

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) )

TESTIMONY OF BRIAN R. McCAFFREY  
ON BEHALF OF LONG ISLAND LIGHTING COMPANY

Q.1. Please state your name and business address.

A. My name is Brian R. McCaffrey. My business address is Long Island Lighting Co., Shoreham Nuclear Power Station, Wading River, New York 11792

Q.2. What is your occupation?

A. I am employed by LILCO as the Manager, Nuclear Licensing and Regulatory Affairs in the Nuclear Operations Support Department

Q.3. What are your responsibilities as Manager, Nuclear Licensing and Regulatory Affairs?

A. As Manager, Nuclear Licensing and Regulatory Affairs, I am responsible for the overall management of the company's licensing activities of the Shoreham station. My

organization is the primary contact with the Nuclear Regulatory Commission and Institute of Nuclear Power Operation (INPO) and is responsible for receiving and determining the corporate position and response to any regulatory issue affecting the station. As part of my duties, I am required to be familiar with the substance of regulatory issues and LILCO's activities that deal with those issues. I am responsible for all licensing activities leading to an Operating License as well as the conduct of the various ASLB proceedings underway. In this capacity, I coordinate LILCO's efforts to respond to discovery, LILCO's technical review of contentions submitted by intervenors, the preparation of testimony by LILCO witnesses and support activities during the hearing process. I also play an active role in the procurement of expert assistance for dealing with licensing issues and testifying in hearings. My organization is also responsible for maintenance of Policies, Programs and Directives for the Office of Nuclear and for the assessment of emerging licensing issues.

Q.4. Please summarize your previous employment and educational experience.

A. A copy of my resume (Attachment 1) was previously submitted in the Shoreham operating license proceeding as

LILCO Exhibit 35, item 4. Let me summarize and update that information. I joined LILCO in January 1973, as an associate engineer in the Mechanical and Civil Engineering Department. In 1975, I was named a senior engineer in the department and appointed as Project Coordinator-Gas Turbine Installations. As a senior engineer, I was also assigned as the Lead Mechanical Engineer for Nuclear Projects. In October 1977, I was transferred to LILCO's nuclear organization. Since that time I have held various positions relating to the Shoreham Nuclear Power Station. These positions include Senior Licensing Engineer; Project Engineer; Assistant Project Manager-Engineering & Licensing; Manager, Project Engineering; and Manager, Nuclear Compliance and Safety. In May 1984, I was named Manager, Nuclear Licensing and Regulatory Affairs. In many of these positions, I was involved in and familiar with LILCO's efforts to license Shoreham. Prior to joining LILCO, I was employed by the Grumman Aerospace Engineering Corporation involved with aerodynamic design and flight test stability and control testing of the F-14A aircraft.

Q.5. Mr. McCaffrey, please describe your educational background.

A. I hold a Bachelor of Science degree in Aerospace Engineering from the University of Notre Dame, a Master of Science degree in Aerospace Engineering from Pennsylvania State University and a Master of Science degree in Nuclear Engineering from the Polytechnic Institute of New York.

Q.6. Are you a member of any professional societies?

A. I am a member of the American Society of Mechanical Engineers, the Long Island Section of the American Nuclear Society and am a Registered Professional Engineer in New York.

Q.7. What is the purpose of your testimony?

A. The purpose of this testimony is to address several aspects of the circumstances surrounding LILCO's application for an exemption from GDC 17 which justify granting LILCO's request. I will describe LILCO's extensive efforts to meet GDC 17's requirements for an onsite power source, the resources LILCO has been required to devote to the Shoreham licensing proceedings, and the effect of this proceeding on the perception of the likelihood that Shoreham can ever be licensed.



LILCO's Good Faith Efforts

Q.8. Why are LILCO's efforts to comply with GDC 17 pertinent to LILCO's application for an exemption from GDC 17?

A. The Commission's May 16, 1984 Order indicated that LILCO had to submit a request for an exemption under 10 CFR § 50.12(a) in order to obtain further consideration of its low power license application. The Commission noted that LILCO's application should discuss the "exigent circumstances" that favor granting the request. One of the considerations the Commission explicitly mentioned was LILCO's good faith in attempting to comply with GDC 17. This testimony demonstrates that LILCO has made a good faith effort to meet GDC 17.

Q.9. How has LILCO made such a good faith effort?

A. There are a number of indications of LILCO's good faith efforts:

- (1) The original design of the Shoreham plant included an onsite power source that was intended to meet the requirements of GDC 17.
- (2) When problems with the TDI diesel generators were discovered, LILCO undertook extensive efforts to ensure that these diesels would reliably perform the functions required of them by GDC 17.

- (3) As a contingency, LILCO is installing three additional diesel generators manufactured by Colt Industries to ensure that there will be a qualified onsite source of emergency power for Shoreham as required by GDC 17.
- (4) As demonstrated in LILCO's other low power testimony, LILCO has provided significant enhancements of the offsite system to assure that AC power will be available in the event offsite power is lost during low power testing.

Q.10. Is it significant that Shoreham's original design included qualified diesel generators?

A. Yes. LILCO's request for an exemption is not the result of an attempt to avoid GDC 17's requirements for qualified diesel generators at Shoreham. LILCO's original intent, as reflected in Section 8.2 of the Shoreham FSAR, was to provide fully qualified diesel generators to comply with GDC 17. Importantly, LILCO still intends to provide fully qualified diesel generators for Shoreham. LILCO is only requesting an exemption from these requirements as an interim measure to allow fuel load and low power testing of the plant prior to completion of litigation concerning the reliability of the TDI diesels. In fact, two TDI

diesels have completed preoperational testing and a modified integrated electrical test (i.e., demonstrated plant response to a loss of offsite power coincident with LOCA), and are available to perform their intended function.

Q.11. Will you please explain LILCO's efforts to ensure that the TDI diesel generators will operate reliably and, thereby, meet GDC 17.

A. LILCO's efforts to ensure that the TDI diesel generators operate reliably can be divided into two phases -- (1) efforts prior to the failure of the crankshaft on diesel generator 102 in August 1983, and (2) efforts following that failure.

Prior to the crankshaft failure, LILCO included in Shoreham's design three emergency diesel generators intended to meet all applicable regulatory requirements for onsite power sources. With these requirements in mind, specifications for these machines were developed by Stone & Webster and LILCO. LILCO purchased three diesel generators from Transamerica Delaval, Inc, requiring that these machines be manufactured in accordance with the approved specifications.

Once the diesels arrived on site and were installed in the plant, LILCO subjected them to a preoperational test program which used a building block approach. This program had been completed except for an integrated electrical test when the crankshaft failed on diesel generator 102.

Q.12. Could you please explain LILCO's building block approach to testing?

A. The TDI diesel generator preoperational test program started with checkout and initial operation (C&IO) tests of individual components such as pumps, air compressors, pressure switches and the like. After these tests, components were tested again as part of a system or subsystem. Through system flushes and specific C&IO testing, there was functional demonstration of support systems such as lube oil, fuel oil starting air, and others.

The C&IO testing was followed by mechanical, electrical and qualification preoperational tests. The mechanical preoperational test verified the operability of each diesel and its supporting auxiliary systems. Similarly, the electrical preoperational test demonstrated the capabilities of the diesel generator electric system and included a 24 hour full load run (22 hours at

full load, 2 hours at overload) and a 72 hour run. The qualification preoperational test demonstrated the ability of each diesel to perform 23 consecutive starts. All of these tests had been completed at the time the diesel generator 102 crankshaft failed. In addition, LILCO had planned to perform an integrated electrical test which would have tested the plant's entire electrical power supply system and the loads it supplies under simulated loss of coolant accident and loss of offsite power conditions. I should add that pre-crankshaft failure testing included enhancements LILCO imposed to provide additional measures of their reliability above and beyond regulatory norms.

Q.13. Did this test program identify any problems with the diesels?

A. Yes. As expected, the Shoreham test program identified problem areas that needed correction.

Q.14. And what was LILCO's response to these problems?

A. In addition to correcting each individual problem that was identified, LILCO performed a review of the operability of the TDI diesels. This Diesel Generator Operational Review Program initiated in March 1983 involved a complete review of each problem encountered



with the Shoreham diesels and resulted in recommendations for improved reliability. LILCO reviewed this program with the NRC Staff on June 30, 1983 and subsequently submitted a report on it.

Q.15. Following the failure of the crankshaft of diesel generator 102 in August 1983, what steps did LILCO take to ensure that the TDI diesels could be relied upon to meet the requirements of GDC 17?

A. LILCO engaged the services of a nationally known engineering firm, Failure Analysis Associates (FaAA), within two days of the failure to conduct a comprehensive investigation into the cause of the failure. FaAA was physically on the job less than four days after the failure. The effort involved:

- (1) inspection of the crankshaft on DG 101 and 103 for indications of similar problems;
- (2) complete metallurgical analysis of the failed crankshaft;
- (3) strain gauge and torsionograph testing of one of the remaining original crankshafts to determine actual stresses on the shaft;
- (4) complete disassembly and inspection of all three diesel engines to replace the original crankshafts with crankshaft of an improved design, and to

assess any damage to the engines as a result of the crankshaft problems; and

- (5) design analysis using finite element modeling/modal superposition analysis to ascertain dynamic torsional response of the original crankshafts.

Q.15. What resulted from disassembly of the diesels?

A. As a result of problems discovered during disassembly, LILCO established a team of specialists to review engine components. Initially, LILCO and its consultants investigated each problem identified to determine its cause and the appropriate corrective action. After identifying problems with a number of components, however, LILCO concluded that a comprehensive review of the design and quality of the TDI engines was necessary. Thus, at a November 3, 1983 meeting with the NRC Staff, LILCO announced that it would undertake a comprehensive diesel generator recovery program. This program has four phases:

- A. disassembly, inspection, repair and reassembly of each diesel,
- B. failure analysis of defective components,
- C. design review and quality revalidation (DRQR) program, and

D. expanded qualification testing.

The expanded testing included a 100-consecutive-start test on one engine, a seven-day run on all three diesels that conservatively simulated the load on the diesels following a LOCA, and the accumulation of at least 100 full power hours on each diesel. These expanded tests are in excess of the pre-crankshaft failure test program which itself had elements above and beyond minimal regulatory requirements.

Q.17. What is the DRQR program?

A. The DRQR program is a detailed review of the design and quality of the TDI diesel engines. The program, involving over 120 people from LILCO, Stone & Webster, FaAA, Impell and other consultants, resulted in an assessment of the design of important components in the diesels. It also verified important quality attributes for the requisite engine components.

Q.18. How does LILCO's DRQR program relate to the Diesel Generator Owners' Group effort?

A. As LILCO discovered and reported problems with its TDI diesel generators, other utilities also experienced and reported problems with TDI machines at their own nuclear power plants. In response to these problems, the

NRC Staff indicated that each utility would be required to demonstrate the reliability of its TDI diesels. The utilities that owned TDI diesels for nuclear service formed the TDI Diesel Generator Owners Group to address these concerns about the reliability of the TDI engines. Because LILCO had already instituted its comprehensive DRQR program, the utilities looked to LILCO for leadership in the Owners Group effort. Accordingly, the Owners Group developed a DRQR program modeled on LILCO's program and appointed LILCO personnel and LILCO contractors and consultants to significant leadership roles in the Owners Group effort. For example, LILCO's then Director of the Office of Nuclear, William Museler, was appointed Technical Director of the Owners Group and Michael Milligan, then LILCO's Shoreham Project Engineer, was the Assistant Technical Director. Craig Seaman of LILCO was assigned as DRQR Program Manager. To give some idea of the magnitude of Owners Group undertaking, LILCO's share of the DRQR and Shoreham-specific activities outside of the original crankshaft failure has totaled approximately \$4 million.

Q.19. You stated that another indication of LILCO's good faith in attempting to comply with GDC 17 was the installation of three additional diesel generators manufactured by Colt Industries. Please explain.



A. As already noted, LILCO initiated an extensive review of the design and quality of the TDI diesel generators as a result of the failure of the crankshaft on DG 102 and subsequent problems identified during the disassembly and inspection of all three TDI diesels. When these investigations were initiated, LILCO had no guarantee that it could successfully demonstrate the reliability of the TDI diesels. Thus, as a precaution, LILCO undertook to procure and install three diesel generators manufactured by Colt Industries. These machines are of the type in use at other nuclear power plants and are designed to satisfy the requirements of GDC 17.

Q.20. Please describe how much effort is involved in the installation of the Colt diesel generators.

A. LILCO has devoted substantial resources to the Colt effort to ensure that Shoreham would have an alternate means of meeting GDC 17. When questions about the reliability of the TDI diesels arose, LILCO organized a task force to research the availability of nuclear qualified diesels that would meet Shoreham's requirements. Once potential candidates were identified, LILCO expedited the procurement process. LILCO decided to purchase the Colt engines within two months of the



DG 102 crankshaft failure. At about the same time, Stone & Webster started a substantial engineering effort to design a new building for the Colt diesels, to design support systems, and to analyze how to integrate this new system into the existing plant. The Stone & Webster engineering effort alone had consumed 216,000 manhours as of the end of May, 1984.

Q.21. Has LILCO aggressively pursued installation of the Colts?

A. Yes. As discussed above, LILCO created a task force that was dedicated to the Colt diesel project. This task force was charged with moving the project forward briskly. Thus, the procurement and engineering activities just described were all conducted on an expedited basis. Construction of site facilities for the machines started almost immediately in November, 1983. All three machines have now been manufactured and delivered to the Shoreham site. Engineering work for the installation of the Colts is essentially complete and construction work is well underway. Underground cable and piping runs are in progress. The main duct bank between the new EDG building and the main plant is essentially complete. Work on the new diesel building is in progress. The engines are scheduled to be moved

into the building by the end of July. In addition, work on auxiliary structures such as the oil storage tank building is in progress. Construction and testing is now scheduled to be complete in May 1985.

LILCO currently believes the TDI diesels will be qualified for nuclear service. Thus, it will not be necessary to connect the Colts to the plant immediately. The Company plans to connect the machines at the first refueling outage. LILCO, however, is committed to completing the Colts as soon as possible to ensure that a qualified onsite power source is available in the event the TDI licensing process is delayed or the TDIs are found not to be reliable.

Q.22. How much will the Colt diesel generators cost LILCO?

A. Over 260 LILCO and Stone & Webster personnel were working full-time on the Colt project at its peak. The total cost for these machines is now estimated at approximately \$93 million.

Q.23. Have there been other efforts by LILCO to provide AC power in compliance with GDC 17?

A. Yes. LILCO's proposal for low power operation did not ignore the need to provide a reliable means of emergency power. LILCO's low power testimony demonstrates the

significant effort undertaken to provide such power. This testimony describes, among other things, the GM EMD diesels, the 20 MW gas turbine, LILCO's testing commitments and LILCO's commitments to suspend low power testing, all of which are intended to ensure that the plant can be operated safely.

Cost of the Shoreham Licensing Proceeding

Q.24. Mr. McCaffrey, how long has the Shoreham licensing proceeding been going on?

A. LILCO filed its application for an operating license when the Final Safety Analysis Report was submitted in August 1975. The FSAR was officially submitted for docketing in January, 1976 and the application was publically noticed on March 18, 1976. Thus, this licensing proceeding has been underway for over eight years.

In February 1977, the New York State Energy Office and OHILI/North Shore Committee were granted intervenor status. Suffolk County filed its petition to intervene on March 17, 1977, with Shoreham Opponents Coalition filing in January 1980. Over the years, the major intervention was conducted by Suffolk County. Recently, the State of New York has been in active opposition to the plant before the various licensing boards.

