

6/29/82

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

Long Island Lighting Company

Docket Number 50-322

(Shoreham Nuclear Power Station,
Unit 1)

NRC STAFF TESTIMONY OF ROBERT GALLO, JOHN GILRAY, GEORGE RIVENBARK
JAMES HIGGINS, AND LEWIS NARROW
REGARDING QUALITY ASSURANCE

SC Contentions 12, 13, 14, and 15

OUTLINE OF TESTIMONY

SC contentions 12-15 contend that there has been a pattern of QA/QC breakdown at Shoreham as illustrated by NRC cited violations, the QA program for operations does not comply with regulations, the NRC inspection program has not adequately verified the implementation of LILCO's QA program, and there has been inadequate review and physical inspection of Shoreham. This staff testimony shows that the cited violations are indicative of problems in individual areas only and do not show a pattern of QA/QC breakdowns. The NRC reviews violations and licensee performance continually and takes additional action whenever required. This has occurred on a few occasions at Shoreham. Regarding the QA program for operations, the licensee has committed in the FSAR to meet all applicable QA regulations. Further, the implementation of this program will be reviewed by the NRC. The NRC inspection program is pre-defined, extensive, and fully documented. The program reviews all aspects of construction including QA, physical inspections, and record review. Extensive physical inspections have been performed in the past at Shoreham, and more are scheduled between now and fuel load. The combination of these inspections provides an adequate review of the facility.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

Long Island Lighting Company

Docket Number 50-322

(Shoreham Nuclear Power Station,
Unit 1)

NRC STAFF TESTIMONY OF ROBERT GALLO, JOHN GILRAY, GEORGE RIVENBARK
JAMES HIGGINS, AND LEWIS NARROW
REGARDING QUALITY ASSURANCE

SC Contentions 12, 13, 14, and 15

PART I INTRODUCTION

1. Q.1 Will the panel members each please state your name, employer, job title, and responsibilities relative to the Shoreham project.

A.1 My name is Robert M. Gallo, and I am Chief, Reactor Projects Section 1A, Projects Branch Number 1, Division of Project and Resident Programs, Region I, United States Nuclear Regulatory Commission. I am responsible for supervision of regional and resident inspectors whose jobs are to inspect construction, start-up, and operation of certain nuclear power plants in Region I, including the Shoreham Nuclear Power Station.

My name is John W. Gilray, Principal Quality Assurance Engineer, Division of Engineering, Office of Nuclear Reactor Regulation, United States Nuclear Regulatory Commission. I am responsible for review and evaluation of the QA program described in the docket for acceptability from a safety standpoint.

My name is George W. Rivenbark, Senior Management Systems Engineer, Licensee Qualifications Branch, Division of Human Factors Safety, Office of Nuclear Reactor Regulation, United States Nuclear Regulatory Commission. I am responsible for the review and evaluation of licensee management and organizational structure for the Shoreham Nuclear Power Station.

My name is James C. Higgins, and I am the Senior Resident Inspector, Shoreham Nuclear Power Station, Reactor Projects Section 1A, Projects Branch Number 1, Division of Project and Resident Programs, Region I, United States Nuclear Regulatory Commission.

My name is Lewis Narrow, and I am a Reactor Inspector, Reactor Projects Section 2B, Projects Branch Number 2, Division of Project Resident Programs, Region I, United States Nuclear Regulatory Commission. I have been the Project Inspector on construction of the Shoreham Nuclear Power Station during July 1974 to October 1977 and August 1979 to May 1982.

Q.2 Has the panel prepared statements of educational and professional qualifications?

A.2 Yes. Copies of our respective qualification statements are attached to this testimony.

Q.3 What is the purpose of this testimony?

A.3 The purpose of this testimony is to respond to Suffolk County Contentions 12, 13, 14, and 15.

PART II CONTENTION 12

Q.4 What does Contention 12 state?

A.4 (Gallo) Contention 12 states:

"Suffolk County contends that LILCO and the NRC Staff have not adequately demonstrated that the quality assurance program for the design and installation of structures, systems, and components for Shoreham was conducted in a timely manner in compliance with the pertinent portions of 10 CFR 50, Appendix B, Sections I to XVIII, and 10 CFR 50, Appendix A, GDC 1. There has been a pattern of QA/QC breakdowns at Shoreham. This pattern has covered Appendix B Criteria 2, 3, and 5-18. Accordingly, Suffolk County contends that LILCO has failed to comply with 10 CFR Part 50, Appendix B as particularized in Appendix I attached hereto."

Appendix I to Contention 12 lists violations identified by the NRC inspection program from 1974 through 1981.

Q.5 Has there been a pattern of QA/QC breakdowns at Shoreham, as alleged by Contention 12?

A.5 (Gallo) No. From April 1973 through June 1, 1982, Region I issued 73 violations to Shoreham. The NRC inspections at Shoreham during this period showed no pattern of QA/QC breakdowns and review of the

violations reveals no such pattern. The balance of this testimony describes the detailed bases for these conclusions.

Q.6 Are you familiar with Appendix I which is part of Contention 12?

A.6 (Gallo, Higgins, Narrow) Yes. Appendix I lists one hundred and sixty-nine (169) instances of failure to comply with 10 CFR 30, Appendix B criteria (violations) as found by Region I during the period of March 1974 through December 1981.

Q.7 Briefly discuss the apparent discrepancy between the number of violations listed in Appendix I of Contention 12, and the number of violations shown in your response to Question 5.

A.7 (Gallo, Higgins, Narrow) In response to the previous question, it was stated that seventy-one (71) violations had been issued to the licensee. This information is obtained from review of inspection reports for the period shown. The period reviewed was April 1973, the date the Construction Permit was issued, through June 1, 1982.

Appendix I of Contention 12 lists one hundred and sixty-nine (169) violations during the period of March 1974 through December 1981. Review of NRC inspection reports for that period shows that the Appendix I listing actually consists of fifty-four (54) violations identified during NRC inspections. These fifty-four (54) violations are included in the seventy-one (71) violations identified above.

Most of the violations shown in Contention 12 are listed as failures to comply with two or more criteria of 10 CFR 50, Appendix B. As an extreme example: During Inspection 78-05, the licensee was cited for a violation of 10 CFR 50, Appendix B, Criterion X, in that a sub-contractor's QA manual did not establish responsibility nor provide acceptance criteria for certain installation activities; and, as a result, certain water lines were installed improperly. Contention 12 lists this item separately as a violation of 10 CFR 50, Appendix B, Criteria II, III, V, VI, X, XV and XVII.

The apparent discrepancy or difference in the number of violations listed, therefore, is due to the way in which they are characterized or counted, and not a result of any omissions.

Q.8 Briefly describe the NRC Inspection Program at Shoreham during the period in question, April 1973 through June 1, 1982.

A.8 (Gallo, Higgins, Narrow) The NRC Inspection Program is a pre-defined and systematic program for inspecting the major phases of the project. For the period in contention, these include the construction and pre-operation phases. For Shoreham, inspection of the construction phase was carried out by a project inspector and by technical specialists. Inspection of the pre-operation phase also was conducted by a project inspector until September 30, 1979 when a resident inspector responsible for pre-operation program inspections was assigned to the site in line with a nationwide program for assignment of resident inspectors.

Technical specialists also inspected pre-operational activities during this period.

The inspection findings are reviewed by each inspector with his supervisor to determine their safety significance and possible generic implications. The findings are documented in an inspection report. Violations are reviewed by Region I management to verify that proposed enforcement actions are appropriate. It should be noted that inspection of activities which are found to be acceptable are intentionally reported briefly, while violations and other concerns requiring resolution are reported in much more detail.

The NRC Inspection Program at Shoreham during the period in question, April 1973 through June 1, 1982, included 146 inspections and three investigations for a total of about 1200 inspection mandays. These inspections covered a broad spectrum of construction and pre-operational activities, including design review and control, QA/QC activities, hardware installation, document review, and testing of components and systems. Each major activity was inspected a number of times. As examples, welding was inspected during 40 inspections, electrical work during 18 inspections, instrumentation during 20 inspections. In addition, approximately 20% of the inspector's time was spent on independent inspections which included observation of work in progress during that inspection, protection of installed equipment, and inspections not required by in the routine inspection program.

Q.9 What were the results of the inspection program at Shoreham during the period in question, April 1973 through June 1, 1982?

A.9 (Gallo, Higgins, Narrow) By far, the greatest number of activities inspected were found to be satisfactory. During 146 inspections over a period of nine years, a total of 73 violations were identified. About half of these violations were isolated instances of performance failures in various disciplines. They were corrected with no evidence of recurrence. The remaining violations were observed in three general areas, (equipment storage, welding, and design control) and one specific area (control of the Startup Manual).

Additional management attention was directed toward each of these areas by Region I, and the licensee was required to place increased emphasis on the cause and corrective action of the problems. A further discussion of these areas is provided later in this testimony.

Q.10 What constitutes a violation as used in this testimony?

A.10 (Gallo) A violation is a failure to comply with a regulatory requirement, such as the Atomic Energy Act, Title 10 of the Code of Federal Regulations, the conditions of the license or permit, or an order issued to the licensee.

Q.11 How does the NRC determine if a violation is part of a problem which requires further management attention?

A.11 (Gallo, Higgins, Narrow) Each time a violation is written, Region I (inspectors and management) reviews that item to determine the breadth and depth of the problem and to see if it is part of a recurrent pattern. Region I annually reviews and evaluates each licensee's performance in important functional areas through the Systematic Assessment of Licensee Performance (SALP) process to determine if any patterns or programmatic breakdowns exist. More generally, a potential problem which may require management attention is suspected when any abnormal condition is identified during the inspection or during review of the inspection findings. These conditions may be a large number of violations in one area, recurrence of similar violations, inadequate corrective action, delay in corrective action, or any programmatic deficiency.

Further review of the cause and extent of these conditions by the inspector will determine whether management attention is necessary for their correction.

Q.12 What is NRC policy regarding individual violations?

A.12 (Gallo) When a violation is identified during an inspection, the licensee is informed. If the violation at a facility under construction is serious enough, work in the affected area will be stopped. This has not been necessary at Shoreham. At the completion of the inspection, the licensee's representatives are apprised of the inspection findings, including the violation(s), during an exit meeting.

The violation is reviewed by the inspector with Regional NRC management and then formally issued to the licensee with the inspection report. The licensee is notified in the letter transmitting the inspection report that a violation was identified during the inspection. The violation is formally cited in Appendix A to the letter and is discussed in detail in the inspection report. Unless satisfactory corrective actions were completed during the inspection, the licensee is required to respond to the violation, stating: (1) the corrective steps taken and results achieved, (2) the corrective steps to be taken to avoid further violations, and (3) the date when full compliance will be achieved. When the licensee's written response is received, it is reviewed to verify that it adequately addresses all three of these items and that it is technically acceptable. Then, during a subsequent inspection, an inspector reviews the corrective actions to assess their adequacy and status. Such followup is documented in inspection reports. If all items are satisfactorily addressed, the violation is closed. If some aspects are still in question, this is documented in the report, and the violation is left open until they are satisfactorily resolved.

Q.13 Give an example of the treatment of a nonrecurrent violation at Shoreham.

A.13 (Higgins) One nonrecurrent violation was identified at Shoreham in Inspection Report 79-05. In this violation, the licensee failed to update Engineering Quality Assurance Procedures annually as required

by his own internal procedure in accordance with 10 CFR 50 Appendix

B. Attachment 1 to this testimony contains the following:

- a. Inspection Report 79-05 Transmittal Letter and Appendix A, Notice of Violation.
- b. Inspection Report 79-05, Subsection 4.c., pages 5 and 6, describing the violation more fully.
- c. LILCO response to the violation, dated May 24, 1979.
- d. The NRC's followup and closeout of the violation, documented in Inspection Report 80-06, subsection 2.b., page 4.

The above identified documents illustrate how a nonrecurrent violation is processed to ensure that the violation is corrected and that the corrective action will prevent recurrence of similar violations. As of June 1, 1982, there has been no recurrence of this type of violation.

Q.14 Generally speaking, what actions could be taken for conditions requiring management attention?

A.14 (Gallo) When such a condition is identified, the licensee is informed, and additional attention is directed to that area by the inspector. The licensee is formally notified of the problem and Region I's concern in an inspection report transmittal letter and is requested

to describe the actions taken or planned to be taken to resolve the problem. If considered necessary, an enforcement meeting will be held with licensee management to discuss the problem and proposed corrective action. Implementation of the corrective action and its results are reviewed during later inspections.

Various types of escalated enforcement actions are also available if necessary. They include: civil monetary penalties, orders to modify, suspend or revoke a license, orders to cease and desist from a given practice or activity, and orders to take such other action as may be proper.

Q.15 Have there been any violations at Shoreham which required escalated enforcement action or additional management attention?

A.15 (Gallo, Higgins, Narrow) None of the seventy-three (73) violations identified at Shoreham required escalated enforcement action. Thirty-six (36) of the violations were identified in four areas, and these areas did require and receive additional management attention.

These areas are:

1. Equipment storage conditions - 11 violations
2. Welding - 16 violations
3. Design control - 7 violations
4. Startup Manual control - 2 violations

The remaining thirty-seven (37) violations were isolated deficiencies in diverse disciplines controlled by a number of separate organizations. They showed no evidence of repetitive or programmatic failure. There was no concentration of violations in any one discipline, and the violations were identified throughout the nine-year period covered by the inspection program.

Q.16 You have classified the violations requiring further management attention by type of activity, rather than by 10 CFR 50, Appendix B criteria as shown in Contention 12. What is the reason for doing so?

A.16 (Gallo, Higgins, Narrow) In performance of the inspection program as well as in responding to this contention, our interest was in identifying recurrent problems and the specific cause of these problems in order to assure that the necessary corrective action was taken. To do so, it was necessary to identify the specific activity involved, the phase of the activity determined to be deficient, the organization or organizations responsible for performance of work and quality control of that phase of the activity, and the specific reason for the deficiency.

Categorization by Appendix B criteria does not provide the above information. For the purpose of identifying recurrent violations or programmatic deficiencies, such classification is not only ineffective but often misleading. As an example, Criterion V regarding instructions,

procedures, and drawings is broad in coverage so that many violations identified may be classified as a violation of Criterion V. Specifically, Contention 12 lists forty-five (45) violations of 10 CFR 50, Appendix B, Criterion V. It is noted that where the NRC inspection report listed multiple examples of deficiencies, Contention 12 lists each example as a separate violation. In our review, we have considered the violations as cited in the NRC inspection reports, thus reducing the total number to thirty-six (36) violations of Criterion V. Even so, identification of 36 violations in one category would appear to indicate a programmatic problem. However, review of these examples shows that five (5) organizations and thirteen (13) separate groups within these organizations were involved in these violations. In some cases, two or three separate disciplines were also involved.

Because of the diversity of problems which may be grouped under one of the Appendix B criteria, classification in this manner (as found in Contention 12) is of little or no help in identifying a programmatic problem or a potential QA/QC breakdown.

Q.17 Discuss the issue of equipment storage conditions which you noted earlier as requiring further management attention.

A.17 (Higgins, Narrow) Since April 1973, eleven (11) violations have been issued relating to equipment storage. These items are summarized briefly below:

1. Reactor pressure vessel stored without enclosure and with inert gas maintained below specified pressure (Inspection Report 74-05).
2. Records of dew point and outside air temperature not maintained (Inspection Report 75-05).
3. Corrosion on threads of pipe hangers in storage (Inspection Report 76-01).
4. Dust in switchgear cabinets (Inspection Report 76-07).
5. Instrument & Control components not properly covered (Inspection Report 76-09).
6. Molten iron splatter on the refueling cavity lines (Inspection Report 76-12).
7. Valves exposed to rain while in transit from warehouse to reactor building (Inspection Report 77-23).
8. Improper dust control in equipment storage area (Inspection Report 77-23).

9. Dirt in switchgear cabinet (Inspection Report 78-16).
10. Inadequate coverings for high pressure coolant injection (HPCI), core spray, and residual heat removal (RHR) pumps (Inspection Report 79-06).
11. General storage program inadequacies (Inspection Report 79-16).

