

ORIGINAL

OFFICIAL TRANSCRIPT  
PROCEEDINGS BEFORE

NUCLEAR REGULATORY COMMISSION  
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

DKT/CASE NO. 50-322-

TITLE LONG ISLAND LIGHTING COMPANY  
(Shoreham Nuclear Power Station)

PLACE Hauppauge, New York

DATE February 22, 1983

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of :  
LONG ISLAND LIGHTING COMPANY : Docket No. 50-322-OL  
(Shoreham Nuclear Power Station) :

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Court of Claims of New York  
Room 3B44, B Building  
State Office Building  
Hauppauge, New York  
Tuesday, February 22, 1983

The hearing in the above-entitled matter  
convened, pursuant to notice, at 10:35 a.m.

BEFORE:

LAWRENCE BRENNER, Chairman  
Administrative Judge

PETER A. MORRIS, Member  
Administrative Judge

## 1 APPEARANCES:

2

3

On behalf of Applicant:

4

ANTHONY S. EARLEY, Esq.

5

T. S. ELLIS III, Esq.

6

DONALD P. IRWIN, Esq.

7

Hunton &amp; Williams

8

707 East Main Street

9

Richmond, Va. 23212

10

11

On behalf of the Regulatory Staff:

12

BERNARD BORDENICK, Esq.

13

Washington, D.C.

14

15

On behalf of Suffolk County:

16

LAWRENCE COE LANPHER, Esq.

17

MICHAEL S. MILLER, Esq.

18

Kirkpatrick, Lockhart, Hill,

19

Christopher &amp; Phillips

20

1900 M Street, N.W.

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Washington, D.C. 20036

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1 tomorrow.

2 We are aware that we have Thursday afternoon  
3 to use for examination of the witnesses and we plan on  
4 making use of Thursday afternoon for that purpose. So  
5 we will run all day on Thursday if necessary.

6 I don't know how long the emergency planning  
7 session will take and I will just assume for planning  
8 purposes that it's going to take up until lunchtime,  
9 although perhaps it will not take that long.

10 Do the parties have any preliminary matters?

11 (No response.)

12 JUDGE BRENNER: Among other things, there are  
13 some settlements owed to us or reports of settlements.

14 MR. IRWIN: Judge Brenner, let me note in  
15 passing that LILCO filed its reply findings this morning  
16 in person on the Board and on the parties present, and  
17 will be filing copies by mail later today.

18 As to the pending settlement, I believe the  
19 Board has a copy of the settlement on Suffolk County  
20 contention 32, SOC contention 19.F, electrical  
21 penetrations. Mr. Lanpher has given me this morning  
22 copies, fully executed by the County, of the remaining  
23 to settlement agreements that were outstanding, namely  
24 that on containment isolation and that on the Halipatz  
25 concern. They are being Xeroxed right now and as soon

1 as they have been copied I will distribute them to the  
2 Board and the parties.

3 JUDGE BRENNER: Okay.

4 MR. ELLIS: Judge Brenner, the parties were  
5 able to resolve the OQA staffing matter and as soon as  
6 we have an opportunity we will have agreement to the  
7 Board on that.

8 And on the procedures matter, the parties met  
9 for a couple of days last week and they have three days  
10 scheduled for next week, and it is taking longer than we  
11 anticipated but we are in earnest and making some  
12 progress and we hope to get that wrapped up as soon as  
13 we can.

14 JUDGE BRENNER: On the procedures schedule, at  
15 the end of this week maybe we can go back to the  
16 contemplated schedule for those meetings and plug in the  
17 actual calendar dates as to where we are at so we can  
18 get a handle by date as to when the parties expect to  
19 meet over the next immediate future, the next few days  
20 or weeks, and come back to that.

21 MR. ELLIS: All right, sir.

22 I also have -- you had requested that we state  
23 to you the situation with respect to or the position  
24 with respect to Teledyne, and I'm prepared to do that  
25 now if you would like.

1 JUDGE BRENNER: Yes, that will be fine in a  
2 moment.

3 Let me back up to staffing. Is that an  
4 agreement that we can get this week? What are the  
5 logistics of that, or at least some report of the  
6 substance of the agreement?

7 MR. ELLIS: Well, there is no doubt about our  
8 being able to give you the results of the substance. I  
9 have some concern about the logistics of getting  
10 anything to you this week.

11 JUDGE BRENNER: As long as we get a report on  
12 the substance whenever it's convenient this week, that  
13 will be fine.

14 MR. ELLIS: Yes, sir, that won't be any  
15 problem.

16 JUDGE BRENNER: All right. And we can hear  
17 about Teledyne now, unless there are other reports on  
18 OQA.

19 MR. LANPHER: Judge Brenner, on OQA, in terms  
20 of the status schedule, since Mr. Dynner was involved in  
21 that he will be up when we get to the OQA part of this  
22 week's schedule. So if we could defer that until then I  
23 would appreciate it.

24 JUDGE BRENNER: Fine, and that way the parties  
25 can talk to each other before coming back to us.

1 MR. BORDENICK: Judge Brenner, I didn't have  
2 anything on OQA, but I was going to suggest that we  
3 defer Teledyne and get started with the panel. I don't  
4 know how long Teledyne will take, but my feeling is that  
5 can wait until later in the week.