Q.25. Would you please describe generally the licensing activities relating to the hearing process for Shoreham during the last eight years?

A. A detailed review of the Shoreham licensing process is contained in Appendix A to the Shoreham Licensing Board's Partial Initial Decision of September 21, 1983 (Attachment 2) and in LILCO's Proposed Opinion, Findings of Fact and Conclusions of Law in the Form of a Partial Initial Decision, Vol. 3, Appendix A (Jan. 17, 1983) (Attachment 3). I will only provide a summary of hearing related activities here.

During the 1976 to 1979 time period, LILCO was heavily involved in the prehearing process at the same time we were attempting to complete the NRC Staff review and issue the Safety Evaluation Report. It was clear that the heavy intervention affected the Staff review. Often the Staff review would include issues raised in intervenor contentions because the Staff knew it would have to prepare testimony on these issues. LILCO, without technical justification, was consistently held by the Staff to a different standard than other plants. This does not mean that the Staff's review at other plants was deficient. To the contrary, the Staff conducts detailed reviews of all plants. Rather, in an



effort to eliminate issues or reduce the burdens of dealing with them in hearings, the Staff would require more of LILCO than had been judged acceptable for other plants. All of this ultimately contributed to delay in issuance of the SER.

The most recent example of this different standard is the NRC's May 22 order issued to Mississippi Power and Light Company (Attachment 4). This order relates to the low power license for the Grand Gulf Nuclear Station. Section III of the order notes:

As a result of the above [i.e., operational problems], there is a question concerning the reliability of the TDI diesel generators installed at the Grand Gulf facility. Staff analysis (Attachment 1) indicates that the total loss of diesels at 5% power would not significantly increase the risk of low-power operation. Nevertheless, one of the contributors to that risk is some very low probability environmental events.

LILCO, of course, has addressed these environmental events by committing to shut down the plant for certain events as noted in testimony of William J. Museler. The point here is that Grand Gulf was permitted to retain their low power license without fully qualified TDI diesels in accordance with GDC 17 and with fewer enhancements and commitments than LILCO.



Suffolk County and the other intervenors filed contentions on hundreds of issues. LILCO and its consultants were required to respond to numerous document requests and interrogatories concerning these issues. LILCO prepared responses to the hundreds of contentions to be ready to go forward as soon as possible with what we knew from experience would be protracted hearings. LILCO personnel devoted substantial time to developing affidavits and other supporting materials for motions for summary disposition.

The period from 1979 to 1981 was marked by intense efforts to settle or narrow issues. The process included extensive informal and formal discovery. Five stipulations which settled or narrowed many issues in the case were consummated. Each of these agreements resulted from multiple meetings among the parties and extensive research on the part of LILCO and its consultants to provide information responsive to the intervenors' "concerns." This period also saw the development of new contentions filed by SOC and SC on matters related to Three Mile Island.

Commencing in the spring of 1981, negotiations with Suffolk County intensified in an effort to reach a comprehensive settlement of the large number of issues

still outstanding. This settlement, termed the Sixth Stipulation of Settlement, was negotiated throughout the summer of 1981 with representatives of the Executive and Legislative Branches of the County, along with their lawyers and consultants. After intense effort by the parties, Mr. Charles R. Pierce, LILCO's Chairman and Chief Executive Officer, approved the Stipulation and forwarded it to Mr. Cohalan, Suffolk County Executive with the understanding that the LILCO Board of Directors would formally approve the settlement once Mr. Cohalan did. This settlement would have resolved all but a few issues and significantly shortened the pending hearings. Significantly, the terms of the settlement had been approved by Suffolk County's lawyers and consultants, Mr. Cohalan and representatives of the Suffolk County legislature participating in the negotiations. The Suffolk County Legislature, however, rejected the settlement on December 8, 1981. This action led to the lengthy licensing hearings that are still underway.

Prehearing Conferences were held on November 10, 1976, October 11, 1977, March 9-10, 1982, and April 14, 1982. During the first half of 1982, massive formal discovery efforts were resumed. Despite the almost five years of informal and formal discovery, Suffolk County once

again served extensive interrogatories and document requests on LILCO. Also, a number of LILCO witnesses were deposed. Indeed, formal discovery has been almost continuous since early 1982. The County has routinely used LILCO's filing of testimony as a pretext for additional document requests. Particularly notable was an extensive request for quality assurance documents following already massive discovery on the issue. The Board and parties spent a large part of one hearing day (Tr. 9334-9447) dealing with this one request.

Emergency planning discovery started in 1982 and still continues. Untold numbers of document requests and interrogatories have been answered in the Phase I (on-site) and Phase II (off-site) emergency planning proceedings. (Phase II alone included over 300 document requests and interrogatories, not counting subparts.) These proceedings have involved over 65 depositions.

Diesel generator discovery commenced in June 1983. The proceeding was originally quite limited in scope. But on the one issue to be litigated prior to fuel load, the County deposed eight individuals from LILCO and its contractors. The initial diesel discovery effort also involved the production of documents. Following the

crankshaft failure, the scope of diesel discovery was greatly expanded. Throughout the second half of 1983, LILCO provided SC with information concerning the diesel effort. After a conference of the parties in February 1984, diesel discovery intensified. To date, LILCO and TDI have produced more than 50,000 documents in response to County requests. Depositions of 28 LILCO personnel, LILCO consultants and TDI personnel have been conducted.

Finally, LILCO has had to deal with discovery on its low power application. LILCO has produced over eleven boxes of documents (on the order of 30,000 pages). LILCO has had to depose 10 County consultants in an effort to determine what opinions they intend to express because the County had no documents which would give LILCO information on the opinions of its consultants. The County has deposed eight individuals from LILCO and its contractors and consultants.

Q.26. When did the Shoreham licensing hearings begin?

A. Formal ASLB hearings commenced on May 4, 1982. Thirty seven issues (combining identical County and SOC contentions), many with subparts, were set for litigation. Out of the original 37 issues to be litigated, 26 were settled and the rest litigated. It is worthy of note



that the 11 health and safety contentions decided by the ASLB consumed approximately 29 weeks of evidentiary hearings, over 110 days of hearings with over 21,000 pages of transcript. Over 100 witnesses testified in the proceedings that led to the Licensing Board's September 21, 1983, Partial Initial Decision.

Q.27. Would you please describe the resources that LILCO devoted to those efforts?

A. The OL hearing process of dealing with contentions, answering discovery requests, negotiating settlements, filing testimony and testifying placed a considerable drain on LILCO and its consultants' resources at a time the Company was attempting to complete the plant and the NRC Staff review process. In most cases, to deal with a single contention issue, LILCO used technical expertise in the areas of design, construction, startup and operations. Personnel with first hand knowledge of the systems or components at issue and associated documents were involved in developing a response to contentions. Many times these were the same people responsible for designing and completing the systems, testing them and making them ready for operations. In addition, the settlement process involved numerous meetings and site tours to discuss technical aspects of



contentions with the intervenors, their consultants and attorneys. Thus, LILCO Project, Startup, Operations, Quality Assurance, Nuclear Engineering and Engineering personnel, and General Electric and Stone & Webster personnel had to devote extensive efforts to the ASLB process preceding and following the start of hearings. In addition, the licensing staffs of Stone & Webster, General Electric and LILCO were heavily involved in attempting to expedite the process and to coordinate the overall program with LILCO's attorneys.

Q.28. In addition to the efforts in the hearings on health and safety issues, on what other licensing issues has LILCO had to expend resources?

A. The County, and to a lesser extent other intervenors, have seized on every possible opportunity to delay the licensing of Shoreham. Other efforts have included challenges to construction permit extension requests, shipment of new fuel to the site, emergency planning and diesel generators. The first two items just mentioned are particularly representative of the frivolous nature of many of these challenges. Both construction permit extensions and receipt of new fuel on site are routine matters that any knowledgeable person recognizes as having no safety impacts on the public.

In addition, the County has attempted to litigate the safety of Shoreham in other arenas. For example, in hearings held by the so-called "Marburger Commission" appointed by Governor Cuomo, the County raised many of the same health and safety issues already litigated in front of the ASLB. Once again, LILCO had to devote significant resources to answering the County's baseless claims.

Q.29. Please describe LILCO's efforts in emergency planning.

A. The emergency planning issues in the hearings were divided into two phases. Phase I essentially covered on-site emergency planning and Phase II covered off-site emergency planning.

As already described, Phase I emergency planning involved extensive discovery. LILCO prepared and filed thousands of pages of written testimony to respond to the County's contentions. The Licensing Board, which had already experienced the County's proclivity for dragging out the hearing process, attempted to make the process more efficient by requiring pre-hearing evidentiary depositions so as to focus the issues that would have to be heard before the ASLB. The County, after forcing LILCO to expend significant resources on pre-hearing activities, refused to obey the Board's

order and declined to participate in these depositions. Consequently, the Board dismissed all of the Phase I emergency planning contentions.

Phase II emergency planning also has been a tremendous drain on the Company's resources. Again, the County filed hundreds of contentions (counting parts and subparts). Following another massive discovery effort, Phase II emergency planning hearings started in December 1983. These hearings have, to date, consumed 55 hearing days and generated over 12,000 transcript pages. Over 7,000 pages of prefiled testimony have been submitted.

Q.30. Is there anything particularly burdensome about the Phase II emergency planning effort?

A. Yes. In 1981, LILCO and the County signed a contract in which the County agreed to prepare an offsite emergency plan. LILCO agreed to pay the County \$245,000 to cover the cost of developing the plan. After extensive cooperation between SC and LILCO personnel which resulted in the preparation of a draft plan, the County reneged on its contractual obligations. As a result of the County's refusal to produce an off-site emergency plan and its position that the County will not cooperate in any way with LILCO on emergency planning

matters, LILCO has had to undertake extensive efforts to develop its own offsite emergency planning organization. This effort has been both expensive and time consuming. New York State, as well, has done nothing to assist in developing an emergency plan for Shoreham.

Q.31. With respect to the licensing hearings, will you please summarize the extent of LILCO's efforts?

A. As of June 1984, there have been a total of almost 15,000 pages of written testimony and almost 400 exhibits in these proceedings. There have been over 180 days of prehearing conferences and hearings with more than 310 witnesses taking the stand. There have been over 34,000 pages of transcript. The rulings of various Licensing and Appeal Boards and the Commission have exceeded 2,900 pages. In addition, over 160 people have been deposed. The drain on LILCO and its consultants has been severe. In excess of 50 LILCO, 20 General Electric, 25 Stone & Webster and 25 consultant personnel have testified or directly supported the ASLB proceedings. Thus, at a time when LILCO was attempting to finish the plant, critical personnel were being diverted to the litigation arenas.

Q.32. Do you know how much this effort has cost LILCO?



A. In May, 1983, LILCO estimated that the cost of the ASLB process would end up in excess of \$22 million. This projection was made at a time when the hearings were expected to be "winding down." Subsequent to this, there has been TDI licensing, low power licensing and a tremendously expanded emergency planning proceeding. We have not made a new overall projection, but I would judge that the total cost of the Shoreham licensing proceeding to date is more than \$33 million.

The cost to LILCO and its consultants, of course, cannot be limited strictly to financial accounting. Long days, extended trips away from home, diversion of key people from performing their normal duties and a general disruption of family life has been the norm.

Q.33. What have been the results of all of these hearings?

A. Unfortunately, these proceedings are continuing on emergency planning, diesel generators and, most recently, the low power proceedings. The Partial Initial Decision issued in September 1983, however, demonstrated that there was essentially no merit to the intervenors' contentions. Prior to the health and safety hearings, all environmental issues had been resolved by summary disposition.

The quality assurance issue provides a good example of why the Shoreham litigation has placed an unjustified and unfair burden on LILCO. This issue alone consumed 52 days of hearings and involved 24 witnesses. After this searching inquiry, the Board concluded that the intervenors had not supported any of their claims. Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), LBP-83-57, 18 NRC 445, 580-81 (1983). In fact, the Board was very critical of the County and its use of the record:

Once again, the Board, in reaching its conclusions on these contentions, is faced with a massive record, based on 55 days of hearing, extensive written testimony and exhibits, and voluminous proposed findings of fact and opinions by the parties that are disparate, at least. The difficulty of our task, trying to be objective in consideration of each of the parties' submissions, is further compounded by the County's misrepresentation of the complete record -- by omission, selective citations and distortion of recorded testimony.\*

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\* Our view of the County's performance is strictly our own. Our conclusion, however, is not without independent, if biased, corroboration. LILCO, on its own initiative, took the trouble of analyzing all 732 proposed findings of the County. It found 365 (50%) of them inaccurate, for 439 reasons (157 out of context, 110 with no citation, 105 with unjustified inference and 67 refuted on the record).

Id. at 579. The Board made similar comments on

Suffolk County's use of the record in Contention SC/SOC 7B. Id. at 545. In summary, the Company has had to spend an inordinate amount of money and resources defending the plant against allegations which consistently have been demonstrated to be baseless.

Q.34. In addition to the human and financial costs, has the protracted nature of the Shoreham licensing process had any other adverse impacts on LILCO?

A. Yes. The protracted licensing process has created the perception that the Shoreham licensing proceeding may never end. It is possible to reach this conclusion based upon the length and scope of the proceeding. Through my dealings with other utilities on generic licensing issues, I know that the Shoreham licensing proceeding is one of a handful of exceptionally protracted licensing proceedings. Licensing proceedings for plants similar to Shoreham have been far less extensive than Shoreham's. After eight years, the proceeding continues unabated on at least three fronts (low power, emergency planning, diesel generators). The stark contrast between Shoreham and other NRC proceedings has led to the perception that the Shoreham proceeding may continue indefinitely.

Q.35. Why are the costs of the Shoreham litigation pertinent to LILCO's application for an exemption?

A. The NRC's May 16 Order indicated that if LILCO's low power proposal did not present a risk to the public health and safety, it was appropriate to weigh the equities involved in determining whether to grant an exemption. The length and cost of Shoreham's licensing proceeding are pertinent because they demonstrate the unusual burdens placed upon LILCO over the years by intervenors' use of the NRC licensing process. LILCO has had to spend an inordinate amount of money and resources defending the plant against allegations which have consistently been demonstrated to be baseless. In addition to the direct costs of litigation previously addressed, the extended hearings have and will continue to delay the plant's fuel load date. The testimony of Anthony Nozzolillo demonstrates that delay in the operation of the plant increases the cost to the ratepayers.

With rare exception, when the substantive merits of the issues raised in litigation have been engaged, Shoreham has been found to be safe. More frequently, the County has fought to avoid engaging the merits by seeking delay, raising legal challenges, ignoring the absence



of any demonstrable safety concerns, and, in one instance, flatly refusing to participate in hearings. Given this protracted licensing history, fairness dictates that if LILCO can demonstrate the safety of its proposal, it should be granted an exemption from the regulations.

Item 4

## PROFESSIONAL QUALIFICATIONS

Brian R. McCaffrey  
Manager, Nuclear Compliance  
Nuclear Operations Support Department  
Long Island Lighting Company

My name is Brian R. McCaffrey. My business address is Long Island Lighting Company, 175 East Old Country Road, Hicksville, New York. I have been employed by Long Island Lighting Company (LILCO) since 1973, and have been Manager, Nuclear Compliance and Safety for LILCO since November 1981, responsible for managing the Nuclear Compliance and Safety Division of the Nuclear Operations Support Department. In addition, I am responsible for managing and coordinating the Company's efforts in the ASLB Licensing Proceedings. The Nuclear Compliance and Safety Division will support the operation of the Shoreham Station in coordination of all NRC licensing activities, the Nuclear Review Board and the management of the Independent Safety Engineering Group.