Although concerned with equipment storage, several of these items are not indicative of an overall problem or pattern. Items 1, 2, 3, 6, 7, and 8 are of this more specific type. These problems have not recurred. The other items involve protection or covering of installed equipment. This is an area in a construction plant which requires continued attention. Both the frequency of surveillance of the affected equipment and the particular areas needing attention vary considerably over time due to a number of factors. For example:

- construction activity can disturb protective coverings;
- equipment surveillance or preventive maintenance sometimes requires removal of protective covers;
- equipment is gradually transferred from the warehouses to installed locations.

- equipment is jurisdictionally transferred between groups, viz. construction, test and startup, and the operating staff.

The licensee did not in all cases adequately respond to the changing needs to ensure protection of stored equipment, as evidenced by the violations.

Because of the equipment storage problems, a thorough inspection of the entire program was performed in November 1979. A number of programmatic deficiencies were identified in one violation. This item was highlighted to site management as recurrent by the inspection report transmittal letter. The licensee responded with programmatic changes which adequately addressed the problem areas. The inspector then performed reviews to verify that the actions implemented were, in fact, adequate. Attachment 2 contains the following which document the above actions:

- a. Inspection Report 79-16 transmittal letter and Appendix A, Notice of Violation
- b. Inspection Report 79-16, Section 4, Equipment Storage and Protection
- c. LILCO response to the violation, dated February 21, 1980
- d. First followup of licensee action, Inspection Report 80-06, Page 3

- e. Second and final followup of licensee action, Inspection Report 80-09, Section 2.

These documents illustrate one method of handling a recurrent problem in order to obtain corrective action. In this case, they were effective. Had they not been effective, it would have been necessary to proceed with escalated enforcement action: as discussed earlier in this testimony.

Also worthy of note when discussing equipment storage is the defense in depth concept, applied throughout nuclear power plant design, construction, and operation. Storage requirements protect against damage, but other checks of operability are involved too. After construction of a component or system is complete, it receives a final quality control inspection before being turned over to the licensee's startup group. The startup group then inspects and tests for equipment operability.

These tests include piping flushes, electrical component inspections, initial energization, functional operation of equipment, and integrated system operation. The tests are reviewed by the NRC on a sampling basis. After the startup group completes all testing, the system is turned over to the operating plant staff, and another system inspection is performed. As the plant is started-up, tests are performed to again check equipment operation; such tests are also selectively reviewed by the NRC. Periodic surveillance checks during operation observe the continued ability of systems to perform their safety function. Shutdown is required if minimum conditions are not met. Finally, redundant design features are employed

to assure that safety needs can be fulfilled, even if significant equipment defects occur.

Q.18 Please discuss the previously-identified issue of welding violations which required management attention.

A.18 (Narrow) Inspection of welding at Shoreham was conducted during thirty-eight (38) inspections and two (2) investigations during the period of September 1973 through May 1980. Sixteen violations were identified as shown below:

1. Primary shield wall weld defects (Inspection Report 75-11).
2. Undersize structural welds (Inspection Report 76-11).
3. Weld repair procedure specified use of an improper weld procedure specification (Inspection Report 77-01).
4. Contour of transition weld between components of unequal diameter did not conform to the applicable weld procedure (Inspection Report 77-17).
5. Failure to control return of used and unused weld filler metal to issue station (Inspection Report 78-02).

6. Failure to maintain welding interpass temperatures (Inspection Report 78-03).
7. Grinding of completed welds not in accordance with specification (Inspection Report 78-06).
8. Undersize flange to pipe welds on safety relief valve discharge piping (Inspection Report 78-12).
9. Use of a weld procedure prequalified for 45 degree minimum bevel angle for welding of a 30 degree bevel weld joint (Inspection Report 78-12).
10. Use of an incorrect weld procedure for welding of skewed angle joints (Inspection Report 78-15).
11. Welding defects in reactor building polar crane welds (Inspection Report 78-16).
12. Post weld heat treatment procedure and instructions interpreted ASME III incorrectly resulting in a heat-up rate which exceeded the code allowable rate (Inspection Report 79-02).
13. Thermal cutting of RHR heat exchanger pressure caps from nozzles without preheat (Inspection Report 79-04).

14. Failure to provide full penetration welds on integral pipe lugs for pipe restraints (Inspection Report 79-06).
15. Fit-up gap for CRD beam support bracket to wall weld too large (Inspection Report 79-07).
16. Requisition of incorrect type of filler metal (Inspection Report 79-24).

Review of the reports of these violations and the corrective actions taken by the licensee show the following:

1. Items 1, 2, 8, 11, and 15 showed no common pattern. In each case, welding and quality control were performed by organizations not involved in any of the other fifteen violations. Two of the violations occurred in vendors' shops, and the remaining three on site.
2. Items 5 and 16 are both concerned with welding material, but are, otherwise, unrelated since one is concerned with control of material issued to the welders, while the other results from preparation of an incorrect requisition.
3. Item 13 is a singular instance of work performance without an approved procedure.

4. Items 3 and 12 are the result of engineering errors.
5. Items 4, 6, 7, and 14 are the result of improper workmanship and failure of site QC to detect and require correction of the nonconforming conditions. Three of these four QC failures occurred between March 1978 and April 1979.
6. Items 9 and 10 are similar violations which were identified during successive NRC inspections in August and September, 1978. Following the latter inspection, the licensee was notified that these were considered to be repetitive violations and was requested to give this matter particular attention. The licensee's corrective actions were reviewed by the inspector during a later inspection and verified as acceptable. There have been no recurrences of similar violations since that inspection.

Early in 1979, Region I staff reviewed the results of welding inspections during the previous year and noted that, in addition to the repetitive violations (item 6 above), there had been an increase in the number of welding violations identified by NRC since early 1978. In July 1979, the licensee was asked to review QC and audit records of welding performance between September 1977 and April 1979 to determine the cause of this increase and take the necessary corrective action. The results of this review were presented by the licensee at a meeting on site with Region I in May 1980. The licensee's field audit findings and the subcontractors QC nonconformance reports had also increased since early 1978. All of

these findings (NRC, licensee, and subcontractor) peaked in mid-1979, and their number dropped thereafter.

The increase in NRC, licensee, and subcontractor findings roughly corresponded to the increase in the number of welders employed on site. This increase started in 1977 and continued at an accelerating rate through 1978. The number of welders remained practically constant through 1979, while the number of findings decreased after mid-1979. On the basis of this review, it appears reasonable to attribute the increase in the number of violations primarily to an increase in the amount of welding performed.

To summarize Region I review of welding violations:

1. Sixteen (16) violations of welding requirements were identified during thirty-eight (38) inspections and two (2) investigations during a period of almost eight (8) years when welding was actively in progress at the site.
2. One instance of a repetitive violation was identified. The licensee's corrective action was acceptable, and no recurrence has been identified since that time.
3. An increase in the number of welding violations identified during 1978 and early 1979 resulted in review by the licensee and Region I. The increase was apparently due primarily to an increase in the amount of welding performed.

4. After consideration of the number of NRC inspections, the number and diversity of violations identified, the amount of welding activity, and the extended period of time during which this activity was in progress, it can be concluded that there is no pattern of a QA/QC breakdown in this area and no unacceptable welds exist at Shoreham.

Q.19 Discuss the previously identified issue of Design Control at Shoreham.

A.19 (Higgins, Narrow) In the nine years since 1973, there have been seven violations in the design control area. These items are summarized briefly below:

1. QA review of design changes (Inspection Report 76-06).
2. Conformance with requirements of ANSI 13.1 for sampling lines (Inspection Report 80-14).
3. Vent lines and valves installed without a specific authorizing design change (Inspection Report 80-14).
4. Location of containment isolation valves not per the General Design Criteria (Inspection Report 81-02).
5. Verification of electrical design changes by the Startup Group (Inspection Report 81-22).

6. Manual Initiation of Safeguards (Inspection Report 82-04).
7. Type of containment isolation valve not per General Design Criterion 56 (Inspection Report 82-04).

In addition to the above, the licensee was cited during Inspection 79-07 for failing to promptly correct a violation of electrical separation requirements. This matter has been the subject of an engineering analysis by the licensee (which was submitted to the NRC) and continuing correspondence and several meetings between the licensee and NRC staff. It is more fully discussed in the testimony filed in this proceeding concerning SC Contention 31/SOC 19(g). Upon resolution of this issue, Region I will inspect the licensee's corrective actions to confirm their adequacy.

Items number 1 and 3 above were very specific instances not indicative of an overall problem and were separately resolved. Item 5 was indicative of problems in an somewhat broader area. The licensee has initiated a number of actions to address these concerns. Region I will inspect the licensee's corrective actions to confirm their adequacy. The remaining four items relate to the conformance of plant design with licensing commitments or regulatory requirements. This issue was discussed in a November 12, 1981 meeting between the licensee and the NRC staff and was highlighted in Inspection Report 82-02 and 82-04 cover letters. In the response letter to report 82-02, dated March 11, 1982, the licensee described a Shoreham Configuration Review Program instituted as a result of NRC concerns in this area. Region I will inspect the licensee's corrective actions to confirm their adequacy.

Q.20 Discuss the issue of Startup Manual Control which you noted earlier as requiring further management attention.

A.20 (Higgins, Gallo) Problems with the control of changes to the Startup Manual are discussed in Inspection Reports 81-13, 82-02, and 82-08. Due to the recurrence of this specific individual problem, the licensee was directed to give particular attention to the problem in Inspection Report 82-08. As of June 1, 1982, this specific problem had not yet been resolved. Region I will inspect the licensee's corrective actions to confirm their adequacy.

Q.21 Discuss the violations which are not addressed in the above four areas which, in your view, support the conclusion that no other areas existed which required further management attention.

A.21 (Higgins, Narrow) Other than the equipment storage, welding, design control, and Startup Manual control violations discussed above, there were 37 violations during the nine-year period. These violations were spread out over time and involved isolated discrepancies among diverse disciplines and groups on site. These disciplines or groups represent not only different areas of licensee management responsibility for design, inspection, construction and testing, but also different contractor personnel with different management involvement. Thus, there were no repeatable events or programmatic breakdowns identified within the remaining violations.

It is concluded that there were no other areas within the 73 violations which recurred or indicated a pattern which required further management attention.

Q.22 Please summarize the bases for your conclusion that no pattern of QA/QC breakdowns exist at Shoreham.

A.22 (Gallo, Higgins, Narrow) A detailed analysis of all violations issued to Shoreham does not reveal a pattern of QA/QC breakdowns. Each violation was reviewed at the time of issuance to determine its significance and any aspects of recurrence. There were four individual areas identified over the last nine years which required further management attention due to their significance and some aspects of recurrence. As discussed earlier, these four areas and not the areas or groupings presented in these contentions are the only ones requiring further followup and management attention. These areas were identified as the situations developed over the years through careful review at the time of each violation and through periodic reanalysis to determine if any patterns existed which were not previously uncovered by the review at the time of any given violation. A further review performed in conjunction with this testimony identified no additional problem areas.

Each of the four identified individual problem areas were addressed by management, as discussed above in Questions 17, 18, 19, and 20 and are not indicative of a pattern of QA/QC breakdowns. The remaining violations outside the above four areas were individual problems in specific diverse

areas. Hence, the complete set of violations from 1973 to the present (more violations than listed in Contention 12) does not support a conclusion that there was a pattern of QA/QC breakdowns. Secondly, the NRC Inspection Program has reviewed a broad spectrum of activities on site, since the Construction Permit was issued, and found that in each area reviewed, the great majority of activities inspected was acceptable. Thus, the simple fact that violations were identified does not imply a pattern of breakdowns. The violations identified must be viewed in the context of the totality of activities reviewed to uncover the violation. When thus viewed, the violations clearly become isolated instances or problems, rather than a pattern of breakdowns.

PART III SC CONTENTION 13

Q.23 What does Contention 13 state?

A.23 (Gilray) Contention 13 states:

"Suffolk County contends that the QA program description for the operation of Shoreham, as provided in the FSAR, does not comply with 10 CFR 50.34(b)(6)(ii) and 10 CFR 50, Appendix B, Sections I to XVIII, with regard to:

- (a) Failure to address, at a minimum, each of the criteria in Appendix B in sufficient detail to enable an independent reviewer to determine whether and how all the requirements of Appendix B will be satisfied;
- (b) Failure to provide for the adequate identification, reporting and analysis of all equipment failures discovered during operation and maintenance at Shoreham and at other operating BWR stations with similar equipment;
- (c) Failure to ensure that replacement materials and parts of systems classified as components "important to safety" will be equivalent to the original equipment, that replacements will be installed in accordance with adequate process procedures, and that the repaired or reworked structures, systems, or components will be adequately inspected, tested, and documented in "as-built" drawings; and

(d) Failure to provide an adequate number of qualified QA/QC personnel on the operating staff, including the availability of QC personnel on off-shifts."

Q.24 Are each of the eighteen criteria of Appendix B to 10 CFR 50 addressed in sufficient detail by LILCO's QA Program description?

A.24 (Gilray) In the FSAR, LILCO's QA program description discusses how each criterion of Appendix B will be met. The acceptance criteria used by the QAB to evaluate this QA program are listed in the 18 subsections of Section 17.2 of the NRC Standard Review Plan. The acceptance criteria include a commitment to comply with the regulations and regulatory positions presented in the appropriate issues of the quality-related Regulatory Guides. Thus, this commitment constitutes an integral part of the QA program description and requirements. LILCO's QA program description meets these acceptance criteria and is, therefore, considered to be in compliance with pertinent NRC regulations. Essential elements of LILCO's QA program description included in the FSAR which satisfies 10 CFR 50, Appendix B are described in Attachment 3.

This QA program description forms the foundation from which LILCO is required to develop QA manuals and implementing procedures describing in more detail how to carry out the QA program commitments.

I conclude that the FSAR QA program description provides the necessary controls describing how the program will be carried out to satisfy Appendix

B to 10 CFR 50 and the acceptance criteria in the Standard Review Plan, Section 17.2.

Q.25 Describe Region I's role regarding the acceptance of the Shoreham operational QA Program.

A.25 (Higgins) As stated in the response to Question 23, the QA program description forms a foundation from which a manual and implementing procedures are developed which describe in detail how to carry out program commitments. The NRC Region I office reviews and evaluates both the QA Manual and QA implementing procedures for acceptability and for conformance with both 10 CFR 50, Appendix B, and the FSAR commitments. This review will be completed prior to fuel load.

Q.26 Were the review and assessment of the LILCO's procedures for feedback of operating experience a part of the NRC staff's safety evaluation?

A.26 (Rivenbark) This review and assessment was performed in conjunction with the preparation of input to the staff's Safety Evaluation Report, Supplement No. 1, NUREG-0420 (September, 1981). It was based on the information submitted by the applicant in response to Item 1.C.5 of NUREG-0737, "Clarification of TMI Action Plan Requirements" (November, 1980) in its July 31 and August 7, 1981, letters to the NRC.

Q.27 Was it concluded that LILCO's program for feedback of operating experience was acceptable at the time of the review?

A.27 (Rivenbark) Yes. Although the final procedures as committed to by the applicant in its July 31 and August 7, 1981, letters had not been completed at the time of our review, we concluded that when the commitments are implemented in the Shoreham Administrative Procedures, the program for feedback of operating experience will meet the requirements of Item 1.C.5 and will be acceptable.

Q.28 How will you determine when these commitments are acceptably implemented in the Shoreham Administrative Procedures?

A.28 (Higgins) Region I will inspect the procedures to assure that they are prepared as described in the applicant's July 31 and August 7, 1981, responses to Item 1.C.5.

Q.29 Will the procedures for feedback of operating experience include feedback of information concerning equipment failures discovered during operation and maintenance of the Shoreham plant?

A.29 (Rivenbark) Yes. We interpret operating experience to include equipment failures discovered during operation and maintenance.