6 JUDGE BRENNER: It can wait until a little bit  
7 later, but we want an opportunity, if necessary, to be  
8 able to react and get back to the parties. So we would  
9 rather do it no later than tomorrow.

10 Have the parties talked to each other recently  
11 about their respective positions on Teledyne?

12 MR. ELLIS: No, sir, I don't think we have  
13 recently. I think I have indicated earlier on to the  
14 Board and had indicated to the parties earlier on what  
15 our general position was, and I am prepared to state it  
16 fairly succinctly right now or later, as the Board  
17 wishes.

18 JUDGE BRENNER: Maybe the parties should  
19 exchange views, not to argue with each other but just to  
20 know in advance what the views are, and then you can  
21 tell us as a preliminary matter tomorrow morning.  
22 Perhaps that would be best.

23 MR. ELLIS: Yes, sir.

24 I think the record should also perhaps reflect  
25 that we have delivered our reply findings.

1 JUDGE BRENNER: Mr. Irwin mentioned that.

2 MR. LANPHER: Judge Brenner, just one  
3 inquiry. The Board earlier indicated that it was  
4 intending to ask some questions of its own on 82-29.  
5 Are you intending to do that at the conclusion of this  
6 panel or is there some particular time? Because I  
7 personally would like to be here at that time and I'm  
8 not going to be able to be here the whole time during  
9 this inquiry, and if there could be just a bit of  
10 advance notice so I can be sure to be here.

11 JUDGE BRENNER: If it is convenient to the  
12 other parties, I can ask my questions at the conclusion  
13 of the County's cross, on the assumption that the right  
14 LILCO witnesses are among those on the panel.

15 MR. ELLIS: Yes, sir, I think so. But we  
16 would like to have some warning so that we could -- we  
17 prepared for RAT this morning by agreement, but I think  
18 Mr. Russeler is going to be the appropriate person.

19 JUDGE BRENNER: Well, I will ask my questions  
20 as soon as the County completes its cross-examination on  
21 RAT, and that way the other parties, when they come up  
22 with follow-up questions can include my questions, any  
23 questions they have on my questions.

24 Incidentally, we need some things to be made  
25 exhibits when we do get to those questions that I have

1 and I did not bring copies of. So maybe the parties can  
2 accommodate the record by tomorrow, if possible.  
3 Otherwise we will catch up later. But we should make  
4 LILCO's responses to the ASLB information request, which  
5 includes that folder as well as the cover filing bearing  
6 a similar caption, I guess all dated December 21st,  
7 1982. And I suppose we should end up with part of it in  
8 evidence, the part that I will ask about, and the rest  
9 of it just for identification.

10           The inspection report that relates to item 4  
11 is inspection report 82-29. I do not know whether that  
12 is already in the record for identification or in  
13 evidence. I do not believe it is.

14           The only other arguably pertinent inspection  
15 report relates to item 1, and it is already marked for  
16 identification at least. It is IE report 82-26, and it  
17 is Suffolk County Exhibit 91, and I think my question or  
18 two on item 1 is going to be so brief that we probably  
19 don't need to do anything further by way of evidence  
20 with the inspection report.

21           But if anybody has copies of report 82-29 that  
22 would be helpful. Otherwise we will catch up later.  
23 And it is only the pertinent part relating to item 4 in  
24 LILCO's information response. I think it is paragraph  
25 3.5.3.3.



1 the hearing, and I think the easiest way to do that  
2 would be to wait until the conclusion of the  
3 examination.

4 With the letter of January 19th, 1983, which  
5 is related to the report and relevant, I believe, to  
6 this phase of the hearing, on that one we can likewise  
7 mark that as an exhibit and again wait until the end of  
8 the examination for purposes of moving it into the  
9 record.

10 JUDGE BRENNER: Mr. Miller?

11 MR. MILLER: Judge Brenner, I would think that  
12 we should just move in the entire inspection report, and  
13 certainly, with respect to the confirmatory action  
14 letter, the entire letter into evidence. It seems to me  
15 that rather than trying to determine what portions  
16 during the course of the next few days are going to be  
17 discussed during this hearing, I would hope that we  
18 would just mark the inspection reports and the letter as  
19 exhibits and then move them into evidence at whatever  
20 time, certainly before the hearings come to a  
21 conclusion.

22 JUDGE BRENNER: Well, I don't think the whole  
23 RAT report is going to be inquired into. I suspect by  
24 the time you're done that the letter might be in  
25 evidence. Why don't we do it the way Mr. Bordenick

1 suggests, and if it becomes too difficult to isolate  
2 portions, we would be willing to admit it to the extent  
3 inquired into. Let's do that, then.

4 Mr. Bordenick, I neglected to bring a copy of  
5 the confirmatory action letter with me, although you  
6 have given us a number of copies on a number of  
7 occasions now, and I apologize.

8 MR. BORDENICK: I have spare copies of that  
9 available for the Board, and I have spare copies of the  
10 inspection report, and I have spare copies of Mr.  
11 Higgins' professional qualifications which went into the  
12 record in December, if anyone needs a copy of that. Mr.  
13 Greenman's qualifications are not yet in the record. I  
14 will do that at the appropriate time.