I graduated from the University of Notre Dame in 1967 with a Bachelor of Science Degree in Aerospace Engineering. I received a Master of Science Degree in Aerospace Engineering in 1972 from the Pennsylvania State University and a Master of Science Degree in Nuclear Engineering in 1978 from the

Polytechnic Institute of New York. I completed a General Electric BWR Design Orientation Course in 1978.

My professional experience began with my employment with Grumman Aerospace Corporation in 1968. My primary responsibilities were in the areas of aircraft aerodynamics and flight test stability and control.

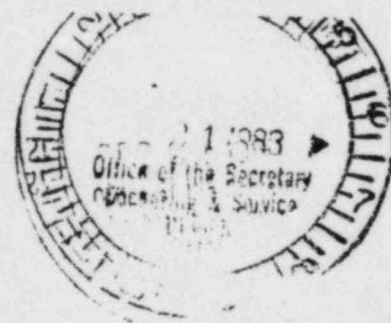
I joined LILCO in 1973. I have held the positions of Associate Engineer and Engineer in the Power Engineering Department (1973-1975), where I was involved with plant engineering for both fossil and nuclear power stations. I then became Senior Engineer in the Power Engineering Department (1975-1977), with responsibilities as Project Coordinator for gas turbine installations and Lead Mechanical Engineer for nuclear projects; Senior Licensing Engineer for Shoreham Nuclear Project (1977-1978), with responsibility for the licensing activities leading to an Operating License; and Project Engineer for Shoreham (1979-1980), with responsibilities that included directing Project Engineering and the Architect Engineer in engineering and procurement for Shoreham.

I was assigned in 1980 as Assistant Project Manager for Engineering and Licensing (in July 1981, retitled Manager--Project Engineering) for Shoreham. In that capacity I

was responsible for the overall engineering and licensing of the Shoreham Station. My organization directed and approved the engineering efforts of the Architect Engineer and Nuclear Steam Supplier, and was responsible for directing the activities leading to an Operating License from the NRC. I became Regulatory Supervisor in November, 1981 (retitled Manager, Nuclear Compliance and Safety in October 1982).

I am a Registered Professional Engineer in the State of New York. In addition, I am a member of the American Society of Mechanical Engineers and the Long Island Section of the American Nuclear Society.





UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

SERVED SEP 21 1983

Lawrence Brenner, Chairman  
Dr. George A. Ferguson  
Dr. Peter A. Morris

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

Docket No. 50-322-0L

PARTIAL INITIAL DECISION

UNPUBLISHED APPENDICES A THROUGH F

**Background of the Proceeding**

APPENDIX A:

BACKGROUND OF THE PROCEEDING

On April 12, 1973, the Atomic Energy Commission issued a construction permit to the Long Island Lighting Company (LILCO) for its Shoreham Nuclear Power Station, Unit 1, an 820 MWe boiling water reactor located in Suffolk County, New York.<sup>1</sup> The site covers 500 acres on the north shore of Long Island, near the village of Shoreham. At issue now is the plant's operation.

The background of the Shoreham operating license proceeding, currently in its seventh year, is described below in these terms:

1. The Application
2. Staff Review
3. ACRS Review
4. Adjudicatory Review
  - (a) Atomic Safety and Licensing Boards
  - (b) Intervenor
  - (c) Prehearing Process
  - (d) Discovery

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<sup>1</sup>See 38 Fed. Reg. 14,183 (1973); See also Long Island Lighting Co. (Shoreham Nuclear Power Station), LBP-73-13, 6 AEC 271 (1973).

- (e) Summary Disposition
  - (f) Settlements
  - (g) Hearings
  - (h) Cross-examination by Means of Public Prehearing Examinations
5. Issues
- (a) Non-Health and Safety Matters
    - (1) Environmental Issues
    - (2) Extension of the Construction Permit
    - (3) New Fuel
  - (b) Health and Safety Matters
6. Findings
7. Motions to Reopen

## 1. THE APPLICATION

This proceeding concerns LILCO's application to the Nuclear Regulatory Commission for a license to operate Shoreham. LILCO tendered the OL application for the plant, along with its Environmental Report (ER) and Final Safety Analysis Report (FSAR), on August 28, 1975, pursuant to Section 103 of the Atomic Energy Act, 42 U.S.C. § 2133. The application, ER and FSAR, as amended on January 26, 1976, were docketed thereafter by the NRC Staff, and publicly noticed on March 18, 1976. See 41 Fed. Reg. 11,367 (1976). Another major licensing document, the Shoreham Design Assessment Report, was initially submitted by LILCO in January 1976. These documents have undergone numerous revisions.



## 2. STAFF REVIEW

The NRC Staff reviewed the documents just listed, the plant itself and other data as necessary in order to determine whether, in the Staff's judgment, the facility complied with NRC regulations. Summaries of the results of the Staff's environmental review of Shoreham were published in a Draft Environmental Statement on March 24, 1977, and in a Final Environmental Statement (FES) on October 25 of that year. The aftermath of Three Mile Island interrupted the Staff's health and safety review. Thus, Shoreham's Safety Evaluation Report (SER) did not appear until April 17, 1981 -- three and one-half years after issuance of the FES. To date, SER Supplements have been issued in September 1981 (No. 1), February 1982 (No. 2) and February 1983 (No. 3). The Staff's review of some matters has continued during the hearings. Steps were taken to make the Staff's conclusions available for purposes of settling or litigating affected contentions prior to formal issuance of SER Supplements. See, e.g., Tr. 9145-47.

## 3. ACRS REVIEW

Shoreham was also reviewed by the Advisory Committee on Reactor Safeguards (ACRS), pursuant to Section 182(b) of the Atomic Energy Act, 42 U.S.C. § 2232(b). The site was visited by an ACRS subcommittee on April 30, 1981. Hearings were held by the subcommittee in Washington, D.C. on September 30, 1981 and the full committee held its hearings on

October 15. Based on these public and certain private deliberations, the ACRS made its recommendations in a letter to NRC Chairman Palladino, dated October 19, 1981, and concluded:

We believe that if due consideration is given to the recommendations above, and subject to satisfactory completion of construction, staffing, and preoperational testing, there is reasonable assurance that Shoreham Nuclear Power Station Unit 1 can be operated at power levels up to 2436 Mwt without undue risk to the health and safety of the public.

SER Supp. No. 2, at 18-3.

#### 4. ADJUDICATORY REVIEW

##### (a) Atomic Safety and Licensing Boards

On April 21, 1976, the Chairman of the Atomic Safety and Licensing Board Panel, acting pursuant to the authority delegated to him by the Commission, appointed an Atomic Safety and Licensing Board "to rule on petitions and/or requests for leave to intervene." 41 Fed. Reg. 17,979 (1976). With one change in its membership, that same Board was designated on February 22, 1977 to hold hearings "at a time and place to be fixed" by it. 42 Fed. Reg. 11,294 (1977); see also Tr. 45. The Board was subsequently reconstituted six times, ultimately having four different chairmen and ultimately retaining none of its original members. The reconstitutions were as follows:

<u>Date of Change</u>	<u>ASLB Member Affected</u>
February 6, 1978	Replacement of chairman
March 2, 1981	Replacement of chairman
December 17, 1981	Replacement of environmental member
February 8, 1982	Replacement of chairman
March 23, 1982	Replacement of health and safety member
July 14, 1983	Replacement of environmental member (by a second health and safety member)

See 43 Fed. Reg. 6346 (1978); 46 Fed. Reg. 16,384 & 62,571 (1981); 47 Fed. Reg. 6510 & 13,069 (1982); see also "Notice of Reconstitution of Board," 48 Fed. Reg. \_\_\_\_ (Notice dated July 14, 1983).

On May 27, 1982, pursuant to 10 C.F.R § 2.722(a)(1) and (b), the Board appointed a member of the Atomic Safety and Licensing Board Panel to assist it, particularly in the area of safety classification and systems interaction. See Confirmatory Order Appointing Administrative Judge Walter H. Jordan as Technical Interrogator and Informal Assistant (May 28, 1982). Pursuant to the limitations of Section 2.722, Judge Jordan took no part in this Board's decision.

On August 24, 1982, at the request of the Board, issues involving plant security were transferred to a different ASLB, which was "established . . . to continue to guide ongoing settlement efforts by the parties with respect to security planning issues and to preside over the proceeding on those issues only in the event that a hearing is required." See 47 Fed. Reg. 37,984 (1982). This transfer occurred because, given the demands of other aspects of the Shoreham proceeding, the Board was unable to give the requisite attention to the security issues. See Tr. 9306-07. On December 3, 1982, following approval by the security Board of the parties' extensive and successful settlement efforts, the security proceeding was dismissed. The security board explained that LILCO and Suffolk County had:

held numerous meetings and negotiations concerning the security contentions of the County. Periodic reports were filed by the parties. Finally, on November 24, 1982, all parties herein filed the "Final Security Settlement Agreement."

. . . .

The Nuclear Regulatory Commission recognizes and encourages fair and reasonable settlement of contested issues . . . We have considered the nine security contentions of the County, the Agreement of all parties to resolve those contentions, and the Commission's policy encouraging settlement. Accordingly, we conclude that the Agreement is fair and reasonable and should be approved. The parties and their counsel are deserving of a special commendation for their outstanding efforts which led to a resolution of the security contentions in this proceeding.



Board Memorandum and Order Cancelling Hearing, Approving Final Settlement Agreement, and Terminating Proceeding at 1-2 (Dec. 3, 1982) (unpublished). The Security Settlement contains safeguards information and thus the terms and details of that resolution cannot be further described here.

On May 11, 1983, approximately one month after the Board had closed the record on all matters other than emergency planning, a separate Atomic Safety and Licensing Board was established, at the OL Board's request, to preside over the litigation of all remaining emergency planning issues. See 48 Fed. Reg. 22,235 (May 17, 1983). The OL Board retained jurisdiction over the health and safety matters to resolve any outstanding issues and to render this partial initial decision.

(b) Intervenors

Notice of opportunity for hearing on the OL application was published on March 18, 1976, with a deadline for filing petitions for intervention of April 19, 1976. See 41 Fed. Reg. 11,367-68 (1976). Three groups filed timely petitions to intervene: the New York State Atomic Energy Council, now superseded by the New York State Energy Office (SEO), the Oil Heat Institute of Long Island, Inc. (OHILI), and the North Shore Committee Against Nuclear and Thermal Pollution (NSC). Ten months later, on February 22, 1977, the SEO was granted participation under 10 C.F.R § 2.715(c) as an interested state, while OHILI and NSC were admitted as

consolidated intervenors pursuant to § 2.714. See Long Island Lighting Company (Shoreham Nuclear Power Station, Unit 1), LBP-77-11, 5 NRC 481 (1977).

Subsequently, other parties sought leave to intervene out of time. Suffolk County filed its petition to intervene on March 17, 1977, eleven months after the deadline. The Shoreham Opponents Coalition sought to intervene on January 24, 1980, three and three-quarter years late. LILCO opposed the intervention of each of these parties as being untimely; the NRC Staff did not oppose these petitions.

Each of these parties was found by the Board to have met the then appropriate balancing test for late intervention pursuant to 10 C.F.R. § 2.714(a)(1). Both were ultimately admitted to the proceeding, the County on October 11, 1977 and SOC on May 1, 1980. See Board Memorandum and Order (January 27, 1978) (confirming rulings made during the October 11, 1977 prehearing conference) (unpublished); Memorandum and Order Relating to Response of SOC to Board Order Dated March 5, 1980 (May 1, 1980) (unpublished). However, as the Staff had recommended, SOC's participation in this proceeding was limited to new issues arising subsequent to the TMI accident. Memorandum and Order Relating to Response of SOC to Board Order Dated March 5, 1980 (May 1, 1980) (unpublished), slip op., at 7.

In the spring of 1982, shortly before the hearings began, Suffolk County asked that it be deemed a governmental participant under Section 2.715(c), as well as an intervenor under Section 2.714. This request was granted. See Board Memorandum and Order Confirming Rulings Made at the Conference of Parties, LBP-82-19, 15 NRC 601, 617 (1982).

On February 23, 1983, the Town of Southampton sought leave to participate in this proceeding as an interested governmental participant on matters related to offsite emergency planning. Southampton was so admitted in an order dated March 10, 1983, LBP-83-13, 17 NRC \_\_\_\_.

The SEO took part in various aspects of the prehearing process, but not in the hearings themselves. OHILI has not participated since 1978, although it has not formally withdrawn from the proceeding. On November 22, 1978, NSC renounced its link with OHILI, and thereafter limited its interest to matters involving receipt of new fuel at the site and emergency planning. Accordingly, NSC has rarely appeared at the hearings to date. At the Board's request, by letter to Counsel for OHILI dated April 26, 1982, Counsel for NSC confirmed that OHILI was not being represented in the proceeding. Once admitted, SOC was quite active until very shortly after the hearings began. Thereafter, like NSC, it has rarely appeared, either settling its contentions with LILCO before hearings began on them, or leaving their prosecution to Suffolk County. The County, LILCO and the NRC Staff have been active throughout the proceeding.

(c) Prehearing Process

The prehearing phase of this proceeding lasted more than six years, from March 18, 1977, when notice of opportunity for hearing was published, to the actual beginning of hearings on May 4, 1982.

Four prehearing conferences were held prior to the commencement of evidentiary hearings:

November 10, 1976	(Tr. 1-42)
October 11, 1977	(Tr. 43-143)
March 9-10, 1982	(Tr. 144-529)
April 14, 1982	(Tr. 645-831)

During the course of the hearings, additional prehearing conferences were held by this Board to discuss emergency planning matters:

July 20, 1982	(Tr. 7173-7421)
January 12, 1983	(Tr. 17,819-17,892)
February 24, 1983	(Tr. 20,240-79).

There were also numerous informal conferences and other communications among the parties.



(d) Discovery

During the October 11, 1977 prehearing conference, the Board ordered that discovery begin. Tr. 120-21; see also Order Relative to Requests for Clarification and Reconsideration of the Board Order of January 27, 1978, at 4-5 (March 8, 1978) (unpublished). There ensued and has continued to date extensive resort to formal means of discovery -- interrogatories, requests for production, and depositions. Informal sharing of information, principally in the context of settlement negotiations, has been even more extensive. Much of the discovery, formal and informal has taken place after the hearings began. Thus, of the approximately 40 persons deposed so far in this proceeding, all but 10 have been deposed since May 1982, in places from California to New York. The other ten deponents testified shortly before the hearings began, on March 31 and April 22, 1982. All told, extremely large amounts of data have been exchanged, both in writing and orally.

(e) Summary Disposition

LILCO on June 23, 1978, and the NRC Staff on June 28, 1978, sought summary disposition of issues raised under the National Environmental Policy Act. On December 18, 1978 and February 5, 1979, LILCO requested summary disposition of certain issues raised under the Atomic Energy Act. The motions concerning the environmental issues were granted. See pages A-20 to A-21, infra.

The motions concerning health and safety issues were rejected as "premature since discovery will not close until . . . after the issuance of the SER." Board Order Relative to Applicant's "First Group" of Motions for Summary Disposition at 3 (March 8, 1979) (unpublished); Board Order Relative to Applicant's Motion for Summary Disposition on the "Second Group" of Contentions (March 8, 1979) (unpublished).