Q.30 Will the procedures for feedback of operating experience include operating experience at other nuclear plants as well as at Shoreham?

A.30 (Rivenbark) Yes. Item 1.C.5 of NUREG-0737 requires this, and the applicant has committed to this in its July 31 and August 7, 1981, responses to Item 1.C.5.

Q.31 Will the licensee be required to report equipment failures discovered during operation and maintenance at Shoreham?

A.31 (Higgins) Yes. The Shoreham Technical Specifications are part of the License and Technical Specification 6.9 details reporting requirements which include equipment failures. Additionally, licensee compliance with these reporting requirements is reviewed periodically by Region I.

Q.32 What controls exist to ensure proper technical and quality assurance requirements for safety-related replacement materials and parts?

A.32 (Gilray) LILCO is committed by Section 17.2 of the FSAR to provide for the proper procurement documentation and control of those materials and components necessary for plant maintenance and modification, which includes replacement materials and parts of safety-related plant items. Procedures are required to be sufficiently detailed to ensure that purchased materials, parts, and components associated with safety-related items are:

- (1) purchased to specifications and codes at least equivalent to those of the original equipment;
- (2) produced or fabricated under quality control surveillance at least equivalent to that of the original equipment;
- (3) properly documented to show compliance with applicable specifications, codes, and standards;

- (4) properly inspected, identified, and stored to provide protection against damage or misuse;
- (5) properly controlled to ensure the identification, segregation, and disposal of nonconforming material.

ANSI 45.2.13 to which LILCO is committed by FSAR Section 17.2 provides controls for specifying technical and quality assurance requirements for replacement items. The appendix to the standard provides additional guidance in the form of explanations and examples of logic and considerations to be used in deciding how and to what extent quality assurance requirements shall be specified for items.

In addition, LILCO is committed to provide detailed inspection and test procedures and work instructions to assure that replacements will be installed and inspected and tested in accordance with the latest design specification, procedures, and instruction requirements.

I, therefore, conclude that the replacement materials and parts of systems will be at least equivalent to the original equipment and that they will be installed, inspected, tested, and documented in accordance with preplanned procedures and instructions.

Q.33 Describe Region I's role regarding acceptance of LILCO's commitment regarding replacement materials and parts of safety-related systems.

A.33 (Higgins) As stated in the response to Question 32, LILCO has committed to provide sufficiently detailed procedures to ensure proper procurement documentation and control of replacement safety-related materials and components necessary for plant maintenance and modification. NRC Region I office reviews and evaluates the licensee procedures for procurement and spare part control to ensure that they properly implement the various requirements and commitments. This review will be completed to fuel load.

Q.34 Are there adequate numbers of qualified QA/QC personnel on the operating staff?

A.34 (Gilray, Higgins) Figure 13.1.2-1 of the Shoreham FSAR identifies a staff of eight QA/QC personnel who are responsible for establishing and assuring implementation of on-site QA/QC procedures and instructions which include the performance of inspections and audits. This is comparable to other single unit reactor QA staffs. Though the availability of QA/QC personnel for off-shift activities is not specifically addressed in the FSAR, the on-site QA/QC organization is required to be available at any time necessary to perform their committed responsibilities in such areas as review and concurrence of procedures, inspections, and audits.

I believe the on-site QA/QC staff is adequate to properly carry out the QA program recognizing there are no set NRC criteria established as to what constitutes an acceptable QA/QC staff size. Establishing such criteria is not practicable due to the many combinations and variables in

structuring an organization which includes drastic fluctuations in staff size from the normal operating phase to shut down refueling, repairing, maintenance, and modification phases.

As stated in response to Question 25, during the preoperational phase and after fuel load, the NRC Region I office periodically inspects various aspects of the Operational Quality Assurance program to ensure that it is being properly implemented. Inspections are performed during normal and off-shift hours. Inherent in these inspections are evaluations of the adequacy of staffing. In general, however, the NRC is more concerned with results than with how these results are obtained. Thus, if the licensee's QA program is being adequately implemented, as determined by the periodic Region I reviews, then a conclusion would follow that staffing was adequate. If problems were identified in the implementation of the QA program, either in scope or quality, then the licensee would be required to take corrective actions, which may include an increase in staffing. Hence, the NRC concludes that the operational QA staff is initially adequate, and its continued adequacy will be monitored by Region I inspections throughout operation, both during normal hours and off-shifts.

PART IV

Q.35 What does Contention 14 state?

A.35 (Gallo) Contention 14 states:

"Suffolk County contends that the NRC Staff's Inspection and Enforcement (I&E) Program has not adequately verified that LILCO's quality assurance program for Shoreham has been implemented in accordance with the requirements of 10 CFR 50.34(a), paragraph 7, and 10 CFR 50, Appendix B, Sections I through XVIII, in that:

- (a) The I&E Program has identified only the symptoms of the Shoreham quality deficiencies as nonconformances and has not required LILCO to initiate corrective action to resolve the root causes;
- (b) The I&E Program's reliance on LILCO for primary inspections at Shoreham with NRC officials serving as auditors is not adequate because the same practice has recently proved to be inadequate in timely identifying quality deficiencies at other nuclear facilities (e.g., Browns Ferry, North Anna, Davis Besse, and Sancho Seco); and
- (c) The I&E Program has no baseline criteria against which to measure quantitatively the effectiveness of the Shoreham quality program. In order to draw conclusions from random inspections, just such a statistical base is desirable. In addition, the I&E program has no

means of determining improvements in, or the effectiveness of, corrections as no comparative measures are used.

Therefore, no general conclusions as to the adequacy of the LILCO program can be drawn by I&E."

Q.36 Does the NRC Inspection Program resolve root causes, or only identify symptoms of quality deficiencies?

A.36 (Gallo) Rather than identifying only the symptoms of quality deficiencies, the NRC Inspection Program requires that the root causes be corrected since the licensee is required to describe corrective actions taken to avoid further violations. These requirements have been discussed in response to Questions 10, 11, and 12 regarding Contention 12. The responses to Questions 13 and 17 regarding Contention 12 provide examples of the determination of root causes of deficiencies and actions taken to assure corrective actions are completed by the licensee. Therefore, it is concluded that the NRC programmatically requires corrective action to resolve root causes and for Shoreham has required LILCO to initiate corrective action to resolve root causes.

Q.37 Does the NRC Inspection Program rely on LILCO for primary inspections at Shoreham, and has this proved inadequate in timely identification of quality deficiencies at Shoreham?

A.37 (Gallo) The NRC requires the licensee and each of its contractors to have effective quality-assurance programs. For a nuclear power plant, such as Shoreham, there are many different companies working on safety-related systems. The quality assurance (QA) organization of each company could number from a few to a considerable number of QA inspectors. The licensee's QA organization must ensure, through direct observation and audits, that all contractors are meeting their obligations. The QA programs are not equally applied throughout the total plant. Rather, the more important a system or component is to safety, the more rigorous the inspection effort.

The NRC Inspection Program is aimed at determining how well this combination of QA programs, those of the licensee and contractors, is working. NRC inspections are made of the licensee and of each contractor performing safety-related work. The NRC concentrates primarily on those licensee and contractor efforts associated with systems having direct safety significance. NRC inspections include a review of each QA organization, QA procedures, review of work control procedures, observation of work in progress, and a review of the records of work accomplished. NRC also reviews the qualifications and training of the Quality Assurance personnel.

The structured quality assurance approach for the inspection of nuclear power plants has been designed to provide for multiple levels of inspection and verification by the NRC, the licensee, and licensee contractors. The inspection activity is pyramided with each level of activity verified, inspected, or audited by those above. The NRC inspection effort is essentially the apex of this pyramid of inspections and audits. It is

the last in a series of inspections performed by many different groups. The NRC examination is to determine that the licensee and contractor QA programs are properly implemented. It is not aimed at accepting "hardware" for the licensee. By this technique, a relatively small sampling inspection by the NRC can provide timely insights into the performance of the licensee and contractor QA programs in assuring the quality of the nuclear power plant.

In summary, the NRC Inspection Program relies on experienced and highly trained professionals using sound technical judgement to select suspected licensee weak areas for review.

The NRC Inspection Program at Shoreham is described in the response to Question 8 regarding Contention 12.

As described in the response to Question 15 regarding Contention 12, some violations were identified which required additional management attention. Those types of quality deficiencies are reviewed during the NRC's Systematic Assessment of Licensee Performance (SALP).

Q.38 Does the NRC Inspection Program have baseline criteria against which to measure quantitatively the effectiveness of the Shoreham quality program? Is such a baseline desirable?

A.38 (Gallo) The baseline criteria used to measure the effectiveness of the Shoreham quality program include regulatory requirements as discussed in

response to Question 10 regarding Contention 12, regulatory guides, industry standards, licensee commitments, and the technical judgement of inspectors. Baseline criteria are desirable and are available; however, sound, technical judgement is considered more significant to determining the effectiveness of a quality program, rather than a mathematical summary of positive and negative findings.

Q.39 What means does the NRC Inspection Program have of determining the effectiveness of licensee corrective actions?

A.39 (Gallo) Licensee response to NRC violations and NRC review of corrective actions is discussed in the response to Question 12 regarding Contention 12. The comparative measures used to determine acceptability of corrective actions are the baseline criteria discussed in response to Question 38.

Q.40 Can conclusions as to the adequacy of the LILCO Program be drawn by the NRC?

A.40 (Gallo) The NRC regional office can and does draw conclusions from the results of the NRC Inspection Program as to the adequacy of the LILCO program. Prior to the issuance of an operating license the regional office must transmit to the Director, Division of Licensing, Office of Nuclear Reactor Regulation, a determination that, based on NRC inspection efforts, construction and preoperational testing of Shoreham have been completed in substantial agreement with docketed commitments and regulatory requirements.

PART V

Q.41 What does Contention 15 state?

A.41 (Gallo) Contention 15 states:

"Suffolk County contends that the Shoreham quality assurance/quality control program has involved inadequate review and physical inspection to verify compliance with 10 CFR 50, Appendix B. The inability to verify full compliance with Appendix B is based on inadequacies discovered independently at Diablo Canyon, Zimmer, Midland and South Texas, and on statements by NRC Chairman Palladino. Similarly, the random, nonsystematic approach taken by NRC I&E to verify quality programs is inadequate to provide appropriate assurance of compliance. Also, the random checks being conducted by the NRC resident inspector at Shoreham indicate lapses, breakdowns, and inconsistencies that do not provide credible public assurance of an operable QA System. For example, see NRC Inspections 50-322/79-05, 80-03, 80-06, 80-08, 80-14 and 81-02. Because the NRC reports do not indicate what changes, if any, were made in procedures to correct for failures that have occurred, it is not possible to judge the adequacy of corrective actions. Finally, there are no quantitative measures used to assure that NRC I&E and LILCO audits can be correlated statistically to provide verification of the adequacy of the QA system to detect system or equipment errors or distinguish between random errors and systematic failures.

Therefore, there is no assurance that LILCO has complied with 10 CFR 50.55(e) and 10 CFR 50, Appendix B, Sections XVII and XVIII. Suffolk County contends that NRC I&E and LILCO cannot provide assurance of compliance without systematically auditing QA documentation against physically inspectable structures and components. This physical audit should be sufficiently detailed to provide statistically valid data to permit projection of the audit results to systems beyond those systems and QA records inspected."

Q.42 Does the Shoreham quality assurance/quality control program involve inadequate review and physical inspection to verify compliance with 10 CFR 50, Appendix B?

A.42 (Gallo) No. The licensee is responsible, through verifications made by the quality assurance/quality control program, to verify compliance with 10 CFR 50, Appendix B. As discussed in the response to Contention 12, the NRC has identified no pattern of quality assurance/quality control program breakdowns and therefore adequate review and physical inspection is assured.

Q.43 Do the inadequacies discovered at Diablo Canyon, Zimmer, Midland and South Texas, and the statements by NRC Chairman Palladino apply to Shoreham?

A.43 (Gallo) Although the inadequacies discovered at the aforementioned facilities have not been identified at the Shoreham facility, the NRC has taken actions relative to the quality assurance concerns discussed in the

November 19, 1981, testimony of Chairman Palladino before the Subcommittee on Energy and the Environment. A meeting was held between NRC management and LILCO on March 15, 1982, regarding the licensee's commitment to quality assurance. As a result of that meeting, LILCO, to further emphasize LILCO's commitment to quality, decided to proceed with an independent review of controls applied to the design, construction, and verification of plant systems. The independent review of a Core Spray Loop is described in LILCO letters to NRC dated April 19, 1982 and May 26, 1982.

Q.44 Briefly discuss the NRC Inspection Program.

A.44 (Gallo) The responses to Question 8 regarding Contention 12 and to Contention 14 discuss the NRC inspection program.

Q.45 Does the sampling program conducted by the NRC resident inspector indicate lapses, breakdowns, and inconsistencies that do not provide credible public assurance of an operable QA system?

A.45 (Gallo, Higgins) No. All inspections by the NRC resident inspector at Shoreham are documented in NRC, Region I, inspection reports, which are made public after issuance. These inspections have identified some violations of regulatory requirements as discussed in the portion of this testimony responding to contention 12. However, as concluded in Question 22, there is no pattern of QA/QC breakdowns at Shoreham.

Q.46 Referring to NRC inspection reports 50-322/79-05, 80-03, 80-06, 80-08, and 81-02, is it true that the reports do not indicate changes made to correct for failures?

A.46 (Higgins) No. As discussed in the response to Question 12 regarding Contention 12, this is the type of information that is included in inspection reports after violations are identified. As described in the responses to Questions 12 and 13, the information may not all appear in one report, since an identified problem may not be fully resolved in the time frame of one inspection. The final resolution of the problem would then appear in a subsequent report.

Q.47 Referring again to NRC inspection reports 50-322/79-05, 80-03, 80-06, 80-08, 80-14, and 81-02, is it true that it is not possible to judge the adequacy of corrective actions taken to address failures or violations?

A.47 (Higgins) No. All followup corrective actions are described either in the original report, where a violation is identified, or in subsequent reports. Additionally, the licensee's formal response to the violation, which details his corrective actions, is placed in both the NRC and the Local Public Document Rooms.

Q.48 Are there quantitative measures to assure that NRC and LILCO audits can be correlated statistically?

A.48 (Gallo) No. The NRC Inspection Program, as described in response to Contention 14, is independent of LILCO's audits and independently determines if the licensee and contractor QA programs are properly implemented.

Q.49 Does the NRC Inspection Program include inspections of 10 CFR 50.55(e) and 10 CFR 50, Appendix B, Criteria XVII and XVIII?

A.49 (Narrow) The NRC inspection program does include a review of corrective actions taken relative to reports submitted in accordance with 10 CFR 50.55(e). The results of NRC review of those reports are documented in routine inspection reports. Inspections of records and audits, Criteria XVII and XVIII, respectively are included among the areas reviewed during the routine inspection program.

Q.50 How can the NRC provide assurance of compliance?

A.50 (Gallo) The results of the NRC's routine inspection program, including a recent Construction Assessment Team inspection, Inspection Report 82-04, provide assurance of compliance with NRC requirements and licensee commitments. The NRC routine inspection program continues throughout the life of the facility and includes physical inspection of operations, structures and components; thus providing continuing assurance of compliance.

PROFESSIONAL QUALIFICATIONS

OF

ROBERT M. GALLO

I am Chief, Reactor Projects Section 1A, Projects Branch Number 1, Division of Project and Resident Programs, Region I, United States Nuclear Regulatory Commission. I am responsible for supervision of regional and resident inspectors whose jobs are to inspect construction, start-up, and operation of certain nuclear power plants in Region I. I have held this position since February 1981.

I received a Bachelor of Science Degree from Villanova University in 1966. The major curriculum area was mathematics.