15 JUDGE BRENNER: All right. Why don't we mark  
16 the confirmatory action letter and I will let you  
17 identify it in a moment. It would be Staff Exhibit 12  
18 for identification.

19 Let's bind a copy of that into the record at  
20 this point.

21 Were you going to identify it, Mr. Bordenick?

22 MR. BORDENICK: Yes, Judge Brenner. This is a  
23 letter dated January 19, 1983, a two-page letter  
24 addressed to the Long Island Lighting Company,  
25 attention, Mr. M.S. Pollack, and it is signed by Richard

1 W. Starostecki, Director, Division of Project and  
2 Resident Programs. And as indicated in the first  
3 paragraph, the letter refers to a discussion on January  
4 18th, 1983, between Messrs. J. Ribello of LILCO and Mr.  
5 E. Greenman, who is one of the Staff witnesses present  
6 this morning.

7 JUDGE BRENNER: All right. It is so marked  
8 for identification and we will bind a copy in for  
9 convenience at this point also.

10 (The document referred to  
11 was, marked Staff Exhibit  
12 No. 12 for  
13 identification, follows:)

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

Print  
INSERT #1

JAN 19 1983

Docket No. 50-322  
CAL No. 83-01

Long Island Lighting Company  
ATTN: Mr. M. S. Pollock  
Vice-President, Nuclear  
175 East Old Country Road  
Hicksville, New York 11801

Gentlemen:

This refers to the discussion on January 18, 1983, between Messrs. J. Rivello of your staff and E. Greenman of this office regarding the necessity for improvements in general housekeeping conditions at the Shoreham Nuclear Power Station.

Housekeeping has previously been an area of NRC concern at Shoreham. This was documented in the Construction Assessment Team (CAT) inspection and more recently as unresolved items during Inspection 82-27. These items remain open. Region I performed further reviews in this area during Inspection 83-02, between January 10-15, 1983.

We understand that you have initiated plans to implement additional measures and controls to assure conditions are adequate for plant operation. Consequently, please verify within seven days your plans to conduct a general cleanup of the plant (Reactor Building, Control Building and Screenwell). In your plans we understand that you are including the following considerations:

1. Assignment of personnel for fulltime housekeeping activities until housekeeping has improved to a satisfactory level.
2. Establishment of specific eating areas in the plant.
3. Additional instruction to plant personnel and all non-manual construction personnel regarding housekeeping policies and procedures.
4. Housekeeping inspections by plant staff and construction engineers.
5. Surveillance and audit of housekeeping by Field Quality Assurance personnel with emphasis on the issuance of "Stop Work" orders for those work areas not meeting cleanliness zone requirements.
6. Review of the above activities by LILCO management.

Please provide to this office by February 25, 1983, a report detailing the status of your plans, results to-date, the additional management oversight initiated, and any additional actions taken to improve housekeeping at Shoreham.

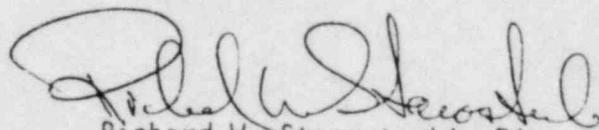
JAN 19 1983

The response directed by this letter is not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

If our understanding of your planned actions described above is not in accordance with your actual plans and actions being implemented, please notify this office by telephone within 24 hours of your receipt of this letter.

Your cooperation is appreciated.

Sincerely,



Richard W. Starostecki, Director  
Division of Project and Resident  
Programs

cc:

J. Rivello, Plant Manager  
J. L. Smith, Manager of  
Special Projects  
Director, Power Division  
Edward M. Barrett, Esq.  
Jeffrey L. Futter, Esq.  
T. F. Gerecke, Manager, QA Department  
Public Document Room (PDR)  
Local Public Document Room (LPDR)  
Nuclear Safety Information Center (NSIC)  
NRC Resident Inspector  
State of New York  
Shoreham Hearing Service List

bcc:

Region I Docket Room (with concurrences)  
Bernard M. Bordenick, ELD  
J. Axelrad, IE  
D. Holody  
R. Gallo  
E. Greenman  
T. Martin  
R. Starostecki

1 MR. BORDENICK: Judge Brenner, do you want to  
2 proceed with the inspection report now?

3 JUDGE BRENNER: Yes, and then after that you  
4 could do Mr. Greenman's qualifications, and then we will  
5 turn to LILCO.

6 MR. BORDENICK: I guess the easiest way to do  
7 this --

8 Whereupon,

9 EDWARD G. GREENMAN,  
10 called as a witness by counsel for the Regulatory Staff,  
11 having first been duly sworn by the Chairman, was  
12 examined and testified as follows:

13 Whereupon,

14 JAMES HIGGINS

15 WILLIAM J. MUSELER

16 JOSEPH KELLY

17 and TRACY T. ARRINGTON,

18 recalled as witnesses by counsel for the Regulatory  
19 Staff, having previously been duly sworn by the  
20 Chairman, were examined and testified as follows:

21 DIRECT EXAMINATION

22 BY MR. BORDENICK:

23 Q Mr. Greenman, do you have a copy of inspection  
24 report 83-02 in front of you?

25 A (WITNESS GREENMAN) Yes, I do.

1 Q And for the record, this consists of a  
2 two-page letter, three pages of Appendix A, notice of  
3 violations, and then the inspection report itself, which  
4 consists of a cover page, actually two pages of  
5 introductory matters, Table 1, which is numbered "i",  
6 and then two pages of table of contents numbered "ii"  
7 and "iii", and then the report itself consists of 35  
8 pages.