After issuance of the SER in April 1981, LILCO filed motions for summary disposition of all or parts of five SOC contentions. See LILCO Motions for Summary Disposition of SOC Contentions 1, 2, 3, 6(a)(i), and 12 (Part Two) (July 13, 1981). LILCO withdrew its motions concerning Contentions 3 and 12 (Part Two) after agreeing with SOC about the particularization of the underlying issues. See LILCO's pleading on Matters Pending for Board Decision, at 3, n.1 (December 23, 1981). SOC withdrew its Contention 6(a)(i) "in lieu of responding to LILCO's motion for summary disposition of that contention." Board Memorandum and Order Confirming Rulings Made at the Conference of Parties, LBP-82-19, 15 NRC 601, 616 (1982). SOC Contentions 1 and 2, "as framed by the filings of SOC in response to the motions for summary disposition by LILCO and the Staff, and SOC's response to the Board's Order of February 8, 1982, and the discussion at the conference (Tr. 346-385), were dismissed as a challenge to the Commission's emergency planning regulations." Id., 15 NRC, at 618.

(f) Settlements

This proceeding has been characterized by sustained and often successful efforts to resolve issues without the need for further litigation. Settlement negotiations began in earnest early in 1979. They have continued with infrequent interruption, involving thousands of hours of effort.

During the first two years of negotiations, attention focused on clarifying, narrowing and/or eliminating contentions. As the Board stated in its June 28, 1979 Order (unpublished) approving the parties' first stipulation:

The Applicant, NRC Staff, and Suffolk County (SC) entered into a stipulation on June 5, 1979, which provides for the withdrawal of several SC contentions and a commitment of the Applicant to assume additional responsibilities.

The Board accepts the stipulation and encourages the parties to continue their efforts to resolve or particularize contentions.

See also, e.g., Order Relative to Stipulation Concerning 10 CFR Part 70 (Oct. 5, 1979) (unpublished); Memorandum Concerning the Second Stipulation Regarding Certain Suffolk County Contentions (Nov. 16, 1979) (unpublished); Order Relative to the Second Stipulation Concerning Suffolk County Contentions (Jan. 7, 1980) (unpublished); Order Accepting Third Stipulation Regarding Certain Suffolk County Contentions (June 26, 1980) (unpublished); Order Relative to Stipulation by the NRC Staff and Shoreham

Opponents Coalition (June 26, 1980) (unpublished); Order Accepting Fourth Stipulation Regarding Certain Suffolk County Contentions (Oct. 27, 1980) ("The Board . . . commends the parties for their continuing efforts to resolve differences and to sharpen the issues") (unpublished); Order Relative to Fifth Stipulation on Certain Suffolk County Contentions (Feb. 17, 1981) (" . . . the parties are again to be commended in their continuing efforts") (unpublished); see also comments of the Security Board set out on pages A-6 to A-7 above.

From spring through fall 1981, negotiations became more ambitious, involving an intense effort -- ultimately unsuccessful -- to reach a comprehensive settlement between the County and LILCO. As counsel for Suffolk County explained to the Board in late October 1981:

Since April of this year, the County and the Applicant have been engaged in negotiations regarding the possible settlement of the County's intervention in the O.L. proceedings. Since the end of May, the County's negotiation team has included members of the Executive and Legislative Branches of the County, along with the County Attorney and the County's technical consultants. Pursuant to a Suffolk County Resolution passed in June of this year, it was mandated that approval by the Suffolk County Legislature would be needed before the County could enter into any final settlement agreement.

At a meeting in June of 1981, the representatives of the Applicant and the County agreed upon a final version of the proposed Sixth Stipulation. It was understood between the representatives at that meeting that upon receipt of a letter from LILCO's Chairman of the Board, indicating his approval of the proposed Sixth Stipulation, a resolution would be introduced into the County



Legislature, calling for legislative approval of the Sixth Stipulation. On October 13, 1981, a letter was sent from Charles R. Pierce, Chairman and Chief Executive Officer of the Applicant, to Peter F. Cohalan, Suffolk County Executive, indicating that he was prepared to recommend to the Board of Directors of the Company that the Board authorize execution of the Sixth Stipulation by the appropriate representatives of the Company once it has finally been approved by Mr. Cohalan and the County Legislature, and executed in behalf of the County.

At this point, a resolution requesting legislative approval will be introduced to the Suffolk County Legislature at its next legislative session. After legislative deliberation, passage of such a resolution could occur as early as November 10, 1981. Should the County Legislature authorize the County Executive to sign the Sixth Stipulation, then the agreement would be offered to the Applicant's Board of Directors for its approval. It is at this time that the Sixth Stipulation could be offered to the Board for its review.

Suffolk County's Response to the Applicant's Motion that a Hearing Schedule be Set at 1-2 (Oct. 21, 1981). On December 8, 1981, the County Legislature rejected the settlement.

From the collapse of comprehensive negotiations until the beginning of hearings, there was no settlement activity. It resumed in May 1982 and has since resulted in the resolution of numerous contentions. They are listed in Appendix B below, "Sequence of Settlements."

At all times, the Board has encouraged and facilitated the settlement process. See, Tr. 3168-73. The present Board, at the request of the parties, has cancelled hearings at times to permit negotiations to go

forward undistracted. See, e.g., Tr. 9936-42, 9956-59. The Board on other occasions has reduced the length of hearing days to the same end. See, e.g., Tr. 8318, 9327. The transcript evidences many Board-imposed deadlines for reports by the parties on the progress of their negotiations and Board inquiries into what disputes remain and why they remain. See, e.g., Tr. 14,754-75. The Board commends the parties for their hard work and for their professional approach to these matters, both of which combined to make their settlement efforts in this proceeding so successful.

(g) Hearings

Early in 1978, two years after the start of the Shoreham OL proceeding, LILCO first began to press for hearings or for some other definitive means of resolving issues that it thought had become ripe for resolution.<sup>2</sup>

Five and one half years after the OL proceeding began, on October 6, 1981, LILCO filed "Applicant's Motion that a Hearing Schedule Be Set," asking that the Board take concrete steps to end the prehearing

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<sup>2</sup>See, e.g., Applicant's Request that the Board Set a Schedule for Resolution of Environmental Issues (Feb. 24, 1978); Applicant's Request for Summary Disposition of OHILI/Committee Contentions 7a(ii) and (iii) (June 23, 1978); Applicant's Request for Summary Disposition of Suffolk County Contentions 4a(vii), (x); 7a(ii)-(iii), (vi)-(vii); 12a (viii); and 14a (Dec. 18, 1978) (with an alternative request for hearings if summary disposition was unavailable); Motions of Long Island Lighting Company for summary disposition of SOC Contentions 1-3, 6(a)(i) and 12 (Part Two): Overview (July 13, 1981) (with an alternative request for hearings if summary disposition was unavailable).

process -- steps beginning on November 4 with "[a]ll parties . . . either (1) agreeing on a list of particularized issues to be litigated further . . . or (2) stating their disagreements," and ending on February 23, 1982 with the actual start of hearings. The Board denied the motion by telegram, on November 6, 1981. A month later, after the County Legislature had rejected the proposed Sixth Stipulation Settlement, LILCO renewed its request that hearings begin.

Hearings began on May 4, 1982. To date, there have ensued 29 weeks of evidentiary sessions during a period of one year, mostly in a concentrated time frame over the first nine months. More than 7,000 pages of written direct testimony and attachments have been filed. The Transcript has passed 21,000 pages. Over 200 exhibits have been generated, as well as many motions, briefs, and ASLB orders. More than 100 witnesses have testified.<sup>3</sup> For further detail, see Appendices C ("Sequence of Testimony"), D ("Witnesses in Alphabetical Order"), and E ("Exhibits by Party and Number").

Evidentiary hearings took place on the dates and at the places set out below:

<u>Weeks</u>	<u>Dates</u>	<u>Transcript Pages</u>	<u>Places</u>
1	May 4-7, 1982	Tr. 982-1845	Riverhead

<sup>3</sup>If a particular person has testified on more than one contention, he has been counted anew for each contention on which he has been a witness.

<u>Weeks</u>	<u>Dates</u>	<u>Transcript Pages</u>	<u>Places</u>
2	May 25-28	Tr. 1846-2677	Riverhead
3	June 1-4	Tr. 2678-3609	Riverhead
4	June 8-11	Tr. 3610-4321	Hauppauge
5	June 15, 17-18	Tr. 4322-991	Hauppauge
6	June 22-25	Tr. 4992-5700	Riverhead
7	July 6-9	Tr. 5701-6412	Riverhead
8	July 13-16	Tr. 6413-7168	Riverhead
9	July 20-22	Tr. 7169-904	Riverhead
10	July 27-30	Tr. 7905-8686	Riverhead
11	Aug. 3-5	Tr. 8687-9302	Riverhead
12	Aug. 24-27	Tr. 9303-10,036	Hauppauge
13	Sept. 14-17	Tr. 10,037-616	Hauppauge
14	Sept. 21-24	Tr. 10,617-11,308	Hauppauge
15	Oct. 12-15	Tr. 11,309-12,021	Bethesda
16	Oct. 27-29	Tr. 12,022-543	Bethesda
17	Nov. 2-5	Tr. 12,544-13,275	Bethesda
18	Nov. 9-12	Tr. 13,276-14,025	Bethesda
19	Nov. 16-19	Tr. 14,026-712	Bethesda
	Nov. 23	Tr. 14,713-749	Hauppauge
20	Nov. 30-Dec. 3	Tr. 14,750-15,476	Bethesda
21	Dec. 7-10	Tr. 15,477-16,190	Bethesda
22	Dec. 14-17	Tr. 16,191-17,006	Bethesda
23	Dec. 20-22	Tr. 17,007-533	Bethesda
24	Jan. 10-13, 1983	Tr. 17,534-18,129	Hauppauge



<u>Weeks</u>	<u>Dates</u>	<u>Transcript Pages</u>	<u>Places</u>
25	Jan. 17-20	Tr. 18,130-796	Hauppauge
26	Jan 24-27	Tr. 18,797-19,541	Hauppauge
27	Jan 31-Feb. 1	Tr. 19,542-733	Hauppauge
28	Feb. 22-24	Tr. 19,734-20,344	Hauppauge
29	April 5-8	Tr. 20,345-21,178	Riverhead

With one brief exception, the evidentiary hearings have always been open to the public. Several non-evidentiary argument and discussion sessions were held in camera from May through July 1982, a very small number on the record and the remainder in chambers, to discuss the security of new fuel onsite. One brief in camera evidentiary session was held in June 1982 in order to protect certain information claimed by General Electric to be proprietary. Furthermore, an in camera prehearing conference was held on September 13, 1982 before the Board charged with the litigation concerning plant security.

Limited appearances were made by and received from many individuals on April 13-14, 1982, Tr. 530-644, 832-981. Some additional persons took advantage of the publicized opportunity to make limited appearances at the end of hearing days in May and June, 1982. Tr. 2475-80, 3123-29, 3813-16. However, public attendance at the hearings, whether conducted on Long Island or in Bethesda, has been extremely sparse.

(h) Cross-examination by Means of Public Prehearing Examinations

On October 29, 1982, the Board "noted that it was considering ordering that the parties conduct cross-examination, redirect and recross examination with respect to the Phase I emergency planning contentions initially by means of public prehearing depositions." Board Memorandum and Order Ruling on Licensing Board Authority to Direct that Initial Examination of the Pre-Filed Testimony Be Conducted by Means of Prehearing Examinations, LBP-82-107, 16 NRC \_\_\_\_ (Nov. 19, 1982) (slip op., at 1); see also Tr. 12,541-43. After giving all parties ample opportunity to address the legality and wisdom of the proposed procedure, e.g., Memorandum Advising SOC and NSC of Board Proposal to Require Depositions and of Opportunity to File Views (Nov. 9, 1982) (unpublished), the Board adopted the procedure. Suffolk County, SOC and NSC refused to either conduct their initial cross-examination in this fashion or to make their witnesses available for such examination. Pursuant to the provisions of its earlier order, LBP-82-107, 16 NRC \_\_\_\_ (slip op., at 27-28), the Board deemed the intervenors' refusal to participate to be a total abandonment of their contentions. Accordingly, on November 23 and 30, 1982, the Board dismissed, with prejudice, all Phase I emergency planning contentions not previously settled. Tr. 14,746-49, 14,753; see generally Board Memorandum and Order Confirming Ruling on Sanctions for Intervenors' Refusal to Comply with Order to Participate in Prehearing Examinations, LBP-82-115, 16 NRC \_\_\_\_ (Dec. 22, 1982).

Much the same use of prehearing examinations for initial cross-examination was subsequently made in order to narrow and focus the hearings on an aspect of the QA dispute involving the Torrey Pines Independent (Construction) Verification of the Shoreham Nuclear Power Station. See LBP-82-115, 16 NRC \_\_\_, supra (slip op., at 15-16). The County, the only intervenor active in the quality assurance litigation, participated in these depositions. The NRC Staff did not take part in these depositions, albeit for reasons unrelated to its general views that such prehearing examinations are legal and useful. See NRC Staff Position on the Board's Proposed Deposition Procedures (November 12, 1982). Accordingly, the NRC Staff did not participate in the evidentiary hearings on the Torrey Pines Report.

## 5. ISSUES

### (a) Non-Health and Safety Matters

In addition to the health and safety contentions heard and/or settled since the beginning of evidentiary hearings, the Phase I emergency planning contentions settled or dismissed, and the security issues settled before a separate licensing board, this Board and the parties have engaged three other sorts of issues to date: (1) environmental matters, (2) extension of Shoreham's construction permit, and (3) new fuel. Offsite ("Phase II") emergency planning issues are being considered beyond the time of issuance of this decision.

(1) Environmental Issues

The Board raised certain environmental questions that were answered to its satisfaction. OHILI/NSC, Suffolk County, and SOC also raised issues under the National Environmental Policy Act. Some of their NEPA contentions were rejected at the pleading stage for a variety of defects; some were dismissed because their proponents failed to respond to discovery concerning them; others did not withstand motions for summary disposition.<sup>4</sup>

On August 4, 1978 the Board ruled that:

[T]here are no remaining environmental issues to be considered in this case. Therefore an environmental hearing will not be held.

Memorandum and Order Relative to Board Concerns Regarding Fish-Return System and Chlorine Discharge at 6 (August 4, 1978) (unpublished). The Shoreham Opponents Coalition failed in its attempt to reverse this ruling when SOC entered the proceeding over a year after the ruling came down.<sup>5</sup>

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<sup>4</sup>See, e.g., Board Memorandum and Order at 17-18 (January 27, 1978) (unpublished); Order Relative to NRC Staff Motion to Compel Discovery and Impose Sanctions (April 19, 1978) (unpublished); Order Relative to Motions for Summary Disposition from Applicant and NRC Staff of Consolidated Intervenor (CI) Contentions 7(a)(ii) and (iii) (July 25, 1978) (unpublished); Memorandum and Order Relative to Board Concerns Regarding Fish-Return System and Chlorine Discharge (August 4, 1978) (unpublished).

<sup>5</sup>See, e.g., Order Ruling on Petition of Shoreham Opponents Coalition at 22-24 (March 5, 1980) (unpublished); Memorandum and Order Relating to Response of SOC to Board Order dated March 5, 1980, at 8 (May 1, 1980) (unpublished).



(2) Extension of the Construction Permit

On December 18, 1978, LILCO requested an extension of Shoreham's construction permit. An extension to December 31, 1980 was granted on May 14, 1979. See 44 Fed. Reg. 29,545 (1979).

