UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of LONG ISLAND LIGHTING COMPANY (Shoreham Nuclear Power Station, Unit 1)	Docket No. 50-322 O.L.

SUFFOLK COUNTY SUBMITTAL OF QA/QC INFORMATION

By telephone notification received October 8, 1932, the Board directed Suffolk County to provide the data in subparagraphs (a)-(c) on page 15 of "LILCO's Motion for Further Board Direction on the Conduct of QA Cross-Examination," dated October 5, 1982. The three types of data identified in the LILCO Motion are:

(a) a statement or description of what the County contends each group of findings represents;

(b) a statement concerning whether the County contends that the group of findings represents a pattern and, if so, what pattern is represented and how the County defines the pattern; and

(c) whether the County contends the pattern represents a QA breakdown and, if so, the County's definition of what constitutes a QA breakdown.

The County hereby complies with the Board's direction for the following areas of "pattern" inquiry: storage/housekeeping; document control; FSAR configuration; and drawings/sketches/diagrams.

I. STORAGE/HOUSEKEEPING

The County has identified six groups of findings in the Storage/Housekeeping area. As noted in the County's October 6

letter to Mr. Earley, there is overlap between groups. Thus, in many instances findings in one group also may be evidence of a pattern of breakdowns in another group as well.

Further, the County, while presenting Storage/Housekeeping findings as six groups, believes these groups, if looked at as a whole, document that beginning at least by 1974 and continuing to the present time, there have been repeated failures to follow procedures, instructions and other requirements which constitute LILCO's program to comply with Appendix B, Criterion XIII. Despite early identification of the problems, they continued to appear, indicating a failure to institute proper corrective action, thus violating Criterion XVI, and a failure of the audit process to take adequate followup action, violating Criterion XVII

Storage/Housekeeping Group I. The audit findings applicable to Group I are summarized in Exhibit 1 hereto.

(a) The County contends that the Storage Group I findings document LILCO's failure to maintain storage cards as required and its failure to carry out inspections and other activities noted on or required by the storage cards.

(b) The County does contend that this group constitutes a pattern. The storage cards represent a recordkeeping device intended to assist in the proper storage of various equipment. An important part of that control function is to have up-to-date, completed storage cards for all stored equipment and to ensure that activities described on or required by the storage cards

(like inspections) take place as required. Exhibit 1 hereto documents 14 instances[1/] where storage cards were not maintained in the required manner and 9 instances[2/] where activities such as inspections were not carried out properly. These 23 instances often overlap and hence are combined in the County's proposed examination. The defined pattern, therefore, is LILCO's failure to maintain storage cards as required, including the failure to carry out inspections and other required activities.

(c) The County does contend that the foregoing pattern constitutes a QA breakdown. A breakdown occurs, in the County's view, when the same or similar problems occur over a period of time, thus indicating that the audit followup action, including corrective action measures, did not successfully eliminate or substantially reduce the problem. In the instant group, the breakdown results in violations of Criteria XIII, XIV, XVI, and XVIII.[3/] The Criteria XIII and XIV violations occur

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1/ FQC 13, Findings D.4, D.7; F.A. 238, Finding 4.3; FQC 15, Finding D.8; F.A. 376, Findings 4.2, 4.7; F.A. 443, Finding 4.4; FQC 21, Findings D.11, D.12; FQC 27, Findings B.7, B.8, B.9; F.A. 1086, Finding 4.4; F.A. 1213, Finding 4.1. The County also intends to use storage surveillances in its examination on Group I and on other storage groups. The County and LILCO are still attempting to work out a stipulation in that regard.

2/ F.A. 376, Finding 4.8; F.A. 601, Finding 4.4; FQC 24, Finding B.4; F.A. 721, Finding 4.4; F.A. 1016, Findings 4.1, 4.2; F.A. 1016, Finding 4.3; F.A. 1213, Finding 4.2; F.A. 1425, Finding 4.1.

3/ To avoid needless repetition in this filing, the County hereby clarifies that it does not contend that a pattern of QA breakdowns occurs whenever an auditor identifies a problem. [This clarification was conveyed to LILCO by phone on October 8 in response to a LILCO inquiry.] Rather, the County contends that a QA problem becomes a breakdown of the QA/QC program when the same or similar problems recur, indicating (in the County's view) a failure by QA/QC to institute effective corrective action. Accordingly, a key factor in a QA/QC breakdown is the repetitive nature of the problems.

because while LILCO established measures, including a storage card system, to control handling and storage of material and equipment, there were repeated instances of failure to implement the storage card system in the required manner. The failure to effect adequate corrective action leads to violation of Criteria XVI and XVIII as well.

Storage/Housekeeping Group II. The audit findings applicable to Group II are summarized in Exhibit 2 hereto.

(a) Group II involves repeated failures by LILCO to protect material and equipment from weather-related damage.

(b) The findings represent a pattern of failures to protect material and equipment from weather-related damage and possible deterioration. While all the Group II findings are similar to each other, the most pronounced deficiency is the failure to protect against water damage, where 22 instances[4/] of violation are identified. Other weather-related storage problems are also documented, involving failures to store off the ground, problems with covers, and rust-related damage. See Exhibit 2. In defining this pattern, therefore, the County contends that there are repeated instances of failing to protect material and equipment from weather-related damage.

4/ FQC 8, p. 3 and Finding 05782; FQC 13, Findings B.13, D.5; F.A. 226, Findings 4.4, 4.14; F.A. 238, Finding 4.9; F.A. 371, Findings 4.2, 4.3; F.A. 376, Finding 4.4; F.A. 425, Finding 4.3; F.A. 444, Findings 4.1, 4.2; F.A. 443, Finding 4.4; F.A. 470, Finding 4.2; FQC 23, Findings D.5(1), D.5(2), D.5(3), D.7; F.A. 648, Finding 4.3; FQC 24, Finding K.6; FQC 25, Finding K.3; FQC 40, Finding 1.3.

(c) The County does contend that the pattern of weather-related storage problems constitutes a QA breakdown. Criterion XIII requires that:

> Measures shall be established to control the handling, storage, shipping, cleaning, and preservation of material and equipment in accordance with work and inspection instructions to prevent damage or deterioration.

Contrary to this requirement, LILCO repeatedly violated procedures and other requirements designed to prevent weather-related damage and deterioration. In addition, Criterion XVI provides:

> Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the conditions is determined and corrective action taken to preclude repetition.

Contrary to this Criterion, effective corrective action was not taken and effective actions to preclude repetition were not instituted. See also Criterion XVIII which requires that "followup action . . . shall be taken where indicated." The County contends that proper followup action was not taken.

Storage/Housekeeping Group III. The audit findings relating to Storage/Housekeeping Group III are set forth in Exhibit 3 hereto.

(a) The Group III storage/housekeeping findings document repeated failures of LILCO to provide adequate capping and covering of stored material and equipment.

(b) The County contends that the findings set forth in Exhibit 3 hereto do constitute a pattern. This pattern is represented by findings beginning in March 1975 and continuing through December 1981 where LILCO has failed to maintain the

proper coverings or caps for stored material and equipment, all in violation of LILCO procedures or other requirements required by the QA/QC program.

The findings described in Exhibit 3 document that in at least 44 instances[5/] since 1975, there have been violations of requirements to provide capping/covering of materials and equipment. In addition to the large number of findings relating to failure to cover or to provide end caps, many of the other Group III findings also document a general failure to protect stored equipment. These failures involve instances such as stacking cartons on top of each other in a manner which fails to prevent damage . See Exhibit 3. Accordingly, the definition of a pattern is the failure to provide adequate protection of stored material and equipment, particularly as relates to the failure to provide adequate covering and end caps.

5/ See FQC 13, Finding D.8; FQC 15, Finding D.7; FQC 17, Finding D.4; F.A. 470, Finding 4.9; FQC 21, Findings D.7, D.8; F.A. 601, Findings 4.1, 4.2, 4.3; FQC 23, Findings D.5(3), page 2 of 3, D.8; F.A. 656, Finding 4.2; FQC 24, Finding D.3; F.A. 721, Findings 4.1, 4.2; F.A. 740, Finding 4.3; F.A. 803, Findings 4.3, 4.4; FQC 27, Finding D.7; F.A. 934, Findings 4.1, 4.2, 4.3; FQC 30, Finding N.1; F.A. 980, Findings 4.1, 4.2, 4.3; F.A. 1026, Findings 4.1, 4.2; FQC 32, Finding D.3; FQC 53, p. 2 of 3 & D.4; F.A. 1086, Findings 4.1, 4.2; FQC 34, Findings K.3, N.2; Q.R. 7/22/80, p. 2; FQC 35, Findings 2.3 & p. 2 of 3; F.A. 1180, Finding 4.1; F.A. 1204, Finding 4.1; F.A. 1234, Finding 4.1; Q.R. 2/17/81, p. 1; F.A. 1301, Finding 4.1; F.A. 1313, Findings 4.1, 4.2; Q.R. 8/31/81, p. 2; FQC 40, Finding 1.3; Q.R. 12/03/81, p. 1. While not listed here, the CAT inspection also identified failure to provide caps. This will be pursued with the NRC Staff.

(c) The County contends this pattern does represent a QA breakdown. The breakdown concerns the repeated occurrence of the same kind of storage problem (covering and capping) without taking the proper corrective and protective action to correct the problem and to prevent recurrence in the future. This constitutes a violation of Criteria XIII, XVI and XVIII. 6/

Storage/Housekeeping Group IV. The audit findings relating to Storage/Housekeeping Group IV are set forth in Exhibit 4 hereto.

(a) Storage/Housekeeping Group IV concerns the County's allegation that LILCO has failed to provide proper environmental protection for equipment in storage. This group is closely related to Storage/Housekeeping Group III, but differs in that the findings involve failures to maintain proper environmental conditions in the sense of temperature, humidity, and similar controls.

(b) The County contends that the findings do represent a pattern. In the period from March 1975 through June 1981, there have been 14 instances where the proper environmental conditions have not been maintained in accordance with procedural requirements. The most frequent occurrence is the failure to

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6/ See discussion re Storage/Housekeeping Group II for quoted portions of Appendix B criteria.

provide the proper heat to stored equipment, an event which occurred 8 times.[7/]

(c) The County does contend that this pattern constitutes a QA breakdown. Criterion XIII states in part:

> When necessary for particular products, special protective environments, such as inert gas atmosphere, specific moisture content levels, and temperature levels, shall be specified and provided.

LILCO has specified such requirements in accordance with Criterion XIII, but as the documented deficiencies in Exhibit 4 demonstrate, LILCO failed to implement such requirements, thereby constituting a failure to comply with Criterion XIII of Part 50, Appendix B.

Storage/Housekeeping Group V. The audit findings related to Storage/Housekeeping Group V are set forth in Exhibit 5 hereto.

(a) Storage/Housekeeping Group V concerns housekeeping deficiencies, focusing on LILCO's failure to keep areas clean and free from debris.

7/ See F.A. 226, Finding 4.1; F.A. 340, Finding 4.1; F.A. 376, Finding 4.3; FQC 21, Finding D.15; F.A. 679, Finding 4.2; F.A. 699, Finding 4.1; F.A. 721, Finding 4.3; F.A. 1301, Finding 4.2. Note also that certain of the Quarterly Reports to Management identified in Storage/Housekeeping Group III also apply to Group IV since they identify lack of environmental protection. See Exhibit 3.

(b) LILCO procedures and requirements specify that various areas of the plant, including storage areas, are to be kept clean and free from debris. Contrary to this requirement, the audit findings described in Exhibit 5 hereto document that on 17 occasions from March 1974 through August 1981, auditors found excessive garbage, debris or other problems of a housekeeping nature, which problems violate LILCO procedures and requirements.

(c) The County contends that the housekeeping deficiencies described in Exhibit 5 constitute a QA breakdown. Criterion XIII, among other things, specifies that measures shall be established to control the cleaning and preservation of material and equipment. Criterion II provides that "activities affecting quality shall be accomplished under suitably controlled conditions . . . such as adequate cleanness . . . ." Where trash and other debris are allowed to accumulate, a clean and proper work place and storage area are not provided. This constitutes a violation of Criteria II and XIII. Given the repetitive nature of this problem, the County also contends that adequate protective and followup measures have not been implemented to avoid repetition of the problems.

Storage/Housekeeping Groups VI and VII. These groups have been combined and the audit findings are described in Exhibit 6 hereto.

(a) This grouping of findings concerns improper storage of material and equipment which require segregation from other items. In many instances, the segregation is required for fire prevention concerns; in other instances, the segregation is provided for by procedures unrelated to fire concerns.

(b) The County contends that a pattern of deficiencies is established by the findings in Exhibit 6. Exhibit 6 identifies 10 instances where required segregation has not been maintained. Notwithstanding these instances, no apparent effective action was taken to prevent recurrence. Accordingly, the pattern of deficiency is defined as the failure to properly segregate items in storage.

(c) The County contends that the foregoing pattern constitutes a QA breakdown, since handling and storage requirements for these items had been established but were not followed. Criterion XIII specifies that measures shall be established in the handling and storage of material and equipment in accordance with work and inspection instructions to prevent damage or deterioration. Contrary to these requirements, LILCO did not follow its own requirements which implement Appendix B, Criterion XIII, and also did not take effective corrective action in accordance with Criterion XVI.

II. DOCUMENT CONTROL

The County on October 1, 1982 identified six Document Control groupings and audit findings related to each. As with Storage/Housekeeping, there is considerable overlap among the groups. Overall, the County contends that the findings support a conclusion that there has been a failure to comply with Appendix B Criteria III (Design Control), V (Instructions, Procedures and Drawings), VI (Document Control). XVI (Corrective Action), and Criteria XVIII (Audit Followup).

Document Control Group I. The audit findings related to Group I are summarized in Exhibits 7 and 8 hereto.[8/]

(a) Group I identifies problems with procedures and instructions, either where required procedures/instructions have not been issued at all or where those that have been issued are inadequate.

(b) The County contends that a pattern of deficiencies is established. There have been 17 instances[9/] where necessary procedures/instructions were not issued and 7 related instances[10/]

8/ Exhibit 7 summaries Group I findings from Engineering Assurance audits while Exhibit 8 summarizes Group I findings from audits other than E.A. and FQC. No FQC audit findings are being used for Document Control Group I.

9/ E.A. 12, Finding 2.C.1; E.A. 18, p. 2, #3; E.A. 21, Finding 012; E.A. 22, Finding 026; E.A. 38, Finding 141; E.A. 40, Finding 155; Site QA #7, pp. 1-2, Nos. 2 & 3; LILCO QA Audit of S&W PQC, p. 2, #4; No. 4 Audit of LILCO Purchasing Dept., p. 1, bottom ¶; QA Audit No. 4, SNPS S&W Project, p. 6, IV.10; Shoreham Project Audit, III.6.4; QA Audit #1, S&W FQC, Attachment, I.A.1; QA Audit #6 LILCO Purchasing Dept., pp. 2 & 3, Finding A & Recommendation A; QA Audit #77-8 S&W, p. 4, Finding 3, pp. 4-5, Finding 4; QA Audit 77-1, S&W FEO, p. 5, Finding 5; QA Audit 78-9 S&W, Finding 5; QA Audit 81-11 LILCO Purchasing Dept., p. 4, Open Item 1.

10/ E.A. 21, Finding 013, #6; E.A. 24, Finding 050, #1; Site QA Audit #1, Receiving Inspection, p. 1, ¶2, Summary of Findings; QA Audit #1, S&W FQC, I.C.6; S&W PQC #1, Attachment, p. 1, Vendor Nonconformance #2 & Training ¶; QA Audit 81-9, LILCO Shoreham Project, p. 5, Open Item 1; Courter Audit 145, 145/6.

where the procedures/instructions were inadequate. Thus, the pattern is defined as LILCO's failure to issue or maintain adequate instructions and procedures.

(c) The County contends that the foregoing deficiencies constitute a repetitive problem which reflects a QA breakdown. Criterion V, in part, requires that:

> Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.

The audit findings in Exhibits 7 and 8 document repeated failures to satisfy this Criterion. The failure to effect satisfactory corrective action indicates a failure to comply with Criteria XVI and XVIII.

Document Control Group II. The audit findings related to Group II are summarized in Exhibits 9, 10 and 11.[11/]

(a) This Group concerns LILCO's failure to distribute and transmit documents in accordance with LILCO requirements.

(b) The County contends that a pattern of distribution/transmittal deficiencies is documented. Beginning in March 1974 and continuing through 1980, there have been 28 instances where distribution and transmittal problems have been identified. See Exhibits 9, 10 and 11. Thus, the definition of the pattern is LILCO's failure to control transmission and distribution of documents.

11/ Exhibit 9 contains E.A. audit findings; Exhibit 10 contains FQC audit findings; Exhibit 11 contains findings from 5 other audits.

(c) The County contends that the deficiencies identified in Exhibits 9-11 are repetitive and effective corrective action was not taken to prevent recurrence. Criterion VI provides in part:

> Measures shall be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality. These measures shall assure that documents, including changes, are reviewed for adequacy and approved for release by authorized personnel and <u>are distributed to and used at the location where the prescribed activity is performed</u>. (emphasis supplied).

Contrary to Criterion VI, LILCO has failed to control document distribution, as evidenced by the 28 instances identified in Exhibits 9-11. The failure to correct these problems constitutes a violation of Criteria XVI and XVIII as well.

<u>Document Control Group III</u>. The audit findings related to Group III are summarized in Exhibits 12, 13 and 14. 12/

(a) Group III concerns lack of controls related to filing, indexing and other recordkeeping-related activities affecting documents.

12/ Exhibit 12 contains E.A. audit findings; Exhibit 13 contains FQC audit findings; and Exhibit 14 contains findings from other audits.

(b) The County contends that a pattern of document control deficiencies does exist. The Group III audits identify 31 instances[13/] in which the master lists/indices/files are not being properly maintained in accordance with LILCO procedures. These audit findings also identify 16 related instances[14/] in which documents are missing from files or are misfiled. Accordingly, the pattern of deficiencies is LILCO's failure to control document files and indices in accordance with procedural requirements.[15/]

13/ E.A. 0, pp. 48-49; E.A. 21, Finding 013, #5; E.A. 22, Finding 024; E.A. 23, Finding 042, Nos. 4 & 7; E.A. 24, Finding 050, #2; E.A. 28, Finding 082; Nos. 2a & 2b; E.A. 40, Finding 023; FQC 8, Finding 05790, #2; FQC 9, Findings 06680, 06681, #1; FQC 12, Finding 07807; FQC 17, F.1; FQC 18, K.7; FQC 19, D.F, F.2; FQC 26, L.4; FQC 32, K.2; Site QA Audit # 9, NDT, p. 2, #1(b); QA Audit #4, SNPS S&W Project, p. 3, IV.1; Followup of LILCO Purchasing Audits 4 & 5, p. 1, bottom ¶; F.A. 228, 4.2; F.A. 359, 4.1; F.A. 433, Conclusion, 4.1, 4.2, 4.3, 4.4; F.A. 563, Conclusion, 4.1, 4.2. 4.3; F.A. 636, Conclusion, 4.1, 4.2, 4.4; F.A. 990, 4.1.

14/ E.A. 5, p. 3, #4; E.A. 26, Finding 065; E.A. 27, Finding 075, #1; E.A. 28, Finding 082, Nos. 1a & 1b; E.A. 29, Finding 091; FQC 16, B.1, B.2.A; FQC 17, D.1.2; FQC 19, D.6; FQC 22, B.5; LILCO Internal Audit #3, Engineering, IV.1 & 2; LILCO Internal Audit 3A, Followup of #3, p. 8, IV.4; 3d Audit of LILCO Purchasing Dept., p. 3, bottom, p. 4 top; Site QA Audit #9, NDT, p. 2, # 1(b); Courter Audit 160, 160/10; F.A. 636, 4.6.

15/ The Group III problem with indices and files necessarily overlaps with Group V problems wherein indices and files have not been maintained up-to-date. See discussion at note 18, infra. This Group also overlaps with E&DCR filing problems which have been addressed previously.

(c) The County contends that the deficiencies described in Exhibits 12-14 constitute a QA breakdown. There have been repeated occurrences of the same kinds of recordkeeping/filing deficiencies during the period since 1970. These deficiencies constitute violations of LILCO's own document control requirements designed to implement LILCO's program for compliance with Criterion VI. Accordingly, the County contends LILCO has failed to comply with Criterion VI and in failing to take effective corrective and preventive action has failed to comply with Criteria XVI and XVIII.