9 And Mr. Greenman, I would ask you whether this  
10 report was prepared by you or under your supervision?

11 A (WITNESS GREENMAN) Yes, it was prepared under  
12 my supervision, in part by me, but primarily by the  
13 members of the team that conducted the inspection.

14 Q And were you the team leader on this  
15 inspection?

16 A (WITNESS GREENMAN) Yes, I was.

17 Q Are there any corrections to this report?

18 A (WITNESS GREENMAN) There are no known  
19 corrections to the report.

20 Q To the best of your knowledge and belief, are  
21 the statements which are contained in this inspection  
22 report true and correct?

23 A (WITNESS GREENMAN) Yes.

24 Q And do you adopt this as part of your  
25 testimony this morning?



1           MR. BORDENICK: Yes, Judge Brenner. Before I  
2 turn to that, as I indicated, I have spare copies of Mr.  
3 Higgins' statement, and that was put into the record on  
4 December 14, 1982, following transcript page 16,245. If  
5 the Board would like, I can give another copy to the  
6 reporter and have it bound in again. That is not  
7 necessary, but I would just make that suggestion.

8           JUDGE BRENNER: I don't think we have to do  
9 that.

10           BY MR. BORDENICK: (Resuming)

11           Q     Mr. Greenman, do you have in front of you a  
12 document consisting of two pages entitled "Professional  
13 Qualifications of Edward G. Greenman"?

14           A     (WITNESS GREENMAN) No.

15                   (Pause.)

16           MR. BORDENICK: The record will show that I  
17 have handed Mr. Greenman a copy of the document I have  
18 previously identified.

19           BY MR. BORDENICK: (Resuming)

20           Q     And I would ask Mr. Greenman if these  
21 qualifications were prepared by him or under his  
22 supervision.

23           A     (WITNESS GREENMAN) Yes, these are my  
24 qualifications, prepared by me.

25           Q     Are there any corrections?

1           A       (WITNESS GREENMAN) No, sir.

2           Q       And are the statements made in this two-page  
3 document of professional qualifications true and correct  
4 to the best of your knowledge and belief?

5           A       (WITNESS GREENMAN) Yes.

6           Q       And do you adopt these qualifications as your  
7 testimony in this proceeding?

8           A       (WITNESS GREENMAN) Yes.

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1           MR. BORDENICK: Judge Brenner, I might point  
2 out, as I said earlier, I do have spare copies of  
3 these. These were originally attached to the Staff's  
4 supplemental testimony on OQA. And I certainly could  
5 give the reporter a copy. And if any parties need one,  
6 I can provide that.

7           And I would move that Mr. Greenman's  
8 professional qualifications be incorporated into the  
9 record as if read.

10          JUDGE BRENNER: All right. In the absence of  
11 any objection, we will bind it into the transcript at  
12 this point as if read.

13          (The document referred to, professional  
14 qualifications of Mr. Greenman, follows:)

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PROFESSIONAL QUALIFICATIONS  
OF  
EDWARD G. GREENMAN

EXPERIENCE:

November 1982 to Present: Branch Chief, Projects Branch 1 Division of Project and Resident Programs, Region I, NRC

Responsible for and management of a Branch involved in resident inspection, at power reactors and construction sites to assure safety and verify compliance with regulatory requirements. Project Branch inspection responsibilities include management systems, test programs plant systems, operations and coordination of regional specialist inspections.

March to November 1982: Acting Section Chief, Facilities Radiation Protection Section, Division of Engineering and Technical Programs, Region I, NRC

Responsible for management of inspection program for inspection of radiological protection areas at power and test reactors, fuel facilities and reactors in construction status.

June to November 1982: Technical Assistant, Division of Engineering and Technical Programs, Region I, NRC

Responsible for assistance in formulation of Division policies, guidance, SALP and assessment/evaluation of technical issues within the Division. Conducted and/or supervised assigned special projects, inspections, safety analyses or investigations. Responsibility for appraising and making recommendations for improving the effectiveness and efficiency of the Regional inspection and licensing program. Advised the Director on technical policy and administrative matters.

1981 - March 1982: Chief, Reactor Projects Section 2A, Division of Project and Resident Programs, Region I, NRC

Responsible for management of a project section for inspection by and supervision of a resident section for safety inspections of four power reactor sites including two facilities under construction, including integration of regional inspections and evaluation of findings.

1980 - 1981: Chief, Nuclear Support Section No. 2 (Supervisory Nuclear Engineer) Reactor Operations and Nuclear Support Branch, Region I, NRC

Responsible for supervision of a section providing engineering support on reactors in operation and test status. Supervised research reactor projects. Specialized inspection in Quality Assurance, Surveillance, Calibration, and operating procedures.