On November 26, 1980, LILCO requested a further extension of the permit, which was opposed by the Shoreham Opponents Coalition. On January 23, 1981, SOC requested a hearing on the extension application and moved under 10 C.F.R. § 2.206 to have the permit suspended and/or revoked. Six months later, SOC sued the NRC in federal district and circuit courts to the same ends. The suits were dropped once the NRC granted SOC an opportunity for hearing on the CP extension and ruled on SOC's Section 2.206 request.

On July 22, 1981, the Commission issued an order stating that it had:

determined that the request [for a CP extension hearing] will be granted, subject to the petitioner advancing at least one litigable contention, and that an Atomic Safety and Licensing Board is to be convened to consider whether SOC's petition raises issues litigable in this construction permit extension proceeding, and, if so, to hear and decide those issues on the merits. NRC Order at 2 (July 22, 1981) (footnote omitted).

Five days later, the Board sitting in the Shoreham OL proceeding was also appointed to deal with the CP extension issues. 46 Fed. Reg. 39,516 (1981).

After considering extensive written and oral arguments, the Board found that SOC had failed to raise "at least one litigable contention" and, therefore, ordered that no hearing be held on the CP extension application. See Tr. 497-501 (March 10, 1982); Board Memorandum and Order Ruling on SOC's Construction Permit Extension Contentions and Request for Hearing of Shoreham Opponents Coalition, LBP-82-41, 15 NRC 1295 (1982). SOC did not appeal the denial of its hearing request. On July 15, 1982, the construction permit was extended until March 31, 1983. 47 Fed. Reg. 32,502 (1982).

SOC's Section 2.206 request for a stay and/or revocation of the CP had been previously denied by the Director of Nuclear Reactor Regulation. Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), DD-81-9, 13 NRC 1125 (June 26, 1981).

### (3) New Fuel

On September 25, 1978, LILCO applied for a license to receive, possess and store new fuel on site, pursuant to 10 C.F.R. Part 70. On November 3, 1978, the Staff notified the Board and parties of the pendency of the Part 70 application. Almost eight months thereafter, on July 27, 1979, NSC opposed the application, requested a hearing on it, and sought a stay of the issuance of any license pending Board action. LILCO and the Staff, in turn, opposed NSC's requests. Negotiations

ensued, leading to settlement of the dispute. See Stipulation Regarding Application for a Special Nuclear Material License (Sept. 18, 1979). The Board thereafter ruled:

On September 24, 1979, the Staff transmitted a stipulation dated September 18, 1979, concerning the issuance of materials license pursuant to 10 C.F.R. Part 70, to permit receipt, possession and storage of unirradiated new fuel assemblies at the site. The stipulation was signed by the North Shore Committee Against Thermal and Nuclear Pollution [sic], the Staff and the Applicant.

The stipulation is accepted by the Board.

Order Relative to Stipulation Concerning 10 C.F.R. Part 70 (October 5, 1979). Suffolk County took no part in any aspect of these developments; SOC was not yet a party to the proceeding. At the time there were no existing security contentions in the OL proceeding.

In May 1982, LILCO received a Part 70 license. Immediately thereafter, at the request of Suffolk County, the Board temporarily forbade shipment of new fuel pursuant to the license. See Interim Order Staying Shipment of Fuel (May 20, 1982, corrected, May 24, 1982) (unpublished). LILCO and Suffolk County, with the concurrence of the NRC Staff, then negotiated a resolution of the County's concerns about the security of the new fuel once on site. On June 9, 1982, the Board approved the parties' agreement and removed the stay. See Tr. 40<sup>21</sup>-32; Confirmatory Order Lifting "Interim Order Staying Shipment of Fuel"

(June 14, 1982). The Board encouraged this negotiated process. By routinely holding almost weekly meetings with these three parties the Board was kept informed of first the negotiations and thereafter the status of implementation of the agreement. Given the subject matter, the cooperation of counsel for LILCO and the County, and the coordination of County officials and police personnel with LILCO personnel, was most appropriate and commendable. Following implementation of the LILCO/County agreement, new fuel reached the site in mid-July 1982.

(b) Health and Safety Matters

Thirty-seven sets of health and safety contentions were finally accepted for hearings by the Board. These contentions emerged from hundreds of proposed issues, years of informal negotiations, stipulations, settlements, and many formal disputes among the parties, plus numerous responsive rulings by the Board.<sup>6</sup> Of these 37 sets of issues, 20 were wholly settled and 2 were partially settled before reaching hearings.

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<sup>6</sup>Beginning with a May 1976 ruling, there have followed to date over 30 orders concerning the contentions to be litigated. These rulings include: Memorandum and Order (May 7, 1976); Memorandum and Order (February 22, 1977); Memorandum and Order (August 1, 1977); Memorandum and Order (January 27, 1978) (confirming rulings made during the October 11, 1977 prehearing conference); Order Relative to Requests for Clarification and Reconsideration of the Board Order of January 27, 1978 (March 8, 1978); Order Relative to NRC Staff Motion to Compel Discovery and Impose Sanctions (April 19, 1978); Memorandum and Order Relative to Board Concerns Regarding Fish-Return System and Chlorine Discharge (August 4, 1978); Order Granting NRC Staff Motion of August 18, 1978 to Impose Sanctions (October 27, 1978); Order Approving the June 5, 1979 Stipulation (June 28, 1979); Order Relative to Stipulation Concerning 10 C.F.R. Part 70 (October 5, 1979); Memorandum Concerning the Second Stipulation Regarding (footnote cont'd)



One more was fully settled (SC-5) and another one was partially settled (SC-13) after hearings were held on them. See Appendix B for details. Sixteen fully or partially litigated sets of contentions, organized under 11 subjects, are the subject of this partial initial decision. See Appendix C for details.

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(Continued)

Certain Suffolk County Contentions (November 16, 1979); Order Relative to the Second Stipulation Concerning Suffolk County Contentions (January 7, 1980); Order Ruling on Petition of Shoreham Opponents Coalition (March 5, 1980); Certification to the Commission, LBP-80-12, 11 NRC 485 (March 14, 1980); ALAB Memorandum (March 25, 1980); Memorandum and Order Relating to Response of SOC to Board Order Dated March 5, 1980 (May 1, 1980); ALAB Order (May 20, 1980); Order Accepting Third Stipulation Regarding Certain Suffolk County Contentions (June 26, 1980); Order Relative to Stipulation by the NRC Staff and Shoreham Opponents Coalition (June 26, 1980); Order Admitting Shoreham Opponents Coalition (SOC) Contention 12-3rd Subpart (July 2, 1980); Order Accepting "Joint Motion for Acceptance of SOC Contentions 6(a)(i) and for Extension [of Time] to Complete Particularization" (October 27, 1980); Order Accepting Fourth Stipulation Regarding Certain Suffolk County Contentions (October 27, 1980); Order Relative to Fifth Stipulation on Certain Suffolk County Contentions (February 17, 1981); Memorandum and Order (Ruling on Shoreham Opponents Coalition's Motion for Acceptance of Particularized Contention 19) LBP-81-18, 14 NRC 71 (July 7, 1981); Order Approving Stipulation (August 10, 1981); Order (August 25, 1981); Memorandum and Order Approving Stipulations, Deferring Rulings on Summary Judgment Pending Further Particularization, Scheduling a Conference of Parties and Setting an Estimated Schedule for the Filing of Testimony (February 8, 1982); Memorandum and Order Confirming Rulings Made at the Conference of Parties (Regarding Remaining Objections to Admissibility of Contentions and Establishment of Hearing Schedule) (March 15, 1982) (confirming rulings during the March 9-10 prehearing conference) LBP-82-19, 15 NRC 601 (1982). Prehearing Conference Order (April 20, 1982); Memorandum and Order Ruling on SOC's Construction Permit Extension Contentions and Request for Hearing of Shoreham Opponents Coalition, LBP-82-41, 15 NRC 1295 (May 14, 1982); Prehearing Conference Order (Phase I -- Emergency Planning) (July 27, 1982); Supplemental Prehearing Conference Order (Phase I -- Emergency Planning) LBP-82-75, 16 NRC \_\_\_ (September 7, 1982); Appendix B to September 7, 1982 Supplemental Prehearing Conference Order (Phase I -- Emergency Planning) (October 4, 1982) (All unpublished unless otherwise noted).

Members of the Board have examined witnesses in detail and have from time to time requested information on matters both within and beyond the scope of admitted contentions. See, e.g., Tr. 1156-73, 1410-11, 2355-56, 10,043-47, 14,787-88, 14,792-96. The Board has not determined sua sponte, however, that "a serious safety, environmental, or common defense and security matter exists" outside of an otherwise admitted contention. See 10 C.F.R. § 2.760a.

## 6. FINDINGS

In order to both facilitate the parties' abilities to produce findings of fact based on the voluminous record of this proceeding and expedite the Board's efforts to complete this partial initial decision on all matters other than off-site emergency planning, the Board announced its intention, prior to the commencement of evidentiary hearings, to have the parties begin to submit proposed findings on completed contentions while the litigation of other contentions continued. See Prehearing Conference Order, (unpublished), at 9 (April 20, 1982).

On November 30, 1982, the Board directed the parties to file findings of fact and conclusions of law on all disputed matters litigated before September 14, 1982, on the following schedule: LILCO initially on January 10, 1982, SC/SOC/NSC on January 20, the Staff on January 31, and LILCO in reply on February 7. Tr. 14,789-92. On January 5, 1983, in response to the County's unopposed request, these deadlines were extended

by one week. Tr. 17,539. On January 25, 1983, the Board granted the County a four-day extension of time for the filing of findings in order to save the County from defaulting on its other obligations in this proceeding and in order to avoid disruption of the hearing schedule.

Tr. 19,089. This extension was granted over the objections of LILCO.

Tr. 19,091. Therefore, LILCO's initial round of proposed findings of fact were filed on January 17, 1983, the County's on January 31, 1983, and the NRC Staff's on February 11, 1983. By letters to the Board dated January 28 and April 17, 1983, SOC stated its intention to adopt the County's proposed findings.<sup>7</sup> LILCO's reply findings were submitted on February 22, 1983.

On February 24, 1983, the Board established a schedule for the submission of proposed findings of fact and conclusions of law with respect to the quality assurance/quality control contentions and the environmental qualification contention litigated between September 14, 1982 and February 24, 1983: LILCO's proposed findings to be received by the Board and parties by March 28, 1983, SOC and the County's findings

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<sup>7</sup>We do not reach the question raised by Staff Counsel of whether SOC may file exceptions to this decision based on its adoption of the County's findings. See letters from Staff Counsel Bernard Bordenick to the Shoreham OL Licensing Board dated February 4, 1983 and February 7, 1983. We find this matter to be unnecessary to our decision and therefore express no opinion on the views of Staff Counsel. See Tr. 20,305. We note that our April 20, 1982 prehearing conference order directed that parties not filing findings would be deemed to have defaulted. For purposes of our decision, however, SOC's actions are consistent with the close coordination among intervenors which we have required to avoid duplicative filings.

to be filed by April 7, 1983, the findings of the Staff to be submitted by April 18, 1983 and LILCO's reply findings to be due by April 25, 1983.

On April 8, 1983, the Board closed the record on all remaining issues, other than off-site emergency planning, and established an expedited schedule for the submission of supplemental findings on the reopened Contention 7B issues, as follows: LILCO's proposed findings to be received by May 2, 1983, the County's findings due on May 9, 1983, the Staff's findings to be filed by May 16, 1983, and LILCO's reply findings due on May 23, 1983.

7. MOTIONS TO REOPEN

On April 7, 1983, Suffolk County moved the Board to reopen the record on Contention SC 11, Passive Mechanical Valve Failure, to permit the introduction into evidence of IE Bulletin 83-03, "Check Valve Failures in Raw Water Cooling Systems of Diesel Generators" (March 10, 1983). As no party sought a further evidentiary hearing even if the Board were to grant the County's motion to reopen the record, the Board determined that it would rule on the County's motion to reopen as a part of its initial decision on the merits of SC 11. Accordingly, the parties were directed to file supplemental proposed findings of fact on the assumption that the record would be reopened to admit IE Bulletin 83-03 and certain related documents agreed to by the parties. See "Memorandum and Order Providing for Further Filings on Suffolk County's Motion to Reopen the Record on Contention 11" (unpublished) (April 28, 1983).



After the Board's preliminary review of the parties' supplemental proposed findings revealed several potential ambiguities which the Board believed would require clarification should it determine to grant the County's motion to reopen the record, the Board directed that the parties respond to several specific questions posed by the Board. See "Memorandum and Order Directing Clarification of Certain Matters Related to Contention SC 11" (unpublished) (May 26, 1983). Responsive affidavits were filed by LILCO and the Staff on June 10, 1983, and by the County on June 20, 1983. The Board rules on the County's motion to reopen in this decision.

On May 2, 1983, the County filed a motion to admit a new contention concerning the emergency diesel generators. After receiving written responses from LILCO and the Staff, the Board conducted a one day conference of parties to discuss the views of the parties and their experts. On June 22, 1983, the Board issued a memorandum and order admitting portions of the County's contention related to excessive vibration and cylinder head cracking in the diesel generators and denying the balance of the County's motion. See "Memorandum and Order Ruling on Suffolk County's Motion to Admit New Contention," LBP-83-30, 17 NRC \_\_\_\_ (June 22, 1983).

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) )

LILCO'S PROPOSED OPINION, FINDINGS OF FACT  
AND CONCLUSIONS OF LAW IN THE FORM OF A  
PARTIAL INITIAL DECISION

January 17, 1983

Hunton & Williams  
P. O. Box 1535  
Richmond, Virginia 23212

VOLUME THREE OF THREE:  
APPENDICES

## APPENDIX A:

BACKGROUND OF THE PROCEEDING

On April 12, 1973, after one of the most extensive hearings in AEC history,<sup>1/</sup> the Atomic Energy Commission issued a construction permit to the Long Island Lighting Company for its Shoreham Nuclear Power Station, Unit 1. See 38 Fed. Reg. 14,183 (1973). The facility is an 820 MWe boiling water reactor located in Suffolk County, New York. The site covers 500 acres on the north shore of Long Island, near the village of Shoreham. At issue now is the plant's operation.

The background of the Shoreham operating license proceeding, currently in its seventh year, is described below in these terms:

1. The Application
2. Staff Review
3. ACRS Review

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<sup>1/</sup> There were 70 days of AEC hearings, which began on September 21, 1970 and continued episodically for 2-1/2 years, until ending on January 19, 1973. Another 22 days of related hearings were conducted in 1971 by the New York State Department of Environmental Conservation (DEC). Portions of the record of the DEC hearings "were received in evidence by the [ASLB] . . . to avoid duplication and to expedite [the AEC] proceeding." Long Island Lighting Co. (Shoreham Nuclear Power Station), LBP-73-13, 6 AEC 271, 274, 288 (1973).

4. Adjudicatory Review
  - (a) Atomic Safety and Licensing Boards
  - (b) Intervenors
  - (c) Prehearing Process
  - (d) Discovery
  - (e) Summary Disposition
  - (f) Settlements
  - (g) Public Prehearing Examinations
  - (h) Hearings
5. Issues
  - (a) Non-Health and Safety Matters
    - (1) Environmental Issues
    - (2) Extension of the Construction Permit
    - (3) New Fuel
  - (b) Health and Safety Matters
6. Conclusion

1. THE APPLICATION

This proceeding concerns LILCO's application to the Nuclear Regulatory Commission for a license to operate Shoreham. LILCO tendered the OL application for the plant, along with its Environmental Report and Final Safety Analysis Report, on August 28, 1975, pursuant to § 103 of the Atomic



Energy Act, 42 U.S.C. § 2133. The application, ER and FSAR, as amended on January 26, 1976, were docketed thereafter by the NRC Staff, and publicly noticed on March 18, 1976. See 41 Fed. Reg. 11,367 (1976). Another major licensing document, the Shoreham Design Assessment Report, was initially submitted by LILCO in January 1976 and revised in December 1981. The FSAR has been revised 27 times since its initial submission.