Document Control Group IV. The audit findings related to Group IV are summarized in Exhibits 15 and 16.[16/]

(a, b) Group IV concerns LILCO's failure to ensure that documents applicable to and used for the Shoreham project are legible. Of particular concern is the fact that illegible documents were identified in the audit process. The County believes that the project should have identified and eliminated illegible documents immediately upon receipt, without the necessity to rely on the audit process to provide such control. Since auditing does not cover all documents, it appears likely that many illegible documents were not eliminated and may have been utilized.

16/ Exhibit 15 contains one E.A. finding; Exhibit 16 contains FQC findings.

Exhibits 15 and 16 document 15 instances of illegibility problems and/or findings that efforts to eliminate these problems were ineffective.

(c) The County contends that the repeat occurrence of legibility problems and the lack of effective measures to correct these problems constitute a QA breakdown. Criterion VI requires, in part, that documents shall be reviewed for adequacy and approved for release. The fact that illegible documents were allowed to be used indicates a breakdown in the Criterion VI review program and a failure to meet Criteria XVI and XVIII as well. (See related discussion of review deficiencies in part IV, infra.)

Document Control Group V. The audit findings related to Group V are summarized in Exhibits 17-19.[17/]

(a) Group V represents findings that LILCO has failed to maintain controlled documents up-to-date.

(b) The County contends that the Group V findings constitute a pattern, defined as repeated instances where controlled documents are not kept up-to-date. This violates LILCO requirements. The problems center on three areas: failure to keep files, logs and indices up-to-date (12 instances);[18/] failure to

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17/ Exhibit 17 contains E.A. audit findings; Exhibit 18 contains FQC audit findings; Exhibit 19 contains two findings from other audits.

18/ E.A. 17, p. 3, #6; E.A. 22, Findings 020, 021; E.A. 26, Findings 066, 067; E.A. 30, Findings 097, 104; E.A. 39, Finding 152; E.A. 40, Findings 155, 159; LILCO Internal Audit 3A, Followup of #3, p. 8, IV.2; LILCO Internal Audit #4, Purchasing Dept., p. 4, #4, p. 5, #1. Note also that many of the E&DCR deficiencies alleged by the County also fall into this category, as well as other document control categories.

keep drawings, specifications and calculations up-to-date (12 instances);[19] and failure to keep manuals and procedures up-to-date (19 instances).[20] Accordingly, on at least 43 occasions, auditors identified failures to update documents in accordance with LILCO requirements.

(c) The County contends that the failure to update documents in a timely manner constitutes a failure to comply with Criterion VI. That criterion requires LILCO to establish measures "to control the issuance of documents, such as instructions, procedures and drawings, including changes thereto, which prescribe all activities affecting quality." LILCO did establish measures to control documents, but failed repeatedly to comply with those measures. This constitutes a violation of Criteria VI, XVI and XVIII.

Document Control Group VI. The audit findings related to Group VI are summarized in Exhibit 20. The County does not contend that these findings constitute a pattern of breakdowns. Rather,

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19/ E.A. 21, Finding 016; E.A. 22, Finding 025; E.A. 27, Finding 074; E.A. 37, Finding 137, Nos. 2 & 3; FQC 9, 06676, #1; FQC 16, Finding D.2; FQC 17, Finding D.1.1; FQC 19, Finding K.1; FQC 20, Finding D.3; FQC 22, Finding L.4; FQC 23, Finding L.1; FQC 32, Finding B.2.

20/ E.A. 18, p. 2, #4; E.A. 19, 2.B.2; E.A. 22, Finding 021 #2; E.A. 23, Finding 037; E.A. 26, Finding 066 #3; E.A. 27, Finding 078; E.A. 30, Findings 097, 104 #3; E.A. 35, Finding 122; E.A. 38, Finding 141; E.A. 40, Findings 154, 157; FQC 14, Finding A.1; FQC 14, Findings B.2, D.2, D.3; FQC 16, Findings B.2A-E, D.4; FQC 18, Finding B.1.

these findings are listed for possible use in cross-examination of the LILCO prefiled testimony, particularly as that testimony relates to procurement and the inspection processes.

III. FSAR CONFIGURATION

The County has prepared and delivered to LILCO a statement of proposed stipulated facts concerning FSAR configuration deficiencies. That statement, attached hereto as Exhibit 21, is largely self-explanatory and presents most of the data necessary to comply with the Board's direction quoted on page 1 of this filing. The County notes the following additional points.

The FSAR configuration matter is presented as an example where the design process has not been controlled. The FSAR represents the basic component of the OL application and LILCO's commitment regarding how the plant will be designed and constructed. As documented in the SALP reviews, CAT inspection and the seven configuration reports, the as-built plant does not conform to the FSAR commitments.

Criterion III of Appendix B provides in part:

> Measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in § 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. . . .
>
> Measures shall be established for the identification and control of design interfaces and for coordination among participating

> design organizations. These measures shall include the establishment of procedures among participating design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces.
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> * * *
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> Design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and shall be approved by the organization that performed the original design unless the applicant designates another responsible organization.

Contrary to the foregoing, the facts documented in Exhibit 21 demonstrate that adequate measures were not established to ensure that the requirements and design basis specified in the FSAR were properly translated into specifications, drawings, procedures and instructions. These facts also document that design interfaces and design changes were not controlled, since the as-built plant does not conform to the FSAR. This constitutes a violation of Criterion III.

IV. DRAWINGS, SKETCHES & DIAGRAMS

In one of the County's October 1, 1982 letters, the County identified "drawings, sketches and diagrams" as a separate area of "pattern" inquiry, specifying a number of EA audits to be used in that connection. Exhibit 22 hereto provides summaries of those EA audit findings.

The County has decided that the "drawing, sketches and diagram" inquiry is most appropriately considered as a further part of the document control inquiry (hereafter, Group VII) and thus proposes to pursue this examination prior to inquiry regarding FSAR configuration. The County provides below a summary of this Group VII of document control.

(a) The Group VII audit findings concern LILCO's failure to ensure the proper development and review of drawings, sketches and diagrams.

(b) The County contends that the Group VII audit findings constitute a pattern of noncompliances related to development and review of drawings, sketches and diagrams. EA 00, 2, 29, 39, and 40, as described in Exhibit 22, directly identify problems in the review and checking of such documents. The other audit findings in Exhibit 22 document problems with such documents which should have been identified if the development/review/checking process had been functioning properly. The fact that these problems only were identified at the audit stage is evidence that the review and checking process had not been successfully implemented.

(c) The County contends that the problems identified in Exhibit 22 reflect a QA breakdown which violates Criteria III and VI. Criterion III, in part, requires measures for review and release of design documents involving design interface

requires measures to ensure that drawings properly translate design commitments. Contrary to these requirements, Exhibit 22 shows many instances where proper design control was not effected. Similarly, Criterion VI requires that measures shall be established to "assure that documents, including changes, are reviewed for adequacy. . . ." In many instances, such review was not accomplished. Accordingly, in failing to control the design process, particularly due to inadequate review of design documents, LILCO has violated Criteria III and VI.

Respectfully submitted,

David J. Gilmartin
Patricia A. Dempsey
Suffolk County Department of Law
Veterans Memorial Highway
Hauppauge, New York 11788

Lawrence Coe Lanpher

Herbert H. Brown
Lawrence Coe Lanpher
Alan Roy Dynner
KIRKPATRICK, LOCKHART, HILL,
CHRISTOPHER & PHILLIPS
1900 M Street, N.W.
Washington, D.C. 20036
(202) 452-7000

October 11, 1982

Attorneys for Suffolk County

EXHIBIT LIST

EXHIBIT	DESCRIPTION
1	Audit Findings re storage/housekeeping Group I: storage card problems.
2	Audit Findings re storage/housekeeping Group II: protection of material and equipment from weather-related damage.
3	Audit Findings re storage/housekeeping Group III: capping and covering of stored equipment and materials.
4	Audit Findings re storage/housekeeping Group IV: environmental protection for stored equipment.
5	Audit Findings re storage/housekeeping Group V: failure to keep areas clean and free of debris.
6	Audit Findings re storage/housekeeping Groups VI and VII: failure to provide segregated storage.
7	EA Audit Findings re document control Group I: inadequate procedures and instructions.
8	Audit Findings (Not EA or FQC) re document control Group I: inadequate procedures and instructions.
9	EA Audit Findings re document control Group II: problems with distribution/transmittal of documents.
10	FQC Audit Findings re document control Group II: problems with distribution/transmittal of documents.
11	Audit Findings (Not EA or FQC) re document control Group II: problems with distribution/transmittal of documents.
12	EA Audit Findings re document control Group III: problems re filing and indexing.
13	FQC Audit Findings re document control Group III: problems re filing and indexing.
14	Audit Findings (Not EA or FQC) re document control Group III: problems re filing and indexing.
15	EA Audit Findings re document control Group IV: legibility problems.

EXHIBIT	DESCRIPTION
16	FQC Audit Findings re document control Group IV: legibility problems.
17	EA Audit Findings re document control Group V: failure to maintain documents up-to-date.
18	FQC Audit Findings re document control Group V: failure to maintain documents up-to-date.
19	Audit Findings (Not EA or FQC) re document control Group V: failure to maintain documents up-to-date.
20	Audit Findings re document control Group VI.
21	FSAR Configuration Proposal.
22	EA Audit Findings re document control Group VII: inadequate review of drawings, sketches and diagrams.

EXHIBIT 1

STORAGE GROUP I: STORAGE CARD DEFICIENCIES

Audit	Audit Page/ Finding	Date	Description
FQC 13	D.4	3/75	Some NSS equipment in one warehouse doesn't have "Equipment History Storage Cards"
	D.7		Some cards don't indicate what maintenance checks are required, although some checks are being done.
FA 238	4.3	3/75	The Storage History Card megger-ing schedule for the windings of the Reactor Core Spray Pump violates specifications for electrical installation; also special handwritten QC instructions.
FQC 15	D.8	8/75	Storage card listed equipment in one location (Bay J) while it really was in Bay E.
FA 376	4.2	3/76	No copies of Storage History Cards were found on 5 control panels stored in the Control Room.
	4.7		No Storage History Card exists for RBCLCW Heat Exchangers stored in reactor building. No S&W or manufacturer's procedure requires storage care or maintenance nor is there a provision for periodic inspection of these safety-related items.
	4.8		Storage History Card for a Control Panel indicates items have been in storage for almost a year but only inspection took place on day Storage History Card was prepared.
FA 443	4.4	10/76	The Storage History Cards for the Hydraulic Control Units (HCUs) for the Control Rod Drive (CRD) (a) were not updated to reflect store-in-place status; (b) indicated units were packed in wooden boxes and on dunnage (later verified as corrected)

Audit	Audit Page/ Finding	Date	Description
FQC 21	D.11	4/77	4 of 12 pieces of Cat. I equipment didn't have Storage History Cards.
	D.12		Storage History Card didn't reflect where equipment was actually stored.
FA 601	4.4	6/77	Numerous meters had missed inspections required by the Storage History Card.
FQC 24	B.4	12/77	Audit of 4 cards re electrical equipment didn't reflect FQC checks for 8 months. Supposed to be quarterly.
FA 721	4.4	3/78	Storage area surveillance inspections are not being performed by Courter QC personnel.
FQC 27	B.9	9/78	Cards being processed by CSI rather than QC procedure.
	B.7, B.8		FQC couldn't document on storage cards that it had witnessed all required tests.
FA 1016	4.1	10/79	The motors from three (3) motor operated valves (MOVs) were removed from storage and installed without meggering being performed as required by the Storage History Cards.
	4.2		Storage History Cards for two (2) bearings indicate that they were not lubricated within a year's time. Inconsistency of fan pre-lubrication (lack of necessity for storage lubrication) with Storage History Card requirements should require change in Storage History Card requirements so only turnover lubrication requirement is in effect.

Audit	Audit Page/ Finding	Date	Description
FA 1016	4.3	10/79	The required strip heater periodic inspection(s) was/were never performed; neither are the strip heaters installed in the components. Also, two components had no "poly" covering.
FA 1086	4.4	3/80	The Storage History Cards for 44 components do not indicate that they are safety-related.
FA 1213	4.1	1/81	The Storage History Card of a motor operated valve (MOV) did not record the performance of a megger test.
	4.2		No documented quarterly maintenance checks had been performed on a panel in almost a year.
FA 1425	4.1	2/82	A piece of equipment requiring a quarterly storage inspection was not inspected in almost a year and a half.

EXHIBIT 2

STORAGE GROUP II: FAILURE TO PROTECT AGAINST WEATHER

Audit	Audit Page/ Finding	Date	Description
FQC 8	05782 & page 3	3/74	Specs call for water tight doors, but they are not provided.
FQC 13	B.13	3/75	Traceability control number fading due to light exposure.
	D.5		Storage area [illegible]-9 not well-drained.
FA 226	4.4	3/75	Storage Level D3 has poor drainage and puddling.
	4.14		Some Storage Level C areas do not drain properly because the yard does not have stone spread throughout the enclosure. Equipment is exposed to unnecessary dampness.
FA 238	4.9	3/75	Motor leads are exposed to moisture and possible damage.
FA 340	4.3	11/75	Steel plates (7) were found lying on the ground.
FA 371	4.1	2/76	A torn tarpaulin on a refueling platform funneled water on equipment.
	4.2		A bundle of stainless steel piping was lying in a puddle.
	4.3		Steel angle and plate stock materials had ponded water trapped in some of them. Also, unidentified bars were welded to others.
	4.4		Steel stock material was lying on the ground.
FA 376	4.4	3/76	The roof still leaks in one of the warehouses.
FA 425	4.1	7/76	Nine (9) pieces of unidentified equipment are stored outdoors, uncovered, with torn or missing opening seals.

Audit	Audit Page/ Finding	Date	Description
FA 425	4.3	7/76	Storage area roof leaks badly onto stored cardboard crates and cartons.
FA 444	4.1	9/76	A storage area had an accumulation of trash and cartons, a pile of structural steel in a rain puddle with no dunnage, and several stock stainless steel angles in contact with a carbon steel embedment.
	4.2		Pipe hanger material had water ponded in structural steel shapes. Two turnbuckles had rust on their threads and machined swivel ball joints.
	4.4		A painted structural steel assembly of the refueling platform was severely corroded.
FA 443	4.4	10/76	The Hydraulic Control Units (HCUs) for the Control Rod Drive (CRD) were not recovered with water barrier wrapping and rivulets of water came down on all sides of the units from concrete curing above the level of the units.
FA 470	4.2	10/76	A storage roof leaks badly onto stored cardboard crates and cartons. The situation has worsened since issuance of earlier violation.
FQC 23	D.5(1)	9/77	Weather proof coverings not provided, allowing moisture and wind damage.
	D.5(2)		Turbine laggings and casings were rusted, contained water.
	D.5(3)		Heavy walled pipe not protected vs. weather.
	D.6		Roof covering warehouse torn, resulting in crates of thermal sleeves becoming wet, conflicts with ANSI N45.2.2.
	D.7		Cable reels in deep puddle of water.

Audit	Audit Page/ Finding	Date	Description
FA 648	4.3	10/77	The poly cover on a MOV was torn allowing water to come into contact with equipment. Also, the lamp providing local heat was not on. The bulb needed to be replaced.
FQC 24	K.6	12/77	D.5 of FQC Audit 23 not all fixed.
	K.7		D.6 of FQC Audit 23 not fixed although protective covering provided.
FQC 25	K.3	4/78	Some of D.5 of FQC Audit 23 just being fixed.
FA 803	3.1	8/78	Outdoor storage conditions were found to be barely satisfactory.
	4.1		One motor operated valve and three air operated valves were being stored outdoors, not in a heated building. Also, 2 of the AOVs were missing end caps.
	4.2		Numerous bundles of reinforcing bars were not on dunnage and were in contact with the ground.
FQC 34	N.2	6/80	Plastic covering ripped, exposing pipe to elements.
FA 1183	4.1	10/80	Steel shapes not on dunnage and scrap material not in designated HOLD/REJECT area remain in those conditions.
	4.2		Several containers of conduit collars do not have protective covers (the "poly" is severely weathered). Several pieces of conduit and several conduit elbows did not have end caps.
	4.3		Several pieces of angle steel and "I" beam material were not on dunnage.

Audit	Audit Page/ Finding	Date	Description
FQC 36	p. 1 and 1.3	12/80	Cable not properly stored.
FA 1275	4.2	5/81	A skid of fuel storage racks was found without its protective cover intact.
FQC 40	1.3	12/81	Cable not properly stored, including in puddle.

EXHIBIT 3

STORAGE GROUP III: STORAGE PROBLEMS, PARTICULARLY RELATED TO COVERING AND CAPPING

Audit	Audit Page/ Finding	Date	Description
FQC 13	D.8	3/75	Check valves not covered. Last 3 monthly construction dept. checks show same problem with same valves.
FQC 15	D.7	8/75	Five 10" gate valves without protective end caps required by procedure.
FQC 17	D.4	3/76	Valves and heat exchangers lack required protective covers.
FA 376	4.1	3/76	A control panel was not protected against mechanical damage.
FA 425	4.4	7/76	Stored cardboard cartons are stacked so high that the bottom ones are crushed.
FA 443	4.1	10/76	Standby liquid control system pumps have rust surrounding the bolts and carbon steel lifting rings where they are threaded into a stainless steel housing.
FA 470	4.3	10/76	Stored cardboard cartons are still stacked so high that the bottom ones are crushed. This repeats an earlier violation.
	4.9		A core spray header pipe was lying on the floor with its end cap missing.
FQC 20	D.4	1/77	Electrical cable protruding from concrete for grounding purposes not protected, violating spec.
FQC 21	D.7	4/77	Expansion bolts lacked temporary protective covers required by spec.
	D.8		Iron contamination to be prevented/ minimized by covering or isolating materials. Contrary to spec., this wasn't done.

Audit	Audit Page/ Finding	Date	Description
FA 601	4.1	6/77	Two valve bodies were found with no visible identification and no end caps applied to them.
	4.2		Valves were found without end caps applied to them.
	4.3		A valve was found with no end cap applied to it.
FQC 23	D.5(3) p. 2 of 3		
	D.8	9/77	Heavy walled pipe lacked end caps; numerous, repeated storage problems.
FA 656	4.2	11/77	Miscellaneous pieces of piping were found off dunnage and missing end caps. Several pieces of piping and sections of structural steel were also found off dunnage.
FQC 24	D.3	12/77	Ends of cable reels not sealed with insulating varnish.
	D.5		Damage to level control switch.
FA 721	4.1	3/78	Fourteen piping spool pieces were found missing end caps, lacking identification and also were cluttered with debris.
	4.2		A motor operated butterfly valve was found with an end cap punctured. A second motor operated butterfly valve was missing both end caps and mud had accumulated on the valve butterfly plate.
FA 740	4.1	4/78	A control room air conditioning system unit had severe peeling of the protective coating on the unit's inside surfaces. Also, one of the threaded pipes at the base of the unit is missing its screw-on cover and a length of 1/2" conduit has been broken away from a fitting near the top of the filter. Also, several other lengths of conduit are bent due to debris and ductwork being piled on top of the unit.

Audit	Audit Page/ Finding	Date	Description
FA 740	4.2	4/78	The electrical terminations and inside surfaces of an electrical panel box were extensively corroded.
	4.3		Two tanks were found with two openings left uncovered.
FA 803	4.3	8/78	Numerous pieces of stock pipe were found with split, broken, or missing end caps.
	4.4		Various temporary laydown areas had excessive litter and/or piping was off dunnage and missing end caps.
FQC 27	D.7	9/78	Stored in place equipment lacks covers and other protection.
FA 934	4.1	4/79	A panel did not have the "poly" cover required by the Storage History Card.
	4.2		A panel had several unplugged openings on the stainless steel lines.
	4.3		Nine individually mounted instruments have unplugged openings. This is a generic problem.
	4.4		The copper tubing on an air operated valve was found kinked and the copper tubing on a solenoid operated valve was broken off. Two SOVs were missing their stainless steel identification tags.
FQC 30	N.1	5/79	Courter failed to cap piping, including one item installed in containment.
FA 980	4.1	8/79	None of four panels reviewed was covered with "poly." This is a generic problem that has been noted on 3 previous instrumentation storage audits.
	4.2		Two pieces of equipment had conduit openings uncapped.