Prior Work History

- 1980-1981 Senior Resident Inspector, Reactor Operations and Nuclear Support Branch - Susquehanna Steam Electric Station -
Responsible to Chief, Reactor Projects Section #2 for conduct of preoperational testing inspection program and supervision of a Resident Inspector.
- 1978-1980 Resident Inspector - Reactor Construction and Engineering Support Branch (RC&ES) - Susquehanna Steam Electric Station -
Responsible to Chief, Project Section, for conduct of the construction inspection program.
- 1975-1978 Reactor Inspector, RC&ES Branch - Responsible to Chief, Projects Section, for conduct of inspection program at several Region I facilities including Susquehanna, Salem 1 & 2, Millstone 3, Forked River and Jamesport.
- 1973-1975 Operations Officer/Navigator Nuclear Submarine - Responsible to Commanding Officer for safe operation and navigation of nuclear submarine. Included overall planning of ship movements and submarine overhaul.
- 1971-1973 Instructor, U.S. Naval Nuclear Power School - Directed staff of 10 officers who instructed and examined nuclear program candidates in chemistry, materials and radiological fundamentals. Qualified as Engineer Officer of Naval Nuclear Power Plant.
- 1966-1971 Naval Officer - Served on two nuclear submarines in Engineering and Weapons Department. Completed Nuclear Program and Submarine Training.

PROFESSIONAL QUALIFICATIONS

OF

JAMES C. HIGGINS

REGION I

UNITED STATES NUCLEAR REGULATORY COMMISSION

I am the Senior Resident Inspector at the Shoreham Nuclear Power Station, Shoreham, New York. In this position, I perform inspections and investigations and coordinate NRC activities at the site. I have held this position since October 1979.

I received a Bachelor of Science Degree from the United States Naval Academy in 1969. The base curriculum was Naval Engineering, and I also received a double major in Mathematics. In 1970, I received a Master of Science with a major in Mathematics from the United States Naval Postgraduate School. I, then, completed one year of Naval Nuclear Propulsion Training in 1971.

Prior Work History

- 1979 U. S. Nuclear Regulatory Commission, Region I, King of Prussia, Pennsylvania, Reactor Inspector. Project Inspector for safety-related activities at preoperational and operating reactor plants.
- 1976-1979 U. S. Nuclear Regulatory Commission, Region I, Reactor Inspector. Specialist inspector of preoperational and operating reactor plants. Served as the lead inspector in the areas containment testing, pipe supports, refueling, and inservice testing of pumps and valves.
- 1975-1976 U. S. Navy, USS Billfish (SSN-676), Department Head, Weapons Officer. Responsible for all weapons systems and related personnel aboard this fast attack nuclear-powered submarine.
- 1973-1975 U. S. Navy, U. S. Naval Nuclear Power School, Bainbridge, Maryland, Division Director and Instructor. Taught courses in reactor plant systems and electrical theory and supervised a division of about ten instructors.
- 1971-1973 U. S. Navy, USS Nathan Hale (SSBN-623), Division Officer. Served as Reactor Controls Officer, Electrical Officer, Sonar Officer, and Damage Control Assistant; responsible for corresponding reactor plant equipment and engineering department personnel.

PROFESSIONAL QUALIFICATIONS

of

LEWIS NARROW

I am a Project Inspector in Projects Branch No. 2 of the Division of Project and Resident Programs in the Region I Office of the Nuclear Regulatory Commission.

I have a Bachelor of Science Degree in Civil Engineering from Pennsylvania State University and am a Registered Professional Engineer in the Commonwealth of Pennsylvania.

I joined the Nuclear Regulatory Commission, formerly Atomic Energy Commission, in July 1973. My duties have included assignments as Project Inspector on construction of seven power reactors in Region I.

My prior experience includes 18 years (1955 - 1973) with AMF, Inc., as Project Manager, Section Manager, and Department Manager on design and construction of nuclear reactors, and as Manager of Product Development for the York Division; three years (1950 - 1953) with the Atomic Energy Division, Idaho Operations Office, as Project Engineer on construction of the Materials Testing Reactor; and two years (1948 - 1950) with General Electric Company as Senior Construction Engineer on reactor construction at Hanford, Washington.

PROFESSIONAL QUALIFICATIONS

of

GEORGE W. RIVENBARK

I am a Senior Management Systems Engineer in the Licensee Qualifications Branch of the Division of Human Factors Safety, Office of Nuclear Reactor Regulation, U. S. Nuclear Regulatory Commission. In this position, I review and evaluate license applications to determine acceptability of the operating organization, plant staffing patterns and overall utility management structure. I joined the Regulatory Staff of the U. S. Atomic Energy Commission in August 1980 and have been in my present position since the Licensee Qualifications Branch was initially formed in May 1980. In this position, I have participated in management reviews of utilities proposing to operate the Farley Unit 2, LaSalle, Zimmer and Shoreham nuclear plants. I also participated in similar reviews that were conducted for the Zion and Indian Point Unit 2 nuclear plants.

I attended Cardon Newman College in Jefferson City, Tennessee; Georgia Institute of Technology in Atlanta, Georgia; and North Carolina State University in Raleigh, North Carolina, receiving a Bachelor of Mechanical Engineering degree in 1948 and a Master of Science degree in Nuclear Engineering in 1956 from the latter. I am a registered professional engineer (nuclear) in the State of California.

- 2/80-5/80 Senior Project Manager. Served as a Project Manager in the Division of Operating Reactors. Was responsible for managing NRC licensing activities associated with the Oconee Nuclear Station.
- 10/77-2/80 Assistant to the Office Director and Chief of the Program Support Branch in the Office of Standards Development (SD), U. S. NRC. Assisted and represented the SD Office Director on special administrative and technical assignments and managed an administrative support function for SD. During the period from May 1979 through December 1979, I served as a member of the NRC Special Inquiry Group investigating the Three Mile Island accident.
- 9/75-10/77 Senior Nuclear Engineer, U. S. NRC. Served as the senior technical member of the Program Support Branch, Office of Standards Development. Provided staff support for coordinating SD activities involving program planning control and evaluation and managed NRC staff participation in the IAEA Nuclear Safety Standards Program.
- 8/70-9/75 Licensing Project Manager, U. S. NRC/AEC. Served as Licensing Project Manager for the construction permit review of the Aquirre Nuclear Power Plant in Puerto Rico, for the operating

- license review of the Calvert Cliffs Nuclear Power Plant in Maryland and for the preliminary design approval review of the Combustion Engineering System 80 standard plant design.
- 8/69-8/70 Consulting Staff Engineer, Combustion Engineer, Inc. Coordinated a company project directed at developing passive safety systems for nuclear power plants. Coordinated combustion engineering's safety and licensing activities for the Fort Calhoun Nuclear Power Plant that is located in Nebraska.
- 2/66-8/79 Project Engineer and Program Manager, Advanced Nuclear Systems Operation, General Electric Company. Directed General Electric's nuclear safety work for the use of the SNAP 27 radioisotope powered thermoelectric generator on the APOLLO space/lunar mission. Participated in several space nuclear power studies and hardware development tasks.
- 7/61-2/66 Project Engineer, Atomics International. Managed the design and development of a prototype of a SNAP 8 space nuclear reactor and its associated test systems for ground testing under simulated space conditions.
- 7/58-7/61 Staff Engineer, General Nuclear Engineering Corp. Served as a group leader responsible for testing fuel designs for a gas cooled reactor project. Conducted heat transfer experiments and analyses. Made economic evaluation of gas cooled reactor designs. Performed literature reviews on nuclear power technology.
- 5/56-7/58 Development Engineer - Oak Ridge National Laboratory. Served as shift supervisor for testing, startup, and operation of the Aqueous Homogeneous Reactor Test (HRT). Performed some of the shielding and activation analyses. Wrote, performed, and analyzed some of experiments designed to prove the reactor and its systems. Assisted in writing the operations manual and training personnel to operate the HRT.
- 1954-1956 Graduate Student at N. C. State University.
- 1948-1954 Mechanical Engineer, Creole Petroleum Corporation. Worked as mechanical engineer in the production, refining, and marketing department in Venezuela, S. A. Responsible for design, construction, and maintenance of a wide variety of oil piping, pumping, storage, refining, and associated facilities.

QUALIFICATIONS AND EXPERIENCE

OF

JOHN WILLIAM GILRAY

Present Position: Title: Principal Quality Assurance Engineer (Nuclear)

Responsibilities: Participates as a senior member of the Office of Nuclear Reactor Regulation - Quality Assurance Branch staff whose function is primarily one of evaluating, from a safety standpoint, reactor construction and operating proposals with response to quality assurance and/or technical specifications.

6/63 - 6/72 Title: Quality Control Engineer for the AEC Space Nuclear Propulsion Office.

Responsibilities: As the SNPO-C on-site Quality Control Engineer in the prime contractor's plant, is responsible for monitoring the contractor's quality control program and providing technical direction relative to the testing, inspection, and adherence to aerospace-rated quality control procedures for the development of the nuclear rocket engine (NERVA). Directs inspection personnel of the Air Force Plant Representative's office assigned to NERVA program relative to day-to-day inspections and quality surveys.

8/62 - 6/63 Title: Quality Control Engineer for Bourn's, Inc. (Electronic Component Co.)

Responsibilities: Responsible for the Quality Control and Reliability policies and activities in the manufacturing and inspection of potentiometers and relays used in the Aerospace industry. Evaluates the design and inspection processes for adequate quality and reliability requirements.

1/59 - 8/62 Title: Quality Control Engineer at Alco Products, Inc. (Fabricator of Nuclear Components).

Responsibilities: Responsible for establishing and assuring proper implementation of Quality Control and Quality Assurance requirements for nuclear components from the design, purchasing, and manufacturing phases thru the shipment of the components of the Navy Nuclear Shipyards.

Schooling: Graduate in BSME 1958

Courses: Optical Tooling Engineering
Radiography and Film Reading

Societies: Society of Non-Destructive Testing
American Society of Quality Control

PE: Registered Professional Quality Engineer



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

Docket No. 50-322

MAY 4 1979

Long Island Lighting Company
ATTN: Mr. Andrew W. Wofford
Vice President
175 East Old Country Road
Hicksville, New York 11801

Gentlemen:

Subject: Inspection 50-322/79-05

This refers to the inspection conducted by Mr. G. Napuda of this office on March 27-30, 1979 at Shoreham Nuclear Power Station, Shoreham, New York of activities authorized by NRC License No. CPPR-95 and to the discussions of our findings held by Mr. Napuda with Messrs. T. Gerecke, L. Lewin, J. Rivello, and other members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the Office of Inspection and Enforcement Inspection Report which is enclosed with this letter. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

Based on the results of this inspection, it appears that one of your activities was not conducted in full compliance with NRC requirements, as set forth in the Notice of Violation, enclosed herewith as Appendix A. This item of noncompliance has been categorized into the levels as described in our correspondence to you dated December 31, 1974. This notice is sent to you pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Section 2.201 requires you to submit to this office, within twenty (20) days of your receipt of this notice, a written statement or explanation in reply including: (1) corrective steps which have been taken by you and the results achieved; (2) corrective steps which will be taken to avoid further items of noncompliance; and (3) the date when full compliance will be achieved.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosures will be placed in the NRC's Public Document Room. If this report contains any information that you (or your contractor) believe to be proprietary, it is necessary that you make a written application

7909190068

Long Island Lighting Company

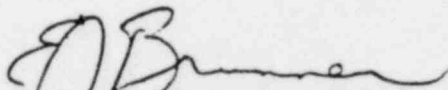
2

MAY 4 1979

within 20 days to this office to withhold such information from public disclosure. Any such application must be accompanied by an affidavit executed by the owner of the information, which identifies the document or part sought to be withheld, and which contains a statement of reasons which addresses with specificity the items which will be considered by the Commission as listed in subparagraph (b) (4) of Section 2.790. The information sought to be withheld shall be incorporated as far as possible into a separate part of the affidavit. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,



Eldon J. Brunner, Chief
Reactor Operations and Nuclear
Support Branch

Enclosures:

1. Appendix A, Notice of Violation
2. Office of Inspection and Enforcement Inspection
Report Number 50-322/79-05

cc w/encls:

J. P. Novarro, Project Manager
Edward M. Barrett, Esquire
Edward J. Walsh, Esquire
T. F. Gerecke, Manager, Engineering
QA Department

bcc w/encls:

IE Mail & Files (For Appropriate Distribution)
Central Files
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
Technical Information Center (TIC)
Region IV, Director (Report Only)
REG:I Reading Room
State of New York

APPENDIX A
NOTICE OF VIOLATION

Long Island Lighting Company

Docket No. 50-322

Based on the results of an NRC inspection conducted at the Shoreham Nuclear Station on March 27-30, 1979, it appears that one of your activities was not conducted in full compliance with the conditions of your NRC Facility License No. CPPR-95. This item is a deficiency.

10 CFR 50, Appendix B, Criterion V, states, in part, "Activities affecting quality shall be prescribed by documented... procedures... appropriate to the circumstances and shall be accomplished in accordance with these... procedures..." FSAR Section 17.1.6A states, in part, "The LILCO EQA Program provides for the control of documents... The program requires that procedures be established and implemented to control... documents such as the following: 1) Quality assurance manuals, procedures, and instructions..." Procedure EQAP 5.1, Paragraph 4.6, states, in part, "The Quality Program Division Manager shall annually have effective EQAP's, EQAI's, and the associated Change Notices reviewed, corrected, and updated as indicated by the review."

Contrary to the above, as of March 30, 1979, the following Engineering Quality Assurance Procedures (EQAP's) had not been updated though their respective Change Notices were in effect in excess of a calendar year.

- EQAP 2.3, Revision 2, Change Notice (CN) No. 1, dated April 15, 1977.
- EQAP 2.8, Revision 0, CN No. 1, Dated April 15, 1977.
- EQAP 3.3, Revision 2, CN No. 1, dated March 10, 1978.
- EQAP 4.1, Revision 3, CN No. 1, dated April 18, 1977.
- EQAP 15.2, Revision 3, CN No. 1, dated July 18, 1977.
- EQAP 16.1, Revision 3, CN No. 1, dated January 3, 1977.

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-322/79-05Docket No. 50-322License No. CPPR-95Priority --Category ALicensee: Long Island Lighting Company175 East Old Country RoadHicksville, New York 11801Facility Name: Shoreham Nuclear StationInspection at: Shoreham, New YorkInspection conducted: March 27-30, 1979Inspectors: G. Napuda
G. Napuda, Reactor Inspector4/30/79
date signedL. E. Briggs
L. E. Briggs, Reactor Inspector4/30/79
date signedR. S. Markowski
R. S. Markowski, Reactor Inspector4/30/79
date signedApproved by: H. B. Kister
H. B. Kister, Chief, Nuclear Support Section
No. 2, RO&NS Branch5/3/79
date signedInspection Summary:Inspection on March 27-30, 1979 (Report No. 50-322/79-05)

Areas Inspected: Routine, unannounced inspection by regional based inspectors of Pre-Operational Program in the areas of: QA/QC Program; document control; records; quality verification program; and, licensee action on previous inspection findings. The inspection involved 78 inspector-hours onsite by three regional based NRC inspectors.

Results: Of the five areas inspected, no items of noncompliance were identified in four areas and one item of noncompliance was identified in one area (Deficiency - QA procedures were not updated in accordance with established requirements, Paragraph 4.e.(1)).

7909190077

The licensee stated that this area would be reviewed and appropriate action taken.

Pending review of the licensee's action by RI during a subsequent inspection, this item is unresolved (322/79-05-01).

c. Implementation

The inspector selected several controlled manuals (e.g., Startup, EQA, OQA, EQAP, etc.) to determine that they were being controlled, reviewed and updated as required by the procedures referenced in subparagraph a above.

The inspector identified one apparent item of noncompliance and an unresolved item that are discussed below.

- (1) EQAP 5.1, Paragraph 4.6 states, in part, "The Quality Program Division Manager shall annually have effective EQAP's, EQAI's, and associated Change Notices reviewed, corrected, and updated as indicated by the review."