## 2. STAFF REVIEW

The NRC Staff reviewed the documents just listed, the plant itself and other data as necessary in order to determine whether, in the Staff's judgment, the facility complies with NRC regulations. Summaries of the results of the Staff's environmental review of Shoreham were published in a Draft Environmental Statement on March 24, 1977, and in a Final Environmental Statement on October 25 of that year. The aftermath of Three Mile Island interrupted the Staff's health and safety review. Thus, Shoreham's Safety Evaluation Report did not appear until April 17, 1981 -- 3-1/2 years after issuance of the FES. To date, SER Supplements have been issued in September 1981 (No. 1), and February 1982 (No. 2). The Staff's review of some matters continued during the hearings. Steps were taken to make the Staff's conclusions available for

purposes of settling or litigating affected contentions prior to formal issuance of SER Supplements. See, e.g., Tr. 9145-47.

### 3. ACRS REVIEW

Shoreham was also reviewed by the Advisory Committee on Reactor Safeguards pursuant to § 182(b) of the Atomic Energy Act, 42 U.S.C. § 2233(b). The site was visited by an ACRS subcommittee on April 30, 1981. Hearings were held by the subcommittee in Washington, D.C. on September 30. The full committee held its hearings on October 15. Based on these public and certain private deliberations, the ACRS concluded in a letter to NRC Chairman Palladino, dated October 19, 1981:

We believe that if due consideration is given to the recommendations above, and subject to satisfactory completion of construction, staffing, and preoperational testing, there is reasonable assurance that Shoreham Nuclear Power Station Unit 1 can be operated at power levels up to 2436 MWt without undue risk to the health and safety of the public.

SER Supp. No. 2, at 18-3.

### 4. ADJUDICATORY REVIEW

#### (a) Atomic Safety and Licensing Boards

On April 29, 1976, the Commission appointed an Atomic Safety and Licensing Board "to rule on petitions and/or

requests for leave to intervene." 41 Fed. Reg. 17,979 (1976). With one change in its membership, that same Board was designated on February 22, 1977 to hold hearings "at a time and place to be fixed" by it. 42 Fed. Reg. 17,294 (1977); see also Tr. 45. The Board was subsequently reconstituted five times, ultimately having four different chairmen and ultimately retaining none of its original members. The reconstitutions were as follows:

<u>Date of Change</u>	<u>ASLB Member Affected</u>
February 6, 1978	Replacement of chairman
March 2, 1981	Replacement of chairman
December 17, 1981	Replacement of environmental member
February 8, 1982	Replacement of chairman
March 23, 1982	Replacement of health and safety member

See 43 Fed. Reg. 6346 (1978); 46 Fed. Reg. 16,384 & 62,571 (1981); 47 Fed. Reg. 6510 & 13,069 (1982). The Board as finally constituted in March 1982 concluded the prehearing phase of the case. It has sat throughout all evidentiary sessions held to date.

On May 27, 1982, the Board appointed a member of the Atomic Safety and Licensing Board Panel to assist it, particularly in the area of safety classification and systems

interaction. See Confirmatory Order Appointing Administrative Judge Walter H. Jordan as Technical Interrogator and Informal Assistant (May 28, 1982).

On August 24, 1982, at the request of the Board, issues involving plant security were transferred to a different ASLB, which was "established . . . to continue to guide ongoing settlement efforts by the parties with respect to security planning issues and to preside over the proceeding on those issues only in the event that a hearing is required." See 47 Fed. Reg. 37,984 (1982). This transfer occurred because, given the demands of other aspects of the Shoreham proceeding, the Board was unable to give the requisite attention to the security issues. See Tr. 9306-07. On December 3, 1982, following approval by the security Board of the parties' successful settlement efforts, the security proceeding was dismissed. The security Board explained that LILCO and Suffolk County had:

held numerous meetings and negotiations concerning the security contentions of the County. Periodic reports were filed by the parties. Finally, on November 24, 1982, all parties herein filed the "Final Security Settlement Agreement."

. . . .

The Nuclear Regulatory Commission recognizes and encourages fair and reasonable settlement of contested issues. . . . We have considered the nine security contentions of the County, the Agreement of all parties



to resolve those contentions, and the Commission's policy encouraging settlement. Accordingly, we conclude that the Agreement is fair and reasonable and should be approved. The parties and their counsel are deserving of a special commendation for their outstanding efforts which led to a resolution of the security contentions in this proceeding.

Board Memorandum and Order Cancelling Hearing, Approving Final Settlement Agreement, and Terminating Proceeding at 1-2 (Dec. 3, 1982).

(b) Intervenors

Notice of opportunity for hearing on the OL application was published on March 18, 1976, and the deadline for filing petitions for intervention was set on April 19, 1976. See 41 Fed. Reg. 11367-68 (1976). Three groups filed timely petitions to intervene: the New York State Atomic Energy Council, now part of the New York State Energy Office (SEO), the Oil Heat Institute of Long Island, Inc. (OHILI), and the North Shore Committee against Thermal and Nuclear Pollution (NSC). Ten months later, on February 22, 1977, the SEO was granted participation under 10 CFR § 2.715(c) as an interested state, while OHILI and NSC were admitted as consolidated intervenors pursuant to § 2.714. See generally Board Memorandum and Order (Feb. 22, 1977), 5 NRC 481 (1977).

Subsequently, two other parties sought to intervene out of time. As with OHILI/NSC, these parties' petitions were vigorously contested. Suffolk County filed its petition eleven months after the deadline, on March 17, 1977. The Shoreham Opponents Coalition was 3-3/4 years late in seeking admission; SOC filed on January 24, 1980. Both parties were admitted under § 2.714, the former on October 11, 1977, and the latter on May 1, 1980. See Board Memorandum and Order (Jan. 27, 1978) (confirming rulings made during the Oct. 11, 1977 prehearing conference); Memorandum and Order Relating to Response of SOC to Board Order Dated March 5, 1980 (May 1, 1980). In the spring of 1982, shortly before the hearings began, Suffolk County asked that it be deemed a governmental participant under § 2.715(c) as well as an intervenor under § 2.714. Its request was granted. See Board Memorandum and Order Confirming Rulings Made at the Conference of Parties at 22-23 (March 15, 1982), 15 NRC at 617.

The SEO took part in various aspects of the prehearing process, but not in the hearings themselves. OHILI was last heard from in 1978, although it has not formally withdraw from the proceeding. On November 27, 1978, NSC renounced its link with OHILI, and focused thereafter on matters involving new fuel and emergency planning. NSC has rarely appeared at the hearings. Once admitted, SOC was quite active until the

hearings began. Thereafter, like NSC, it has rarely appeared, either settling its contentions with LILCO before hearings began on them or leaving their prosecution to Suffolk County. The County, LILCO and NRC Staff have been active consistently.

(c) Prehearing Process

The prehearing phase of this proceeding lasted more than six years, from March 18, 1977, when notice of opportunity for hearing was published, to the actual beginning of hearings on May 4, 1982. The intervening six years involved constant, complex activity.

There were four prehearing conferences, held on:

November 10, 1976	(Tr.1-42)
October 11, 1977	(Tr. 43-143)
March 9-10, 1982	(Tr. 144-529)
April 14, 1982	(Tr. 645-831)

There were also numerous informal conferences and other communications among the parties. The more significant of these prehearing exchanges among the parties -- "significant" when measured by the number of participants involved, the extent of work before, during and after the meetings, and the amount of information exchanged -- occurred as follows:

<u>Meeting Dates</u>	<u>Meeting Places</u>
March 30, 1979	Bethesda
April 20, 1979	Shoreham
May 2, 1979	Boston
June 5, 1979	Shoreham
August 21, 1979	New York City
November 2, 1979	Shoreham
December 11-12, 1979	Boston
June 17, 1980	Shoreham
July 17, 1980	Riverhead
July 29-30, 1980	Boston
August 29, 1980	Bethesda
September 12, 1980	Bethesda
October 9, 1980	Boston
November 13, 1980	Shoreham
January 21-22, 1981	Shoreham
February 24, 1981	Bethesda
April 9, 1981	Shoreham
May 14, 1981	Boston
May 28, 1981	Shoreham
July 9, 1981	Shoreham
September 9, 1981	Mineola

In addition to much cooperation among the parties during the prehearing phase, there were also frequent formal



disputes, resulting in many Board rulings. Controversy centered on intervention, contentions and discovery. See, e.g., Board Orders cited in note 8 below.

(d) Discovery

During the October 11, 1977 prehearing conference, the Board ordered that discovery begin. Tr. 120-21; see also Order Relative to Requests for Clarification and Reconsideration of the Board Order of January 27, 1978, at 4-5 (March 8, 1978). There ensued and has continued to date extensive resort to formal means of discovery -- interrogatories, requests for production, and depositions. Even more extensively, there has also occurred the informal sharing of information, principally in the context of settlement negotiations. Much of the discovery, formal and informal, has taken place after the hearings began. Thus, of the 37 persons deposed so far in this proceeding, 27 have been deposed since May 1982, in places from California to New York. The other ten deponents testified shortly before the hearings began, on March 31 and April 22, 1982. All told, extremely large amounts of data have been exchanged, both in writing and orally, during formal and informal discovery.<sup>2/</sup>

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<sup>2/</sup> By March 1980, the Board agreed that: "As LILCO correctly points out, formal discovery was set in motion long ago and has

(footnote cont'd)

(e) Summary Disposition

LILCO on June 23, 1978, and the NRC Staff on June 28, 1978, sought summary disposition of issues raised under the National Environmental Policy Act. On December 18, 1978 and February 5, 1979, LILCO requested summary disposition of certain issues raised under the Atomic Energy Act. The motions concerning the environmental issues were successful. See page A-23 below.

The motions concerning health and safety issues were rejected as "premature since discovery will not close until . . . after the issuance of the SER." Board Order Relative to Applicant's "First Group" of Motions for Summary Disposition at 3 (March 8, 1979); Board Order Relative to Applicant's Motion for Summary Disposition on the "Second Group" of Contentions (March 8, 1979).

Over two years after LILCO's initial attempts to obtain summary disposition of certain health and safety issues, the Company filed motions for summary disposition of all or parts

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(footnote cont'd)

followed a tortuous path." Order Ruling on Petition of Shoreham Opponents Coalition at 12 (March 5, 1980). But while discovery had already "followed a tortuous path" by 1980, in fact the process was still in its infancy, as measured against the discovery yet to come.

of five SOC contentions. See LILCO Motions for Summary Disposition of SOC Contentions 1, 2, 3, 6(a)(i), and 12 (Part Two) (July 13, 1981). LILCO withdrew its motions concerning Contentions 3 and 12 (Part Two) after agreeing with SOC about the particularization of the underlying issues. See LILCO's pleading on Matters Pending for Board Decision at 3 n.1 (Dec. 23, 1981). SOC withdrew its Contention 6(a)(i) "in lieu of responding to LILCO's motion for summary disposition of that contention." Board Memorandum and Order Confirming Rulings Made at the Conference of Parties at 20 (March 15, 1982), 15 NRC at 616. SOC Contentions 1 and 2, "as framed by the filing of SOC in response to the motions for summary disposition by LILCO and the Staff, and SOC's response to the Board's Order of February 8, 1982, and the discussion at the conference (Tr. 346-385), were dismissed as a challenge to the Commission's emergency planning regulations." Id. at 24, 15 NRC at 618.

No summary disposition phase occurred between the Board's final prehearing ruling on litigable contentions and the beginning of hearings themselves because of the short interlude involved and because of the demands of testimony preparation and discovery. The only summary disposition motion filed during the hearings was withdrawn prior to ASLB ruling. See Tr. 4983-90, 4995-96.

(f) Settlements

This proceeding has been characterized by sustained, often successful efforts to resolve issues without the need for further litigation. Settlement negotiations began in earnest early in 1979. They have continued with infrequent interruption, involving thousands of hours of effort.

During the first two years of negotiations, attention focused on clarifying, narrowing and/or eliminating contentions. As the Board stated in its June 28, 1979 Order approving the parties' first stipulation:

The Applicant, NRC Staff, and Suffolk County (SC) entered into a stipulation on June 5, 1979, which provides for the withdrawal of several SC contentions and a commitment of the Applicant to assume additional responsibilities.

The Board accepts the stipulation and encourages the parties to continue their efforts to resolve or particularize contentions.

See also, e.g., Order Relative to Stipulation Concerning 10 CFR Part 70 (Oct. 5, 1979); Memorandum Concerning the Second Stipulation Regarding Certain Suffolk County Contentions (Nov. 16, 1979); Order Relative to the Second Stipulation Concerning Suffolk County Contentions (Jan. 7, 1980); Order Accepting Third Stipulation Regarding Certain Suffolk County Contentions (June 26, 1980); Order Relative to Stipulation by the NRC Staff



and Shoreham Opponents Coalition (June 26, 1980); Order Accepting Fourth Stipulation Regarding Certain Suffolk County Contentions (Oct. 27, 1980) ("The Board . . . commends the parties for their continuing efforts to resolve differences and to sharpen the issues"); Order Relative to Fifth Stipulation on Certain Suffolk County Contentions (Feb. 17, 1981) (" . . . the parties are again to be commended in their continuing efforts"); see also comments of the security Board set out on pages A-6 to -7 above.

From spring through fall 1981, negotiations became more ambitious, involving an intense effort -- ultimately unsuccessful -- to reach a comprehensive settlement between the County and the Company. As counsel for Suffolk County explained to the Board in late October 1981:

Since April of this year, the County and the Applicant have been engaged in negotiations regarding the possible settlement of the County's intervention in the O.L. proceedings. Since the end of May, the County's negotiation team has included members of the Executive and Legislative Branches of the County, along with the County Attorney and the County's technical consultants. Pursuant to a Suffolk County Resolution passed in June of this year, it was mandated that approval by the Suffolk County Legislature would be needed before the County could enter into any final settlement agreement.

At a meeting in June of 1981, the representatives of the Applicant and the County agreed upon a final version of the

proposed Sixth Stipulation. It was understood between the representatives at that meeting that upon receipt of a letter from LILCO's Chairman of the Board, indicating his approval of the proposed Sixth Stipulation, a resolution would be introduced into the County Legislature, calling for legislative approval of the Sixth Stipulation. On October 13, 1981, a letter was sent from Charles R. Pierce, Chairman and Chief Executive Officer of the Applicant, to Peter F. Cohalan, Suffolk County Executive, indicating that he was prepared to recommend to the Board of Directors of the Company that the Board authorize execution of the Sixth Stipulation by the appropriate representatives of the Company once it has finally been approved by Mr. Cohalan and the County Legislature, and executed in behalf of the County.

At this point, a resolution requesting legislative approval will be introduced to the Suffolk County Legislature at its next legislative session. After legislative deliberation, passage of such a resolution could occur as early as November 10, 1981. Should the County Legislature authorize the County Executive to sign the Sixth Stipulation, then the agreement would be offered to the Applicant's Board of Directors for its approval. It is at this time that the Sixth Stipulation could be offered to the Board for its review.