Audit	Audit Page/ Finding	Date	Description
FA 980	4.3	8/79	Four valves had conduit openings uncapped. Two of those valves were not identified.
FA 1016	4.6	10/79	The motor wiring of a component presently stored in place has not been terminated and is lying loose out of the junction box with no cover on the junction box.
FA 1026	4.1	10/79	A component had an uncovered conduit opening.
	4.2		Five components had uncovered conduit and tubing openings.
FQC 32	D.3	11/79	Covers of 5 portable heated electrobe containers were not closed.
FQC 33	p. 2 of 3 D.4	3/80	Due to lack of or damage to covers, many instrumentation assemblies vulnerable to damage. Also lack of caps on tubing.
FA 1086	4.1	3/80	A component was not covered with "poly". The unit had been damaged and an air filter and a gauge were missing.
	4.2		Two filters are being used for storage of such items as a welder's helmet, piping, tubing, rain coats, and various debris. Several conduits on top of the units had their openings uncapped and there was an accumulation of debris behind one filter. Also, the filters are not properly identified.
Q.R.*	p. 1	5/80	FA 1063, 1070 & 1086 identify failures to provide adequate environmental protection for installed equipment.
FQC 34	K.3	6/80	Some of D.4 of FQC Audit 33 not corrected.
	N.2		Piping not protected, including lack of protective end coverings.

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Audit	Audit Page/ Finding	Date	Description
Q.R.	p.2	7/22/80	FA 1098, 4/80, identifies additional instances where there is lack of environmental protection for installed equipment, including failure to cover and cap.
FQC 35	p. 2 of 3, 2.3	9/80	Open ends of tubing identified as deficient in FQC Audits 33 and 34 still not properly protected.
FA 1180	4.1	10/80	Courter is not maintaining adequate valve storage conditions. A review of ten valves indicated deficiencies in five valves: 1 uncapped position switch and missing pressure gauge 2 uncapped solenoid valve and missing pressure gauge 3 damaged pressure regulator and missing pressure gauge 4 & 5 uncapped openings.
	4.3		An uncapped opening remains uncapped.
Q.R.	p.1	11/13/80	FA 1133 and 1142 identify two failures to provide adequate environmental protection for installed equipment.
FQC 36	p. 1, item 3.1.2 and Obs. 1.2	12/80	Improper storing resulting in oil and water contamination and unacceptable megger readings. Problem had been previously noted.
FA 1204	4.1	12/80	Two filters were not covered with "poly" and the doors were removed exposing the internals of the filters to dirt and potential damage.
	4.2		The identification of a component was not visible without removing the protective covers.
FA 1234	4.1	1/81	An instrument had an uncapped conduit opening.

Audit	Audit Page/ Finding	Date	Description
Q.R.	p.1	2/17/81	FA 1180 and 1204 identify further failures to provide adequate environmental protection for installed equipment.
FA 1301	4.1	6/81	Equipment was not covered with "poly."
FA 1313	4.1	8/81	Two components were not covered with "poly."
	4.2		A component was not covered with "poly" and the electrical box was damaged.
Q.R.	p.2	8/31/81	FA 1275, 1297 and 1301 identify further instances of improper environmental protection of installed equipment, including failure to provide adequate covers and improper use of internal heaters.
FQC 40	1.3	12/81	Cable lacks covers.
Q.R.	p.1	12/03/81	FA 1313 identified 3 additional instances where stored-in-place equipment not adequately covered.

EXHIBIT 4

STORAGE GROUP IV: ENVIRONMENTAL PROTECTION

Audit	Audit Page/ Finding	Date	Description
FQC 13	D.9	3/75	Dessicant in main steam stop valves for humidity control purposes had not been checked.
FA 226	4.1	3/75	Two motor generator sets are in a unheated-instead of a heated-indoor storage area.
FA 340	4.1	11/75	Control Rod Drive Pump Motors did not have their space heaters energized for 8 days while in storage.
FA 376	4.3	3/76	"Leanto" area's heaters were not fully operational. Lack of heat has continued uncorrected throughout winter.
FQC 21	B.9 D.14	4/77	Humidity in storage area at 70%, rather than maximum of 60% provided by procedure.
	D.15		Items required to be heated and within building. Certain items didn't have strip heater energized and also the protective enclosure was torn and condensation noted.
	D.16		Spring heaters being stored under wrong conditions since building has no roof and protective plastic blown away.
	D.17		Pump motors and pump stored in wrong type of area. Failure to correct from earlier inspection.
	D.18		Rust accummulated on valve due to storage in uncontrolled area without protective covering.
FA 679	4.2	12/77	A pump was found not to have local heat applied in an unheated structure as required by the Storage History Card.

Audit	Audit Page/ Finding	Date	Description
FA 679	4.3	12/77	Rust is still evident in the threaded bolt holes surrounding the carbon steel lifting rings where they are threaded into the stainless steel housing for the Standby Liquid Control System Pumps. This is a continuation of an earlier violation from Audit 555.
FA 699	4.1	2/78	The refueling platform, main hoist motor, and monorail hoist motor do not have local heat applied. The motors are also stored in an area different from the area required by the Storage History Card.
FA 721	4.3	3/78	The twenty-five horsepower motor attached to the hydrogen recombiner did not have the internal heater operating.
FA 1301	4.2	6/81	Internal heaters were kept 31°F above the required temperature. Since the primary purpose of the heat is to prevent condensation, the amount of heat applied is excessive.

EXHIBIT 5

STORAGE GROUP V: HOUSEKEEPING DEFICIENCIES

Audit	Audit Page/ Finding	Date	Description
FQC 8	3	3/74	Trash barrels available but not being used. Deterioration since last audit.
FQC 11	3	10/74	Same finding as in FQC Audit 8.
FA 226	4.3	3/75	Garbage and food were found in a storage area, the Reactor Shroud Enclosure.
FA 425	4.2	7/76	Accumulations of trash and evidence of food/drink consumption were found in storage areas.
FA 470	4.1	10/76	Accumulations of trash and evidence of food/drink consumption were still found in storage areas. Repeats an earlier violation.
	4.5		A box containing a refueling platform assembly hoist had an accumulation of trash including old desiccant bags and an open can of unidentified liquid in its open crate. Also, there was no "poly" cover and one instrument was rusting.
FQC 20	D.5	1/77	Trash and litter allowed to accumulate, thus violating CSI-13.1.
FQC 21	D.13	4/77	Trash accumulation in storage areas, violating QC-17.1.
FQC 23	K.5	9/77	D.13 of FQC Audit 21 not fixed.
FQC 24	p. 2 of 3, item 3.1.1	12/77	Housekeeping lack of attention is evident.
FQC 25	D.6	4/78	Housekeeping inspections not documented.
	D.7		Housekeeping zone markers not posted.
FQC 26	K.4	6/78	Relating to D.6 of FQC Audit 25, finds procedure inadequate.
FA 803	4.4	8/78	Various temporary laydown areas had excessive litter and/or piping was off dunnage and missing end caps.

Audit	Audit Page/ Finding	Date	Description
FA 1086	4.2	3/80	Two filters are being used for storage of such items as a welder's helmet, piping, tubing, raincoats, and various debris. Several conduits on top of the units had their openings uncapped and there was an accumulation of debris behind one filter. Also, the filters are not properly identified.
FQC 34	N.2	6/80	Housekeeping deficient; debris and dirt need cleanup.
FA 1275	4.1	5/81	A pipe storage area was found to have excessive litter and debris. Continuation of a violation in Audit 1237.
FA 1325	3.2	8/81	A storage area continued to have excessive litter and debris. Violation remains from audit 1275.
	4.1		A storage area continued to have excessive litter and debris. Violation remains from audit 1275. It was verified that a wooden floor has been installed but it appears that the area is not cleaned regularly.

STORAGE GROUPS VI AND VII: STORING ITEMS IN WRONG AREAS

Audit	Audit Page/ Finding	Date	Description
FQC 8	3 and A.O. 05786	3/74	Flamable materials not segregated; precautions not taken. A repetition of earlier finding.
FQC 17	D.5	[illegible]76	Outdated epoxy stored in Category I section.
FQC 13	D.6	3/75	Accepted, rejected, hold and uninspected goods are intermixed.
FQC 15	D.2	8/75	Different types of welding electrodes stored together in violation of specs.
FA 340	4.2	11/75	Highly volatile Tylox cement was stored among vital items.
FA 376	4.6	3/76	A flammable liquid storage container in the middle of a steel receiving area.
FA 425	4.5	7/76	Three tanks of propane gas were found in a storage area.
FQC 23	D.5(5)	9/77	Gas stored in wrong area.
FQC 32	D.3	11/79	Oven contained two types of electrodes; also, wire types not segregated.
FQC 34	N.2	6/80	Instrumentation assemblies not properly segregated.

EXHIBIT 7

DOCUMENT CONTROL GROUP 1: PROBLEMS WITH PROCEDURE/INSTRUCTIONS

Audit No.	Page/Finding	Date	Description
EA 12	2.C.1	1/75	Project instructions have not been issued for reproducing, distributing and filing loop diagrams; contrary to EAP 5.15.
EA 18	p. 2, #3	7/76	Project does not have instructions for distribution of Functional Control Diagrams and descriptions.
EA 21	012	5/77	Supplier Technical Documents Project Memo 52 does not give instruction for follow-up of delinquent documents from suppliers.
	013, #6		Project Instructions do not state the criteria for determining: A. Whether a change authorized by an N&D is to be incorporated into welding and material process procedures, and ESSOWs. B. When the changes (which must be incorporated) are to be incorporated into welding and material process procedures, and ESSOWS.
EA 22	026	8/77	The project has not issued instructions to identify the distribution of S&W generated Stress Reports/Analyses to manufacturing sites, installation sites, and the client.
EA 24	050, #1	3/78	The project is following procedures/instructions (e.g., SATMs, DCs, DPs, IOCs, etc.) which have been superseded or are not covered by division guidelines. Interoffice memorandum requires that these documents be authorized for use by project instruction or a deviation request approved in accordance with EMAG-0. Also, the project has developed a "LILCO

Audit No.	Page/Finding	Date	Description
			Pipe Stress and Supports Manual" which is intended for inclusion in the project instruction system. However, this manual does not contain all of the procedures/instructions (e.g., STAMs, DG-Zs) being followed and it has not yet been incorporated into the project instructions.
EA 38	141	12/81	There is no single comprehensive project instruction that details preparation, issuance, and control of the project manual. Currently, the instructions for preparation, format, and control of project directions are found in several different sections of the manual.
EA 40	155	6/82	There are no project procedures governing the preparation, review, and control of cable block diagrams. There is no evidence that CBDs are reviewed.

EXHIBIT 8

GROUP 1: PROBLEMS WITH PROCEDURES/INSTRUCTIONS

Audit	Page/Finding	Date	Description
Site QA Audit #1 - Receiving Inspection	p. 1, ¶ 2 Summary of Findings (2 pages)	8/7/72	Receiving inspection procedure is inadequate, particularly re lack of specific instruction for inspector and lack of any provision for acceptance of GE purchased equipment. Matter serious enough to warrant immediate meeting with S&W personnel. Details of problems described in "Summary of Findings."
Site QA #7	pp. 1-2, Nos. 2 & 3	8/27/73	Routine practice of verbally placing orders for Category I equipment prior to issuing written purchase orders violates Criterion VI of App. B since suppliers frequently do not receive written QC instructions until after shipment of material or performance of services. Need to prepare and implement procedures to fully describe functions of FQC, purchasing and construction re procurement activities. Need to develop method for QC to verify acceptability of prospective suppliers prior to placement of orders.
LILCO QA Audit of S&W FQC	p. 2, #4	11/13/73	Criteria for final and in-process inspections are not established for initial shipments of equipment Spot check by LILCO QA found unacceptable weld conditions. FQC shop inspection personnel need further training.
No. 4 Audit of LILCO Purchasing Dept.	p. 1, bottom ¶	10 & 11/73	Procedure describing maintenance and distribution of purchase order register is still unavailable after repeated requests.
QA Audit No. 4, SNPS S&W Project	p. 6, IV.10	1974	No follow-up system to assure that technical changes, transmitted to vendors by Purchase Change Order, are eventually incorporated into purchase spec.

Audit	Page/Finding	Date	Description
Shoreham Project Audit	III.6.4	1974	S&W needs to establish program to enforce requirement that preparers and reviewers of specs. comply with project procedures.
QA Audit #1, S&W FQC	Attachment, I.A.1	1975	No detailed QC procedures or instructions re FQC review of vendor provided documentation.
	I.A.3		FQC documentation review group has accepted documentation where documentation checklists haven't been properly approved by S&W engineer as required by spec.
	I.C.5		Category I items were sample receipt inspected in violation of QC manual that allows sampling of Cat. I only with LILCO's approval.
	I.C.6		FQC receipt inspection procedures do not require check or review to assure received item has been provided in accordance with the required procurement document change level.
S&W PQC #1	Attachment, p. 1 Vendor Nonconformance #2 & Training ¶	1975	S&W PQC manual doesn't address formal responsibilities and interface of PQC re vendor-identified nonconformances. No specific training for PQC inspectors re vendor quality document requirements and review of quality data in those documents.
QA Audit #6 LILCO Purchasing Dept.	pp. 2&3, Finding A & Recommendation A	10/75	No written procedure outlining requirements for purchase orders or addenda.
QA Audit #77-8 S&W	P. 4, Finding 3	8/77	Contrary to EAP 17.1, S&W has not issued project instruction to implement records retention program.
	pp. 4-5, Finding 4		A. S&W doesn't have instructions or procedures to determine the cause of significant conditions adverse to quality and to assure that all required protective actions are taken to preclude repetition. B. SWEC Problem Reporting system utilized to provide feedback regarding deficient vendor pipe support design calculations did not address affected discrepant pipe supports which had been shipped to Shoreham.

Audit	Page/Finding	Date	Description
			C. Shoreham Project did not provide any formal feedback or information to QA until July 1977, with respect to the discrepant pipe supports shipped to the Shoreham Site.
			D. Prior to July 1977, SWEC QA had not identified discrepant pipe supports at the site. This audit finding violates Section 16 (Corrective Action) of SWEC Shoreham Project Quality Assurance Manual and the LILCO Engineering Quality Assurance Manual.
QA Audit 77-1 S&W Field Extension Office	p. 5, Finding 5	8/77	S&W, with exception of audits of Bergen Paterson design control program implementation, has failed to develop formal program to assure acceptability of all pipe support calculations provided by B.P.
QA Audit 78-9 S&W	p. 4, Finding 2	10/78	No documented evidence resulting from S&W review that supplier's QA program is applied or committed to be applied to all S/R items.
	Finding 5		Project Engineering hasn't issued instructions re gathering, storing, and releasing QA records into permanent file.
QA Audit 79-10 S&W	pp. 3-4; Audit Finding 1	10/79	Contrary to Criterion IV, project for certain outside engineering services has not provided documentation which includes basis for work to be accomplished and other information necessary to assure adequate quality. Violates EAP.
QA Audit 81-9 LILCO Shoreham Project	p. 3, B.6	3/81	Certain purchase orders failed to indicate whether item or service was safety-related.
	p. 5, Open Item 1		Shoreham Project Procedures for procurement activities do not clearly define the requirements for generating a procurement document, or for the required review and approval by the Lead Engineer, the Quality Assurance Manager (for safety related items), and the Project Engineer for material, equipment and engineering services when they are initiated by LILCO personnel from Project Engineering or other Engineering disciplines.

Audit	Page/Finding	Date	Description
QA Audit 81-11 LILCO Purchasing Dept.	p. 3, Finding 1	3/81	Purchase orders and supplements being processed without project release form signed by Project Engineer.
	p. 3, Finding 2		Purchase Requisitions that don't indicate whether items are Category 1 or 2 are processed as Category 2.
	p. 4, Open Item 1		Many current problems associated with processing of PR's generated by LILCO result from lack of procedures to implement quality requirements for control of procurement documents.
Courter Audit 145	145/6	4/3/81	Failure to comply with procedure requiring QA manager to issue memo to Estimating/Purchasing upon inclusion of Vendor on approved list.

EXHIBIT 9

Document Control Group 2: Distribution/Transmittal Problems

Audit No.	Page/Finding	Date	Description
EA 13	2.C.2	4/75	N&D's related to drawings not distributed to Project Design Engineer so Change Record doesn't list N&D's requiring drawing changes.
EA 14	2.C.7	8/75	Copies of N&D's not sent to Project Design Engineer. Project's response to last audit not received by EA.
EA 24	047	3/78	1. The distribution list for purchase recommendations is not in agreement with the project manual model. 2. Of the two letters of recommendation audited, neither had its pink copy stamped by the equipment specialist. One of the letters had not included the equipment specialist in the distribution list.
EA 25	060	6/78	1. Document issue checklists identifying specifications sent to the site, are being issued approximately every two months instead of within one week after the issue of the specifications. 2. Of five DICLs audited to determine whether site personnel were receiving specifications, one of the DICLs was recorded as having been issued. The project records do not contain any evidence that the four listed specifications were received at the site. Also, no evidence that the project had attempted to verify site receipt of those specifications

EXHIBIT 10

Document Control Group 2: Distribution/Transmittal Problems

Audit	Page/Finding	Date	Description
FQC8	05788	3/74	Document transmittal forms are not being returned to the site within 5 days of receipt. Numerous transmittal forms are over 60 days late.
	05789, #2		Of approximately 30 Dravo "down-comer" drawings received from Boston, the following was observed: (a) Revision 1 is being sent to the site for use prior to the issue of Revision Ø; (b) both Revision Ø and 1 had different account numbers and both were indicated as new drawings. The account numbers indicate that Revision Ø supersedes Revision 1.
	05790, #1		The S&W Drawing Issue Checklist is not being received weekly.
FQC 14	B.3	6/75	A copy of the QCI Index is not being sent to the Division Manager and the Methods Group of the Quality Systems Division on a quarterly basis.
	D.1		Twenty-one document forms out of 50 sampled in the reactor trailer had not had the blue copies of the transmittal forms returned within 5 days. No followup activity had been initiated for the delinquent transmittals, some of which were up to 30 days delinquent.
	F.3		Construction site personnel have not received the specification index which should be forwarded to the site on a bimonthly basis.
FQC 17	D.2	3/76	An audit of mechanical installations revealed the component control system discrepancies, including: Two of the six components had completed Foundation inspection checklists which had not been distributed; and mail boxes to be used for pickup of completed inspection forms have not been strategically placed and consequently some completed forms are not reaching the component control group.

Document Control Group 2: Distribution/Transmittal Problems

Audit	Page/Finding	Date	Description
	F.2		IBM cards used to generate the component control system identification plates and the master record are not always received prior to receipt of the components at the site.
FQC 19	D.2	8/76	Courter and Co has not returned 234 transmittals which should have been stamped and returned within 14 days. One hundred and thirty three of those 234 unreturned transmittals were listed on an earlier computer generated followup list.
	F.1		Senior FQC Engineer does not receive manufacturers' operation and instructic manuals as required. (The Senior FQC Engineer does not consider that requirement necessary since he has access to manuals in the central files. The Senior FQC Engineer was later deleted from the distribution list.)
FQC 23	D.3	9/77	Document transmittal forms are not being completed by the addressee and returned to document control within 14 calendar da s. The following delinquencies were noted:

Addressee	Number of Delinquencies	Time Span
Comstock-Johnson	28	4/22/77 to 7/28/77
Reactor Trailer	17	6/21/77 to 7/15/77
Courter	29	6/14/77 to 7/28/77
Field Engineering Office	7	7/19/77 to 7/28/77

	D.4		Of four document issue checklists reviewed, one did not indicate whether six documents had been received onsite. Further investigation located five of the documents but the sixth one had not been received.
	F.4		Excessive time periods, up to 20 weeks, elapse between first transmittal and onsite receipt. Also, documents sent in response to "not received" indications on the first transmittal are not always sent as a second transmittal. Instead, they are included in a subsequent "first transmittal" and

Document Control Group 2: Distribution/Transmittal Problems

Audit	Page/Finding	Date	Description
	F.4 (Continued)		the "tickler system" is thereby rendered ineffective. Problem is described as "of greatest concern" in 3.1.1.B.
FQC 24	F.2	12/77	The Senior Site Construction Superintendent was on the distribution list for letters pertaining to document changes, but because "enclosure" was not indicated next to his name, he did not receive the actual documents.
	K.4		Adherence to the requirement that the document transmittal be completed by the addressee and returned to document control within 14 calendar days has been poor. Positive results have not been attained by the sending of delinquency notices after 14 days, 19 days, and twice a week thereafter.
FQC 25	D.4	4/78	A. Black-on-pink drawings are not being sent to S&W's central files. B. The weekly issued drawing issue checklist is not being forwarded to FQC after review by document contro (Site personnel feel that other documents are available to FQC to keep them informed of the drawings received on the site each week.)
	F.1		The latest specification index should be forwarded to the site monthly. This has not been done since 11/29/77.
FQC 26	L.4, A-D, F, and J	6/78	A. Document control does not deliver documents to area supervisors as required. Instead, area personnel themselves obtain drawings and other documents from document contr B. In 29 of 44 Courter transmittals, void documents had been retrieved before revised documents had been issued. Also, three out of nine control drawings sampled were out-of-date. C. Document control does not sign the Courter area transmittals indicatin receipt of the void documents.