1978 - 1980: Senior Resident Inspector Peach Bottom Atomic Power Station, Reactor Operations and Nuclear Support Branch, Region I, NRC

Implemented initial Resident Inspection Program at site. Responsible for conducting safety inspections, managing the inspection program, coordinating the efforts of other NRC inspectors at the Peach Bottom Atomic Power Station. Provided supervision of two resident inspectors and resident office. Participated in evaluation of Quality Assurance and Performance Appraisal activities.

1972 - 1977: Project Inspector - Project Section No. 2, Reactor Operations and Nuclear Support Branch, Region I, NRC

Responsible for coordination, review and conduct of power and research reactor inspections. Project assignments included six power reactors and various research reactor projects, and evaluated and conducted operational Quality Assurance inspections, including Millstone and Oyster Creek. Developed preoperational test program for Columbia Triga Reactor.

1962 - 1972: Associate Instructor, US Atomic Energy Commission, Iowa State University

Institute for Atomic Research - Iowa State University - Chief Operator Ames Laboratory Reactor Supervisor. Developed fuel handling manuals and Radiation Protection Program for PWR utility. Reactor Operator, Senior Reactor Operator.

1961 - 1962: Reactor Operator - Argonne National Laboratory

Design and construction of Janus Reactor, Qualified CP-5 and EBWR reactor operator. Developed and published Reactor Operator Training Program.

EDUCATION:

Graduate Study (Nuclear Engineering, Iowa State University, 1970-1972)  
BS - Industrial Engineering - Iowa State University 1970  
BS - Industrial Administration, Iowa State University 1970

PROFESSIONAL SOCIETIES:

Society of Technical Writing

PROFESSIONAL QUALIFICATIONS  
OF  
EDWARD G. GREENMAN

EXPERIENCE:

November 1982 to Present: Branch Chief, Projects Branch 1, Division of Project and Resident Programs, Region I, NRC

Responsible for and management of a Branch involved in resident inspection, at power reactors and construction sites to assure safety and verify compliance with regulatory requirements. Project Branch inspection responsibilities include management systems, test programs plant systems, operations and coordination of regional specialist inspections.

March to November 1982: Acting Section Chief, Facilities Radiation Protection Section, Division of Engineering and Technical Programs, Region I, NRC

Responsible for management of inspection program for inspection of radiological protection areas at power and test reactors, fuel facilities and reactors in construction status.

June to November 1982: Technical Assistant, Division of Engineering and Technical Programs, Region I, NRC

Responsible for assistance in formulation of Division policies, guidance, SALP and assessment/evaluation of technical issues within the Division. Conducted and/or supervised assigned special projects, inspections, safety analyses or investigations. Responsibility for appraising and making recommendations for improving the effectiveness and efficiency of the Regional inspection and licensing program. Advised the Director on technical policy and administrative matters.

1981 - March 1982: Chief, Reactor Projects Section 2A, Division of Project and Resident Programs, Region I, NRC

Responsible for management of a project section for inspection by and supervision of a resident section for safety inspections of four power reactor sites including two facilities under construction, including integration of regional inspections and evaluation of findings.

1980 - 1981: Chief, Nuclear Support Section No. 2 (Supervisory Nuclear Engineer) Reactor Operations and Nuclear Support Branch, Region I, NRC

Responsible for supervision of a section providing engineering support on reactors in operation and test status. Supervised research reactor projects. Specialized inspection in Quality Assurance, Surveillance, Calibration, and operating procedures.

1 MR. BORDENICK: I believe that takes care of  
2 the Staff. We do not, as the Board knows, have any  
3 additional prefiled written testimony.

4 JUDGE BRENNER: All right, let's turn to LILCO  
5 then and get their testimony in.

6 MR. ELLIS: All right, sir. I think there was  
7 no prefiled testimony at all with respect to the Staff.

8 Is that right?

9 MR. BORDENICK: That is correct.

10 MR. ELLIS: Judge Brenner, we did file  
11 additional prefiled testimony at the request of the  
12 Board and the parties. And we have four copies, which  
13 we will now supply to the Board or to the reporter.

14 EXAMINATION BY COUNSEL FOR LONG ISLAND LIGHTING COMPANY

15 BY MR. ELLIS:

16 Q Gentlemen, beginning with Mr. Arrington, would  
17 you briefly identify yourselves, your name and your  
18 present position, please?

19 A (WITNESS ARRINGTON) Yes. My name is Tracey  
20 Arrington. I work for Store and Webster Engineering  
21 Corporation at the Shoreham Power Station as the  
22 superintendent of field quality control.

23 A (WITNESS KELLY) My name is Joseph Kelly. I  
24 am employed by Long Island Lighting Company as the Field  
25 Quality Assurance Division manager at Shoreham.

1           A       (WITNESS MUSELER) My name is William J.  
2 Museler. I am the manager of construction and  
3 engineering for the Shoreham nuclear power plant. I  
4 work for the Long Island Lighting Company.