The inspector identified that the following procedures had not been updated though their respective Change Notices were in effect for over one calendar year. The procedures and Change Notices are:

- EQAP 2.3, Change Notice (CN) #1, dated April 15, 1977
- EQAP 2.8, CN #1, dated April 15, 1977
- EQAP 3.3, CN #1, dated March 10, 1978
- EQAP 4.1, CN #1, dated April 18, 1977
- EQAP 15.2, CN #1, dated July 18, 1977
- EQAP 16.1, CN #1, dated January 3, 1977

The inspector noted that the status of the procedures could be readily determined since the Change Notices were filed in front of the affected procedures and the current index indicated what procedures were affected by outstanding CN's.

The inspector informed the licensee that the failure to update the listed procedures was contrary to 10 CFR 50, Appendix B, Criterion V; FSAR Section 17.1.6A; Procedure EQAP 5.1; and constituted a deficiency level item of non-compliance (322/79-05-02).

- (2) The inspector determined that the Startup Manual did not reflect the recent reorganization that affected the Engineering and Operations Quality Assurance groups and that the impending FSAR revision submittal may further affect the manual.

The licensee stated that this area would be reviewed and appropriate revisions to the manual would be accomplished. Pending review of the licensee's action(s) by RI during a subsequent inspection(s), this item is unresolved (322/79-05-03).

5. Records

a. References

- FSAR Chapter 17.1.17A, Quality Assurance Records, Revision 6
- Engineering Quality Assurance (EQA) Manual Section 17, Quality Assurance Records, Revision 4
- Startup Manual (SUM) Section 4.7, Records Management, Revision 8
- Operations Quality Assurance (OQA) Manual Section 17, Quality Assurance Records, Revision 0
- EQA Procedure (EQAP) 17.1, Engineering Quality Assurance Office File System, Revision 3
- EQAP 17.2, Engineering Quality Assurance Records Shoreham Permant Plant Files, Revision 1
- QAP-S-17.1, Station OQA Records, Revision 1
- QAP-S-17.2, Station OQA Use of the Permanent Plant File System, Revision 1



LONG ISLAND LIGHTING COMPANY

175 EAST OLD COUNTRY ROAD · HICKSVILLE, NEW YORK 11801

ANDREW W. WOFFORD
VICE PRESIDENT

SNRC 393
May 24, 1979

Mr. Eldon J. Brunner, Chief
Reactor Operations and Nuclear Support Branch
U. S. Nuclear Regulatory Commission, Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

NRC Inspection No. 79-05
Shoreham Nuclear Power Station - Unit No. 1
Docket No. 50-322

Dear Mr. Brunner:

This letter responds to your letter of May 4, 1979, which forwarded the report of the inspection of activities authorized by NRC License No. CPPR-95, conducted by Mr. Napuda of your office on March 27-30, 1979. The letter stated that it appeared that one of our activities was not conducted in full compliance with NRC requirements. The apparent noncompliance and our response follow:

Apparent Noncompliance with 10CFR50, Appendix B, Criterion V, FSAR Section 17.1.6A and EQAP 5.1

Contrary to the above, as of March 30, 1979, a number of Engineering Quality Assurance Procedures (EQAP's) had not been updated though their respective Change Notices were in effect in excess of a calendar year.

Corrective Action and Results

All Engineering Quality Assurance Procedures (EQAP's) are being reviewed, revised and reissued as Quality Assurance Procedures (QAP's) to reflect the changes mandated by a recent change in the LILCO organization for Quality Assurance. Applicable Change Notices are being reviewed with each Procedure and will be incorporated into the Procedure or cancelled, as appropriate, during the review

7909190065

Mr. Eldon J. Brunner
May 24, 1979
Page Two

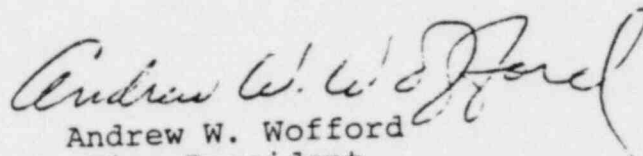
Steps Taken to Prevent Recurrence

The revised QAP 5.1, Quality Assurance Procedures, Instructions, Memoranda and Change Notices, will require that all effective Change Notices be reviewed annually with the applicable QAP and incorporated into the Procedure or canceled, as appropriate, at that time.

Date Full Compliance Will Be Achieved

Full compliance will be achieved by July 31, 1979.

Very truly yours,


Andrew W. Wofford
Vice President

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-322/80-06

Docket No. 50-322

License No. CPPR-95 Priority -- Category B

Licensee: Long Island Lighting Company

175 East Old Country Road

Hicksville, New York 11801

Facility Name: Shoreham Nuclear Power Station, Unit 1

Inspection at: Shoreham, New York

Inspection conducted: March 24 - April 27, 1980

Inspectors: J. C. Higgins

J. C. Higgins, Resident Inspector

H. H. Nicholas
H. H. Nicholas, Reactor Inspector

5/9/80
date signed

5/13/80
date signed

date signed

Approved by: H. B. Kister

H. B. Kister, Chief, Reactor Projects Section
No. 4, RO&NS Branch

5/14/80
date signed

Inspection Summary:

Inspections on: March 24 - April 27, 1980 (Inspection Report No. 50-322/80-06)

Areas Inspected: Routine onsite regular and backshift inspections by the resident inspector (82 inspection hours) and a region-based inspector (30 inspection hours) of work activities, preoperational testing and plant staff activities including: tours of the facility; review of test program; review of procedures; comparison of as-built plant to FSAR descriptions; and, followup on previous inspection findings.

Results: No items of noncompliance were identified.

8006300060

(Open) Unresolved Item (322/80-02-03): Environmental Qualifications of RTD's: All steam tunnel conduits are designed to be sealed and moisture tight, from the component served, to the sleeve where they exit the steam tunnel area. The moisture barrier is provided by proper fittings, sleeves, gasketed junction boxes, etc. The inspector questioned the type of QC inspections performed to verify the required moisture tightness and accompanied a Field Quality Control (FQC) Inspector on several final acceptance inspections for Category I conduit installations in the Drywell and in the Reactor Building. The inspector noted that the Quality Control Instruction (QCI) No. FSI-F12.1-080, "Inspection of Raceway (Conduit) Installation" did not check the tightness of connections or that good and proper workmanship prevailed as specified in Regulatory Guide 1.30 and ANSI N45.2.4-1972. The licensee's representative stated that those attributes had been checked in the past but that the QCI would be revised to specify such checks. The inspector also questioned the sealing of the ends of open conduits in wet areas. The licensee's representative stated that this would be required, but that a program to seal and inspect these had not been established yet. This item remains open.

(Open) Unresolved Item (322/80-04-03): CRAC System Design Items: The inspector noted that some of the same items applied to the RBSVS System also. Due to the number of undocumented deviations between the as-built systems and commitments in the FSAR and R.G. 1.52 the inspector stated that a review of the as-built CRAC and RBSVS systems against their design requirements appeared appropriate. The licensee's representative acknowledged this comment. This item remains open.

b. Items Closed

(Closed) Noncompliance (322/79-05-02): EQAP's not updated to incorporate change notices: The inspector reviewed the licensee's response to the noncompliance dated 5/24/79 and followup actions as described below. All EQAP's have been reviewed and reissued as QAP's (Quality Assurance Procedures) with their associated change notices incorporated or cancelled, as appropriate.

The revised QAP-5.1 calls for an annual review of procedures, which will be documented and which will incorporate or cancel any change notices in effect. The inspector further reviewed the EQAP's and change notices identified in the noncompliance to determine the potential for procedural errors caused by the change notices not having been incorporated. In all cases the changes to the EQAP's were clearly identified in the change notices, which were attached to the pertinent EQAP. Additionally, the changes were of a type that offered little potential for misuse, e.g. adding flexibility, administrative changes and clarifying requirements. This item is considered closed.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
431 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

Attachment 2.a

JAN 21 1980

Docket No. 50-322

Long Island Lighting Company
ATTN: Mr. Andrew W. Wofford
Vice President
175 East Old Country Road
Hicksville, NY 11801

Gentlemen:

Subject: Inspection 50-322/79-16

This refers to the inspection conducted by Mr. J. C. Higgins of this office on October 1 - November 6, 1979 at Shoreham Nuclear Power Station, Shoreham, New York of activities authorized by NRC License No. CPPR-95 and to the discussions of our findings held by Mr. Higgins with Mr. Gerecke and other members of your staff periodically during the inspection.

Areas examined during this inspection are described in the Office of Inspection and Enforcement Inspection Report which is enclosed with this letter. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

Based on the results of this inspection, it appears that one of your activities was not conducted in full compliance with NRC requirements, as set forth in the Notice of Violation, enclosed herewith as Appendix A. This item of noncompliance has been categorized into the levels as described in our correspondence to you dated December 31, 1974. This notice is sent to you pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Section 2.201 requires you to submit to this office, within twenty (20) days of your receipt of this notice, a written statement or explanation in reply including: (1) corrective steps which have been taken by you and the results achieved; (2) corrective steps which will be taken to avoid further items of noncompliance; and (3) the date when full compliance will be achieved.

The noncompliance shown in the Notice of Violation enclosed with this letter, is a recurrent or uncorrected item. In your response please give this matter your particular attention.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosures will be placed in the NRC's Public Document Room. If this report contains any information that you (or your contractor) believe to be proprietary, it is necessary that you make a written application within 20 days to this office to withhold such information from public disclosure. Any such application must be accompanied

800407020

Long Island Lighting Company

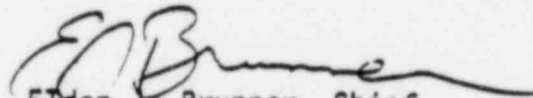
2

JAN 21 1980

by an affidavit executed by the owner of the information, which identifies the document or part sought to be withheld, and which contains a statement of reasons which addresses with specificity the items which will be considered by the Commission as listed in subparagraph (b) (4) of Section 2.790. The information sought to be withheld shall be incorporated as far as possible into a separate part of the affidavit. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,



E. J. Brunner, Chief
Reactor Operations and Nuclear
Support Branch

Enclosures:

1. Appendix A, Notice of Violation
2. Office of Inspection and Enforcement Inspection
Report Number 50-322/79-16

cc w/encls:

J. P. Novarro, Project Manager
Edward M. Barrett, Esq.
Edward J. Walsh, Esq.
T. F. Gerecke, Manager, Engineering
QA Department

bcc w/encls:

IE Mail & Files (For Appropriate Distribution)
Central Files
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
Technical Information Center (TIC)
REG:I Reading Room
State of New York
James C. Higgins, Resident Inspector
L. Narrow, RC&ES Branch

APPENDIX A

NOTICE OF VIOLATION

Long Island Lighting Company

Docket No. 50-322

This refers to the inspection conducted by a representative of the Region I (Philadelphia) office at the Shoreham Nuclear Power Station, Shoreham, New York, of activities authorized by NRC Construction Permit No. CPPR-95.

During this inspection, conducted on October 1-31, 1979, the following apparent item of noncompliance was identified. This item is an infraction.

10 CFR 50, Appendix B, Criterion II, states, in part, that: "...Activities affecting quality shall be accomplished under suitably controlled conditions. Controlled conditions include... suitable environmental conditions for accomplishing the activity, such as adequate cleanness..."

The Shoreham FSAR, Appendix 3B, Paragraph 3B-1.38 states, in part, that: "S&W is complying with ANSI N45.2.2-1972, for receiving, storing, and handling of safety related components..."

1. ANSI N45.2.2-1972, Paragraph 2.4, states, in part, that: "Those personnel who perform inspection, examination or testing activities at the job site shall be qualified in accordance with N45.2.6." Paragraph 6.4.1 states, in part, that: "Inspections and examinations shall be performed and documented on a periodic basis...". Further, implementing procedure CSI 4.6, Paragraph 6.4.1, states in part, "The designated UNICO department shall periodically inspect and maintain equipment in storage".
2. ANSI N45.2.2-1972, Paragraph 6.6, states, in part, that: "Written records shall be prepared that include... storage location..."
3. ANSI N45.2.2-1972, Paragraph 6.4.1, states, in part, that: "Inspections and examinations shall be performed and documented on a periodic basis to assure that the integrity of the item... is being maintained... The characteristics verified during this inspection or examination shall include... cleanness."
4. ANSI N45.2.2-1972, Paragraph 6.4.2(1), states, in part, that: "Items in storage shall have all covers, caps, plugs or other closures intact... Covers removed for internal access to any time for any reason shall be immediately replaced and resealed after completion of the purpose for removal."
5. ANSI N45.2.2-1972, Paragraph 6.4.2(5), states: "Space heaters enclosed in electrical items shall be energized."

Contrary to the above, activities affecting quality were not accomplished under suitably controlled conditions in that:

1. As of October 31, 1979 periodic inspections by personnel qualified in accordance with ANSI N45.2.6 were not performed to ensure the control of items in storage as required by ANSI N45.2.2.
2. No mechanism exists to update the Equipment Storage History Cards at the time when equipment changes location either in the warehouse or from the warehouse to a permanent inplant location.
3. Periodic cleanness checks are not specified for many of the components stored in the plant (e.g., Standby Liquid Control Pumps and Motors, Core Spray Motors, and Residual Heat Removal Pumps and Motors). Additionally, as noted on inspections conducted between October 3 and October 11, 1979, many components were not maintained with adequate cleanness.
4. Caps, covers or plugs were noted to have been removed and not immediately replaced on several Category I components during inspections conducted between October 3 and October 26, 1979.
5. The space heaters in panels 1H21*PNL10 and 1H21*PNL 26 were found to be de-energized on October 16, 1979.

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-322/79-16Docket No. 50-322License No. CPPR-95 Priority -- Category BLicensee: Long Island Lighting Company175 East Old Country RoadHicksville, New York 11801Facility Name: Shoreham Nuclear Power Station, Unit 1Inspection at: Shoreham, New YorkInspection conducted: October 1 - November 6, 1979Inspectors: R.S. Maczkowski for
J. C. Higgins, Resident Inspector12/11/79
date signed

_____ date signed

_____ date signed

Approved by: R.S. Maczkowski for
H. B. Kister, Chief, Reactor Projects Section
No. 4, RO&NS Branch12/11/79
date signedInspection Summary:Inspection on October 1 - November 6, 1979 (Report No. 50-322/79-16)

Areas Inspected: Routine onsite regular and backshift inspections by the resident inspector (66 inspector-hours) of work activities and preoperational testing including: tours of the facility; quality assurance; fire protection; equipment storage and maintenance; housekeeping; test procedure review; followup on Part 21 reports; and, review of previously identified inspection items.

Results: Of the 8 areas inspected, no items of noncompliance were identified in 7 areas and one apparent item of noncompliance was identified in the remaining area (Infraction - failure to provide suitably controlled conditions for activities affecting quality, Paragraph 4).

8 004070123

- Instrumentation. Adequate protection for installed instrumentation.
- Logs. Completeness of logs maintained.
- Security. Adequate site construction security.
- Prohibited Items. Observations to verify no prohibited items were in use on site; e.g., smoking in restricted areas or alcoholic beverages on site.

With the exception of the items in Paragraph 4 below, no items of noncompliance were identified.

4. Equipment Storage and Protection

a. General

The inspector reviewed the following documents related to the licensee's program for equipment storage and protection:

- ANSI N45.2.2-1972, "Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants."
- CSI 4.6, "Storage of Permanent Plant Equipment," Revision 5.
- CSI 13.1, "Housekeeping," Revision 6.
- Appendix 4A to Startup Manual, letter from J. Taylor dated September 26, 1978, describing use of Interim Operating Instructions (IOI's).
- Various QA/QC audits and surveillances relating to equipment storage and protection.
- Various Equipment Storage History Cards and Interim Operating Instructions.

The inspector toured accessible areas of the facility, interviewed personnel associated with the program and reviewed inspection results and corrective actions taken as a result of identified discrepancies.