Document Control Group 2: Distribution/Transmittal Problems

Audit	Page/Finding	Date	Description
FQC 26 (continued)			D. Document had not generated a follow up list to assure the return of document transmittal forms within 14 days. F. The weld engineer does not forward all procedures to S&W document control. J. Document control does not forward all pressure test procedures to S&W document control.
FQC 32	D.1	11/79	Review of 45 document transmittals disclosed that 14 of the transmittals had not been signed, acknowledging the destruction of the voided document when in fact the documents had been destroyed.
	D.2		A copy of each transmittal has not been forwarded to LILCO, attention E.W. Tesko. This is partially due to the fact that LILCO is now the originator of these transmittals.

EXHIBIT 11

GROUP 2: DISTRIBUTION/TRANSMITTAL PROBLEMS

Audit No.	Page/Finding	Date	Description
QA Audit #5, LILCO Shoreham Project	p. 3 of 3, # B.3	9 & 10/75	All Category I purchase requisitions are not sent to QA with purchase release form for QA disposition. Noncompliance with procedure.
QA Audit #6 LILCO Purchasing Dept.	pp. 2&3, Finding B & Recommendation B	10/75	Certain purchasing packages not sent to purchasing department.
Courter Audit 160	160/11b	7/21/81	Drawings not transferred to proper SQA records.
FA 1195	4.3	12/80	Method of issuance and transmittal of operture cards needs better control.
FA 1287	4.1	6/81	Courter procedure requires product verification before requisitioning material from UNICO. This was not followed re item audited.

EXHIBIT 12

DOCUMENT CONTROL GROUP 3: PROBLEMS WITH FILING, INDEXING AND OTHER RECORD KEEPING FUNCTIONS

Audit No.	Page/Finding	Date	Description
EA 0	48-49	1/70	No master list indicating status of all spec. No master index or list of calculations for which formal review required. No log of nonconformance which is Engineering's responsibility. Latest revision not easily identified on drawings. No master log of vendor bid evaluations.
EA 5	p. 3, #4	10/75	Building Service Equipment Account Job Books have significant number of documents misfiled. Copies of communication with vendor filed under correspondence with client. Letters sent with documents were not separated and filed under appropriate tab. Documentation not filed in a timely manner.
EA 21	013, #5	5/77	Many "change" N&Ds are not listed in the E&DCR and N&D change records against the affected specifications and drawings.
EA 22	024	8/77	The list of ASME III Stress Reports (including manufacturer supplied) does not contain all the stress reports.
EA 23	042, Nos. 4 & 7	12/77	4. Of five N&Ds that changed drawings, and which were processed within the past three months, two drawings had not been entered into the change record against the drawings affected. Three drawings were affected. 7. N&Ds have been revised after approval from quality assurance and construction. Despite that, neither the first page of the N&Ds nor the N&D logs contain any evidence that the N&Ds have been revised. One N&D was observed to have been revised twice but unless all three copies of the N&D are reviewed, it cannot be determined whether the latest copy is being used or whether there are other revisions which are not filed.

Audit No.	Page/Finding	Date	Description
EA 24	050, #2	3/78	2. Due to the absence of identification of the (NUPIPE) computer program and the computer run that modified the amplified response spectra data for NUPIPE input, it could not be verified that the ATS files correctly represent the ARS curves.
EA 26	065	9/78	1. Some documents, which had been reviewed, were not filed in the appropriate job books. In some cases the unreviewed copy was filed and in other cases nothing was filed. 2. Transmittal letters, which forward the review results of multiple documents, and the documents were filed under the tab for the first listed document. Therefore, the other documents were not filed under the appropriate tabs.
EA 27	075, #1	12/78	1. Of 36 pipe support drawings listed in the 11/14/78 Pipe Support Status Report, 11 drawings could not be found in the project "controlled" drawing file and five also could not be found in the reproduction and EMD files.
EA 28	082	4/79	1.a. A minimum of thirty-eight sketches listed in the index to the Mechanical Sketch Job Book has not been filed in the book. 1.b. At the time of the audit, Books 10.6 (structural) and 10.8 (Geotechnical) were not in the filing area and could not be located. 2.a. Transmittals and correspondence to the Client Job Books were found to be incomplete. Twenty-five out of 98 items could not be found in the Job Books. Also, the job order number was not shown on the 2 most recent 7.1 series books. 2.b. Transmittals and correspondence to GE/NED Job Books were incomplete. Twenty out of 75 items reviewed were found to be missing from the books.

Audit No.	Page/Finding	Date	Description
EA 29	091	7/79	1. The document issue checklists were reviewed to determine how many of the 28 specifications/addenda issued for field use since June 1978 had been received at the site. Nine of the specifications issued during the period of 8/78-11/78 were not listed on any of the DICLs but were found to be available at the site. One specification addendum was neither listed on a DICL nor was it available at the site. 2. Of 20 specifications in job books and 10 in the microfiche file, the following results were observed: (a) One job book was missing an addendum. (b) A revision and an addendum were not in the microfiche file. (c) An addendum in the job book was not marked "controlled." (d) A specification has been cancelled but it has not been so marked in the job book.
EA 30	102, #2	10/79	2. After examination of E&DCR and N&D specification change records, it was found that four specifications had at least two unincorporated changes in N&Ds, one of which had been dispositioned more than four years ago. All of the outstanding N&Ds on these four specifications were dispositioned at least fifteen months earlier. Three of these specifications had been revised without incorporating the outstanding N&Ds.
EA 40	Structural-023	6/82	Steel and concrete calculations generally show a lack of accountability between calculations and the calculation index.

EXHIBIT 13

Document Control Group 3: Problems with Filing, Indexing, and Other Record Keeping Functions

Audit	Page/Finding	Date	Description
FQC 8	05790, #3	3/74	The latest addenda to the most recent specification index (1/3/74) did not indicate the correct date of the existing onsite specifications.
FQC 9	06680	5/74	There is no day file for specifications.
	06681, #1		The specification index is inaccurate and incomplete with regard to indicating specifications which should be on the job site.
FQC 12	07807	12/74	The specification index is inaccurate and incomplete with rega to indicating specifications which should be on the job site. Some inconsistencies exist. The notation of status, i.e., for bid or purchase, is lacking. Latest addenda, issuance code, and dates are not evident.
FQC 16	B.1	12/75	Existing QCIs were not being placed in the Historial File. Eight superseded QCIs were missing from the Historical File.
	B.2.A		Of 24 FQC procedures manuals being maintained by FQC personnel, three contained QCIs which should have been filed in appropriate QCI manuals.
FQC 17	D.1.2	3/76	The turbine trailer contained uncontrolled specifications which had not been assigned to that area.
	F.1		Manufacturers' drawings, which have been received on site, are not listed on the record.
FQC 18	K.7	5/76	An earlier review noted that documents in the permanent plant files are not either marked "temporary" or identified as a permanent record. The indentification of records is in progress but many records remain to be marked.

Document Control Group 3:
Problems with Filing, Indexing, and
Other Record Keeping Functions

Audit	Page/Finding	Date	Description
FQC 19	D.5	8/76	Not all manufacturers' drawings in the site file are listed in the print record. This is an ongoing problem. Some engineers record changes on the print record. The clerk in Boston, unaware of those changes, cannot transmit documentation of the new or revised drawing to the site.
	D.6		The painting contractor could not produce touch-up records of protective coatings within the primary reactor containment structure. (Construction Department indicated that it had not required the contractor to maintain touch-up records.)
	F.2		Repeats D.5 of FQC 19.
FQC 22	B.5	7/77	An addendum had been removed from a quality assurance site file folder for installed piping pressure testing. The addendum had neither been signed out nor had it been returned.
FQC 26	L.4, E, G & H	6/78	E. The weld engineer does not maintain a weld procedure index to ensure that only the latest approved procedures are used. G. Document control does not maintain a listing of all NDE procedures. H. Document control does not utilize a quality related document log to provide for proper destruction of superseded documents.
FQC 32	K.2	11/79	In regard to the observations of FQC Audit 31, the survey instrument serial numbers were not always entered on the survey notes. Also, the transit optical plummet had not been verified.

EXHIBIT 14

GROUP 3: INDEXING/FILING/RECORD KEEPING PROBLEMS

Audit No.	Page/Finding	Date	Description
LILCO Internal Audit #3, Engineering	IV.1 & 2	1971	Engineering files only marginally satisfactory; copies of specs. apparently not in files; spec. files apparently lack lists of all issues and addenda to specs.
LILCO Internal Audit 3A, Followup of #3	p. 8, IV.4	1971	Some letters still missing from project correspondence files.
3rd Audit of LILCO Purchasing Dept.	p. 3, bottom 7 lines thru top half of p. 4	1973	Numerous filing problems identified, including the following "major nonconformances": failure to use "out" cards when removing material from central files, checklists not up-to-date, lack of purchase requisitions or modifications, lack of latest spec. or addendum.
S&W Audit No. 3	p.1, # 3(c)	6/73	PQC doesn't have approved copies of QA manuals, thus violating EAP 4.1.
Site QA Audit # 9; Site Non-destruction Testing	p. 2, # 1(b)	1/8/74	Project Specification file and retrieval system is uncontrolled. Four Category I specs. and addenda checked; one spec. missing; 5 addenda missing.
QA Audit # 4; SNPS S&W Project	p. 3, IV.1	1974	Engineering file index not maintained as controlled document.
Followup of LILCO Purchasing Audits 4&5	p. 1, bottom ¶	1975	"Out" cards are not placed in central files when folders removed. Contrary to Control file procedure.
Courter Audit 97	097/1.1	1/23/80	Component stores requisitions for bolted joint materials could not be located.
Courter Audit 145	145/25(A)-(C)	4/3/81	Material requisition forms ("MRF") processed incorrectly by Construction and QC Inspector; some filled out incorrectly also.
Courter Audit 160	160/10	7/21/81	MRF's in wrong file.

Audit No.	Page/Finding	Date	Description
FA 228	4.2	3/19/75	Need to correct deficiencies in specification index.
FA 359	4.1	2/76	Documentation not processed into permanent plant file system.
FA 433	Conclusion & 4.1-4.4	8/76	Permanent plant files again found to be generally unsatisfactory. 4.1: documents on index identified to wrong reel 4.2: 1000-2000 documents not in date sequence, making retrieval difficult. This problem goes back one year seven months since a change in system was made. Auditor believes it should have been fixed by 8/76. 4.3: Duplicate entries made in spec. index. 4.4: Film re production welds not listed in index.
FA 563	Conclusion & 4.1-4.3	6/77	Permanent plant files again generally unsatisfactory. 4.1: Item 4.2 of FA 433 not fixed. 4.2: Item 4.3 of FA 433 not fixed. 4.3: Item 4.4 of FA 433 not fixed.
FA 636	Conclusion & 4.1, 4.2, 4.4, 4.6	9/77	Permanent plant files again generally unsatisfactory. 4.1: Noncompliance with ANSI N45.2.9-1974 re document retention. Of twenty document codes sampled, three were found to have retention periods not consistent with ANSI. In addition, out of 384 document codes reviewed, 58 had no retention periods assigned at all and 169 were not designated as to responsibility for release to files. 4.2: Need to implement procedures to ensure monitoring of density and resolution of micrographic images is in accordance with requirements.

Audit No.	Page/Finding	Date	Description
			4.4: Signout for permanent plant files doesn't accurately reflect status of documentation.
			4.6: Of 18 Welder Qualification Records reviewed, seven were found filed out of sequence making retrieval difficult, if not impossible.
FA 990	4.1	8/79	UNICO document control not using Drawing index referenced in EAP to verify up-to-date status of its files of controlled documents.

EXHIBIT 15

Document Control Group 4:
Legibility Problems

Audit	Page/Finding	Date	Description
EA 23	041, #5	12/77	5. Seventeen of 40 E&DCRs sampled have attachments that are either totally or partly illegible. These E&DCRs are filed in the project file but generally are field originated and dispositional.

EXHIBIT 16

Document Control Group 4:
Legibility Problems

Audit	Page/Finding	Date	Description
FQC 8	05789, #1	3/74	Several manufacturers' sepias were illegible and unsuitable for reproduction.
	05790, #2		Still many S&W sepias which are illegible and unsuitable for reproduction.
FQC 9	06676, #2	5/74	Several half-size prints in QC files were poorly reproduced and extremely difficult to read.
FQC 9	06682, #2	5/74	Six manufacturers' prints were unsuitable for reproduction.
FQC 22	D.1	7/77	Handwritten E&DCR numbers on many sepia drawings were not legible.
FQC 23	F.3	9/77	Of two lists reviewed (6/2/77 and 8/8/77), the nine S&W documents on the June list were still unresolved on the August list. One new S&W item was added to the August list. Nine items are illegible sepias and the tenth item is an instance of missing information.
	F.5		Numerous instances of vendor document illegibility. Lists of vendor document problems were generated in June 1977 (7 pages) and August 1977 (8 1/2 pages). Approximately 80 percent of the problems concern document illegibility
FQC 25	K.1	4/78	In regard to the nine illegible sepia drawings discovered in FQC Audit 23 (F.3), the sepia drawing replacements were also illegible. The copying fault was said to lie with the manufacturer. To date, one vendor has responded and three of the drawings have been replaced by legible sepia drawings. Also, many vendor documents are illegible.
FQC 26	K.3	6/78	In regard to the nine illegible sepia drawings discovered in FQC Audit 23 (F.3) and reported in FQC Audit 25 (K.1), two S&W drawings are still listed as illegible. Many of the sepia vendor drawings listed as

Document Control Group 4:
Legibility Problems

Audit	Page/Finding	Date	Description
FQC 26 (continued)			illegible on the June 1977 list appear on the May 1978 list. Also, many vendor documents are illegible.
FQC 27	K.2	9/78	In regard to the nine illegible sepia drawings discovered in FQC Audit 23 (F.3) and reported in FQC Audits 25 (K.1) and 26 (K.3), the two missing S&W drawings were received at the site but one was again determined to be illegible.
FQC 28	K.2	2/79	In regard to the nine illegible sepia drawings discovered in FQC Audit 23 (F.3) and reported in FQC Audits 25 (K.1), 26 (K.3), and 27 (K.2), a touched up mylar of the last S&W drawing has been transmitted and accepted. Of 44 illegible vendor drawings, only 13 have been replaced with legible drawings.
FQC 29	K.2	4/79	In regard to illegible vendor drawings discovered in FQC Audit 23 (F.3) and reported in FQC Audits 25 (K.1), 26 (K.3), 27 (K.2), and 28 (K.2), the project's efforts to have vendors upgrade their drawings were largely ineffective. The document corrective actions list of February 5, 1979, listed 60 illegible vendor drawings.
FQC 30	K.2	5/79	In regard to illegible vendor drawings discovered in FQC Audit 23 (F.3) and reported in FQC Audits 25 (K.1), 26 (K.3), 27 (K.2), 28 (K.2) and 29 (K.2), 10 drawings have been successfully resubmitted. Project design forces have upgraded a further 11 drawings, including some that are the only surviving reproducibles. Approximately 46 illegible drawings remain to be upgraded.
FQC 31	K.2	9/79	In regard to illegible vendor drawings discovered in FQC Audit 23 (F.3) and reported in FQC Audits 25 (K.1), 26 (K.3), 27 (K.2), 28 (K.2), 29 (K.2), and 30 (K.2), it was decided that even though many vendors' drawings are below current standards, many of

Document Control Group 4:
Legibility Problems

Audit	Page/Finding	Date	Description
FQC 31 (Continued)			those drawings could be classified as acceptable. Approximately 47 vendor drawings remained to be upgraded according to the Monthly Problem Report issued 8/16/79. Twenty-nine of those illegible vendor drawings were previously identified in the Monthly Problem Report issued 5/9/79.

EXHIBIT 17

DOCUMENT CONTROL GROUP 5: FAILURE TO KEEP DOCUMENTS UP-TO-DATE

Audit No.	Page/ Finding	Date	Description
EA 17	p. 3, #6	11/75	Greater attention is required to keeping status log complete and up-to-date.
EA 18	p. 2, #4	8/76	Some manuals have outdated material that is not marked superseded. Some manuals missing addenda to procedure and general information.
EA 19	2.B.2	12/76	3 of 5 EAP manuals didn't contain all current procedures.
	2.B.3		18 of 46 drawings for Project MAC file not up-to-date.
EA 21	016	5/77	Superseded calculations have not been "voided." Also, the input sources for many calculations are not identified adequately.
EA 22	020	8/77	1. Several changes of people and locations have been made since the distribution lists were last issued (4/15/77). Therefore, they are out-of-date. 2. The project has not identified a definite frequency of distribution for the loops diagrams index. 3. The controlled file of FA drawings contained many drawings which were not stamped with the red controlled stamp. Drawings in the remaining controlled files were all stamped. 4. Many "controlled" files of drawings do not contain up-to-date indices. 5. Functional control and loop diagram indices have never been issued and the logic diagram index has not been issued bi-monthly as required. 6. The "controlled" file of FP drawings does not contain some of the most recently issued "controlled" drawings. These drawings were removed and replaced with interim revisions issued from the FEO.
	021	8/77	1. No project manual indices have been reissued within the past year and many

Audit No.	Page/ Finding	Date	Description
			changes have been made to the manuals since the last issue. Therefore, the indices are quite out of date. 2. Most project manuals are not being kept up-to-date. This deficiency has been identified in prior audits.
	025	8/77	Some pages of calculations have been superseded by other calculations but the superseded pages have not been marked to indica-e that they are out-of-date.
EA 23	037	12/77	An audit of the project engineering assurance manuals revealed that approximately 40% of the manuals were deficient. The manuals did not contain up-to-date material or out-of-date material had not been removed, or both.
EA 26	066	9/78	1. The project manual index, last issued 9/1/77, is over a year old. In the time since the last index was issued, changes or revisions have been issued to documents in four of the 10 sections of the manual covered by the index. Based on the number of changes since the last issue of the index and the length of time since the last issue, the index should have been issued more frequently. 2. The addenda issued since the project manual index was last issued have not been accompanied by a revised addendum index. 3. Of five project manuals reviewed: a. Each contained all 23 addenda to the project general instructions. Only one manual altered the text of the general instructions to reflect the changes caused by the addenda. Two other manuals had been marked to indicate where some of the addenda had revised requirements but the addenda were not identified and they were not marked for all of the addenda.

Audit No.	Page/ Finding	Date	Description
			b. Contrary to instructions in Addendum No. 47, all five manuals reviewed contained Appendices A and B. Two manuals still identified Appendices A and B in the index and one manual still contained Section 6.
	067		The review of pipe support design calculations revealed that: 1. Some calculation file indices have not been updated to indicate the superseded and superseding calculation numbers for the revised and revising calculations respectively. Further, the microfilming of pipe support calculations for record retention is not being done on a monthly basis. In some cases, the filming is almost eight (8) months tardy.
EA 27	074	12/78	Of 20 "controlled" file drawings reviewed (of all disciplines), six were out-of-date from one to four months. It was determined that there was a backlog of MACs to be filed which contained the up-to-date drawings which were missing
	078		Of eight engineering assurance procedure manuals reviewed, five did not contain current material and/or out-of-date material had been removed. Similar deficiencies were reported in Audit 23, No. 037.
EA 30	097	10/79	1. The index and documents contained in the LJO Manual do not allow the manual holders the ability to know if the manual or LJOs were up-to-date or complete. The index does not identify dates on documents; total numbers of pages not identified, many LJOs are not page numbered. 2a. Some LJOs appear to be out-of-date. 2b. Many LJOs contain other documents that may be subject to revision (e.g., E&DCRs, welding procedures, vendor catalogue cuts). There is no mechanism to ensure the LJOs are updated in the event these documents are changed.