5           MR. BORDENICK: Judge Brenner, I do not mean  
6 to interrupt -- well, I am interrupting counsel, and I  
7 apologize. But I thought it might be well -- I had  
8 neglected to ask Mr. Greenman and Mr. Higgins to  
9 identify themselves for the record. And perhaps this  
10 would be a good place to do it so it is all on the  
11 record.

12                   EXAMINATION BY COUNSEL FOR NRC STAFF

13           BY MR. BORDENICK:

14           Q       Starting with Mr. Greenman, would you state  
15 your name and your present employment?

16           A       (WITNESS GREENMAN) My name is Edward G.  
17 Greenman. I am employed by the U.S. Nuclear Regulatory  
18 Commission Region I, chief of Reactor Projects Branch 1,  
19 Division of Resident and Project Programs.

20           A       (WITNESS HIGGINS) James Higgins, resident  
21 inspector at Shoreham Nuclear Power Station, with the  
22 Nuclear Regulatory Commission.

23                   EXAMINATION BY COUNSEL FOR LONG ISLAND LIGHTING COMPANY

24           BY MR. ELLIS:

25           Q       Mr. Arrington, Mr. Kelly, Mr. Museler, do you

1 have before you a document entitled "Supplemental  
2 Testimony of Messrs. Museler, Arrington and Kelly  
3 Concerning I&E Inspection Report Number 50-322/83-02"?

4 A (WITNESS MUSELER) Yes, we do.

5 Q All right, Mr. Museler. As spokesman for the  
6 panel, are there any corrections to be made to this  
7 testimony which was previously filed with the Board? On  
8 page 14?

9 A (WITNESS MUSELER) Yes, Mr. Ellis. At the end  
10 of the first paragraph on page 14, the next-to-the-last  
11 line, in the middle of the line the word "either" should  
12 be changed to "both."

13 MR. ELLIS: Those changes, Judge Brenner, were  
14 made in the copies we submitted to the reporter.

15 BY MR. ELLIS: (Resuming)

16 Q Mr. Museler, are there any other corrections  
17 that you know of?

18 A (WITNESS MUSELER) No, sir.

19 Q Gentlemen, would each of you in turn,  
20 beginning with Mr. Museler, tell me whether the document  
21 which is identified as the "Supplemental Testimony of  
22 Messrs. Museler, Arrington and Kelly Concerning I&E  
23 Inspection Report Number 50-322/83-02" is true and  
24 correct to the best of your knowledge and belief?

25 A (WITNESS MUSELER) Yes, it is, sir.

1 A (WITNESS KELLY) Yes, it is, sir.

2 A (WITNESS ARRINGTON) Yes, it is.

3 Q And do you adopt it as your testimony in this  
4 proceeding?

5 A (WITNESS MUSELER) Yes, I do.

6 A (WITNESS KELLY) Yes, I do.

7 A (WITNESS ARRINGTON) Yes, I do.

8 MR. ELLIS: Judge Brenner, at this time then  
9 we would move the admission of the supplemental  
10 testimony. I will need Judge Morris' assistance on the  
11 last number.

12 JUDGE BRENNER: I don't know that we need an  
13 exhibit number. We can bind it into the transcript as  
14 testimony without an exhibit. Let's just do that. In  
15 the absence of any objection, we will admit it into  
16 evidence as if read, and bind it into the transcript at  
17 this point.

18 (The document referred to, "Supplemental  
19 Testimony of Messrs. Museler, Arrington and Kelly  
20 Concerning I&E Inspection Report Number 50-322/83-02,"  
21 follows:)

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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

SUPPLEMENTAL TESTIMONY OF  
MESSRS. MUSELER, ARRINGTON, AND KELLY  
CONCERNING I&E INSPECTION REPORT NO. 50-322/83-02

1. Would you state your names and your business affiliations and positions?

A. My name is William J. Museler, and I am employed by the Long Island Lighting Company as Manager of Engineering and Construction for Shoreham Nuclear Power Station.

My name is Tracy T. Arrington, and I am employed by the Stone & Webster Engineering Corporation, and I am Superintendent of Field Quality Control at the Shoreham Nuclear Power Station.

My name is Joseph Kelly, and I am employed by the Long Island Lighting Company as Manager of the Field Quality Assurance Division at the Shoreham Nuclear Power Station.

Q. Has each of you previously submitted a statement of professional qualifications in connection with this contention?

A. Yes.

Q. What is the purpose of this testimony?

A. The purpose of this testimony is to furnish the Board and the parties with LILCO's response as of this time to notice of violations contained in I&E Inspection Report No. 50-322/83-02. LILCO's formal response to the NRC is in preparation and will be submitted to I&E as required. This testimony also furnishes the Board and the parties with information concerning housekeeping and final inspection matters referred to in Report No. 50-322/83-02.

Q. Appendix A, Notice of Violation of Inspection Report No. 50-322/83-02, lists four Level IV violations. Please give LILCO's response to paragraph A of Appendix A and, if appropriate, include in your response the LILCO corrective or preventive action.

A. The three parts of paragraph A of Appendix A will be addressed separately.

(1) Welds on CRD Piping Supports

In this specific instance, the NRC inspector noted Reactor Controls, Inc., welds on control rod drive

hydraulic line supports which were completed with fit-up gaps. The welds were performed and inspected to drawings which did not specify a gap requirement. When the weld was inspected, the inspector, as had the welder, believed the gap was allowable.

