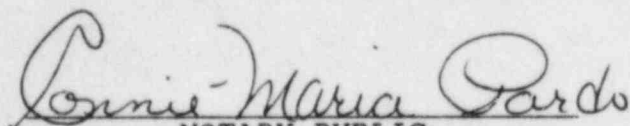
shutdown, all such consequences would diminish to levels below EPA
PAG limits.


Elias P. Stergakos


John A. Rigert

COUNTY OF SUFFOLK)
STATE OF NEW YORK)

Subscribed and sworn to before me
this 7 day of August, 1984.


NOTARY PUBLIC

My Commission Expires on March 30, 1985.

CONNIE-MARIA PARDO
NOTARY PUBLIC, State of New York
No. 52-46158-10
Qualified in Suffolk County
Commission Expires March 30, 1985

FSAR CHAPTER 15 ACCIDENT CONSEQUENCES

REACTOR AT COLD SHUTDOWN, 24 HOURS
OR MORE AFTER INITIATION OF DESCENT
FROM OPERATION AT 100% POWER

Chapter 15 Event	Event Category
1. Generator Load Rejection	*
2. Turbine Trip	*
3. Turbine Trip with Failure of Generator Breakers to Open	*
4. MSIV Closure	*
5. Pressure Regulator Failure - Open	*
6. Pressure Regulator Failure - Closed	*
7. Feedwater Controller Failure - Maximum Demand	**
8. Loss of Feedwater Heating	*
9. Shutdown Cooling (RHR) Malfunction - Decreasing Temperature	**
10. Inadvertent HPCI Pump Start	*
11. Continuous Control Rod Withdrawal During Power Range Operation	*
12. Continuous Rod Withdrawal During Reactor Startup	*
13. Control Rod Removal Error During Refueling	*
14. Fuel Assembly Insertion Error During Refueling	*

* Event not possible.

** Event possible but offsite radiological consequences are
inconsequential or non-existent.

*** Event possible but consequence below PAG limits.

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| 15. Off-Design Operational Transients Due to Inadvertent Loading of a Fuel Assembly into an Improper Location | ** |
| 16. Inadvertent Loading and Operation of a Fuel Assembly in Improper Location | * |
| 17. Inadvertent Opening of a Safety/Relief Valve | * |
| 18. Loss of Feedwater Flow | ** |
| 19. Loss of AC Power | ** |
| 20. Recirculation Pump Trip | ** |
| 21. Loss of Condenser Vacuum | * |
| 22. Recirculation Pump Seizure | ** |
| 23. Recirculation Flow Control Failure - With Decreasing Flow | ** |
| 24. Recirculation Flow Control Failure - With Increasing Flow | ** |
| 25. Abnormal Startup of Idle Recirculation Pump | ** |
| 26. Core Coolant Temperature Increase | ** |
| 27. Anticipated Transients Without SCRAM (ATWS) | * |
| 28. Cask Drop Accident | * |
| 29. Miscellaneous Small Releases Outside Primary Containment | *** |
| 30. Off-Design Operational Transient as a Consequence of Instrument Line Failure | ** |
| 31. Main Condenser Gas Treatment System Failure | *** |
| 32. Liquid Radwaste Tank Rupture | *** |

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|---|-----------|
| 33. Control Rod Drop Accident | * |
| 34. Pipe Breaks Inside the Primary Containment (Loss of Coolant Accident) | ** |
| 35. Pipe Breaks Outside Primary Containment (Steam Line Break Accident) | * |
| 36. Fuel Handling Accident | <u>1/</u> |
| 37. Feedwater System Piping Break | ** |
| 38. Failure of Air Ejector Lines | * |

1/ Event not possible during cold shutdown. If fuel handling operations were conducted following cold shutdown and an accident were to occur, the consequences at the Shoreham site boundary would be below PAG limits if sufficient time had passed following the attainment of cold shutdown.