Audit No.	Page/ Finding	Date	Description
	104		1. Project indices are not issued frequently enough. A number of Project Gore instructions (1) Project Memorandum (3), Project Procedures (5), and Addenda (32) have been issued or cancelled since the issue of the indices for the Manual, Procedures, and memorandum, which are all dated 9/1/78. The review of manuals maintained by assigned manual holders indicates the indexes are not being updated by the holders as required by project instructions. The same condition was observed by an audit 12 months ago. 2. Some Project Memoranda such as PM40 contain out-of-date information. 3. Two of the four assigned manuals reviewed had procedures missing and one other manual did not have 3 or more of the last transmittals of Manual material filed in the Manual (but this material was available in the area).
EA 35	122	2/81	1. An attachment to a project procedure has not been updated. 2. The Project Lead Test Engineer has not issued monthly status reports listing unresolved discrepancies between drawings, documents, or vendor information discovered during the preparation of test loop diagrams.
EA 37	137, #s 2 & 3	9/81	2.a. Twenty out of 20 drawings audited indicated outdated references, and unexplained symbols and notations. A superseded standard is still referenced on 12 wiring and connection diagrams. Symbols and notations on six one-line diagrams are unexplained by any given references. 3. Twelve out of 12 documents sought in the controlled aperture and drawing file did not have the most recent revision filed. Also, electrical design, as well as structural and power, have been deleted from the distribution of aperture cards but the files still indicate that they are controlled.

Audit No.	Page/ Finding	Date	Description
EA 38	141	12/81	The following conditions reduce the level of confidence that project personnel are able to perform their tasks as intended by the Project Engineer. 1. The tables of contents for sections (tabs) of the project manual are not officially updated and reissued frequently enough to keep pace with the changes in project instructions. Numerous pen and ink changes are required of the assigned manual holders. The adequacy of the entries varies from manual to manual. 2. Project instructions contained out-of-date information. 3. Information changing or supplementing project manual sections is issued without the project identification/ designation and, in some cases, without evidence of the Project Engineer's approval. Similar problems have been identified in previous audits.
EA 39	152	2/82	The job book index is not kept up-to-date for a variety of disciplines' sketches. There are varying degrees of documentation as to who prepared, checked, or approved the sketches. There were also variations in the sketch identification numbering. The responsibility for identifying, indexing, filing, and maintaining the sketches up-to-date is not clearly defined.
EA 40	154	6/82	Loading combinations listed in the FSAR have not been updated to reflect those used in calculations.
	155	6/82	Indices for elementary and loop diagrams are not kept up-to-date. Elementary diagrams were not marked for "complete", "voided", or "superseded" status. [Numerous details are contained within the audit observation].
	157		FSAR has not been updated to identify the use of computer program STRUDL-SW for static analyses.

Audit No.	Page/ Finding	Date	Description
	159		The calculations index is not kept up-to-date and not all the entries are complete. In some instances the confirmation required status is not filled in so that the status of the calculation is not evident.

EXHIBIT 18

Document Control Group 5:
Failure to Keep Documents Up-to-date

Audit	Page/Finding	Date	Description
FQC 9	06676, #1	5/74	Four drawings in the construction file (large size) were not the latest revision.
FQC 14	A.1	6/75	Of five manuals sampled, two FQC manuals and one NDT needed updating.
FQC 14	B.2	6/75	Of 28 manuals reviewed for random procedures, six FQC manuals, two ASME manuals, one engineering assurance manual, and one procurement quality control manual were not up-to-date. Also, one ASME manual was unassigned. Overall, 24 manuals of 45 sampled were out-of-date.
	D.2		Of nine manuals held by construction personnel, eight were found not to be up-to-date. Seven were FQC manuals and one was an ASME manual.
	D.3		FQC manual in the account section did not contain all the issued procedures, nor had it been kept up-to-date with addition procedures.
FQC 16	B.2.A-E	12/75	Review of 24 FQC procedures manuals being maintained by FQC indicated the following A. Three FQC procedures manuals containe QCIs that should have been in the appropriate QCI manual. B. Six manuals still contained cancelled of out-of-date procedures. C. Four manuals contained out-of-date Tables of Contents. D. Five manuals were missing documents. E. Two manuals contained improperly filed documents.
	D.2		Review of 14 active ASME III isometric drawings indicated that 11 were not the latest revision.
	D.4		Review of 19 FQC procedure manuals being maintained by construction personnel indicated the following: A. Three manuals contained cancelled documents. B. Tables of Contents in five manuals were out-of-date. C. Six manuals had documents missing.

Document Control Group 5:
Failure to Keep Documents Up-to-date

Audit	Page/Finding	Date	Description
	D.4 (Continued)		D. One manual was assigned to an individual no longer employed at the site. Twelve of the 19 manuals had one or more discreparcies.
FQC 17	D.1.1	3/76	The reactor, turbine trailer, and Comstock-Johnson areas contained specifications which were not up-to-date.
FQC 18	B.1	5/76	Six QCIs have been issued since the last Table of Contents was prepared. An updated Table of Contents has not been prepared.
FQC 19	K.1	8/76	An earlier audit (FQC 17, D.1.1) indicated that the latest addenda were not present in four work areas and the turbine trailer had specifications not assigned to that area. Also, a review of 30 drawings in the turbine trailer revealed: two could not be located, four were not the latest revisions, and two had not been assigned to that area. Of 17 specifications in the turbine trailer, two had not been assigned to that area.
FQC 20	D.3	1/77	Four out of four computer printouts furnished to the contractor for cable and raceway installation requirement guidance were out-of-date. They also did not indicate that they were out-of-date.
FQC 22	L.4	7/77	Six out of 10 control rod drive system drawings were out-of-date.
FQC 23	L.1	9/77	Weld techniques recorded on nine process control sheets were not listed on the applicable document index form.
FQC 32	B.2	11/79	Four superseded drawings, maintained for record purposes by FQC, were not marked "VOID" as required.

EXHIBIT 19

GROUP 5: NEED TO UPDATE MATERIALS

Audit No.	Page/Finding	Date	Description
LILCO Internal Audit 3A, Followup of #3	p. 8, IV. 2	1971	Filed material re purchase of SH1-42 concrete needs to be updated.
LILCO Internal Audit #4, Purchasing Dept.	p. 4, #4 p. 5, #1	1972	Some file folders not complete. Recommend compiling complete, up-to-date purchase order list and write procedure for maintaining and distributing list monthly.

EXHIBIT 20

GROUP 6: MISCELLANEOUS

Audit No.	Page/Finding	Date	Description
LILCO Audit 1D	Nonconformance #2	10/21/70	EA Comm. responsible for reviewing engineering specs. doesn't have QA representative.
LILCO QA Audit of S&W PQC	p. 1, #1	11/13/73	PQC shop inspector did not review vendor records to ensure completeness; only reviewing vendor certification. S&W manual requires audit of all required records and documents by PQC inspector prior to shipment.
	p. 2, #2		PQC shop inspector doesn't determine that drawings applicable to items to be released for shipment are in fact approved by S&W Bostain. Practice does not conform to S&W PQC manual.
	p. 2, #3		PQC shop inspectors have not audited vendor's QA/QC plan as required by PQC manual.
QA Audit #1 S&W PQC	Attachment, I.C.1	1975	Receipt inspection process being changed but new effort is not provided for in QC procedure.
	I.C.2		Receiving inspection reports not written for concrete and aggregate materials as required by QC procedures.
Followup S&W Field QC Audit #1	III.B.1	1975	Action required of S&W management to ensure acceptability of all Category I vendor documentation received to date at Shoreham.
Courter Audit 083	Conclusion	7/80	Courter program for disassembly/reassembly of mechanical equipment is in a general state of noncompliance. Major problem is the use of the disassembly/reassembly release and the parts accountability checklist by both SQA and Construction. There were 7 open items.
FA 87	4.2, 4.3	3/7/74	Need to verify corrective action implementation.
FA 1015	4.1(1)	10/79	Could not be determined if material had been receipt inspected.

EXHIBIT 21

KIRKPATRICK, LOCKHART, HILL, CHRISTOPHER & PHILLIPS

A PARTNERSHIP INCLUDING A PROFESSIONAL CORPORATION

1900 M STREET, N. W.

WASHINGTON, D. C. 20036

TELEPHONE (202) 452-7000
CABLE: HIPRI
TELEX 440209 HIPH UI
WRITER'S DIRECT DIAL NUMBER
202/452-7011

IN PITTSBURGH
KIRKPATRICK, LOCKHART, JOHNSON & HUTCHISON
1500 OLIVER BUILDING
PITTSBURGH, PENNSYLVANIA 15222
(412) 355-6500

October 8, 1982

(BY FEDERAL EXPRESS)

Anthony F. Earley, Jr., Esq.
Hunton & Williams
707 East Main Street
Richmond, Virginia 23212

Dear Tony:

I am enclosing with this letter a document entitled, "FSAR Configuration Control." I believe that this document is basically self-explanatory and we suggest that it forms the basis for a stipulation of facts on whether LILCO has controlled the as-built plant in accordance with FSAR commitments.

I note that the document identifies seven attachments. Only three of those attachments are enclosed. The other four will be available tomorrow, and I will deliver them to you on Monday.

Note: all 7 attachments included in Ex. 21

Sincerely,

Lawrence Coe Lanpher

LCL/dk
Enclosure

cc: Lawrence J. Brenner, Esq. (5 copies)
Bernard M. Bordenick, Esq.

William Eifert (S&W)
William Museler (LILCO)

FSAR CONFIGURATION CONTROL

1. The Applicant for a license to operate a nuclear facility is required to submit to the NRC a Final Safety Analysis Report (FSAR). As set forth in 10 CFR 50.34(b), the FSAR is required, in part, to include information that describes the facility, presents the design basis and the limits on its operation, and presents a safety analysis of the structures, systems, and components of the facility as a whole. Specifically, the FSAR is required, in part to include:

   > A description and analysis of structures, systems, and components of the facility, with emphasis upon performance requirements, the bases, with technical justification therefor, upon which such requirements have been established, and the evaluations required to show that safety functions will be accomplished. The descriptions shall be sufficient to permit understanding of the system designs and their relationship to safety evaluations.

2. Criterion 3 of the NRC's quality assurance requirements, as set forth in Appendix B to 10 CFR 50, requires, in part, that design control

   > Measures shall be established to assure that applicable regulatory requirements and design basis, as defined in §50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions.

   Thus, the NRC regulations require that LILCO design and build the Shoreham plant in accordance with the commitments presented in the FSAR.

3. Further clarification on the use of the SAR's is given on page iii of Regulatory Guide 1.70, November 1978:

   > The SAR is the principal document for the applicant to provide the information needed to understand the bases on which this conclusion has been reached; it is the principal document referenced in the Construction Permit or Operating License that describes the bases on which the permit or license is issued; and it is the basic document used by NRC inspectors to determine whether the facility is being constructed and operated within the licensed conditions. Therefore, the information contained in the SAR should be timely, accurate, complete and organized in a format that provides easy access.

4. The NRC "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants", NUREG-0800, notes on page 1 of the INTRODUCTION, the following, in part:

   The (NRC safety review is primarily based on the information provided by an applicant is a Safety Analysis Report (SAR) . . . . The SAR must be sufficiently detailed to permit the staff to determine whether the plant can be built and operated without undue risk to the health and safety of the public. Prior to submission of an SAR, an applicant should have designed and analyzed the plant in sufficient detail to conclude that it can be built and operated safely. The SAR is the principal document in which the applicant provides the information needed to understand the basis upon which this conclusion has been reached.

   Thus, safety analysis reports, such as the FSAR, are required to be maintained complete and current by the utility; and the NRC Staff utilizes these reports to perform their safety reviews and inspections.

5. In the SALP assessment for Shoreham for the period between march 1, 1980 through February 28, 1981, the NRC Staff identified a number of discrepancies between licensing documents such as the FSAR, and the facility as constructed. While construction had been completed in accordance with the pertinent design documents, those design documents did not in some cases conform to the FSAR. In addition, correction of deficiencies identified prior to this assessment period had been delayed. Specific examples were: electrical separation; the design of the radiation monitoring system; and the location of containment isolation valves as close as practical to containment.1/

6. During the current SALP assessment period, March 1, 1981 through February 28, 1982, LILCO's engineering and design efforts were reviewed by the NRC during inspection of other functional areas. Actions taken by LILCO and the Architect-Engineer (A-E) to address the findings of the previous SALP assessment were also reviewed. Discrepancies between the FSAR and the as-built plant were identified in the following areas: Core Spray System, Carbon Dioxide Fire Protection System, Electrical Separation, Radiation Monitoring, Loose Parts Monitoring, ECCS actuation, and Residual Heat Removal System. As before, the cause was disagreement between the design documents and the FSAR.2/

1/ Letter, Starastecki of NRC to Pollock of LILCO, May 19, 1982, at pp. 15-16.

2/ Starastecki Letter, note 1.

7. A Construction Assessment Team (CAT) inspection of the Shoreham Residual Heat Removal (RHR) system was conducted in February 1982 to observe as-built conformance to design and FSAR requirements. Two violations, one deviation and two observations were made concerning engineering and design control. The deviation concerned the following eight examples where the as-built RHR system deviated from FSAR commitments:3/

   a. FSAR Section 3.10.2.1.1B and Table 3.10.2.B-1 establishes approved criteria for installation of Standard Cabinets using a specified number of 5/8-inch mounting bolts. Contrary to the above, Standard Cabinet H11*PNL-608 was installed with twenty 5/8-inch bolts instead of forty bolts and Standard Cabinets H11*PNL-635 and H11*PNL-636 were each installed with eight 5/8-inch bolts instead of twelve 5/8-inch bolts.

   b. FSAR Chapter 6.2 and Figure 6.2.5-7 describe Primary Containment Spray and specify the number of spray nozzles. A number of drywell spray nozzles are permanently blocked by ventilation duct work, reducing the effectiveness of the containment spray system.

   c. FSAR, p.7.3-22 states that valves from other Residual Heat Removal (RHR) modes are automatically positioned so that water is correctly routed during Low Pressure Coolant Injection (LPCI) operation. Contrary to this E11*MOV-055 and 056, one-inch RHR Heat Exchange vents to Suppression Pool, and E11*MOV-057, RHR cooling water to Hydrogen Recombiner, are not automatically positioned.

   d. FSAR Figure 7.3.1-6 and Table 7.3.2-4 describes LPCI Loop selection logic and instruments. Contrary to this description, the logic has been deleted and is not a design feature.

   e. FSAR Table 7.3.4 shows trip set points of 2 psig for drywell pressure and 500 psig for LPCI low pressure. Page 6.3-12 and Table 6.3.3-6 also give the LPCI low pressure set point of 500 psig. Contrary to this, the present setpoints are 1.69 psig and 409 psig, respectively.

   f. FSAR Figure 7.3.1-10A&B are RHR piping and instrument drawings. Contrary to these drawings, the as-constructed plant deviates as follows:

3/ NRC Inspection 50-322/82-04, Notice of Deviation.

i. Loop fill on B loop is between valves F015 and F017.

ii. Relief valves F030A-D go to floor drains, not controlled radwaste.

iii. Relief Valve F025 is not a thermal relief as stated in Note 12.

iv. The line to Radwaste through valves MO-F040 and F049 is on the opposite side of valve MO-F010 as that shown.

v. Cooling water for RHR pumps is Reactor Building Closed Loop Cooling Water, not emergency equipment cooling water.

vi. Drains from RHR pump suction and discharge do not tie together as shown.

g. FSAR, p. 5.5-22 states that a relief valve on the RHR pump discharge and another on the RCIC steam supply protect the heat exchanger. Contrary to this, one relief valve is on the discharge line into the heat exchanger, with two valves intervening from the RHR pump discharge, and the steam supply is from HPCI, rather than RCIC.

h. FSAR, P.7.3-25 states that only the air-operated check valve and check bypass valve are located in containment. Contrary to this, a manual isolation valve and manual test, vent and drain valves and connections are located in primary containment.

8. The NRC concluded that the identified problems indicate an apparent lack of aggressiveness by LILCO in obtaining design conformance to the FSAR. Further, the problems also are indicative of ineffective and delayed corrective action by S&W Engineering.4/

9. In November, 1981, NRC Region I representatives met at the site with LILCO and A-E representatives to discuss the then identified discrepancies between the as-built plant and FSAR commitments and to review the overall program for assuring plant conformance to the FSAR. Following that meeting, LILCO instituted a new program, the Shoreham Plant Configuration Review (SPCR) Program.

4/ Letter, Starasteck of NRC to Pollock of LILCO, May 19, 1982, at p. 16.

10. The SPCR program, as described at page 122 of the LILCO QA/QC testimony, was "developed to determine if the as-built configuration of safety-related systems conform to the commitments in the FSAR and supporting licensing documents." The procedure to be utilized to conduct the SPCR is set forth in Attachment 28 to the LILCO QA/QC testimony. Thirty-seven reactor systems are to be included in the review.

11. To date, Plant Configuration Reports have been issued for seven of the 37 systems. In all systems reviewed to date:

> "the results of this review indicate conformance does not exist until engineering resolution is provided."

The discrepancies between the as-built plant and the FSAR commitments identified for each of the seven systems reviewed are summarized in Attachments 1 to 7.

ATTACHMENT 1

Plant Configuration Review Discrepancies
Reactor Water Recirculation (B31)

LILCO's plant configuration review for the Reactor Water Recirculation System (B31) identified nine potential discrepancies between the as-built plant and the FSAR commitments as follows:

a. (B31/01) FSAR Figure 5.5.1-2A differs from the as-built plant configuration in that:

(i) FSAR Figure 5.5.1-2A depicts a double valve capped connection as being installed on discharge branch lines 1B31-12"WR-216-Δ-1 & 12"-WR-204-Δ-1 upstream of reactor pressure vessel penetrations N2K and N2E, respectively. The subject connections are not installed as per FM-25A&B, Isometrics NS005 & NS006, and field inspection.

(ii) In accordance with FM-26A&B and FM-27A test connections have been provided in the No. 1 seal injection lines of pumps 1B31*P001A&B (C001A&B). FSAR Figure 5.5.1-2A does not depict these test connections.

b. (B31/02) FSAR section 5.5.1.3 page 5.5-3 paragraph 4 states: "Decontamination connections are provided in the piping on the suction and discharge side of the pump as shown on Figure 5.5.1-2A, to permit flushing and decontamination of the pump and adjacent piping." In accordance with FSAR Fig. 5.5.1-2A and as indicated on Isometrics NS-005 & NS-006, the decontamination connections are installed on the suction side of pumps 1B31*P-001A&B (C001A&B) only and not on the discharge side of the pumps.

c. (B31/03) FSAR Figure 5.5.1-2A differs from the as-built plant configuration in that:

(i) FSAR section 5.5.1-2A depicts isolation signal pressure switches 1B31*PS023A&B (N018A&B) as being installed on recirculation suction line loop "A" upstream of suction line block valve 1B31*MOV031A (MO F023A). In accordance with FM-26B and as depicted on isometric NS-006, the subject pressure switches are installed on the loop "B" suction line upstream of suction line block valve 1B31*MOV031B (MO F023B).

(ii) FSAR Figure 5.5.1-2A indicates the function for the isolation signal pressure switches 1B31*PS023A&B (N018A&B) is ascribed to reference document No. 3. However, reference document No. 3 in FSAR Figure 5.5.1-2A has been deleted.

d. (B31/04) FSAR Table 3.11.1-1 identifies items, such as, safety related equipment and components inside the primary containment that are required to operate or be in a fail-safe condition during and subsequent to an accident. Item 4 from this table states that the "Recirculation valves (main and by-pass valves)" are among safety related equipment required to meet these conditions. FSAR section 5.2.1.6.2.2 page 5.2-6 and FSAR Table 5.2.1-4 also denotes the fact that the Recirculation discharge block (main) and bypass valves are safety related components identified as active valves whose operability is relied on to perform a safety function during transients or accidents. However, there are no bypass valves associated with the Reactor Recirculation System. FSAR section 5.5.1.3 page 5.5-2 paragraph 4 states: "There is no bypass line around the recirculation pump discharge valves." This is also verified by FSAR Figure 5.5.1-2A, FM-26A&B, and Isometric NS005 & NS006.

e. (B31/05) FSAR section 5.2.1.6.2.2 incorrectly identifies the recirculation block valve as F-032. In accordance with FSAR Figure 5.5.1-2A and FM-26A&B the subject block valve is identified as F-031.

f. (B31/06) In accordance with ESK-6B3107, the logic to transfer the control, for the Reactor Recirculation Pump Suction valve 1B*MOV031B (F023B), from the control room panel 1H11*PNL-602 to the remote shutdown panel 1C61*PNL-RSP is not depicted on FSAR Figure 7.7.1-5E Reactor Recirculation System FCD.

g. (B31/07) FSAR Figure 5.5.1-2A differs from the as-built plant configuration in that:

(i) In accordance with FM-26A&B and FM-46B, the re-circulation pumps discharge and suction valves low point vents and drains are all routed to the dirty radwaste water system (DRW). FSAR Figure 5.5.1-2A depicts these lines as being routed to the clean radwaste water system (CRW).