The cause of this situation appears to be the lack of specificity with respect to the gap requirement. Beyond that all steps in the process were correct. Preliminary engineering analysis indicates that allowable stress levels may be exceeded due to the existence of the gap, but that stress will not exceed yield strength, and therefore the condition would not constitute a safety hazard. More detailed analysis is being performed to determine whether or not rework will be required to ensure allowable stress levels are not exceeded. A reinspection of 100% of all RCI pipe support welds of this type. In addition, the applicable design documents are being modified to ensure no ambiguity exists for work which may be done in the future.

(2) Completed RHR System Hangars

(a) Bolt Torque on Pipe Support Ell-SPA-109

The NRC found that two bolts on a pipe support were not able to be loosened by hand when the design document called for "hand tight" conditions. Further, when the

bolts were removed for correction of this perceived problem, a significant amount of force (unmeasured) was required for removal. Since this pipe support had been final inspected by FQC, the NRC concern was that additional items of this type (hand tight bolt requirements) might be present in other areas of the plant. LILCO believes that the bolts in question were properly installed and that the Quality Assurance Program in this case did function effectively. We do not believe there was, in fact, any nonconforming condition in the field for the following reasons:

1. The nuts and bolts in question had been installed for some time and the difficulty in removing the nuts can be attributed in part to normal oxidation of the mating surfaces.
2. The nut in question was secured by a lock nut, and the process of installing lock nuts sometimes results in slight additional tightening of the principal nut, and therefore the appearance of tightening in excess of the "hand tightness" requirement would not be unusual.
3. Field inspections conducted since this NRC inspection and subsequent to rework of those two nut-bolt combinations (at three different times several days apart) indicated that the reworked nut/bolt combinations have been variously "loose," "tight" and "loose" based on the time of the inspection. We therefore believe that the condition observed by the NRC Inspector is consistent with a properly "hand tight" installed nut/bolt combination under the various operating conditions that the particular pipe support is expected to experience.

It was verified by the NRC that the proper bolting material had been employed. In addition, this condition has been reviewed by Engineering and judged that even if the nut/bolt had been tightened significantly beyond the "hand tight" criteria, the pipe support would still have functioned properly. We would emphasize, however, that we believe that the original installation was correct, and the inspections required were carried out and verified the correctness of the installation at the time of the inspection. We have further verified that there are only two pipe supports of this type in the Plant.

(b) Bearing Gaps between Lugs and Pipe Clamps

The NRC noted that there was not full contact between the lugs welded to piping (four lugs) and the pipe clamps supporting that pipe in the vertical direction on supports Ell-PSSH-173 and Ell-PSSH-184 as required by the "full bearing" provision of E&DCR F-1748S. The NRC also believed that on one of the supports, only three of the four lugs were in contact with the pipe clamp. This observation later turned out to be invalid as subsequent FQC reinspection indicated that, in fact, positive contact was being achieved on the lug in question. The NRC was also concerned that GE criteria for GE supports delineated on E&DCR F-33350C were being used as acceptance criteria for SWEC supports instead of E&DCR F-1748S.

With respect to the issue of "full bearing" (i.e., complete surface contact between the mating surfaces), Engineering has reviewed the condition and determined that "positive bearing" (meaning that each lug is, in fact, in some contact with the pipe clamp) is an acceptable condition from a technical standpoint. Further, the two supports inspected by the NRC had an angled surface on the clamp where it contacted the lug. Therefore, "full bearing" is not possible without specific machining operations which were neither required nor necessary.

E&DCR F-1748S, however, did call for "full bearing," and the final inspection did not document the presence of "positive bearing" (which existed) as opposed to "full bearing" of all surfaces of the clamp/lug interface. We believe the particular FQC inspector involved found the condition acceptable based on his interpretation of the documentation package to which he was inspecting. That documentation package included prior approval granted by Engineering for a previously identified reduced surface contact condition. This prior approval is consistent with the recent Engineering review of the condition and with the overall intent of this particular design detail since the only way to achieve absolute "full bearing" would be to have machined surfaces on both parts. Therefore, the "positive bearing" requirement represents the actual Engineering requirement for this configuration. In order to

verify further that adequate bearing for this type of a configuration was achieved, even on supports not employing the specific clamp/lug design encountered on supports E11-PSSH-173 and E11-PSSH-184, LILCO is reinspecting all supports of a similar configuration for this attribute.

With respect to application of the SWEC versus the GE E&DCRs for construction and inspection of clamp/lug joints in the vertical configuration, the UNICO Supervisor originally questioned by the NRC Inspector did not fully understand the NRC Inspector's question, leading to an NRC concern that the appropriate E&DCRs had not been applied in the construction and inspection process for SWEC and GE pipe supports of this configuration. In fact, we have verified that the SWEC scope pipe supports of this configuration were installed and inspected to the appropriate document (E&DCR F-1748S) and that the GE supports of this configuration were installed and inspected to their appropriate document (E&DCR F-33350C.) Evidence of this was obtained through review of inspection records which specifically noted these E&DCRs on the inspection records.