Various areas of the program which were reviewed for adequacy include: program scope, procedures and instructions, use of proper tools and equipment, proper marking of components, warehouse receiving and storage, disposition of nonconforming items, inspections of equipment, temporary heating and other environmental protections, records, QC

surveillance, QA audits, and continuity of program as equipment changes location and jurisdiction from construction to startup to operations. With the exception of the below item, the inspector had no further questions at this time.

b. Personnel Qualification and Identification

Paragraph 2.4 of ANSI N45.2.2 requires that personnel performing inspections be qualified in accordance with ANSI N45.2.6, while Paragraph 6.4.1 requires that inspections of equipment be performed on a periodic basis. Paragraph 4.2 of implementing procedure CSI 4.6 states that "The designated UNICO department shall periodically inspect and maintain equipment in storage". The inspector noted that: control of items in storage discussed in paragraph 6.4 of ANSI N45.2.2 is performed in accordance with equipment storage history cards (SHC's) by S&W construction personnel, who are not qualified per N45.2.6; and, some random inspections of equipment were performed by S&W Field QC personnel, who are qualified to N45.2.6, but this is done without the benefit or guidance of appropriate instructions which address valid sampling plans, etc. The inspector stated that this approach fails to provide planned and systematic actions by personnel qualified in accordance with ANSI N45.2.6 to ensure that the requirements of ANSI N45.2.2 are filled with respect to stored equipment. This is an example of an item of noncompliance (322/79-16-01).

Paragraph 2.3 of N45.2.2 requires that the identity of inspectors be documented. The inspector noted that the identity of operators installing the daily and weekly surveillances called out by equipment IOI's was not clear. The licensee generated a formal list of all operations department personnel with signatures and initials, which provides a clear identification of each operator.

c. Storage Location

Paragraph 6.6 of N45.2.2 requires that records include the storage location. The inspector noted that the licensee's program has no formal mechanism for documenting location changes either in the warehouse or from the warehouse to a permanent inplant location. As an example, on October 4, 1979, valves 1B21*A0V081A and B were not on rack D23 of the warehouse as specified on the SHC's. This is another example of noncompliance (322/79-16-01).

d. Cleanness

Paragraph 6.4.1 of N45.2.2 requires that periodic inspections be performed and documented to assure, among other characteristics, adequate cleanness. The periodic inspections performed per the SHC's do not specify a cleanness check. Furthermore, the inspector noted on tours conducted between October 3 and October 11, 1979, that many Category I components were not maintained with adequate cleanness. Discrepancies noted included accumulations of dust, dirt, grease,

trash, and broken glass. Some of the affected components were: Standby Liquid Control Pumps and Motors, High Pressure Coolant Injection Pump and Turbine, Reactor Core Isolation Cooling Pump and Turbine, and the Battery Room. This is an example of noncompliance (322/79-16-01).

The inspector also noted cleanliness discrepancies on Category 2 and 3 equipment including the Control Rod Drive Pumps and Condensate Booster Pumps. The licensee's representative acknowledged these comments.

e. Equipment Openings

Paragraph 6.4.2(1) of N45.2.2 requires that all covers, caps, plugs or other closures removed for internal access for any reason be immediately replaced after completion of the purpose for removal. During tours conducted throughout the inspection, the inspector noted that covers were removed and not immediately replaced on various pieces of Category I equipment; including: the Standby Liquid Control Pumps, Reactor Core Isolation Cooling Pump equipment, 2 valves in the warehouse, Category I instruments in panels 1H21*PNL018 and 021, and the three diesel engine air start compressors. This is an example of noncompliance (322/79-16-01).

The inspector also noted openings uncapped on various Category II and III components, including: Reactor Feed Pump Turbine, Condensate Booster Pumps, and Control Rod Drive Pumps.

f. Space Heaters

Paragraph 6.4.2(5) of N45.2.2 requires that space heaters enclosed in electrical items be energized. The inspector noted that licensee appeared to have a very effective program for maintaining temporary heat on electric motors and generators, which included daily surveillance checks of each component. During a tour of instrument panels on October 16, 1979, the inspector noted that Panels 1H21*PNL10 and 26 had their space heaters de-energized. This is an item of noncompliance (322/79-16-01).

g. Tapes and Adhesives

Paragraph A3.5.2(3) of N45.2.2 recommends that tapes used for closures and coverings be brightly colored to preclude their loss into a system. The inspector noted that tapes in use were not brightly colored. The licensee acknowledged this and stated that this aspect of equipment protection would be reviewed. This is designated as inspector follow item (322/79-16-02).

h. Performance of Inspections

The inspector noted that no periodic inspections of the Category 2 condensate booster pumps had been performed since their turnover from construction to startup over a year ago. The licensee's representative stated that this area would be reviewed for adequacy.

5. Fire Stops

The inspector reviewed FSAR Section 9.5.1, Fire Protection System, and Shoreham Specification SH1-459, "Cable and Mechanical Penetration Fire Stops and Seals." This specification details the fire stops to be installed in floors, walls and ceilings of fire barrier walls to ensure the fire barrier is maintained. All walls and barriers must have a minimum three hour fire resistance rating. During plant tours, the inspector observed temporary fire stops installed in the turbine lube room floor penetrations for use while conducting lube oil system flushes. The inspector also noted that the normal fire protection system and temporary fire extinguishers were available in the lube oil flush areas. With the exception of the below item, the inspector had no further questions in this area.

Paragraph 9.5.1.1.2.d of the Shoreham FSAR states that the wall between the auxiliary and reactor recirculating pump motor MG set room is a three hour resistance fire barrier. Specification SH1-459, however, does not include this wall as one to be sealed with fire stops at all penetrations. The licensee's representative stated that the specification would be revised to include the wall and that the specification would be reviewed to ensure that all other applicable requirements are included. This item is unresolved and is designated item no. (322/79-16-03), pending review and revision of Specification SH1-459.

6. Part 21 Report

In a report to the NRC dated October 19, 1979, the Fair Company reported that leak testing of their carbon cells supplied to various nuclear power plants had been invalidated by faulty test equipment. Several of these cells had been supplied to Shoreham NPS for use in various ventilation system filter banks. The licensee is planning to leak test all carbon cells in the plant after installation per the requirements of Specification SH1-105. This will establish the leak tight integrity of both the cells and the entire cell banks.

The inspector had no further questions in this area at this time.



LONG ISLAND LIGHTING COMPANY

175 EAST OLD COUNTRY ROAD · HICKSVILLE, NEW YORK 11801

ANDREW W. WOFFORD
VICE PRESIDENT

SNRC-464

February 21, 1980

Mr. Eldon J. Brunner, Chief
Reactor Operations and Nuclear Support Branch
U.S. Nuclear Regulatory Commission, Region I
631 Park Avenue
King of Prussia, PA 19406

NRC Inspection No. 79-16
Shoreham Nuclear Power Station - Unit No. 1
Docket No. 50-322

Dear Mr. Brunner:

This letter responds to your letter of January 21, 1980, which forwarded the report of the inspection of activities authorized by NRC License No. CPPR-95, conducted by Mr. J. C. Higgins of your office on October 1 - November 6, 1979. The letter stated that it appeared that one of our activities was not conducted in full compliance with NRC requirements. The apparent noncompliance and our response follow:

Apparent Noncompliance with 10CFR50, Appendix B,
Criterion II, FSAR Paragraph 3B-1.38 and
ANSI Standard N45.2.2-1972

Contrary to the above, the following conditions were noted:

1. As of October 31, 1979 periodic inspections by personnel qualified in accordance with ANSI N45.2.6 were not performed to ensure the control of items in storage as required by ANSI N45.2.2.
2. No mechanism exists to update the Equipment Storage History Cards at the time when equipment changes location either in the warehouse or from the warehouse to a permanent inplant location.

200407047

Mr. Eldon J. Brunner, Chief
Reactor Operations and Nuclear Support Branch
U.S. Nuclear Regulatory Commission, Region I

Page 2
February 21, 1980

3. Periodic cleanness checks are not specified for many of the components stored in the plant (e.g., Standby Liquid Control Pumps and Motors, Core Spray Motors, and Residual Heat Removal Pumps and Motors). Additionally, as noted on inspections conducted between October 3 and October 11, 1979, many components were not maintained with adequate cleanness.
4. Caps, covers or plugs were noted to have been removed and not immediately replaced on several Category I components during inspections conducted between October 3 and October 26, 1979.
5. The space heaters in panels 1H21*PNL10 and 1H21*PNL26 were found to be deenergized on October 16, 1979.

General Comments

We take partial exception to the findings noted above. Field Quality Control (FQC) Procedure 17.1 and Project Procedure 10 assign responsibility for implementation of program requirements for storage inspections to FQC and require FQC inspection personnel to be qualified in accordance with ANSI N45.2.6. Inspections performed under Construction Site Instruction (CSI) 4.6 are additional inspections performed by Construction personnel to assure that maintenance functions required by that reference are properly performed by the craft personnel.

A Component Stores Requisition (CSR) is required prior to any equipment being relocated from the warehouse to an inplant location. The Chief Mechanical Supervisor is required to sign the CSR before the equipment is moved, and he then directs the modification of the Storage History Card (SHC). The CSR constitutes a record of the relocation until the SHC is updated. Records of relocation of material within the warehouse are maintained primarily for the use of warehouse personnel, and are not considered a requirement of the ANSI Standard. With respect to valves 1B21*AOV-081A&B, we can now find no evidence to support the finding that the SHC's were not properly updated to reflect the location change. However, we will continue to monitor this attribute closely to ensure compliance with requirements.

Mr. Eldon J. Brunner, Chief
Reactor Operations and Nuclear Support Branch
U.S. Nuclear Regulatory Commission, Region I

Page 3
February 21, 1980

Cleanness checks are required by FQC Inspection Reports which include "Cleanliness" as one attribute in addition to others such as protective coverings, coatings and storage levels.

Corrective Action and Results

A Quality Control Instruction is being developed to more clearly define periodicity requirements for inspections of equipment in storage whatever its location. The specific items noted in paragraph 4.d.. of the inspection report, including the Battery Room where extensive construction activities are now complete, have been cleaned. Missing caps, covers and plugs have been replaced, and the space heaters in Panels 1H21*PNL10 and 1H21*PNL26 have been reenergized. An inspection of the panels revealed no damage because of the lack of heat.

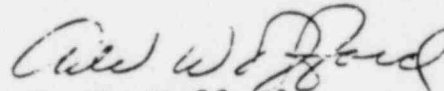
Steps Taken to Prevent Recurrence

The Quality Control Instruction being developed to more clearly specify scheduling of periodic inspections of all items in storage, as discussed above, will be implemented promptly to minimize recurrence of the nonconforming conditions noted in the inspection report. The Battery Rooms will be locked.

Date Full Compliance Will Be Achieved

All specific discrepancies noted in the inspection report have been corrected, and the Quality Control Instruction relative to scheduling of periodic inspections of equipment in storage will be published and implemented by March 15, 1980.

Very truly yours,



A. W. Wofford
Vice President

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-322/80-06
 Docket No. 50-322
 License No. CPPR-95 Priority -- Category B
 Licensee: Long Island Lighting Company
175 East Old Country Road
Hicksville, New York 11801
 Facility Name: Shoreham Nuclear Power Station, Unit 1
 Inspection at: Shoreham, New York
 Inspection conducted: March 24 - April 27, 1980
 Inspectors: JCHiggins 5/9/80
J. C. Higgins, Resident Inspector date signed
H. H. Nicholas for 6/13/80
H. H. Nicholas, Reactor Inspector date signed
 _____ date signed
 Approved by: H. B. Kister 5/14/80
H. B. Kister, Chief, Reactor Projects Section date signed
No. 4, RO&NS Branch

Inspection Summary:

Inspections on: March 24 - April 27, 1980 (Inspection Report No. 50-322/80-06)
Areas Inspected: Routine onsite regular and backshift inspections by the resident inspector (82 inspection hours) and a region-based inspector (30 inspection hours) of work activities, preoperational testing and plant staff activities including: tours of the facility; review of test program; review of procedures; comparison of as-built plant to FSAR descriptions; and, followup on previous inspection findings.
Results: No items of noncompliance were identified.

2006300060

(Open) Noncompliance (322/79-16-01): Failure to provide suitably controlled conditions for equipment in storage: The inspector reviewed the licensee's response dated 2/21/80 and followup actions as detailed below. On March 12, 1980 the licensee issued Quality Control Instruction (QCI) No. FSI-F17.1-060, "Storage and Maintenance of Designated Areas and Specified Category I Components". This instruction specifies periodic inspections in accordance with ANSI N45.2.2-1972 for all required equipment. The inspections verify, among other items: satisfactory cleanliness; protective covers in place; strip heaters energized; and, storage history cards properly completed. The inspector verified that personnel completing inspections per this instruction were qualified in accordance with ANSI N45.2.6. The inspector also noted that inspections were currently being performed more frequently. The inspector reviewed the licensee's established mechanism for recording the storage location of equipment and noted that items were designated as either in the warehouse (with no further specificity required, although sometimes used) or in their permanently installed location. A component stores requisition (CSR) is completed for any piece of equipment which is moved from the warehouse to its permanent location. The inspector selected several pieces of equipment at random and verified that the proper documents existed to define the equipments' location.

The inspector reviewed "UNICO Electrical Construction Department Storage Maintenance Supplement" dated March 18, 1980, which further detailed storage requirements for electrical equipment installed in the plant. A memorandum was also written from J. Vitelli to E. Tesko dated March 4, 1980, "Instrumentation Audit Findings" which establishes daily tours of the Reactor Building and Control Building to identify improper storage of installed instrumentation. The inspector reviewed records of these daily inspections and noted that between March 7 and April 3, 1980 about 40 deficient items were identified.

The inspector reviewed the results of inspections conducted per the new procedure QCI No. FSI-F17.1-060 and noted that between March 12 and April 5, 1980 seventeen Deficiency Correction Orders (DCO's) were written, several of which contained multiple items relating to improper protection and inadequate cleanliness. As of April 11, the majority of these items remained open. During the time period of this inspection, the inspectors conducted frequent tours of the facility and noted that storage conditions had, in general, improved; however, additional instances of improper storage of installed equipment were brought to the licensee's attention. The inspector toured the battery rooms and noted that conditions were acceptable, although the doors were found unlocked several times. Because of the number of discrepancies that continue to be identified, this item remains open.

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-322

Docket No. 50-322

License No. CPPR-95 Priority -- Category B

Licensee: Long Island Lighting Company

175 East Old Country Road

Hicksville, New York 11801

Facility Name: Shoreham Nuclear Power Station, Unit 1

Inspection at: Shoreham, New York

Inspection conducted: April 28-May 31, 1980

Inspectors: J. C. Higgins
J. C. Higgins, Resident Inspector

6/25/80
date signed

date signed

date signed

Approved by: H. B. Kister
H. B. Kister, Chief, Reactor Projects Section
No. 4, RO&NS Branch

6/30/80
date signed

Inspection Summary:

Inspections On: April 28-May 31, 1980 (Inspection Report No. 50-322/80-09)

Areas Inspected: Routine onsite regular and backshift inspections by the resident inspector (47 inspection hours) of work activities, preoperational testing and plant staff activities including: tours of the facility; test witnessing; comparison of as-built plant to FSAR descriptions; procedure review; and followup on previous inspection findings.

Results: No items of noncompliance were identified.

8008250178

The essential elements of LILCO's QA program description contained in the FSAR which satisfy Appendix B are as follows:

I. ORGANIZATION

The Long Island Lighting Company (LILCO) is responsible for the establishment and execution of the Quality Assurance (QA) Program during the operational phase as required by 10 C.F.R. 50, Appendix B.

The Corporate Statement of Quality Assurance Policy commits LILCO to the policy of strict adherence to quality requirements in all safety-related matters concerning the Shoreham Nuclear Power Station. The corporate statement assigns overall responsibility for the Quality Assurance Program to the Vice President, Engineering.

The Manager, Quality Assurance Department (QA Manager), is located offsite and reports directly to the Vice President, Engineering. This relationship assures that LILCO quality assurance personnel who are responsible for auditing or otherwise verifying quality related activities are independent of personnel directly responsible for performing the activities or any other undue influence associated with schedules or costs. He is responsible for establishing and assuring implementation of the LILCO QA Program as described in the LILCO QA Manual. He is responsible for (1) assuring the establishment and continuous implementation of the quality assurance indoctrination and training program for LILCO quality assurance and other concerned personnel, (2) review and approval of applicable documents to assure the

inclusion of appropriate quality requirements, (3) the performance of audits, and (4) defining the content and changes to the LILCO Quality Assurance Manual.