(ii) In accordance with FM-26A&B, the test connections, for the No. 1 pump seal cavity pressure indicating lines on loops A&B, are routed to the DIRTY RADWASTE WATER SYSTEM (DRW). FSAR Figure 5.5.1-2A depicts these test connections as being capped.

h. (B31/08) FSAR section 3.1.2.15 page 3.1-11 paragraph 3 states: "The reactor coolant system consists of the reactor vessel and appurtenances, the reactor recirculation system, the nuclear system pressure relief system, the main steam lines, the reactor core isolation cooling (RCIC) system, and the residual heat removal (RHR) system. These systems are designed, fabricated, erected, and tested to stringent quality requirements and appropriate codes and standards which assure high integrity of the RCPB throughout the plant lifetime. The reactor coolant system is designed and fabricated to meet the requirements of the ASME Boiler, and Pressure Vessel Code, Section III." However, FSAR section 5.5.1.3 page 5.5-4 states "The recirculation system piping is of all-welded construction and is designed and constructed to meet the requirements of the ANSI B31.1.0 Code. This is also verified by FSAR Table 3.2.1-1 "Equipment Classification", FSAR section 5.2.1.4 "Applicable Code Cases", FSAR section 5.2.1.6.2.1 "Reactor Recirculation Pump and Motor", and General Electric Purchase Order Specification No. 21A9211 section 2.2.1.1 "Standards and Codes".

i. (B31/09) The transfer switch (S-16) for Reactor Recirculation suction valve 1B31*MOV031B (MO-F023B) located on the remote shutdown panel (1C61*PNL-RSP) is incorrectly identified as operating motor-operator MO-F032B. The correct designation should read MO-F023B.

ATTACHMENT 2

Plant Configuration Review Discrepancies
Control Rod Drive Hydraulic Control (C11)

LILCO's plant configuration review for the Control Rod Drive Hydraulic Control (C11) identified thirteen potential discrepancies between the as-built plant and the FSAR commitments as follows:

a. (C11/01) FSAR Figure 7.7.1-1 differs from the as-built plant configuration in that:

(i) In accordance with FM-27A-13, differential pressure indicators 1C11-PDI007A 1C11-PDI007B are installed across pump suction trainers 1C11-S037A (D002A) and 1C11-S037B (D002B) respectively. FSAR Figure 7.7.1-1 does not show the subject differential pressure indicators.

(ii) Pump suction filters 1C11-FL-089A (D010A) and 1C11FL089B (D010B) are each provided with a vent line and three drain lines as shown on FM-27A-13. FSAR Figure 7.7.1-1 does not show the subject vent line and delineates only two drain lines per filter.

(iii) FSAR Figure 7.7.1-1 does not depict the instrument line root valves associated with pressure differential indicating switch 1C11-PDS045 (N015). Root valves are installed in the plant in accordance with FM-27A-13.

b. (C11/02) FSAR Figure 7.7.1-1 differs from the as-built plant configuration in that:

(i) As depicted on FSAR Figure 7.7.1-1 the relative position of the lines and instrumentation associated with the drive water pumps, 1C11-P017A&B (C001A&B), discharge lines do not agree with the as-built plant and FM-27A-13.

Proceeding downstream from the Drive Water Pumps along the pumps discharge lines the lines and instrumentation are connected as follows:

- 1" minimum flow bypass line
- 3/4" drain line with two normally closed valves in series
- check valve
- open manual valve (F014A)
- 3/4" drain line with two normally closed valves in series
- discharge lines from both drive water pumps then connect and proceed towards the drive water filters 1C11-FL047A&B (D003A&B)

(ii) The drive water pumps minimum flow bypass lines, depicted on FSAR Fig. 7.7.1-1, do not agree with FM-27A-13 and the as-built plant.

Proceeding downstream from the drive water pumps along the minimum flow bypass lines, the lines and instrumentation are connected as follows:

- check valve
- open manual valve (F014B)
- 3/4" drain line with two normally closed valves in series
- flow restricting orifice
- minimum flow bypass lines from both drive water pumps connect and proceed to the condensate storage tank.

(iii) FSAR Figure 7.7.1-1 does not depict the instrument line root valve associated with pressure indicator 1C11-PI022 (R008) connected to the drive water pump discharge line. In accordance with FM-27A-13 the root valve is installed in the plant.

c. (C11/03) As depicted on FSAR Figure 7.7.1-1, the relative position of the Reactor water recirculation system (B31), Reactor water cleanup system (G33) and the Turbine and reactor sample line (P33) connections to the CRD insertion water line does not agree with the as-built plant and FM-27A-13.

As delineated on the marked up section of FSAR Figure 7.7.1-1 and FM-27A-13, proceeding upstream from flow element 1C11-FE001 (N003) the subject connections are located as follows:

- Reactor water cleanup system (G33)
- Turbine & reactor sample line (P33)
- Reactor water recirculation system (B31)

d. (C11/04) Instrument lines connecting to differential pressure transmitters, pressure indicators and pressure switches contain root valves in accordance with FM-27A-13. FSAR Figure 7.7.1-1 does not depict the instrument lines root valves:

Example: Pressure Indicator 1C11-PI022 (R008) which monitors the drive water pumps, 1C11-P017A&B (C001A&B), discharge pressure contains a root valve in its instrument line.

e. (C11/05) FSAR Fig. 7.7.1-1 differs from the as-built plant configuration in that:

(i) FSAR Fig. 7.7.1-1 delineates the cooling water line from pressure control valve 1C11-MOV031 (F003) as being a 2" line. However, a plant walk in conjunction with FM-27A-13 revealed the subject line is a 1½" line.

(ii) FSAR Fig. 7.7.1-1 shows two pressure equalizing lines from the exhaust headers connecting to the cooling water line downstream of pressure indicator 1C11-PI026 (R007). In accordance with FM-27A-13, the two pressure equalizing lines connect together and tie in to the cooling water line upstream of pressure indicator 1C11-PI026 (R007).

(iii) FSAR Fig. 7.7.1-1 asserts a pressure indicator should be provided for one branch of the cooling water line. The subject pressure indicator is not depicted on FM-27A-13 and subsequently it is not installed in the field.

f. (C11/06) The instrument air supply lines do not agree with FSAR Figure 7.7.1-1 in that:

(i) Proceeding downstream from pressure control valve 1C11-PCV090 along the instrument air line, the lines and instrumentation are connected as follows:

- hand valve
- test and drain line containing one valve
- Pressure Indicator 1C11-PI019
- Relief valve 1C11-RV0047
- line then proceeds to the flow control station

(ii) Proceeding downstream from pressure control valve 1C11-PCV089 along the instrument air line, the lines and instrument are connected as follows:

- drain & test line containing one valve
- pressure indicator 1C11-PI018
- relief valve 1C11-RV046
- parallel connected operating and standby filters
- The filters discharge lines have a tie line allowing the discharge from either filter to supply the 70-75 psig instrument air supply line and backup SCRAM pilot solenoid operated valves 1C11*SOV042A&B (F110A&B
- pressure indicator 1C11-PI020 (R012) is installed downstream of the filter discharge tie line on the backup SCRAM pilot SOV supply line.

(iii) Proceeding downstream from backup SCRAM pilot solenoid operated valve 1C11*SOV042A (F110A) along the instrument air line, the lines and components are connected as follows:

- 1C11*SOV042A (F110A) bypass line intake
- 1C11*SOV048B (F160B) bypass line discharge
- 1C11*SOV048B (F160B)
- 1C11*SOV048B (F160B) bypass line intake
- 1C11*SOV048A (F160A)
- 1C11*SOV048A (F160A) bypass line intake

The subject line then feeds the SCRAM valve pilot air header and the SCRAM discharge volume solenoid operated valves.

g. (C11/07) FSAR Fig. 7.7.1-1 differs from the as-built plant configuration in that:

(i) Scram discharge volume drain valve 1C11*AOV051(F011) is being installed immediately upstream of drain valve 1C11*AOV082(F181). Similarly, scram discharge volume vent valve 1C11*AOV050(F180) is being installed immediately downstream of vent valve 1C11*AOV081(F080). Both installations are in accordance with FM-27B-12 and E&DCR P-3650-Q. However, the subject vent and drain valves are not depicted on FSAR Fig. 7.7.1-1.

(ii) Discrepancies involving the identification of the actuating solenoid for the subject vent and drain valves per the as-built configuration, FSAR Fig. 7.7.1-1, FM-27B-12, and FK-1D-12, 1E-11 & 1G-11 exist.

(iii) FSAR Table 3.2.1-1 delineates the scram discharge volume valves 1C11*AOV050(F180), 1C11*AOV051 (F011), 1C11*AOV081(F010) and 1C11*AOV082(181) as being code class ANSI B31.1.0. However as indicated on isometrics P1294 and P1295 the valves are code class ASME III-2.

h. (C11/08) FSAR Figure 7.7.1-1 differs from the as-built plant configuration in that:

(i) In accordance with FM-27B-12, E&DCR P-3650P, repair rework request 1C11-93 and change control form system/no. C11/06 Rev. 4, modifications to the scram discharge volume instrumentation have been made. The modifications consisted of the addition of four scram switches in redundant loops, one redundant rod block switch and one redundant level alarm switch. However the subject modifications are not delineated on FSAR Figure 7.7.1-1 and FSAR page 4.2-64, paragraph 3.

i. (C11/09) FSAR Fig. 7.7.1-1 differs from the as-built plant configuration in that:

(i) In accordance with FM-27C-9 a filter is provided for the drive water insert line, the drive water withdraw line and the supply line from the drive water header. The subject filters are not depicted on FSAR Figure 7.7.1-1.

j. (C11/10) In accordance with FM-27A-13 a pump test connection is provided in the drive water header just downstream of the flow control station. FSAR Figure 7.7.1-1 does not depict the subject pump test connection.

k. (C11/11) FSAR page 4.2-62, 4.2-63 and FSAR Figure 7.7.1-2B differ from the as-built plant configuration in that:

(i) FSAR page 4.2-62, 4.2-63 and FSAR Figure 7.7.1-2B asserts there is a drive pressure control valve, 1C11-MOV031 (F003), and a cooling pressure control valve, 1C11-MOV032 (F005). However, the requirement for cooling pressure control valve 1C11-MOV032 (F005) has been deleted and subsequently the valve is not installed.

(ii) FSAR page 4.2.62 states, "A flow rate of approximately 6 gpm (the sum of the flow rate required to insert and withdraw a control rod) normally passes from the drive water pressure stage through two solenoid-operated stabilizing valves (arranged in parallel) and then goes into the return line

downstream from the cooling pressure control valve." In addition to the referenced cooling pressure control valve not being installed, see item 1 above, the flow path as described does not agree with FSAR Figure 7.7.1-1, FM-27A-13 and the as-built plant. The flow path bifurcates, paralleling the solenoid operated stabilizing valves (arranged in parallel) with the drive water pressure control station, in accordance with FSAR Figure 7.7.1-1, FM-27A-13 and the as-built plant.

(iii) FSAR Figure 7.7.1-2B indicates 1C11-SOV043 (F008) is a discharge volume isolation solenoid valve. The subject valve is not depicted on FM-28B-12 per E&DCR F-21920A, and subsequently is not installed.

1. (C11/12) FSAR page 4.2-62 and 7.7-4 asserts there is one air operated flow control valve provided to maintain a constant system flow rate. However in accordance with FM-27A-13, and FSAR Figure 7.7.1-1, there are two air operated flow control valves installed, 1C11-FCV001A&B (F002A&B).

m. (C11/13) FSAR Figure 7.7.1-2B differs from the as-built plant configuration in that:

(i) The control switches for drive water pumps 1C11-P017A&B (C001A&B) are shown on FSAR Figure 7.7.1-2B as 3 position switches. The subject switches are actually 4 position switches (1-pull to lock, 2-stop, 3-blank, 4-start) with spring return to auto, as shown on G. E. drawing 791E407TF.

(ii) In accordance with ESK 5C1101, three indicating lamps (green, white and red) are provided on main control room panel 1H11-PNL603 (N11-P603) for each drive water pump, 1C11-P017A&B (C001A&B). However, FSAR Figure 7.7.1-2B shows only two indicating lamps (green and red) for each of the subject pumps.

ATTACHMENT 3

Plant Configuration Review Discrepancies
Standby Liquid Control (C41)

LILCO's plant configuration review for the Standby Liquid Control System (C41) identified nine potential discrepancies between the as-built plant and the FSAR commitments as follows:

a. (C41/01) Standby Liquid Control Storage Tank A001 discharge lines to Test Tank A002 and Standby Liquid Control Pumps suction shown on FSAR Figure 4.2.3-11 do not agree with the as-built conditions of the plant as shown on FSAR Figure 4.2.3-11.

b. (C41/02) Standby Liquid Control Pumps C001A&B discharge lines depicted in FSAR Figure 4.2.3-11, do not agree with the as-built condition of the plant as shown in FSAR Figure 4.2.3-11.

c. (C41/03) Standby Liquid Control System accumulator and relief valve line, located downstream of Pumps C001A&B discharge, do not agree on FSAR Figure 4.2.3-11 with the as-built conditions of the plant, in that:

(i) Proceeding downstream of pump C001A discharge, the relief valve intake line splits off and comes to a tee in the line, with one line ending at Accumulator A003A, and the other going to Relief Valve F029A. The discharge of the relief valve splits, with one line discharging to Pump C001A suction, and the other to a 3/4" valve. Downstream of the valve, the line comes to a tee with one line providing supply pressure to PI 027A, and the other to a test line containing one in line valve.

(ii) Proceeding downstream of pump C001B discharge, the relief valve intake line splits off and comes to a tee in the line, with one line ending at Accumulator A003B, and the other going to Relief Valve F-029B. The discharge of the relief valve splits, with one line discharging to Pump C001B suction, and the other to a 3/4" valve. Downstream of the valve, the line comes to a tee, with one line providing supply pressure to PI 027B, and the other to a test line containing one in line valve.

d. (C41/04) FSAR Table 6.2.4-1 lists the explosive valves as one of the outside isolation valves for penetration X-36. It also lists these valves as having an instantaneous closing time. Since this type of valve is sealed closed until exploded open, it can never be closed again once it is set off.

e. (C41/05) The demineralized water intake line to Storage Tank A001 does not include a vent connection containing one in line valve, immediately downstream of Check Valve F003 on FSAR Figure 4.2.3-11. The as-built condition of the plant has the vent line installed.

f. (C41/06) Several vent, test and drain lines are shown on FSAR Figure 4.2.3-11 as capped. The subject lines, in accordance with FM-21A, are not capped. Example: FSAR Figure 4.2.3-11 shows a cap on the test line for check valve F006. The subject lines have been revealed through a system walkdown as not being capped.

g. (C41/07) Standby Liquid Control Pump C001A&B Control Switch is shown in the FSAR on the Functional Control Diagram, Figure 7.4.1-4, with no mention of a key lock. In accordance with GE drawing 791E409TF, the as-built condition of the plant has the subject switch in the control room with a key lock, key removable in stop position.

h. (C41/08) Temperature elements TE-030A&B and Vibration elements VBE-029A&B are to be installed in Standby Liquid Control Pumps P-024A&B, as per E&DCR P-03698. Those instruments do not appear on FSAR Figure 4.2.3-11.

i. Valves shown on FSAR Figure 4.2.3-11 as locked open or closed have been revealed in a system walkdown as not being locked.

ATTACHMENT 4

Plant Configuration Review Discrepancies
Core Spray System (E21)

LILCO's plant configuration review for the Core Spray System (E21) identified nine potential discrepancies between the as-built plant and the FSAR commitments as follows:

a. (E21/01) FSAR page 6.3-10, revision 3 - November 1976 paragraph 6, states the vent lines of the two core spray pumps, 1E21*P013A&B, have two normally locked closed valves. The subject vent lines contain two normally closed valves with only one locked as indicated on FSAR Figure 7.3.1-8 and FM-23A.

b. (E21/02) FSAR Figure 7.3.1-8 differs from the as-built plant configuration in that:

   (i) FSAR Figure 7.3.1-8, note 12, indicates valve 1E21*RV096A&B shall be located as close as practical to valve 1E21*MOV033A&B respectively. The subject valves are located approximately 55' apart.

   (ii) FSAR Figure 7.3.1-8 shows the discharge from 1E21*RV096A&B to the suppression pool. The subject valve discharges to clean radwaste per FSAR page 6.3-11 paragraph 1 and FM-23A.

c. (E21/03) FSAR page 6.3-11, paragraph 2, states the full flow test line contains a restricting orifice. The as-built line does not contain an orifice in accordance with isometrics IC-57, 63, 65 and 66, FM-23A and FSAR Figure 7.3.1-8.

d. (E21/04) FSAR page 6.3-11, paragraph 4, asserts the referenced testable check valves are located just inside the primary containment. A plant walk in conjunction with isometrics IC-59 & 64 revealed the valves are located more than 40' from the primary containment. However, the referenced valves are located as close as possible to the reactor pressure vessel (RPV) in accordance with FSAR Figure 7.3.1-8 and FM-23A.

e. (E21/05) FSAR Figure 7.3.1-8 differs from the as-built plant configuration in that:

(i) A normally locked open manual valve is provided, in the loop level systems pump discharge lines, downstream of the lines flow element (1E21-FE-099A&B and upstream of the lines to the RHR system as shown on FM-23A. The subject valve is not depicted on FSAR Figure 7.3.1-8.

(ii) The loop level makeup water is from the Demineralized and Makeup Water Supply as shown on FM-23A. FSAR Figure 7.3.1-8 shows the loop level makeup water from Condensate.

f. (E21/06) FSAR Figure 7.3.1-8 differs from the as-built plant configuration in that:

(i) As depicted on FSAR Figure 7.3.1-8, the relative position of the lines and instrumentation associated with the core spray loop does not agree with the as-built plant and FM-23A.

(ii) The drain lines (2"DRW-31-151-4 and 2"-DRW-46-151-4) for the two core spray loops, drain to dirty radwaste via a local floor drain in accordance with FM-23A. FSAR Figure 7.3.1-8 shows the subject drain lines connecting to a 4" drain line mutually shared with the RHR system.

g. (E21/07) FSAR Figure 7.3.1-9A differs from the as-built plant configuration in that:

(i) The control switch for core spray pump (C001A&B) is shown as a 3 position switch on the referenced figure. The subject switch is actually a 4 position switch (1-pull to lock, 2-stop, 3-auto, 4-start) with spring return to auto, as shown on GE drawing 791E419TF.

(ii) The core spray outboard isolation valve (F005A&B) is incorrectly identified on the reference figure, ESK 6E2103 and ESK 6E2103A as the core spray inboard isolation valve.

(iii) The control switch for the core spray outboard isolation valve (F005A&B) is incorrectly identified on panel 1H11*PNL-601 as the core spray inboard isolation valve F005.

(iv) In accordance with ESK 6E2103 and ESK 6E2103A, the logic to open the core spray outboard isolation valve (F005) does not include the valve torque switch or parallel connected limit switch as shown on the referenced figure.

FSAR Figure 7.3.1-9B differs from the as-built plant configuration in that:

(i) The control switches for the testable check valves (AO F006A&B) motor operated bypass valves are spring return to "close" from clockwise only, as indicated on GE drawing 791E419TF. The referenced figure does not indicate the subject switches have the spring return to "close" from clockwise only feature.

(ii) In accordance with ESK 6E2107, the logic to test the testable check valves (AO F006A&B) motor operated bypass valves does not include the MOVs torque switches or parallel connected limit switches as shown on the referenced figure.

(iii) In accordance with ESK 6E2107, the logic to close the testable check valves (AO F006A&B) motor operated bypass valves requires the MOVs limit switches to be "Permissive when valve is fully open". Figure 7.3.1-9B asserts the valve should be "Permissive unless valve is fully closed".