Suffolk County's Response to the Applicant's Motion that a Hearing Schedule be Set at 1-2 (Oct. 21, 1981). On December 8, the County Legislature rejected the settlement.

From the collapse of comprehensive negotiations in December 1981 until the beginning of hearings, there was no

settlement activity. It resumed in May 1982 and has since resulted in the resolution of numerous contentions. They are listed in Appendix B below, "Sequence of Settlements."

At all times, the Board has encouraged and facilitated the settlement process. The present Board, at the request of the parties, has cancelled hearings at times to permit negotiations to go forward undistracted. See, e.g., Tr. 9936-42, 9956-59. The Board on other occasions has reduced the length of hearing days to the same end. See, e.g., Tr. 8318, 9327. And the Transcript is filled with Board-imposed deadlines for reports by the parties on the progress of their negotiations and with Board inquiries into what disputes remain and why they remain.

g. Public Prehearing Examinations

On October 29, 1982, the Board "noted that it was considering ordering that the parties conduct cross-examination, redirect and recross examination with respect to the Phase I emergency planning contentions initially by means of public prehearing depositions." Board Memorandum and Order Ruling on Licensing Board Authority to Direct that Initial Examination of the Pre-Filed Testimony Be Conducted by Means of Prehearing Examinations at 1 (Nov. 19, 1982); see also Tr. 12,541-43. After giving all parties ample opportunity to address the

legality and wisdom of the proposed procedure, e.g., Memorandum Advising SOC and NSC of Board Proposal to Require Depositions and of Opportunity to File Views (Nov. 9, 1982), the Board adopted the procedure. Suffolk County, SOC and NSC refused to participate in the depositions so ordered. Accordingly, on November 23 and 30, 1982, the Board dismissed all Phase I emergency planning contentions not previously settled. Tr. 14,746-49, 14,753; see generally Board Memorandum and Order Confirming Ruling on Sanctions for Intervenors' Refusal to Comply with Order to Participate in Prehearing Examinations (Dec. 22, 1982).

Much the same use of prehearing examinations was subsequently made in order to narrow and focus the hearings on an aspect of the QA dispute. See Board Memorandum and Order of December 22, 1982, above, at 15-16. The County, the only intervenor active in the quality assurance litigation, participated in these depositions.

#### h. Hearings

Early in 1978, two years after the start of the Shoreham OL proceeding, LILCO first began to press for hearings or for some other definitive means of resolving issues that the Company thought had become ripe for resolution.<sup>3/</sup>

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<sup>3/</sup> See, e.g., Applicant's Request that the Board Set a Schedule for Resolution of Environmental Issues (Feb. 24,



Five and one half years after the OL proceeding began, on October 6, 1981, LILCO filed "Applicant's Motion that a Hearing Schedule Be Set," asking that the Board take concrete steps to end the prehearing process -- steps beginning on November 4 with "[a]ll parties . . . either (1) agreeing on a list of particularized issues to be litigated further . . . or (2) stating their disagreements," and ending on February 23, 1982 with the actual start of hearings. The Board denied the motion by telegram, on November 6, 1981. A month later, LILCO renewed its request that hearings begin, explaining:

The Suffolk County Legislature rejected yesterday the Sixth Stipulation and Settlement that had been negotiated in great detail, and at great length, by representatives of the County, LILCO and the NRC Staff.

It has become even more crucial than before, accordingly, that the Board set a schedule for the rest of this proceeding, beginning with a deadline for particularizing contentions. Their particularization has been underway literally for years.

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(footnote cont'd)

1978); Applicant's Request for Summary Disposition of OHILI/Committee Contentions 7a(ii) and (iii) (June 23, 1978); Applicant's Request for Summary Disposition of Suffolk County Contentions 4a(vii), (x); 7a(ii)-(iii), (vi)-(vii); 12a (viii); and 14a (Dec. 18, 1978) (with an alternative request for hearings if summary disposition was unavailable); Motions of Long Island Lighting Company for summary disposition of SOC Contentions 1-3, 6(a)(i) and 12 (Part Two): Overview (July 13, 1981) (with an alternative request for hearings if summary disposition was unavailable).

At the risk of becoming grimly monotonous on the subject, LILCO feels compelled to stress, once again, the protracted nature of nuclear proceedings on Long Island.

Further LILCO Supplement to the Recent Status Report of the County and Staff (Dec. 9, 1981).

Hearings did begin on May 4, 1982. To date, there have ensued 23 weeks of evidentiary sessions spread over eight months. More than 7,000 pages of written direct testimony and attachments have been filed. The Transcript has reached 17,533 pages. Over 170 exhibits have been generated, as well as many motions, briefs and ASLB orders. Almost 100 witnesses have testified.<sup>4/</sup> For further detail, see Appendices C ("Sequence of Testimony"), D ("Witnesses in Alphabetical Order"), and E ("Exhibits by Party and Number").

The 1982 evidentiary hearings took place on the dates and at the places set out below:

<u>Weeks</u>	<u>Dates</u>	<u>Transcript Pages</u>	<u>Places</u>
1	May 4-7	Tr. 932-1845	Riverhead
2	May 25-28	Tr. 1846-2677	Riverhead
3	June 1-4	Tr. 2678-3609	Riverhead

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<sup>4/</sup> If a particular person has testified on more than one contention, he has been counted anew for each contention on which he has been a witness.

4	June 8-11	Tr. 3610-4321	Hauppauge
5	June 15, 17-18	Tr. 4322-991	Hauppauge
6	June 22-25	Tr. 4992-5700	Riverhead
7	July 6-9	Tr. 5701-6412	Riverhead
8	July 13-16	Tr. 6413-7168	Riverhead
9	July 20-22	Tr. 7169-904	Riverhead
10	July 27-30	Tr. 7905-8686	Riverhead
11	Aug. 3-5	Tr. 8687-9302	Riverhead
12	Aug. 24-27	Tr. 9303-10,036	Hauppauge
13	Sept. 14-17	Tr. 10,037-616	Hauppauge
14	Sept. 21-24	Tr. 10,617-11,308	Hauppauge
15	Oct. 12-15	Tr. 11,309-12,021	Bethesda
16	Oct. 27-29	Tr. 12,022-543	Bethesda
17	Nov. 2-5	Tr. 12,544-13,275	Bethesda
18	Nov. 9-12	Tr. 13,276-14,025	Bethesda
19	Nov. 16-19	Tr. 14,026-712	Bethesda
	Nov. 23	Tr. 14,713-749	Hauppauge
20	Nov. 30, Dec. 1-3	Tr. 14,750-15,476	Bethesda
21	Dec. 7-10	Tr. 15,477-16,190	Bethesda
22	Dec. 14-17	Tr. 16,191-17,006	Bethesda
23	Dec. 20-22	Tr. 17,007-533	Bethesda

The hearings have always been open to the public, with

the exception of sessions held in camera from May through July, both on the record and in chambers, to discuss the security of new fuel on site, and except for a September 13, 1982 prehearing conference before the Board charged with the litigation concerning plant security.

Numerous people made limited appearances, though no members of the public were present during most of the 1982 hearings. Limited appearances were received on April 13-14, May 27, and June 2 and 8, 1982. See Tr. 530-644, 832-981, 2475-80, 3123-29, 3813-16.

The Board on November 30, 1982 directed the parties to file findings of fact and conclusions of law on all disputed matters litigated before September 14, 1982, on the following schedule: LILCO initially on January 10, 1983, SC/SOC/NSC on January 20, the Staff on January 31, and LILCO in reply on February 7. Tr. 14,789-92. On January 5, 1983, in response to the County's unopposed request, these deadlines were extended by one week. Tr. 17,539.

## 5. ISSUES

### (a) Non-Health and Safety Issues

In addition to the health and safety contentions heard and/or settled since the beginning of evidentiary hearings, the Board and parties have also engaged three other sorts of issues: those involving (1) environmental matters, (2) extension of Shoreham's construction permit, and (3) new fuel.



(1) Environmental Issues

The Board raised certain environmental questions that were answered to its satisfaction. CHILI/NSC, Suffolk County, and SOC also raised issues under the National Environmental Policy Act. Some of their NEPA contentions were rejected at the pleading stage for a variety of defects; some were dismissed because their proponents failed to respond to discovery concerning them; others did not withstand motions for summary disposition.<sup>5/</sup>

On August 4, 1978, the Board ruled that:

[T]here are no remaining environmental issues to be considered in this case. Therefore an environmental hearing will not be held.

Memorandum and Order Relative to Board Concerns Regarding Fish-Return System and Chlorine Discharge at 6 (Aug. 4, 1978). The Shoreham Opponents Coalition failed in its attempt to reverse this ruling when SOC entered the proceeding over a year after the ruling came down.<sup>6/</sup>

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<sup>5/</sup> See, e.g., Board Memorandum and Order at 17-18 (Jan. 27, 1978); Order Relative to NRC Staff Motion to Compel Discovery and Impose Sanctions (April 19, 1978); Order Relative to Motions for Summary Disposition from Applicant and NRC Staff of Consolidated Intervenor (CI) Contentions 7(a)(ii) and (iii) (July 25, 1978); Memorandum and Order Relative to Board Concerns Regarding Fish-Return System and Chlorine Discharge (Aug. 4, 1978).

<sup>6/</sup> See, e.g., Order Ruling on Petition of Shoreham Opponents Coalition at 22-24 (March 5, 1980); Memorandum and Order

(2) Extension of the Construction Permit

On December 18, 1978, LILCO requested an extension of Shoreham's construction permit. An extension to December 31, 1980 was granted on May 14, 1979. See 44 Fed. Reg. 29,545 (1979).

On November 26, 1980, the Company requested a further extension of the permit, which was opposed by the Shoreham Opponents Coalition. On January 23, 1981, SOC requested a hearing on the extension application and moved under 10 CFR § 2.206 to have the permit suspended and/or revoked. Six months later, SOC sued the NRC in federal district and circuit courts to the same ends. The suits were dropped once the NRC granted SOC an opportunity for hearing on the CP extension and ruled on SOC's § 2.206 request.

On July 22, 1981, the Commission issued an order stating that it had:

determined that the request [for a CP extension hearing] will be granted, subject to the petitioner advancing at least one litigable contention, and that an Atomic Safety and Licensing Board is to be convened to consider whether SOC's petition raises issues litigable in this construction permit extension proceeding,

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(footnote cont'd)

Relating to Response of SOC to Board Order dated March 5, 1980, at 8 (May 1, 1980).

and, if so, to hear and decide those issues on the merits.

NRC Order at 2 (July 22, 1981) (footnote omitted). Five days later, the Board sitting in the Shoreham OL proceeding was also appointed to deal with the CP extension issues. 46 Fed. Reg. 39,516 (1981). After considering extensive written and oral arguments, the Board found that SOC had failed to raise "at least one litigable contention" and, therefore, ordered that no hearing be held on the CP extension application. See Tr. 497-501 (March 30, 1982); Board Memorandum and Order Ruling on SOC's Construction Permit Extension Contentions and Request for Hearing of Shoreham Opponents Coalition (May 14, 1982), 15 NRC 1295 (1982). SOC did not appeal the denial of its hearing request. On July 15, 1982, the construction permit was extended until March 31, 1983. 47 Fed. Reg. 32,502 (1982).

SOC's § 2.206 request for a stay and/or revocation of the CP had been previously denied. Long Island Lighting Co. (Shoreham Nuclear Power Station, Unit 1), DD-81-9, 13 NRC 1125 (June 26, 1981).

(3) New Fuel

On September 25, 1978, LILCO applied for a license to receive, possess and store new fuel on site, pursuant to 10 CFR Part 70. On November 3, 1978, the Staff notified the Board and

parties of the pendency of the Part 70 application. Almost eight months thereafter, on July 27, 1979, the North Shore Committee against Thermal and Nuclear Pollution opposed the application, requested a hearing on it, and sought a stay of the issuance of any license pending Board action. LILCO and the Staff, in turn, opposed NSC's requests. Negotiations ensued, leading to settlement of the dispute. See Stipulation Regarding Application for a Special Nuclear Material License (Sept. 18, 1979). The Board thereafter ruled:

On September 24, 1979, the Staff transmitted a stipulation dated September 18, 1979, concerning the issuance of materials license pursuant to 10 C.F.R. Part 70, to permit receipt, possession and storage of unirradiated new fuel assemblies at the site. The stipulation was signed by the North Shore Committee Against Thermal and Nuclear Pollution, the Staff and the Applicant.

The stipulation is accepted by the Board.

Order Relative to Stipulation Concerning 10 C.F.R. Part 70 (Oct. 5, 1979). Suffolk County took no part in any aspect of these developments; SOC was not yet a party to the proceeding.

In May 1982, LILCO received a Part 70 license.

Immediately thereafter, at the request of Suffolk County, the Board temporarily forbade shipment of new fuel pursuant to the license. See Interim Order Staying Shipment of Fuel (May 20, 1982, corrected, May 24, 1982). LILCO and Suffolk County, with



the concurrence of the NRC Staff, then negotiated a resolution of the County's concerns about the security of the new fuel once on site. On June 9, 1982, the Board approved the parties' agreement and removed the stay. See TR. 4031-32; Confirmatory Order Lifting "Interim Order Staying Shipment of Fuel" (June 14, 1982). Following implementation of the LILCO/County agreement, new fuel reached the site in mid-July 1982.