The QA Manager is authorized to evaluate the manner in which all activities both at the station and offsite are conducted, with respect to quality, by means of checks, reviews, audits, surveillance, and/or inspections. He will perform this evaluation on a planned and periodic basis to verify that the QA Program is being effectively implemented. He is responsible for periodically evaluating and reporting on the status and adequacy of the QA Program to the appropriate LILCO management. He has the authority and organizational freedom to identify quality problems, to initiate, recommend or provide solutions through designated channels, and to verify implementation of solutions. He has the the authority to initiate stop work action, or control further processing, delivery, or installation of nonconforming material through appropriate channels as described in the applicable QA Procedure.

The QA Manager is assisted in carrying out his responsibilities by the QA Department staff consisting of Quality Systems and Field Quality Assurance Divisions. These Divisions consist of engineers, and technical and nontechnical personnel. In addition, this staff will be supplemented as required from other areas within LILCO, consultants or contractors. Line responsibility, coordination, and communication during this time will be through the QA Manager.

The Manager, Shoreham Nuclear Power Station (Plant Manager), reports to the Vice President, Nuclear, and has been delegated direct responsibility for the safe and reliable operation of the station. He

is, responsible for assuring the implementation of the QA Program at the station with authority to approve station OQA procedures and instructions and authority to stop work on any activity at the station, including removal of the unit from service.

The Operating Quality Assurance Engineer (OQAE) who reports to the Plant Manager has direct responsibility for assuring implementation of the LILCO QA Program, and additions and changes thereto at the station. He maintains a working interface and communication with the QA Manager and is responsible for (1) establishing and implementing station QA/QC procedures and instructions, (2) implementing LILCO QA procedures and instructions as they apply to the station, and (3) for the performance of station/audits and inspections. He has the authority and organizational freedom to identify and report quality problems; initiate, recommend, or provide solutions through designated channels; and verify implementation of solutions. He has the authority to initiate stop work action through channels or control further processing, delivery, or installation of nonconforming material as described in the applicable station OQA procedure. In the event of a difference of opinion between the Plant Manager and the OQAE regarding a significant quality matter, the OQAE shall refer the problem to the QA Manager for resolution.

The OQAE is assisted in carrying out his responsibilities by the Station Operating Quality Assurance (OQA) staff. This staff consists of engineers and technical or nontechnical personnel.

The OQAE is responsible for evaluating and reporting the status and adequacy of the QA Program at the station to the Plant Manager and the QA Manager on a periodic basis.

The QA Manager is responsible for the development and implementation of the overall QA Program during design, construction, preoperational testing, operation, and modifications of nuclear power plants.

II. QUALITY ASSURANCE PROGRAM

The LILCO Corporate QA Policy Statement imposes a QA Program which is designed to meet the requirements of Title 10 of the Code of Federal Regulations, Part 50, Appendix B and identifies the QA Manual as the document which establishes the requirements for quality-affecting activities during the operational phase of nuclear power plants. The QA Manual contains this corporate policy statement and is distributed on a controlled basis to responsible managers and key supervisory and QA personnel.

The QA Program is designed to assure that activities such as operation, maintenance, modification, repair, refueling, inspection, and testing, which affect safety-related structures, systems, and components, are accomplished in accordance with the criteria of 10 C.F.R. 50. The QA Program, described in the LILCO QA Manual, is supplemented by QA Procedures and Instructions which provide the detailed instructions and checklists necessary to implement, or verify implementation of QA Program requirements.

The QA Program requires that activities affecting quality shall be accomplished in accordance with documented policies, procedures, and instructions throughout the life of the station. These activities shall be accomplished under suitably controlled conditions. Controlled conditions include, as applicable, appropriate equipment, suitable

environmental conditions, and assurance that required prerequisites have been satisfied. Also considered shall be the need for special controls, processes, test equipment, tools, qualification of personnel, and requirements for verification of quality by inspections, examinations, or tests.

The QA Procedures for operations are derived from the program requirements established in the QA Manual. Organizations performing quality-affecting activities shall prepare their procedures incorporating requirements of the QA Manual and referenced codes, standards, and guides. These procedures will also receive a quality assurance review to assure that all program requirements have been addressed.

The Corporate QA Policy Statement contained in the LILCO QA Manual imposes the mandatory QA Program requirements on all personnel and organizations performing activities affecting the quality of safety-related structures, systems, and components during the operational phase of station life. The Vice President, Engineering, is responsible for periodically engaging an organization, independent of the organization being reviewed, to assess LILCO quality-related activities and evaluate the scope, implementation and effectiveness of the QA Program as applied to operations to assure that the program is adequate and complies with corporate QA policies, goals, objectives, and 10 C.F.R. Part 50, Appendix B criteria.

Direct responsibility for establishing and implementing the QA Program has been delegated to the QA Manager and the OQAE. Provisions have been established for the referral, by these personnel, of quality-related problems to the highest level of management necessary for

resolution. The QA Manager is responsible for regularly assessing the status and adequacy of the QA Program, both internal and external to LILCO, and for reporting the results of this evaluation to the Vice President, Engineering, and Vice President, Nuclear, who will advise Corporate Officers on the status and adequacy of the Program as required.

The QA Program requires that procedures be established for the indoctrination and training of station and offsite personnel performing quality affecting activities. These procedures will document the scope, objective, and method of implementing the indoctrination and training program and contain provisions for documenting training sessions including content, date, attendance, and results. The QA indoctrination and training will include instruction as to the purpose, scope, and implementation of quality assurance manuals, procedures, and instructions. Training and qualification in the principles and techniques of particular activities will be provided to personnel, and responsibility for its accomplishment rests with the respective managers, as described below. The QA Manager is responsible for the quality assurance indoctrination and training of offsite management and nuclear plant support personnel, who perform functions affecting quality, and quality assurance personnel. This indoctrination and training shall include both original and refresher programs as well as maintenance of associated qualification records. The QA Manager is responsible for the above functions for station management, plant operating personnel, quality assurance and other personnel. In general, the LILCO engineering personnel will receive QA indoctrination as part of the LILCO QA Program described.

Respective managers shall be responsible for establishing and maintaining formal training programs and procedures for initial training, qualification, and retraining of their personnel to assure that proficiency to perform their activities in quality related areas is achieved and maintained.

III. DESIGN CONTROL

The LILCO QA Program establishes measures to control design activities which affect the quality of safety-related structures, systems, and components during the operational phase. These measures are applicable to all organizations performing design, design review, or design audit activities including changes of modifications thereto.

The program requires that design activities be accomplished in a planned, controlled, orderly manner in accordance with established procedures. Design control measures will assure the translation of applicable design bases, regulatory requirements, codes, and standards which include the selection of suitable materials, parts, equipment, and processes into specifications, drawings, and documented procedures and instructions. The program requires that the quality requirements be included in the design documents.

Deviations or changes to specified quality requirements in design documents will be controlled. Suitable design control measures are required for design analysis such as reactor physics, stress, thermal, hydraulic, radiation and accident analysis; compatibility of materials; accessibility for inservice inspection, maintenance and repair, and acceptance criteria for inspections and tests. Design control procedures

will identify and control design interfaces both internal and external to LILCO. Design verification, such as design reviews, alternate calculations, or qualification testing, will be properly selected and accomplished. Responsibility for such verification is described later in this section. Where qualification testing of a prototype is used to verify adequacy of design, testing will be performed under the most adverse design conditions. The program requires that design verification be performed by individuals or groups other than the original designer and the designer's immediate supervisor, but who may be from the same organization. Design changes will be subject to design control measures commensurate with those applied to the original design. Design control measures will provide for the suitable review and selection of standard "off the shelf" commercial or previously approved material, parts, equipment and processes that are essential to safety related structures, systems, and components. Design documents and revisions thereto will be distributed to the responsible individuals in a timely and controlled manner to prevent inadvertent use of superseded documents.

Organizations supplying equipment and/or services are responsible for imposing the applicable requirements of this section on their internal operations and on those vendors and contractors performing work within the scope of their activity as required by the procurement documents. They are responsible for assuring by means of audit or surveillance that design control as defined in their respective program is being effectively implemented. LILCO is responsible for assuring program adequacy and implementation for external suppliers through planned and periodic audits.

IV. PROCUREMENT DOCUMENT CONTROL

The LILCO QA Program provides for the control of procurement documents for safety-related material, equipment, and services whether purchased by LILCO or their designated agents during the operational phase.

The program requires that procedures establish measures to assure control of the preparation, review, approval, and concurrence for procurement documents. The procurement documents are to be reviewed by qualified personnel, to assure the adequacy of the quality requirements (i.e. that the quality requirements, including preparation, review, and approval, have been properly defined, that the procured items are inspectable and controllable, and that the acceptance criteria are adequately specified).

The program requires that procurement documents such as purchase specifications contain or reference the design bases technical requirements which include codes, industry standards, and regulatory requirements; material and component identification requirements; drawings and/or specifications, test and inspection requirements; and special process instructions. In addition the procurements identify the requirements for drawings, specifications, procedures, personnel and procedure qualifications, material, chemical, and physical test results, and inspection and test records which must be prepared, maintained, submitted, or made available for review and/or approval; the requirements for the retention, control, maintenance, and/or delivery of records; and the procuring agency's right of access to supplier's facilities and records for source inspection and audits. Procurement documents for

spare or replacement parts will be subject to program requirements which are equivalent to those used for the original equipment or those specified by a properly reviewed and approved revision.

The LILCO Purchasing organization is responsible for the commercial aspects associated with procuring items or services which includes the processing of purchase orders. The internal LILCO organizations such as Shoreham Staff, Nuclear Engineering, Nuclear Operations Support, Shoreham Project, and Quality Assurance are responsible for assuring that the procurement documents contain technical and quality requirements as indicated above. Authorized release, assuring acceptability of both technical and quality control is required prior to releasing a purchase order. The plant operating staff is responsible for preparing and issuing procurement documents to Purchasing for processing. The station OQA organization is responsible for reviewing these procurement documents for quality requirements. The LILCO QA Department is responsible for review of quality requirements in procurement documents prepared by LILCO headquarters organizations. Qualified QA personnel will review and concur with the suppliers' QA Programs for safety-related items.

V. INSTRUCTIONS, PROCEDURES, AND DRAWINGS

The LILCO QA Program establishes provisions for activities affecting the quality of safety-related structures, systems, and components during the operational phase to be accomplished and controlled in accordance with instructions, procedures, and drawings. Organizational procedures delineate the sequence of actions to be accomplished in the preparation, review, approval, and control of instructions, procedures, and drawings.

The LILCO QA Department and Station OQA organization are responsible for surveillance and audit to assure that the instructions, procedures, drawings, and other documents used for safety-related structures, systems, and components are controlled to meet the requirements of 10 C.F.R. 50 Appendix B.

Activities affecting the quality of safety-related structures, systems, and components are defined in specifications, instructions, procedures, drawings, and other documents. They include qualitative and quantitative acceptance criteria for the activity being conducted. These criteria are used for controlling the quality-affecting activities. They define special process controls, codes, standards, and regulatory requirements.

Table 17.2.5-1 contains a listing of the QA Department documents used to assure conformance to 10 C.F.R. 50 Appendix B. Table 17.2.5-2 contains a brief description of each of the station QA Procedures. The LILCO QA Department or the station OQA organization performs reviews of the safety-related test, calibration, special process, maintenance, modification and repair procedures, the inservice inspection program, drawings, specifications and changes thereto with respect to quality requirements as indicated in Section 17.2.6 and delineated in Table 17.2.6.-1.

VI. DOCUMENT CONTROL

The LILCO QA Program provides for the control of documents, including changes thereto, which affect the quality of safety-related structures, systems, and components during the operational phase. The

applicable documents include, but are not limited to, the QA Manual; station OQA Procedures and Instructions; Final Safety Analysis Report; design specifications; procurement documents; design, manufacturing, construction, and installation drawings; inspection and test procedures and instructions.

The program requires that a document control system be established in accordance with approved procedures and instructions for review, approval, and issuance of the documents including changes thereto, to assure that they are adequate and incorporate the quality requirements prior to release. Document control procedures shall establish provisions for the identification of individuals or groups responsible for performing review, approval, issuance, or revision activities.

The program requires that changes to documents be reviewed and approved by the organization responsible for conducting the original review and approval or, as deemed necessary by LILCO, such changes will be reviewed and approved by another qualified responsible organization. In the event that another qualified organization is charged with the responsibility for revision, it shall have access to pertinent background information and adequate understanding of the requirements and intent of the original document. Procedures and instructions provide measures to assure the prompt distribution of approved changes and revisions including control of obsolete or superseded documents to prevent their inadvertent use. The program requires that the documents be available at the location where the activity will be performed prior to the start of work. Change or revision level identification will be established and verified through the utilization of document distribution lists.

Updating and distribution, to personnel, of such lists will be consistent with the nature of the document.

VII. CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

The LILCO QA Program established measures to assure that safety-related material, equipment and services, procured during the operational phase, either directly, or through contractors, conform to the procurement document requirements.

The program establishes provisions for source evaluation and selection. Source evaluation and selection may be based upon historical quality performance data, source surveys or audits, or source qualification programs. This will determine the supplier's capability to supply the item or service in compliance with the design, manufacturing and quality requirements as stipulated in the procurement documents. Measures are established to provide for both a technical and quality evaluation of those suppliers providing safety-related components or services. The internal LILCO organizations such as the Shoreham Staff, Nuclear Engineering, or Nuclear Operations Support will perform the technical evaluation and QA will perform the quality evaluation. These functions may also be accomplished through the utilization of qualified independent organizations. Personnel performing the evaluations, such as auditors, will be qualified. Source evaluation and selection information will be documented and filed.

The program provides for source inspection, surveillance, and audit of suppliers to assure conformance to procurement document requirements.

They shall be conducted in accordance with documented procedures. Source inspection procedures provide for instructions to be established for specifying the characteristics to be witnessed, inspected or verified, and accepted; indicating responsibility; and determining documentation requirements.

Source audits or surveillance will be conducted, as necessary, to assure compliance with quality requirements. Source inspection or audit may not be necessary when the quality of the item can be verified by review of test reports, inspection upon receipt, or other means.

The program requires that receiving inspection be accomplished in accordance with documented procedures and instructions. The received inspection procedures and instructions establish measures to assure that the item is properly identified and corresponds to the receiving documentation, that the inspection of the item and acceptance records are determined to be acceptable in accordance with the inspection instructions prior to use, that the receiving documentation is available at the plant prior to use, and that the inspection status is identified. The QA Program specifies that procurement documents require suppliers to furnish documentation identifying any procurement requirements which have not been met together with a description of these nonconformances dispositioned "accept as is" or "repair" and that responsible QA and technical personnel shall perform a review and approval of the supplier's recommend disposition.

Where required by code, regulation, or other contract requirements, documentary evidence that items conform to procurement requirements will be available at the plant and filed. This documentary evidence will be

retrievable and it will specifically identify the item and codes and/or specifications met by the item. Where not precluded by other requirements, such documentation may take the form of written certification of conformance identifying the requirements met by the items. LILCO QA Procedures require that suppliers' certificates of conformance be periodically evaluated by audits or tests to assure that they are valid.

The internal LILCO organizations who requisition items and/or services, and QA or OQA, are responsible for assuring that the procurement documents contain the information as required above. Procedures have been established to control the spare and replacement part procurement documents, through technical and QA review, to ensure that the controls for safety-related items are equal to or better than the original equipment. The QA Program requires that a technical evaluation and QA review be performed to determine the requirements to be applied to the procurement of spare and replacement parts when the original equipment requirements are not known. LILCO assures program adequacy and implementation for external suppliers through planned and periodic audits consistent with the complexity, importance, and quality of the item or service. The LILCO QA Department will be responsible for evaluating suppliers. This includes the utilization of qualified independent organization surveys. Source inspection, as necessary, will be conducted by LILCO or a qualified independent organization. The plant operating staff is responsible for receipt of items at the station. The station OQA organization is responsible for conducting receiving inspection of items, with respect to quality requirements. The LILCO QA

organizations will assure overall program establishment and implementation through planned and periodic audits and surveillance.