(iv) In accordance with ESK 6E2106, the logic to open the minimum flow bypass valve (MO F031A&B) does not include the valve torque switch or parallel connected limit switch as indicated on the referenced figure.

(v) In accordance with ESK 6E2106, the logic to open the minimum flow bypass valve (MO F031A&B) does require a seal-in contact.

(vi) In accordance with ESK 6E2106, the logic to close the minimum flow bypass valve (MO F031A&B) requires the valve limit switch to be "Permissive when valve is fully open". Figure 7.3.1-9B asserts the limit switch should be "Permissive unless valve is fully closed".

(vii) In accordance with ESK 6E2106, the logic to close the minimum flow bypass valve (MO F031A&B) requires the seal-in contact operate in conjunction with the limit switch. FSAR Figure 7.3.1-9B depicts the seal-in circuit operating independently of the limit switch and torque switch.

(viii) In accordance with ESK 6E2105 the logic to open the test bypass valve (MO F015A&B) does not include the valve torque switch or parallel connected limit switch as indicated on the referenced figure.

(ix) In accordance with ESK 6E2105 the logic to close the test bypass valve (MO F015A&B) requires the valve limit switch to be "Permissive when valve is fully open". Figure 7.3.1-9B states the valve should be "Permissive unless valve is fully closed".

(x) In accordance with ESK 6E2102 the logic to open the suction valve (MO F001A&B) does not include the valve torque switch or parallel connected limit switch as depicted on the referenced figure.

(xi) In accordance with ESK 6E2102, the logic to close the suction valve (MO F001A&B) requires the valve limit switch to be "Permissive when valve is fully open". Figure 7.3.1-9B states the limit switch should be "Permissive unless valve is fully closed".

h. (E21/08) The K-Line excess flow restriction (EFR) orifices are not located as close as possible to the core spray piping as required by FSAR Figure 7.3.1-8, note 11. The subject orifices are located as close as practical to the primary containment per FM-23A, note 14.

i. (E21/09) Several vent, flush and drain lines are shown on FSAR Figure 7.3.1-8 as capped. However, the subject lines are in accordance with FM-23A and not capped. Example: FSAR Figure 7.3.1-8 shows a cap on the drain line for 1E21*MOV033A&B. The subject lines are not capped in accordance with FM-23A.

ATTACHMENT 5

Plant Configuration Review Discrepancies
MSIV Leakage Control System (E32)

LILCO's plant configuration review for the MSIV Leakage Control System (E32) identified eight potential discrepancies between the as-built plant and the FSAR commitments as follows:

a. (E32/01) In accordance with FM-69A, E&DCR F-33016 and P3572, test lines (3/4" CRW-94-153-4 and 3/4 CRW 809-153-4) have been provided to both the upstream and downstream subsystems condensate drain lines 3/4" CRW-92-153-2 (3/4" AB-B) and 3/4" CRW-91-153-2 (3/4" AB-b). The subject lines are not depicted on FSAR Figure 6.5.2-1A and Figure 6.5.2-1B.

b. (E32/02) FSAR Figures 6.5.2-1A&B differs from the as-built plant configuration in that:

(i) FSAR Figures 6.5.2-1A&B, delineates the referenced blowers suction and discharge lines as having flexible connections. In accordance with FM-69A&B, the subject lines do not have flexible connection.

(ii) FSAR Fig. 6.5.2-1B, depicts the downstream blowers discharge lines as being connected into a single discharge line. In accordance with FM-69B, the downstream blower discharge lines do not connect.

c. (E32/03) FSAR Figures 6.5.2-1A&B differ from the as-built plant configuration in that:

(i) In accordance with FM-69A, a test line utilizing two normally closed valves is located between each pair of the upstream subsystem valves 1E32*MOV021A-D (MO F001B, F, K, P) and 1E32*MOV022A-D (MO F002B, F, K, P) respectively. A similar test line is located between each pair of the downstream subsystem bleed valves 1E32*MOV024 (MO F006) and 1E32*MOV025 (F007) and the downstream depressurization valves 1E32*MOV026 (F008) and 1E32*MOV27 (F009) respectively. The subject lines are not depicted on FSAR Figs. 6.5.2-1A&B.

(ii) FSAR Figure 6.5.2-1A&B depict test lines as being capped. The test lines delineated on FM-69A, including the subject test lines, are not capped.

d. (E32/04) A test line is provided on each of the 1" low point condensate drain lines for the referenced heaters, per FM-69A. However, FSAR Figure 6.5.2-1A shows the subject test lines as being connected to the heaters' discharge line.

e. (E32/05) An instrument line containing a root valve is connected to the downstream depressurization line just upstream of the depressurization valve 1E32*MOV026 (F008) as shown on FM-69A. FSAR Fig. 6.5.2-1B shows this instrument line without the root valve connected to the downstream bleed line.

f. (E32/06) In accordance with FM-69A, the referenced instrument lines consist of a root valve, an excess flow restrictor and an excess flow check valve. FSAR Figure 6.5.2.1-A does not show the subject components.

g. (E32/07) FSAR Figure 6.5.2-1A&B differ from the as-built configuration in that:

(i) Dilution Air Intake

- FSAR Figure 6.5.2-1A and 6.5.2-1B Note 14, asserts a flow test point should be provided for the upstream subsystem and the downstream subsystem dilution air intake. The subject test points are not depicted on FM-69A and subsequently are not installed in the field. However, as indicated by startup and the SEO, a temporary spool piece with a test point will be used to perform preop and subsequent surveillance testing.

- In addition, the FSAR Figures 6.5.2-1A&B and FM-69A also show a funnel connected to the dilution air intake line of each of the downstream and upstream subsystems. However a plant walkdown revealed that such funnels are not installed in the field.

(ii) Instrument lines connecting to the differential pressure transmitters (1E32*PDT038 & 035) which monitor dilution air flow for both the upstream and downstream subsystems contain root valves in accordance with FM-69A. FSAR Figures 6.5.2-1A&B do not depict the instrument line root valves.

h. (E32/08) FSAR Figures 6.5.2-3A-D differ from the as-built plant configuration in that:

(i) In accordance with ESK 6E3201 and GE drawing 851E708TF, the remote manual switches for isolation valves 1E32*MOV021A (MO F001B) and 1E32*MOV022A (MO F002B) are 3 position "Test, Normal, Test" keylock switches with spring return to normal and key removable in normal. FSAR Figure 6.5.2-3B does not indicate the switches are keylock.

(ii) FSAR Figure 6.5.2-3A note 4, states the indicating lights for blowers and heaters are as follows:

Green on for device on
Red on for device off

However, this note does not concur with FSAR Figure 6.5.2-3B, 3D, GE drawing 851E708TF and ESK 6E3209-11 which asserts: Green on for device off, Red on for device on.

(iii) In accordance with ESK 6E3209, 6E3210, 6E3211 and 6E3212, the logic to close the associated inboard and outboard MOV's, depicted on FSAR Figures 6.5.2-3A-D, does not agree with the referenced logic asserted in Detail 1 of FSAR Figure 6.5.2-3A. The subject ESK's delineate the valves' limit and torque switches as being connected in parallel with the torque switch permissive when the valve is fully open. However, Detail 1 of FSAR Figure 6.5.2-3A does not depict the valves' limit and torque switches as being connected in parallel and the torque switch is depicted as permissive unless valve is fully closed.

ATTACHMENT 6

Plant Configuration Review Discrepancies
High Pressure Coolant Injection (HPCI) (E41)

LILCO's plant configuration review for the High Pressure Coolant Injection (HPCI) (E41) identified nine potential discrepancies between the as-built plant and the FSAR commitments as follows:

a. (E41/01) FSAR Figure 7.3.1-4A differs from the as-built plant configuration in that:

(i) In accordance with FM-25A and E&DCR P-3594, the isolation valve (1E41*MOV032) located in the HPCI pump suction line from the suppression pool has a leakage test connection consisting of two normally closed valves. FSAR Figure 7.3.1-4A does not depict the subject leakage test connection.

(ii) The test line immediately downstream of motor operated valve 1E41*MOV032 (MO F042) consist of two normally closed valves in accordance with FM-25A. FSAR Figure 7.3.1-4A shows the subject test line consisting of one normally closed valve and an end cap.

b. (E41/02) FSAR Figure 7.3.1-4A differs from the as-built plant configuration in that:

(i) FSAR Figure 7.3.1-4A shows a test connection on the HPCI turbine steam supply line upstream of outboard isolation valve 1E41*MOV042 (MO F003). The subject test connection actually connects to the outboard isolation valve bypass line upstream of bypass valve 1E41*MOV048 (MO F080) in accordance with FM-25A.

(ii) FSAR Figure 7.3.1-4A and FM-25A shows the line to the RHR heat exchanger originating from the HPCI turbine steam supply line downstream of the outboard isolation bypass line. The line to the RHR heat exchanger actually connects to the HPCI turbine steam supply line immediately downstream of isolation valve 1E41*MOV042 (MO F003).

(iii) The turbine steam supply line's inboard isloation valve (1E41*MOV041) and inboard isolation bypass valve (1E41*MOV047) as implied and in accordance with FM-25A, FSAR Figure 7.3.1-4A, FSAR Section 6.3.2.2.1 paragraphs 2 and 7 and Section 7.3.1.1.1 paragraph 2, are installed inside the primary containment. However FSAR Section 6.3.2.2.1 paragraph 6 states: "The HPCI turbine-pump assembly and piping are protected from detrimental physical effects of the DBA, such as pipe whip, flooding and high temperature. The equipment is located outside the primary containment."

c. (E41/03) FSAR Figure 7.3.1-4A differs from the as-built plant configuration in that:

(i) A check valve is provided, in the steam supply condensate drain line, upstream of the main condenser, and a trap is provided, in the steam supply condensate drain line, whose drain line connects downstream of the subject check valve as shown on FM-25A. The subject check valve and trap drain line are not depicted on FSAR Figure 7.3.1-4A.

(ii) A test line is located between the two steam line isolation valves 1E41*AOV081(F028) and 1E41*AOV082 (F029) as delineated on FM-25A and FSAR Figure 7.3.1-4A. The test line in accordance with FM-25A does not have a threaded cap, however, a threaded cap is required as shown on FSAR Figure 7.3.1-4A.

d. (E41/04) FSAR Figure 7.3.1-4A differs from the as-built configuration in that:

(i) FSAR page 6.3.6 paragraph 2 states: "A redundant system of check valves and isolation valves has been installed as a vacuum breaker line which connects the air space in the suppression chamber with the HPCI turbine exhaust line." In accordance with FM-25A and FSAR Figure 7.3.1-4A, FSAR Table 6.2.4-1 indicates the vacuum breaker line contains only one isloation valve (1E41*MOV044) and not redundant isolation valves as stated. However, FSAR Table 6.2.4.1 indicates the vacuum breaker line takes credit for the two isolation check valves in the HPCI turbine exhaust line, in accordance with FM-25A, FSAR Figure 6.2.4-2 and FSAR Figure 7.3.1-4A.

(ii) A manual valve is installed in the vacuum breaker line downstream of the redundant check valves in accordance with FM-25A. FSAR Figure 7.3.1-4A does not depict the subject valve.

(iii) In accordance with FSAR page 6.3-6 paragraph 2 of FM-25A the as-built vacuum breaker line has a test connection upstream of each check valve. The subject test connections have two normally closed valves per FM-25A. FSAR Figure 7.3.1-4A shows a test connection, with one normally closed valve and a threaded cap, upstream and downstream of each of the subject check valves.

(iv) In accordance with FM-25A the as-built turbine exhaust line has a test connection, with two normally closed valves, downstream of each of the redundant check valves and for the turbine exhaust valve 1E41*MOV044 (f021).

FSAR Figure 7.3.1-4A only depicts a test connection with one normally closed valve and a threaded cap downstream of both redundant check valves.

(v) The HPCI turbine exhaust vent line originates from the HPCI turbine exhaust line to the suppression pool downstream of pressure switches 1E41*PS026A (N017A) and 1E41*PS026B (N017B). FSAR Figure 7.3.1-4B and FM-25B depicts the turbine exhaust vent line connecting upstream of the referenced pressure switches.

(vi) The HPCI turbine exhaust vent line is trichotomous in accordance with FM-25B. FSAR Figure 7.3.1-4B shows a bifurcated HPCI turbine exhaust vent line.

(vii) Pressure switches 1E41*PS025A&C (N012A&C) are connected through a common valve to one branch of the HPCI turbine exhaust vent line (1"-SLP-803-151-2) and pressure switches 1E41*PS025B&D (N012B&D) are connected through a common valve to another branch of the HPCI turbine exhaust vent line (1"-SLP-10-151-2) in accordance with FM-25B. FSAR Figure 7.3.1-4B depicts the subject pressure switches individually connecting to a common vent line.

e. (E41/05) FSAR Figure 7.3.1-4B differs from the as-built plant configuration in that:

(i) Moisture collected in the HPCI turbine exhaust steam drain pot is discharged to the barometric condenser as depicted on FSAR Figure 7.3.1-4B and FM-25B. FSAR page 6.3-5 paragraph 7, states the collected moisture is discharged to the suppression pool or bypassed to the barometric condenser if the trap fails. It should also be noted that the steam trap does not exist per design.

(ii) In accordance with FM-25B, the seal drain for the turbine control valve (1E41*NOV052) is located upstream of the valve and discharges to the barometric condenser via the HPCI turbine exhaust drain line. FSAR Figure 7.3.1-4B indicates the drain is located downstream of the turbine control valve.

(iii) The condensate spray line to the barometric condenser originates at the HPCI main pump in accordance with FM-25B. FSAR Figure 7.3.1-4B depicts the subject condensate spray line connecting to the interconnecting line between the HPCI booster pump and the HPCI main pump.

(iv) A temperature indicator (1E41-TI-050) is located on the condensate spray line immediately upstream of the barometric condenser in accordance with FM-25B. Figure 7.3.1-4B indicates a temperature test point should be immediately upstream of the barometric condenser.

(v) The condensate pump (1E41*P075) discharge line to the HPCI booster pump suction line contains two check valves in accordance with FM-25B. Figure 7.3.1-4B depicts a third check valve in the condensate pump discharge line, immediately downstream of the pressure test point.

(vi) The lube oil cooler water discharge line connects to the condensate pump discharge line going to the HPCI booster pump suction, downstream of the condensate pump discharge line going to radwaste system. FSAR Figure 7.3.1-4B and FM-25B indicates the lube oil cooler's water discharge line connects upstream of the condensate pump discharge line going to the radwaste.

(vii) In accordance with FM-25B, the restricting orifice (D009) in the lube oil cooler's water discharge line is installed downstream of the associated pressure test point. FSAR Figure 7.3.1-4B indicates the subject restricting orifice should be located upstream of the associated test point.

(viii) The test connection in the condensate pump discharge line to radwaste has two normally closed valves and is not capped in accordance with FM-25B. Figure 7.3.1-4B shows the subject test line with a single valve and a threaded cap.

f. (E41/06) FSAR Figure 7.3.1-4A differs from the as-built plant configuration in that:

(i) Relief valve 1E41*RV149 (F082) is on the condensate makeup line upstream of the loop level line in accordance with FM-25A. FSAR Figure 7.3.1-4A shows the subject valve connected to the loop level line.

(ii) A test line with two normally closed valves is connected to the HPCI pump discharge line downstream of the condensate makeup line in accordance with FM-25A. FSAR Figure 7.3.1-4A delineates a capped test line having two normally closed valves connecting to the HPCI pump discharge line upstream of the condensate makeup line.

(iii) Temperature indicator 1E41-TI141 (R002) is connected to the HPCI pump discharge line upstream of the HPCI pump minimum flow line in accordance with FM-25A. FSAR Figure 7.3.1-4A depicts the subject temperature indicator connected to the HPCI pump discharge line downstream of the HPCI pump minimum flow line.

FSAR Figure 7.3.1-4B differs from the as-built plant configuration in that:

(iv) The loop level pump's suction line originates from the condensate pump discharge line in accordance with FM-25B. FSAR Figure 7.3.1-4B depicts the loop level pump's suction line originating fromthe HPCI pump's suction line.

(v) FSAR Figure 7.3.1-4B delineates a valved and capped line on each side of the flow switch (N034) in the loop level pump's discharge line. The subject valved and capped lines are not delineated on FM-25B and relatively are not installed in the field.

(vi) A check valve is installed in the loop level pump's discharge line upstream of the flow switch (N034) in accordance with FM-25B. FSAR Figure 7.3.1-4B does not depict the subject check valve.

(vii) Pressure indicating switch 1E41-PIS098 (N032) is located upstream of the check valve in the loop level pump's discharge line per FM-25B. FSAR Figure 7.3.104B show the subject pressure indicating switch immediately downstream of the loop level pump's outlet.

(viii) The loop level pump minimum flow bypass line contains a restricting orifice (1E41*R0137) as indicated on FM-25B and does not contain a locked throttled valve as shown on FSAR Figure 7.3.1-4B.

g. (E41/07) FSAR Figure 7.3.1-5A differs from the as-built plant configuration in that:

(i) In accordance with FSAR section 7.3.1.1.1, FSAR Figure 7.3.1-5A depicts four level indicating switches (LIS B21-N031A-D) and four pressure switches (PS E11-N011A-D) electrically arranged to automatically initiate the HPCI system. The HPCI system is automatically initiated by the analog trip system incorporating level transmitters 1B21*LT157A-D (LT B21-N091A-D) and pressure transmitters 1E11*PT165A-D (PT E11-N091A-D).

(ii) In accordance with ESK 11E4103 and 11E4117, the logic to close the steam supply line outboard isolation valve (MO F003) and the warmup line outboard isloation valve (MO F080) respectively, requires the valve limit switch to be "Permissive when valve is fully open". Figure 7.3.1-5A asserts the limit switch should be "Permissive unless valve is fully closed".

FSAR Figure 7.3.1-5B differs from the as-built plant configuration in that:

(iii) In accordance with ESK 6E4102, 6E4103, 11E4110 and 11E4112, the logic to close the steam supply line inboard isolation valve (MO F002), warm-up line inboard isolation valve (MO F097), pump suction from suppression chamber valve (MO F042) and the minimum flow bypass to suppression chamber valve (MO F012) respectively, requires the valve limit switch to be "Permissive when valve is fully open". Figure 7.3.1-5B asserts the limit switch should be "Permissive unless valve is fully closed".

FSAR Figure 7.3.1-5D differs from the as-built plant configuration in that:

(iv) The control switch for the test bypass to condensate Storage tank valve (MO F008) is incorrectly identified on the referenced figure as the control switch for valve F003.

(v) The control switch for the redundant HPCI discharge to the condensate storage tank shutoff valve (MO F011) is not depicted on FSAR Figure 7.3.1-5D.

(vi) In accordance with ESK 11E4107 and 11E4108, the position of valve 1E41*MOV035(MO F006) affects the operation of the valve 1E41*MOV037 (MO F008) only and not the operation of valve 1E41*MOV038 (MO F011). FSAR Figure 7.3.1-5D indicates the operation of both valves are affected.

(vii) In accordance with ESK 11E4107 and 11E4108, the logic to open the test bypass to condensate storage tank valve (MO F008) and redundant shutoff to condensate storage tank valve (MO F011) does not include the valve torque switch or parallel connected limit switch as indicated on Figure 7.3.1-5D.

(viii) In accordance with ESK 11E4106, 11E4107, 11E4108 and 11E4109, the logic to close the HPCI pump discharge valve (MO F006), the test bypass to condensate storage tank valve (MO F008), the redundant shutoff to condensate storage tank valve (MO F004), requires the valve limit switch to be "Permissive when valve is fully open". Figure 7.3.1-5D asserts the limit switch should be "Permissive unless valve is fully closed".

FSAR Figure 7.3.1-5E differs from the as-built plant configuration in that:

(ix) Figure 7.3.1-5E depicts two pressure switches (PS E11-N011B&D) that sense high drywell pressure as part of the turbine exhaust vacuum breaker valve (MO F079) automatic isolation signal. The subject pressure switches do not contribute to the automatic isolation of valve 1E41*MOV049 (MO F079).

(x) In accordance with ESK 11E4114 and 11E4118, the logic to close the turbine exhaust to suppression pool valve (MO F021) and the turbine exhaust vacuum breaker valve (MO F079) respectively, requires the valve limit switch to be "Permissive when valve is fully open". Figure 7.3.1-5E asserts the limit switch should be "Permissive unless valve is fully closed".