(b) Health and Safety Matters

Thirty-six sets 7/ of health and safety contentions

7/ See the partial initial decision, above, at note 3 for the definition of a "set" of contentions. The system of numbers used for these contentions had its origins in the various intervenors' designations of their initial contentions. See, e.g., County of Suffolk's Amended Petition to Intervene (Sept. 18, 1977), which raised numerous proposed contentions numbered:

2(a)(i)-(vi)	16(a)
3(a)(i)-(iii), (b)-(d)	17(a)(i)-(iv)
4(a)(i)-(xviii), (b)	18(a)(i)-(xi)
5(a)(i)-(xx), (b)(i)-(iii), (c)(i)-(iv)	19(a)(i)-(vi)
6(a)(i)-(iv), (b)	20(a)(i)-(ii)
7(a)(i)-(vii)	21
8(a)(i)-(ii)	22
9(a)(i)-(iv), (b)(i)-(iv)	23
10(a)(i)-(v), (b)	24
11(a)(i)-(v), (b)	25 (incorporating as conten-
12(a)(i)-(viii)	tions all "critical com-
13(a)(i)-(vi), (b)-(c)	ments" on the Draft Environ-
14(a)	mental Statement)
15(a)(i)-(ix)	26(i)-(iii)
	27

See also the numerous, similarly numbered contentions in SOC's Petition to Suspend Construction Permit . . . and to Renotece Hearings . . . or in the Alternative, to Permit Late Intervention of SOC Pursuant to . . . Section 2.714 (Jan. 24, 1980).

were finally accepted for hearings by the Board. These contentions emerged from hundreds of proposed issues, years of informal negotiations, stipulations, settlements, and many formal disputes among the parties, plus numerous responsive rulings by the Board.<sup>8/</sup> Of these 36 sets of issues, almost 20

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<sup>8/</sup> Beginning with a May 1976 ruling, there have followed to date over 30 orders concerning the contentions to be litigated. These rulings include: Memorandum and Order (May 7, 1976); Memorandum and Order (Feb. 22, 1977); Memorandum and Order (Aug. 1, 1977); Memorandum and Order (Jan. 27, 1978) (confirming rulings made during the Oct. 11, 1977 prehearing conference); Order Relative to Requests for Clarification and Reconsideration of the Board Order of January 27, 1978 (March 8, 1978); Order Relative to NRC Staff Motion to Compel Discovery and Impose Sanctions (April 19, 1978); Memorandum and Order Relative to Board Concerns Regarding Fish-Return System and Chlorine Discharge (Aug. 4, 1978); Order Granting NRC Staff Motion of August 18, 1978 to Impose Sanctions (Oct. 27, 1978); Order Approving the June 5, 1979 Stipulation (June 28, 1979); Order Relative to Stipulation Concerning 10 CFR Part 70 (Oct. 5, 1979); Memorandum Concerning the Second Stipulation Regarding Certain Suffolk County Contentions (Nov. 16, 1979); Order Relative to the Second Stipulation Concerning Suffolk County Contentions (Jan. 7, 1980); Order Ruling on Petition of Shoreham Opponents Coalition (March 5, 1980); Certification to the Commission (March 14, 1980); ALAB Memorandum (March 25, 1980); Memorandum and Order Relating to Response of SOC to Board Order Dated March 5, 1980 (May 1, 1980); ALAB Order (May 20, 1980); Order Accepting Third Stipulation Regarding Certain Suffolk County Contentions (June 26, 1980); Order Relative to Stipulation by the NRC Staff and Shoreham Opponents Coalition (June 26, 1980); Order Admitting Shoreham Opponents Coalition (SOC) Contention 12-3rd Subpart (July 2, 1980); Order Accepting "Joint Motion for Acceptance of SOC Contentions 6(a)(i) and for Extension [of Time] to Complete Particularization" (Oct. 27, 1980); Order Accepting Fourth Stipulation Regarding Certain Suffolk County Contentions (Oct. 27, 1980); Order Relative to Fifth Stipulation on Certain Suffolk County Contentions (Feb. 17, 1981); Memorandum and Order (Ruling on Shoreham Opponents Coalition's Motion for Acceptance of Particularized Contention 19) (July 7, 1981); Order Approving Stipulation (Aug. 10,

(footnote cont'd)

have so far been settled before reaching hearings, and one more has been settled after hearings were held on it. Nine fully litigated sets of contentions are the subject of this partial initial decision. The rest of the contentions remain either actually in hearings, awaiting their beginning, or in settlement negotiations.

Members of the Board have examined witnesses in detail and have from time to time requested information on matters both within and beyond the scope of admitted contentions. See, e.g., Tr. 1156-73, 1410-11, 2355-56, 10,043-47, 14,787-88, 14,792-96. The Board has not determined sua sponte, however, that "a serious safety, environmental, or common defense and security matter exists." See 10 CFR § 2.760a.

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(footnote cont'd)

1981); Order (Aug. 25, 1981); Memorandum and Order Approving Stipulations, Deferring Rulings on Summary Judgment Pending Further Particularization, Scheduling a Conference of Parties and Setting an Estimated Schedule for the Filing of Testimony (Feb. 8, 1982); Memorandum and Order Confirming Rulings Made at the Conference of Parties (Regarding Remaining Objections to Admissibility of Contentions and Establishment of Hearing Schedule) (March 15, 1982) (confirming rulings during the March 9-10 prehearing conference); Prehearing Conference Order (April 20, 1982); Memorandum and Order Ruling on SOC's Construction Permit Extension Contentions and Request for Hearing of Shoreham Opponents Coalition (May 14, 1982); Prehearing Conference Order (Phase I -- Emergency Planning) (July 27, 1982); Supplemental Prehearing Conference Order (Phase I -- Emergency Planning) (Sept. 7, 1982); Appendix B to September 7, 1982 Supplemental Prehearing Conference Order (Phase I -- Emergency Planning) (Oct. 4, 1982).



The course of events, once hearings began, is summarized below in terms of the 36 sets of health and safety contentions. They are listed in the order in which they have been litigated and/or their settlements have been accepted by the Board:

<u>Sets</u>	<u>Contention Numbers</u>	<u>Subjects</u>	<u>Hearing and/or Settlement Dates</u>
1	SC/SOC 7B; SOC 19(b)	Safety Classification and Systems Interaction	5/4-7 6/15, 17-18, 22-25 7/6-9, 13-16, 21-22 ✓
2	SC 2	Dirt in Diesel Generator Relays	5/7 Settled ✓
3	SC 17	Fire Protection	5/7 Settled ✓
4	SOC 19(j)	Turbine Orientation	5/7 Settled ✓
5	SC 4	Water Hammer	5/25-27 ✓ 10/14 Stipulation on Receipt into Evidence of Sup- plemental Testimony
6	SC 10	ECCS Core Spray	5/28 ✓
7	SC 5	Loose Parts Monitoring	6/1-4 12/7 Settled
8	SC 11	Valve Failure	6/4, 8-9
9	SOC 19(e)	Seismic Design	6/9-10
10	SOC 16	Clad Swelling and Flow Blockage	6/11 Settled ✓
11	SC 28(a)(iii)/ SOC 7A(3)	Iodine Monitoring	6/15 Settled



<u>Sets</u>	<u>Contention Numbers</u>	<u>Subjects</u>	<u>Hearing and/or Settlement Dates</u>
12	SC 28(a)(iv)/ SOC 7A(4)	SPDS	7/8 Settled
13	SC/SOC 22; SC 28(a)(vi)/ SOC 7A(6)	SRV Tests and Challenges	7/27-30; 8/3 10/14 Stipulation on Receipt into Evidence of Sup- plemental Testimony
14	SOC 9	Notice of Disabled Safety System	8/5 Settled
15	SC 28(a)(i)/ SOC 7A(1)	ECCS Cutoff	8/5 Settled, but Needs Supplemental Agreement
16	SC 16	AIWS	8/3-5
17	SC 27/SOC 3	Post Accident Monitoring	8/24-25 10/14 Partially Settled
18	SC 9	ECCS Pump Blockage	8/25 Settled
19	SC 21	Mark II	8/26-27
20	SC/SOC 12; SC 13-15	Quality Assurance	9/14-17, 21-24 10/12-15, 27-29 11/2-5, 9-12, 16-19, 30 12/1-3, 7-10, 14-17, 20-22 and ongoing
21	SC 19	Human Factors (HF) -- Procedures	10/14 Settled
22	SC 20	HF -- Simulator	10/14 Settled
23	SC 25/ SOC 19(a)	RPV Integrity and Testing	10/14 Settled
24	SC 26	ALARA	10/14 Settled

<u>Sets</u>	<u>Contention Numbers</u>	<u>Subjects</u>	<u>Hearing and/or Settlement Dates</u>
25	SC/SOC/NSC EP 1-14	Phase I Emergency Planning	
	EP 1(A)	Effect of Weather on Sirens	11/23 Settled ✓
	EP 3	Federal Resources	11/23 Settled ✓
	EP 5(C)	Notification with Emergency Classification	11/23 Settled ✓
	EP 6	Training of Offsite Agencies	11/23 Settled ✓
	EP 7(A)	Emergency Director and Response Manager	11/23 Settled ✓
	EP 8	Emergency Operations Facility	11/23 Settled ✓
	EP 9	Radiological Exposure	11/23 Settled ✓
	EP 10(A)	Field Monitoring	11/23 Settled ✓
	EP 11(D)	Redundant Power Supplies	11/23 Settled ✓
	EP 11(E)	Communications through Beepers	11/23 Settled ✓
	EP 11(F)	NAWAS	11/23 Settled ✓
	EP 12(A)	Number of Personnel in EOF	11/23 Settled ✓
	EP 1(B)	Backup Power	11/23 Dismissed ✓ by the Board because SC/SOC/NSC Defaulted on Oblig- atory Prehearing Examinations
	EP 1(C)	Gaps in Siren Coverage	11/23 Dismissed ✓
	EP 2(A)	Adequate Medical Services	11/23 Dismissed ✓

<u>Sets</u>	<u>Contention Numbers</u>	<u>Subjects</u>	<u>Hearing and/or Settlement Dates</u>
	EP 2(B)	Ground Transportation to Hospital	11/23 Dismissed ✓
	EP 4	Protective Actions	11/23 Dismissed ✓
	EP 5(A)	Role Conflict	11/23 Dismissed ✓
	EP 5(B)	Traffic	11/23 Dismissed ✓
	EP 7(B)	Table B-1	11/23 Dismissed ✓
	EP 10(B)	Real-time Monitors	11/23 Dismissed ✓
	EP 10(C)	Iodine Monitoring	11/23 Dismissed ✓
	EP 11(A) and (B)	Communications with Offsite Response Organizations (A) Sabotage, Power Outage, Overload (B) Vulnerability to Weather	11/23 Dismissed ✓
	EP 13	Interim SPDS	11/23 Dismissed ✓
	EP 14	Accident and Dose Assessment Model	11/23 Dismissed ✓
26	SC Security 1-9	Security Planning	12/3 Settled
27	SC 18	HF -- Equipment	12/7 Settled ✓
28	SC 1	Remote Shutdown Panel	12/21 Settled ✓
29	SC 3/SOC 8	Inadequate Core Cooling	12/22 Settled ✓
30	SC 31/SOC 19(g)	Electrical Separation	
31	SC 24/SOC 19(c) and (d)	Cracking of Materials	
32	SC 8/SOC 19(h)	Environmental Qualifications	

<u>Sets</u>	<u>Contention Numbers</u>	<u>Subjects</u>	<u>Hearing and/or Settlement Dates</u>
33	SOC 19(i)	Seismic Qualifications	
34	SC 23	Containment Isolation	
35	SC 32/SOC 19(f)	Electrical Penetration	
36	SC/SOC/NSC	Phase II Emergency Plannir.;	

#### 6. CONCLUSION

The Shoreham operating license proceeding has been vigorously underway for almost seven years. It has occasioned discovery far beyond the norm for administrative litigation. It has involved sustained, often successful efforts to narrow and focus the issues for hearings or to settle disputes outright without the need for hearings. No negotiations of comparable scope and effect have occurred in other NRC litigation. And the hearings themselves, already approaching 90 days and not yet complete, will rarely be surpassed in agency practice.



UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of

MISSISSIPPI POWER & LIGHT COMPANY  
MIDDLE SOUTH ENERGY, INC., AND  
SOUTH MISSISSIPPI ELECTRIC POWER  
ASSOCIATION  
(Grand Gulf Nuclear Station)

Docket No. 50-416

ORDER REQUIRING DIESEL GENERATOR INSPECTION (EFFECTIVE IMMEDIATELY)

I.

Mississippi Power & Light Company, Middle South Energy, Inc., and South Mississippi Electric Power Association (the licensees) are the holders of Facility Operating License No. NPF-13, which authorizes the operation of the Grand Gulf Nuclear Station, Unit 1 (the facility) at steady-state reactor power levels not in excess of 191 megawatts thermal. The facility consists of a boiling water reactor (BWR/6) with a Mark III containment located in Claiborne County, Mississippi.

II.

On August 12, 1983, the main crankshaft on one of the three emergency diesel generators (EDGs) at the Shoreham Nuclear Power Station, which were manufactured by Transamerica DeLaval, Inc. (TDI), broke into two pieces during a load test. During the course of the evaluation of the failure, information related to the operating history of TDI engines has been identified which calls into question the reliability of all TDI diesels. The operational problems associated with TDI diesels have significantly reduced the staff's level of confidence in the reliability of all TDI diesel generators.

### III.

As a result of the above, there is a question concerning the reliability of the TDI diesel generators installed at the Grand Gulf facility. Staff analysis (Attachment 1) indicates that the total loss of diesels at 5% power would not significantly increase the risk of low-power operation. Nevertheless, one of the contributors to that risk is some very low probability environmental events. That risk is reduced if the reliability of the TDI diesel generator is enhanced. Consequently, it is appropriate to have increased assurance as to reliable onsite power. Moreover, for full-power operation, a high degree of reliability is required for the diesel generators. The most appropriate method to obtain information about the specific conditions of the diesel generators at Grand Gulf is to disassemble and inspect the diesel generator which has been operating the longest. The public interest requires that the questions about the reliability of the Grand Gulf diesel generators be resolved promptly. While these questions are being resolved, there is a need to enhance the availability of other sources of power supplied to the facility.

Therefore, the public health, safety and interest require that the diesel generator with the most hours of operation be inspected prior to proceeding above 5% power and that while this diesel is disassembled, the licensees provide additional power supplies and compensatory actions set forth in this order. Attachment 4 is the staff's safety evaluation for operation under the present low power license with one diesel generator undergoing inspection.

### IV.

Accordingly, pursuant to sections 103, 161f, 161o, 182 and 186 of the Atomic Energy Act of 1954, as amended, and the Commission's regulations:

in 10 CFR Parts 2 and 50, it is hereby ordered, effective immediately, that:

- A. 1. The Division I TDI diesel generator shall be disassembled for inspection within 10 days of the date of this Order in accordance with Attachment 2 which describes the components to be inspected and the inspections to be performed.
2. All defective parts found shall be replaced prior to declaring the engine operable. The engine block and engine base may be excepted if indications are non-critical. Non-critical indications are defined as: not causing oil or water leakage, not propagating, or not adversely affecting cylinder liners or stud holes.
3. Preoperational testing must be performed on the inspected engine prior to declaring it operable. This phase of testing shall include the manufacturer's preoperational test recommendations and the following elements, if they are not already included in the manufacturer's recommendations, unless they would not be recommended by the manufacturer in order to satisfy operability requirements:
- 10 modified starts to 40% load
  - 2 fast starts to 70% load
  - 1 24-hour run at 70% load

A modified start is defined as: a start including a pre-lube period as recommended by the manufacturer and a 3 to 5 minute loading to the specified load level and run for a minimum of one hour. The fast starts are "black starts" conducted from the control room on simulation of an ESF signal with the engine on ready standby status. The engine shall be loaded to 70% and run for 4 hours at this load on each fast start.



test. The 24-hour performance run is required to detect abnormal temperatures and/or temperature excursions that might indicate abnormal engine behavior. Either a modified or quick start may be utilized.

Should these tests not be performed satisfactorily at the first attempt, i.e., the 10 modified starts shall be performed successively with no failure, the NRC shall be notified within 24 hours. A failure is defined as an inability of the engine to start, or an abnormal condition during the respective run which would ultimately preclude the engine from continuing to operate.

- B. The licensees shall not operate the Grand Gulf facility under the terms of License No. NPF-13 unless such operation is in conformance with the revised interim technical specifications appended to this Order. (Attachment 3)
- C. The Director, Division of Licensing may terminate in writing any of the preceding conditions for good cause.

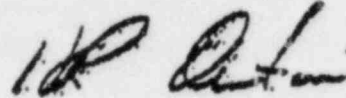
V.

Within 20 days of the date of this Order, the licensees may request a hearing on this Order. Any request for a hearing on this Order must be filed within 20 days of the date of the Order with the Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D. C. 20555. A copy of the request shall also be sent to the Executive Legal Director at the same address. A request for a hearing shall not stay the immediate effectiveness of Section IV of this Order.



If the Licensees request a hearing on this Order, the Commission will issue an order designating the time and place of hearing. If a hearing is held, the issue to be considered at such a hearing shall be whether this Order should be sustained.

FOR THE NUCLEAR REGULATORY COMMISSION:



Harold R. Denton, Director  
Office of Nuclear Reactor Regulation

Attachments:

- (1) Staff Analysis
- (2) Inspection Description
- (3) Interim Technical Specifications
- (4) Safety Evaluation

Dated at Bethesda, Maryland,  
this 22nd day of May, 1984.