VIII. IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

The LILCO QA Program requires the establishment of an identification and control system to prevent the use of defective, unapproved or incorrect safety-related material, parts and components during the operational phase.

The program requires that the identification system, including unique part or mark numbers, developed during the design and construction phases, be maintained and expanded as necessary during the operational phase. A system for identification and control of materials, parts, and components, including partially fabricated subassemblies will be based on documented procedures and/or instructions. Identification is referenced in specifications, drawings, purchase orders, or other appropriate documents providing traceability to associated documentation such as manufacturing and inspection documents, deviation reports, heat numbers, and mill test reports. The identification may be either on the item or on records directly and readily traceable to the item. Physical identification will be used to the maximum extent possible and will be applied in such a manner as not to affect the function of the item. Verification of identification will be accomplished at appropriate stages throughout fabrication, assembly, shipping, and prior to installation.

Suppliers of safety-related material, parts and components, during the operational phase, are responsible for establishing a system of identification and control which addressed the requirements as outlined

above. They are responsible for imposing the requirements on their internal operations and on those vendors and contractors performing work within the scope of their activities as stipulated in the procurement documents. They shall assure through audit or surveillance the adequacy of program implementation. LILCO shall assure program adequacy and implementation through planned and periodic audits of external suppliers.

Within the station, the operating plant staff is responsible for maintaining and expanding the identification and control system for safety-related material, parts, and components which was established during the design and construction phase. In the event that a design change is necessary, during the operational phase, the operations staff is responsible for supplying identification requirements to the associated organizations assuring the continued implementation of the established identification and control system. They are responsible for phasing the supplier identification systems into the plant system so as to maintain the required traceability. The station OAQ organization is responsible for assuring overall program establishment and implementation through planned and periodic audits, surveillance, and inspections at the station.

IX. CONTROL OF SPECIAL PROCESSES

The LILCO QA Program imposes on organizations performing special processes on safety-related structures, systems, and components during the operational phase the requirement to develop a system of special process controls. Special processes include processes such as, but not limited to, unique production or fabricating processes, inspection or

test processes, welding, heat treating, nondestructive examination, and cleaning processes.

The program requires that organizations performing special processes on safety-related equipment at the nuclear power plant or at an offsite facility do so to approved procedures, instructions, or the equivalent and that equipment and personnel are qualified in accordance with applicable codes, standards, specifications, or special requirements. Special process procedures, in addition to providing for the qualification of equipment and personnel, shall provide for the documentation of accomplished activities. Where special processes are not covered by existing codes or standards, or where item quality requirements exceed the requirements of established codes of standards, the necessary qualification of personnel, equipment, or procedures shall be required. Special process procedures and qualification records shall be filed, maintained, and available for verification.

LILCO shall assure overall program adequacy and implementation of internal organizations, as well as external suppliers through planned and periodic audits.

X. INSPECTION

The LILCO QA Program provides for inspection of activities which affect the quality of safety-related structures, systems and components during the operational phase.

It provides for an inspection program to be implemented in accordance with applicable procedures, instructions and checklists. The program requires that inspections be performed by individuals other than

those who performed or directly supervised the activity being inspected. Inspection procedures, instructions, or checklists contain identification of responsibility for performance of the inspection, method of inspection, characteristics to be inspected, acceptance/rejection criteria, verification, evaluation and documentation of the results of the inspection. The program requires that inspection procedures or instructions be made available for use, with supporting documents such as drawings and specifications, prior to the performance of inspection operations. Information concerning inspections will be obtained from design specifications, drawings and/or other controlled documents which include codes, standards, and regulatory requirements. The inspections are conducted by inspectors who have been qualified and certified in accordance with codes, standards, and/or LILCO training programs. The inspection program requires that inspector qualifications be kept current.

When notification or hold points are established in procurement or other documents, the inspection program requires that:

1. Work does not progress beyond the hold point until released by the designated authority.
2. The notification and acknowledgement has been satisfied prior to continuation of work.

Inspection of rework, repair, replacement, or modification activities will be conducted in accordance with the original design criteria and inspection requirements, or by means of an approved alternate. Such alternates would be evaluated on both a technical and quality basis. When direct inspection is not possible, provisions are established for indirect control by monitoring of processing methods, equipment, and personnel.

XI. TEST CONTROL

The LILCO QA Program establishes provisions to assure that testing required to demonstrate that safety-related structures, systems, and components will perform satisfactorily in service is conducted in accordance with an approved documented test program.

It is required that the test program be identified, documented, and accomplished in accordance with procedures that are written, approved, and controlled. The QA Program provides provisions to assure that modifications repairs and replacements are tested in accordance with the original design and testing requirements or acceptable alternatives. Technical and QA reviews provide assurance that the testing does accomplish this end. The test procedures contain or reference the requirements and acceptance limits from the applicable design or procurement documents. These provisions will assure that prerequisites for a given test have been met. Prerequisites include: test equipment is adequate and in satisfactory operating condition; test instrumentation has been properly calibrated; personnel are trained, qualified, and certified if necessary for the various test functions; preparation, condition, and completeness of the item to be used has been satisfactorily accomplished; suitable environmental conditions are available; provisions for data acquisition have been established; if necessary, mandatory inspection hold points for witness by the designated authority are included; appropriate acceptance/rejection criteria are established; and methods for documenting data and results be documented in sufficient detail to prevent misinterpretation, that they be evaluated to the established criteria, and that the acceptance status be identified by a qualified,

responsible individual or group. Test records will be appropriately filed upon completion of the test and evaluation.

XII. CONTROL OF MEASURING AND TEST EQUIPMENT

The LILCO QA Program imposes requirements for control of measuring and test equipment on organizations whose activities affect the quality of safety-related structures, systems, and components. The program requires calibration control for the measuring and test instruments, tools, gauges, fixtures, reference and transfer standards, and nondestructive test equipment.

The program requires that calibration procedures describe the technique, frequency, and maintenance for measuring and test equipment. The QA Program requires procedures to establish methods for identification of measuring and test equipment and associated calibration data including provisions to assure that equipment is labeled, tagged, or uniquely numbered to a documented control system to indicate the date of the next calibration. The frequency of calibration is established for measuring and test equipment on an individual basis or generic grouping thereof. It is based upon the type of equipment, required accuracy, stability characteristics, purpose, degree of usage, experience, manufacturers' recommendations, and recognized industry standards. The reference and transfer standards are traceable to nationally recognized standards and, for any exceptions, provisions are established to document the basis for calibration. The calibration program requires that in the event an instrument is found to be out of calibration, an investigation will be conducted and documented to determine the validity

of previous measurements. It is required that calibration records be established and maintained to provide objective evidence that measuring and test equipment is being controlled, calibrated, and maintained in accordance with approved procedures.

Provisions assure that calibrating standards have an accuracy, range and stability, which are adequate to verify that the equipment being calibrated is within specified tolerance and can meet all other specified requirements.

The reference standard which acts as the working standard shall have a tolerance not greater than one-fourth the specified tolerance of the M&TE being calibrated except when equipment acceptable for nuclear power plant applications is not commercially available. In those cases, instruments of equal or greater accuracy shall be used. The reference standards which are used to calibrate the working standards shall have an accuracy equal to or greater than that of the work standard.

XIII. HANDLING, STORAGE, AND SHIPPING

The LILCO QA Program imposes control requirements on organizations whose scope of activity includes the handling, storage, and shipment of safety-related structures, systems and components during the operational phase.

The program requires that organizations performing handling, storage, and shipping activities including cleaning, packaging, and preservation do so to written procedures or instructions. These procedures shall be developed in accordance with applicable design and specification requirements and provide for control of the aforementioned

activities to preclude damage, loss, or deterioration of safety-related material, components, and equipment. Special environmental conditions such as special coverings, inert gas atmosphere, allowable moisture content, and temperature level shall be detailed and their existence verified and documented. Provisions for necessary cleaning operations as required by the nature of the material or equipment shall be included and their verification documented. Special handling requirements shall be provided and controlled to ensure safe and adequate handling, including associated verification and documentation. The procedures or instructions provide for inspection operations to verify conformance to establish criteria, use of qualified personnel and associated documentation. In addition, they shall provide for the controlled release of safety-related material, components, or equipment from storage for shipment or installation and for the verification and documentation thereof.

XIV. INSPECTION, TEST, AND OPERATING STATUS

The LILCO QA Program provides measures for indicating the inspection, test, and operating status of safety-related structures, systems, and components.

The Program requires that the organizations responsible for fabrication, storage, installation, test, and operation of safety-related components and systems identify and control the inspection, test, and operating status of these items. The status is identified and controlled through the utilization of status indicators such as, tags, markings, logs, shop travelers, stamps, inspection, or test records. In addition,

the Program requires the establishment of measures to control the use of the status indicators including responsibility and authority for their application and removal and the unique identification of the individual involved. Associated procedures establish provisions to assure the performance of required tests and inspections including requirements that the identification of the status be known at any given time. The bypassing of required inspections, tests, and other critical operations is controlled through station administrative procedures. These administrative procedures receive a review by the station OQA organization. Procedures establish measures to indicate the operating status to prevent inadvertent operation of safety-related systems, equipment, and components. They establish provisions so that the identification of operating status be known at any given time.

XV. NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

The LILCO QA Program imposes requirements for control of nonconforming safety-related material, parts, and components. These requirements are applicable to organizations whose activities affect the quality of such safety related items during the operational phase.

The program requires that a control system be established to address nonconformances in accordance with documented, approved procedures. The procedures establish measures to assure that nonconforming items and services are properly identified, documented, reviewed, segregated if practical, dispositioned, and reported to affected organizations. In addition, they establish provisions for designation of responsibility and authority for approval of the dispositioning of nonconforming items. The

program requires that nonconforming items be documented and that such documentation include a clear identification of the nonconformance, a description of the nonconformance, the appropriate disposition including the approval signature, and the applicable inspection requirements. Nonconforming items will be clearly identified as such and placed in a controlled segregated area, when practical, until proper disposition has been effected.

The acceptability of repaired or reworked nonconforming items is verified by reinspection. The reinspection of the item will be in accordance with the original inspection requirements or by a method which is equivalent to the original inspection method. The program requires that the appropriate repair, rework, and inspection procedures be documented. Nonconformance reports verifying "accept as is" or "repair" disposition will be made part of the required inspection records.

XVI. CORRECTIVE ACTION

The LILCO QA Program provides measures to assure that conditions adverse to quality are promptly identified, reported and corrected.

The program provides for a corrective action system implemented through the use of approved written procedures. The procedures provide for an evaluation of deficiencies, including nonconformance reports, and determination of the need for corrective action. They provide for the reporting, the LILCO station and offsite management, the cause of the conditions significant to quality and the corrective action taken. The program requires that upon determination of significant conditions adverse to quality prompt corrective action be initiated to preclude

repetition. In addition, verification is required to assure that these actions have been implemented. Follow-up action is conducted to verify that specified corrective action has been properly implemented and corrective action documentation has been closed out.

The LILCO QA Department and the station OQA organization will be informed of corrective action determinations associated with safety-related structures, systems, and components. In addition, they are responsible for verifying proper implementation of internal corrective action associated with safety-related structures, systems, and components.

XVII. QUALITY ASSURANCE RECORDS

The LILCO QA Program imposes requirements on organizations performing safety-related functions for quality assurance records which furnish documentary evidence of the quality of items and of activities affecting quality during the operational phase.

The program requires that records documenting evidence of the quality of items and activities affecting quality include results of reviews, inspections, tests, audits, and material analyses; monitoring of work performance; qualification of personnel, procedures, and equipment; operating logs; maintenance and modification activities; abnormal occurrences; and other documentation such as drawings, specifications, procurement documents, calibration procedures and reports, nonconformance reports, and corrective action reports. Requirements for identification, transmittal, retention, and maintenance of quality related records subsequent to completion of work or prior to release of material or

equipment for installation are to be indicated in procurement documents, specifications, procedures, or instructions, and are to be consistent with applicable codes and standards. The program requires that inspection and test records specify a description of the type of observation, identification of the inspector or data recorder, evidence of completion or verification of manufacturing, inspection or test operation, the date and results of the inspection or test operation, the date and results of the inspection or test, information related to nonconformances, and acceptability of the item inspected or tested.

The permanent plant filing system, developed during the design and construction phases and maintained during the operational phase, assures that quality assurance records are readily identifiable and retrievable. The program requires that the record storage facilities within the plant be constructed, located, and secured to prevent damage or loss of records due to fire, flooding, theft, or environmental conditions such as temperature or humidity or, alternatively, to maintain duplicate records stored in a separate remote location.

XVIII. AUDITS

The LILCO QA Program establishes provisions for a comprehensive system of planned and periodic audits to verify implementation of program requirements.

The program requires that a comprehensive system of audits be established for both internal and external functions which affect safety-related structures, systems, and components to verify compliance with QA Program requirements as well as with approved quality assurance

procedures, the station technical specifications, administrative controls and regulatory requirements. Audits will include an evaluation of quality related practices, effectiveness of implementation, conformance to policy, work areas, activities, processes, and a review of documents and records.

Audits shall be conducted to predetermined schedules. These schedules shall be reviewed, published annually, and updated as required. Audit frequency shall be based on the status, safety, and importance of the audited activity and results of prior audits. Audits shall be scheduled to ensure that implementation of QA Program requirements and related supporting procedures receive a comprehensive audit at least every 2 years. Those applicable elements of the QA Program in which quality-related activities are more intensive and impacting upon daily operation shall be audited at least annually. Audits of nonroutine operations such as major modifications shall be scheduled as necessary.

Audits shall be conducted in accordance with written, approved procedures, plans and checklists by qualified personnel not directly responsible for the area being audited. Audits shall provide for objective evaluation of the status and adequacy of the area audited.

Audit results shall be documented. Deficient areas shall be reported to management having responsibility for the area being audited to assure corrective action. The QA Manager and the Nuclear Power Plant Manager shall review and assess audits performed by the station OQA organization and assure implementation of required corrective action. Re-audits of deficient areas shall be performed, as required, to assure effective implementation of corrective and preventive action.

The QA Department and station OQA organization are responsible for audit planning, preparation, scheduling, performance, reporting and, as required, verifying implementation of corrective and preventive action measures.

The QA Manager is responsible for assuring the development and implementation of the overall audit program. The QA Department is responsible for auditing the activities of the OQAE. Audits of LILCO headquarters organizations and suppliers of safety-related materials and services are also the responsibility of the QA Department but may be performed by station OQA personnel. Audit planning, scheduling, and programs developed by offsite QA personnel shall be approved by the QA Manager.

LILCO and their major suppliers perform audits of suppliers to evaluate QA Programs, procedures and activities when source evaluation and selection cannot be determined from historical quality performance data and source qualification records.

LILCO and their major suppliers also perform surveillance and audits of suppliers after source evaluation and aware of contract. The degree of surveillance and audit of suppliers after source evaluation and aware of contract will be determined by the importance of the product to safety, the complexity of the product, the likelihood of the product to fail, the quality history of the supplier and the feasibility of verification of quality requirements upon receipts.

The Plant manager is responsible for assuring the development and implementation of the station quality assurance audit program. This responsibility has been delegated to the OQAE. The OQAE and the station

OQA staff are responsible for developing and implementing the audit program for station activities which affect safety-related structures, systems, and components. The QA Program provides for the review and concurrence by the QA Manager, and approval by the Plant Manager, of audit schedules and programs developed by the station OQA organization.

The QA Manager and the Plant Manager, as appropriate, shall review audit results and assure implementation of required corrective action. These audit results shall also be used as source information for determining quality trends and QA Program status and adequacy and shall be reported to appropriate management levels on a periodic basis.