(xi) The control switch for the HPCI vacuum pump (1E41*P074) is shown as a 4 position switch with spring return to auto and maintained contacts in the start position. The subject switch does not maintain contacts in the start position as indicated on E&DCR F-37444A, ESK 11E4101 and GE drawing 791E420TF.

h. (E41/08) Configuration Discrepancy Reports E41/01 item 2, E41/03 item 2, E41/03 items 3 and 4, E41/05 item 8 and the HPCI booster and main pump's vent and drain lines are examples of vent, test and drain lines that are shown on FSAR Figure 7.3.1-4A&B as capped, but are not capped per FM-25A&B.

i. (E41/09) The principal code identified in FSAR Table 3.2.1-1 for the HPCI "piping return test line to condensate storage tank beyond reactor building" (P21-10"-WD-332-153-2) is ANSI B31.1.0. The principal code implied by the line number and identified on isometric IC-1071 and the associated spool sketches (Example: spool sketch E-2821-5839) is ASME III, class 2.

ATTACHMENT 7

Plant Configuration Review Discrepancies
Reactor Core Isolation Cooling (RCIC) (E51)

LILCO's plant configuration review for the Reactor Core Isolation Cooling (RCIC) (E51) identified twelve potential discrepancies between the as-built plant and the FSAR commitments as follows:

a. (E51/01) FSAR Figure 5.5.7-1A differs from the as-built plant configuration in that:

(i) A normally closed double-valve test connection has been added upstream of the inboard motor operated isolation valve (MO F007) in accordance with FM-22A, and small bore isometric PO298. The subject test connection is not shown on FSAR Figure 5.5.6-1A.

(ii) FSAR Figure 5.5.7-1A shows the RCIC steam supply line upstream and downstream of 1E51*MOV041(F007), as an incorrect line size of 4" instead of a 3" line size. This is verified by FM-22A and IC-60.

(iii) The RCIC steam supply inboard isolation valve 1E51*MOV041 (MO F007) is provided with 3/4" double-valve in-line drain on the underside of the valve. This is in accordance with FM-22A and Isometric PO296.

(iv) A 3/4" double-valve in-line test connection has been added downstream of the out-board motor operated isolation valve (MO F008) in accordance with FM-22A, and Isometric 1C-61. The subject valves are shown in a normally closed position. FSAR Figure 5.5.6-1A does not depict the subject connection.

b. (E51/02) FSAR Figure 5.5.6-1A differs from the as-built plant configuration in that:

(i) Test line connection downstream of steam supply condensate drain pot, between the two steam line drain isolation valves 1E51*AOV-081 (F025) and 1E51*AOV-082 (F026) has been routed to drain into the clean radwaste water system. FSAR Figure 5.5.6-1A depicts a double valve test connection with an end cap.

(ii) Steam trap 1E51-TRP004 (D003) has been provided with a drain line (1E51-3/4"-WR-55-1501-4) consisting of a 1/2" x 3/4" reducer, two normally closed valves, and a 3/4" drain with a normally closed valve. Subject line is then routed to the main condenser hotwell via 1N23-1½"-TD-34-1501-4. FSAR Figure 5.5.6-1A does not depict the subject drain line.

(iii) Proceeding downstream from steam trap 1E51-TRP004 (D003) the as-built plant configuration, in accordance with FM-22A, does not agree with FSAR Figure 5.5.6-1A concerning the added connections and equipment.

c. (E51/03) FSAR Figure 5.5.6-1B differs from the as-built plant configuration in that:

(i) The line size of the low pressure valve steam gland leakoff of the turbine trip-throttle valve 1E51*MOV-044 is 3/4", and routed via the turbine supply drain pot drain line (1E51-3"-WR-15-151-2) to the barometric condenser as shown on FM-22A. FSAR Fig. 5.5.6-1B does not show the correct line size.

(ii) The RCIC turbine high exhaust line pressure switches 1E51*PS-026A (N009B) are located upstream of the RCIC turbine exhaust vent line and coming off the steam exhaust drain pot in accordance with FM-22A. FSAR Figure 5.5.6-1B depicts these pressure switches downstream of RCIC turbine exhaust vent.

(iii) The RCIC steam turbine exhaust vent (1E51-8"-SLP-8-151-2) has been modified with an addition of a 1" vent branch and an in-line restricting orifice (1E51*RO-153) vented to the secondary containment. Attached to each 1" vent is a pair of pressure switches 1E51*PS-025B&D (N012B&D) and 1E51*PS-025A&C (N012A&C) commonly connected to a root valve to each vent line. This arrangement is in accordance with FM-22B. FSAR Figure 5.5.6-1B depicts the subject pressure switches individually connecting to a common vent line.

d. (E51/04) FSAR Figure 5.5.6-1A differs from the as-built plant configuration in that:

(i) In accordance with FM-22A, the turbine steam exhaust line depicts a test and vent connection with two in-line normally closed valves downstream and upstream of check valve VCW-15A(F059) respectively. These connections do not have end caps. FSAR Figure 5.5.6-1A does not show the subject connections.

(ii) FSAR Figure 5.5.6-1A depicts a test connection with one normally closed valve and a threaded cap between the vacuum breaker line and check valve VCW-15A(F040). This connection in actuality is a double valve in line test connection with no threaded end cap.

(iii) Normally open manual valve is installed in the vacuum breaker line (1E51-1½"-SLP-10-151-2) downstream of the vacuum breaker check valves (F064 & F063) in accordance with FM-22A. FSAR Figure 5.5.6-1A does not show this valve.

(iv) In accordance with FM-22A, two double valve test connections are installed on the vacuum breaker line (1E51-1½"-SLP-10-151-2) upstream of each check valve (F064 & F063). FSAR Figure 5.5.6-1A depicts three single valve test connections with caps on each side of the vacuum breaker check valves (F064 & F063).

e. (E51/05)
FSAR Figures 5.5.6-1A and B differ from the as-built plant configuration in that:

(i) In accordance with FM-22A, the as-built configuration of the RCIC pump discharge line, and associated lines do not agree with FSAR Figure 5.5.6-1A.

(ii) In accordance with FM-22A a normally closed 3/4" double valve drain connection has been added just downstream of condensate and makeup system check valve (F072). FSAR Figure 5.5.6-1A does not depict the subject drain connection.

(iii) In accordance with FM-22B, the as-built cooling water supply line (2"-WR-16-901A-2) just downstream of RCIC pump 1E51*P015(C001) does not agree with FSAR Figure 5.5.6-1B.

f. (E51/06) FSAR Figure 5.5.6-1B differs from the as-built plant configuration in that:

(i) In accordance with FSAR Figure 5.5.6-1B, the barometric condenser vacuum tank 1E51*E038 is provided with a low level switch, high level switch, and a pressure switch. Field inspection indicates that 3 additional indicating instruments were installed. They are as follows:

- level gauge (1E51-LG818)
- pressure indicator (1E51-PI818) and
- temperature indicator (1E51-TI816)

FSAR Figure 5.5.6-1B does not depict these indicators as being installed.

(ii) Pressure relief valve 1E51*RV145(F017) is located on the discharge of condensate pump 1E51*P077 downstream of checkvalve VCS-60B(F047). This is in accordance with FM-22B. FSAR Figure 5.5.6-1B depicts the relief valve upstream of RCIC pump suction inlet.

(iii) FSAR Figure 5.5.6-1B depicts a 3/4" single valve capped connection between the condensate pump discharge isolation valves. The subject connection actually is a double valve open end connection according to FM-22B. As shown on FSAR Figure 5.5.6-1B the position of the lines and connections associated with the condensate pump discharge line do not agree with the as-built plant and FM-22B.

g. (E51/07) FSAR Figure 5.5.6-1B differs from the as-built plant configuration in that:

(i) The loop level pump's suction line originates from the RCIC Pump's suction line upstream of condensate storage tank valve, 1E51*MOV-031 (F010), in accordance with FM-22A. FSAR Figure 5.5.6-1B depicts the loop level pump's suction line originating from the RCIC pump suction line immediately upstream of RCIC pump.

(ii) In accordance with FM-22B, upstream of the loop level pump suction, A - 1½"x1" reducer, Y-strainer 1E51*S-056(D015) and loop level pump suction valve are installed. FSAR Figure 5.5.6-1B does not agree with the as-built plant configuration.

(iii) Pressure indicating switch 1E51-PIS098 (PIS-N031) is located immediately upstream of loop level pump discharge valve VGS-60B (F081) on the loop level pump discharge line, as per FM-22B. FSAR Figure 5.5.6-1B shows the subject pressure switch immediately downstream of the loop level pump's minimum flow line.

(iv) A check valve is installed in the loop level pump's discharge line upstream of the flow switch (FS-N032) in accordane with FM-22B. FSAR Figure 5.5.6-1B does not show the subject check valve.

(v) FSAR Figure 5.5.6-1B depicts two test connections each with a normally closed valve and end cap located on either side of the loop level discharge line flow switch (FS-N032). The subject test connections are not installed as per FM-22B.

(vi) Loop level pump's minimum flow line (1"-WR-24-151-2) has been provided with a restricting orifice (1E51*R0137) upstream of checkvalve (F079) as per FM-22B and does not contain locked throttle valve (F078). FSAR Figure 5.5.6-1B does not show these changes.

(vii) FSAR Figure 5.5.6-1B shows that the loop level discharge minimum flow line (1"-WR-24-151-2) is routed to RCIC pump suction line, where in reality it is routed to HPCI suction line in accordance with FM-22B.

h. (E51/08) FSAR Figure 8.3.2-2&3 differ from the as-built plant configuration in that:

(i) FSAR Section 7.4.1.1.2 page 7.4-1 paragraph 4 sentence 4 states: "All other valves are powered by Division I 125V dc Bus except the outboard steam line drain and condensate pump discharge isolation valves [1E51*AOV081(F025), AOV082(F026), AOV083(F005), LOV-095(F004)] which are powered by the Division II 125V dc Bus." FSAR Figure 8.3.2-2 One Line Diagram for 125V dc distribution Bus "A" depicts valves 1E51*AOV-081(F025) and LCV-095(F004) as powered by distribution panel, 1R42*PNL-A2(RED) which signifies Div. I. FSAR Figure 8.3.2-3 One Line Diagram, 125V dc distribution Bus "B" depicts valves 1E51*AOV-082 (F026) and AOV-083(F005) as powered by distribution

panel, 1R42*PNL-B2(Blue) which signifies Div. II. However, as-built field inspection, field cable ticket, cable schedule EC-1 report, and cable location EC-5 report, indicate the following:

VALVE MARK NO.	CABLE I.D.	JUNCTION BOX	DIVISION NO.
1E51*AOV-082(F026)	1E51ARC500	1JB*082	Div. I
1E51*AOV-083(F005)	1E51BRC518	1JB*083	Div. I
1E51*AOV-081(F025)	1E51BBC517	1JB*081	Div. II
1E51*LCV-095(F004)	1E51ABC504	1JB*095	Div. II

i. (E51/09) Description to be provided later.

j. (E51/10) FSAR Figure 5.5.6-2A and FSAR Figure 7.3.1-12C asserts the four indicating type level switches 1B21*LIS029A-D (B21-N031A-D) are electrically arranged to automatically initiate the RCIC system when there is a loss of coolant accident (LOCA). These four level switches have been replaced by four analog trip level transmitters 1B21*LT157A-D (B21-N091A-D) which will initiate the RCIC system. This is in accordance with the system engineering completion review and control program change control form B21/08 Rev. 3.

k. (E51/11) The principal code identified in FSAR Table 3.2.1-1 for HPCI Return Test Line (1E41-10"-WR-6-901B-2) to condensate storage tank beyond reactor building is ANSI B31.1.0. The principal code implied by the line number and identified on Isometrics 1C-180, 1071 and FM-25A is ASME III, Class 2.

l. (E51/12) Configuration Discrepancy Reports E51/01 Item 1, E51/02 Item 1, E51/04 Item 2 and E51/06 items 3 and 4, are examples of vents, test and drain lines that are shown on FSAR Figure 5.5.6-1A&B as capped, but are not capped per FM-22A&B.

EXHIBIT 22

SUMMARY OF PROBLEMS RELATED TO DRAWINGS, SKETCHES & DIAGRAMS

Audit No.	Page/Finding	Date	Description
EA 00	p. 7	4/70	Performance of draftsmen and designers in the development and review of drawings was unacceptable. 19 drawings were selected for auditing and 22 infractions were observed out of 159 checks. The auditor concluded that drawings were lacking in correct review and support of calculations and engineering criteria and did not receive a thorough checking approximately 11% of the time.
EA 1	p. 7	9/70	Design Division drawings were below acceptable Stone & Webster performance standards. 39 drawings were audited and 503 checks were made. 52 infractions were observed. The rate of deficiency in the review of drawings is 10.5%.
EA 2	p. 7	3/71	Drawings produced by Design Division on the LILCO project continue to receive an unacceptable level of review. Of 6 drawing categories audited, only electrical drawings received an acceptable performance rating. Drawings received an unsatisfactory review 10.5% of the time.
EA 4	p. 2	2/73	Building service drawings marginally satisfactory. Deficiencies include incorrect or omitted dimensions, insufficient identification of material, and graphic of elevation incorrect. Structural drawings were judged to be unsatisfactory, with the following examples of deficiencies observed during the audit: references are incomplete for showing columns; material identification is insufficient; sections are improperly taken from the drawings; dimensions are incorrect or omitted; and notes are incomplete.
	p. 3		Electrical control diagrams judged unsatisfactory, with examples of deficiencies being: equipment numbers missing; fuse ratings not specified; and contacts for various devices not shown in referenced drawings.

Audit No.	Page/Finding	Date	Description
EA 8	p. 2	2/74	Structural steel drawings contain incorrect drawing references. Drawing coordinates not included in references. Deficiencies also identified with respect to mechanical flow diagrams. Boundaries between S&W vendor furnished piping are not clearly defined, relief and safety valve settings are not specified, and valve identification is incomplete.
EA 12	Attachment 3	1/75	Four drawings reviewed. Two of the drawings had problems. One drawing had problems in that the presentation method of showing conduit runs across each other and conduits turning up to equipment was not properly shown. Another drawing had dimensions missing when the tray changed elevation and direction. In addition, tray fitting mark numbers were also missing in two places. Auditor notes that the Shoreham project is very difficult to apply latest design standards and procedures to some drawings because of the starting and stopping of the project and because of physical space constraints. "It does not serve the best interest of this project to enforce the latest standards and procedures on every drawing since previous procedures are already established. Any reasonable deviations would be accepted so as not to hinder the progress of this project."
EA 13	p. 2, C. 3	4/75	Problems identified with nuclear flow diagrams. Symbols used for equipment are not included in the symbols on the symbol sheets; line identification is incomplete and incorrect on many lines; and design checklists are not being filled out.
	p. 3, C.4		Problem identified in project instruction 4.4 in failing to meet state law requirements.
EA 22	Observation 019	8/77	Dampers that are normally positioned either open or closed are often not identified in the KSKs.

Audit No.	Page/Finding	Date	Description
EA 29	Observation 092	7/79	25 drawings were audited to determine whether they were reviewed and approved in accordance with engineering assurance procedures. 11 of the drawings lacked evidence of approval by a responsible engineer. These drawings had received approval only by the lead structural engineer.
	Observation 093		22 flow diagrams were examined to determine whether the latest issues were prepared, reviewed and approved in accordance with engineering assurance requirements. Three diagrams bore no objective evidence of review by the operations service design group supervisor, as required by the procedures. Subsequent examination determined that two diagrams had been reviewed. With respect to the third flow diagram, no objective evidence could be found to indicate the diagram had been forwarded for review.
EA 30	Observation 103	10/79	Engineering assurance procedures require that where drawings containing QA Category I information are changed, the reason for the change and any justification or backup information must be given. Five of 8 electrical drawings audited did not comply with this requirement.
EA 33	Observation 115	6/80	Changes are being made to QA Category I drawings which are not traceable to adequate documentation. 13 of 15 drawings reviewed by the auditors contained changes which could not be traced back to a statement of justification or backup information as required by engineering assurance procedures.
EA 34	Observation 119	11/80	1. Logic Diagrams. The audit revealed inconsistent practices in identifying safety-related vs. non-safety-related devices. The audit also revealed that Logic diagrams failed to provide complete information regarding equipment locations. Finally, a method to indicate changes to the Logic diagrams was not made.

Audit No.	Page/Finding	Date	Description
			2. Piping drawings. Audited drawings do not contain a requirement to provide a 1/2" diameter vacuum breaker hole in accordance with the flow diagram. No E&DCR can be identified which corrected the problem.
	Observation 121		Drawing discrepancies are not being identified in the checking process for pipe support drawings. One audited drawing did not depict a support properly in several respects. Several drawings were not in agreement with the calculation model. Apparently, it had not been picked up in the checking process.
EA 39	Observation 149	2/82	No evidence that checking sheets are being completed or maintained on file for flow diagrams. Checking forms are used to establish a system for accuracy to ensure that the latest drawing revision is up-to-date. Checking forms are required to be completed by a checker and kept on file by the design engineer for all issues of mechanical drawings. Checking sheets were being used only for the initial issue of drawings.
EA 40	p. 2 and Observation 156	6/82	Audit revealed that there are no project procedures governing the preparation, review and control of cable block diagrams. There is no evidence that cable block diagrams are reviewed.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	
LONG ISLAND LIGHTING COMPANY	Docket No. 50-322 (O.L.)
(Shoreham Nuclear Power Station, Unit 1)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NOTIFICATION OF CORRECTIONS TO SUFFOLK COUNTY EXHIBITS 51 AND 56," "SUFFOLK COUNTY RESPONSE TO PORTIONS OF LILCO'S MOTION FOR FURTHER BOARD DIRECTION ON THE CONDUCT OF QA CROSS-EXAMINATION," and "SUFFOLK COUNTY SUBMITTAL OF QA/QC INFORMATION" have been served to the following this 12th day of October, 1982 by first class mail, except as otherwise noted.

*Lawrence Brenner, Esq.
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Dr. James L. Carpenter
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Dr. Peter A. Morris
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Edward M. Barrett, Esq.
General Counsel
Long Island Lighting Company
250 Old Country Road
Mineola, New York 11501

Mr. Brian McCaffrey
Long Island Lighting Company
175 East Old Country Road
Hicksville, New York 11801

Ralph Shapiro, Esq.
Cammer and Shapiro
9 East 40th Street
New York, New York 10016

Howard L. Blau, Esq.
217 Newbridge Road
Hicksville, New York 11801

* W. Taylor Reveley III, Esq.
Hunton & Williams
P.O. Box 1535
707 East Main St.
Richmond, Virginia 23212

Mr. Jay Dunkleberger
New York State Energy Office
Agency Building 2
Empire State Plaza
Albany, New York 12223

Stephen B. Latham, Esq.
Twomey, Latham & Shea
Attorneys at Law
P.O. Box 398
33 West Second Street
Riverhead, New York 11901

DS03

Marc W. Goldsmith
Energy Research Group, Inc.
400-1 Totten Pond Road
Waltham, Massachusetts 02154

Joel Blau, Esq.
New York Public Service Commission
The Governor Nelson A. Rockefeller Building
Empire State Plaza
Albany, New York 12223

David J. Gilmartin, Esq.
Suffolk County Attorney
County Executive/Legislative Bldg.
Veterans Memorial Highway
Hauppauge, New York 11788

Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docketing and Service Section
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

* Bernard M. Bordenick, Esq.
David A. Repka, Esq.
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Stuart Diamond
Environment/Energy Writer
NEWSDAY
Long Island, New York 11747

* Daniel F. Brown, Esq.
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. Jeff Smith
Shoreham Nuclear Power Station
P.O. Box 618
North Country Road
Wading River, New York 11792

MHB Technical Associates
1723 Hamilton Avenue
Suite K
San Jose, California 95125

Hon. Peter Cohalan
Suffolk County Executive
County Executive/Legislative Building
Veterans Memorial Highway
Hauppauge, New York 11788

Ezra I. Bialik, Esq.
Assistant Attorney General
Environmental Protection Bureau
New York State Department of Law
2 World Trade Center
New York, New York 10047

Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Matthew J. Kelly, Esq.
Staff Counsel, New York State Public Service Comm.
3 Rockefeller Plaza
Albany, New York 12223

Lawrence Coe Lanpher

Lawrence Coe Lanpher
KIRKPATRICK, LOCKHART, HILL, CHRISTOPHER & PHILLIPS
1900 M Street, N.W., 8th Floor
Washington, D.C. 20036

DATE: October 12, 1982

* By Hand