(3) Cable Tray Supports (CAB TRAP)  
RB100B, RB208A, and RB131

This situation involves three observed conditions on cable tray supports. Each will be separately discussed.

(a) RB100B

The NRC Inspector noted on the as-built drawing that on one tier of a three tier cable tray support, the as-built drawing showed one cable tray whereas in the field two cable trays were, in fact, installed. The configuration of the cable tray support was in accordance with the Design Documents. The as-built drawing utilized by the NRC Inspector was a new support drawing developed in the as-built program as a result of a walkdown. During the as-built walkdown, the designer observed and recorded the second cable tray in that location, however, the draftsman who produced the final drawing omitted the second tray. Again, the cable tray supports and cable trays themselves were properly installed in accordance with appropriate design documents. The design criteria used for cable tray supports assumes maximum tray loading, therefore this support was analyzed for two trays even though one was shown. The as-built support drawing will be revised to reflect the second tray. In summary, no further preventive or corrective action is being initiated because the constructed condition is in accordance with the design, the occurrence has no implications with respect to the adequacy of the plant, and we have no basis to believe that this is other than an isolated human error.

(b) RB208A

At the outset, it must be noted that the specific cable tray support involved here was correctly installed in conformance with the applicable design documents. However, the as-built drawing depicted a concrete beam on the wrong side of the support for the view (west) noted on the drawing. It should also be noted that a diagonal brace, such as the one in question, could be installed either way (going down left to right or going up left to right) and would perform exactly the same function since the seismic loading is applied in both directions horizontally to the tray support. This was a drafting error. The corrective action included a revision of the as-built drawing and a field check of 12 additional cable tray supports having an east/west aspect and their associated as-built drawings. This field check disclosed no similar errors in drafting the as-built drawings. One minor discrepancy of a section view was observed and will be corrected on the as-built drawing. In addition to this, a formal training program for all FQC inspectors responsible for inspections in the electrical as-built program has been conducted. LILCO believes no further action is required.

(c) RB131

The NRC Inspector noted in this case that a diagonal brace termination was located one foot above the termination point indicated on the as-built drawing and indicated on the original design drawing for this support. The brace was originally installed in the correct location. However, as a result of the CAB TRAP reanalysis program, the FQC inspection identified the need to install modified hardware at the lower termination point of the brace. The correct hardware was installed, but to do so required movement of the termination point to the existing location. Since the FQC inspector reinspected this support (same inspector) for only the modified hardware called for on the previous inspection report and having already verified that the brace was in the correct location, he did not reinspect for correct location. Investigation also revealed that the brace was installed in the only possible configuration given the new hardware installation requirements.

We have confirmed by our Engineering review that adjustment of the diagonal brace termination location is acceptable from an Engineering standpoint. The corrective and preventive action in this instance included an engineering verification that the as-built condition was acceptable and the revision of the as-built drawing. Also we verified through interviews that personnel performing work in the field are

aware of and are implementing their responsibility to obtain prior approval for deviations from specified conditions.

Q. Please give LILCO's response to paragraph B of Appendix A and, if appropriate, include in your response the LILCO corrective or preventive action.

A. The NRC's concern was that verification of hangar cold set, specifically the pulling of the shear pin, was not being adequately verified. We reviewed this matter and have concluded that existing site programs adequately ensure that hangar cold set verification occurs at the appropriate time. For example, there is a requirement, which preexisted the NRC inspection, to check pins pulled prior to fuel load. In addition, the Construction Site Inspection Program has required the inspection of the attribute to be noted on the construction inspection program forms for all supports of this type in the secondary containment. We have reviewed the two specific spring cans referenced in the NRC report and found them to be in the condition called for by the site programs. Thus, the observed condition was not different from the required condition, but rather was appropriate and controlled. Also, 12 additional spring cans were checked and found to be in the correct configuration. (Six of these had already had the cold set verified, and the other six were in process with the shear pins still installed as required.) While LILCO considers the

existing programs adequate, we agree with the NRC that a more rigorous accounting system for the cold setting of pipe supports prior to fuel load will be beneficial in providing additional assurance that the final configuration is correct.

Accordingly, LILCO established, effective February 2, 1983, a program composed of the following elements:

- a. An additional CIP form (Construction Inspection Program) will be generated for each spring can in the Plant (safety related and non-safety related) highlighting the cold setting requirement.
- b. All hangars will be reinspected for this specific attribute prior to fuel load (a directive which existed prior to inspection 83-02) and the CIP form will be filled out and forwarded to the Resident Engineering Office for inclusion in the permanent Plant files.
- c. In addition to individual inspection forms for each spring can, an overall reverification sheet by System will be established for all spring cans in every System.
- d. The Master Punch list has had this verification included as a line item for each system.

LILCO believes this additional precaution is acceptable to the NRC and that no further action is required in connection with this matter.

Q. Please give LILCO's response to paragraph C of Appendix A and, if appropriate, include in your response the LILCO corrective or preventive action.

A. Paragraph C of Appendix A notes that the inspectors observed the following conditions:

1. Construction did not notify QC prior to working on safety related platform number 21 in the secondary containment, and on main steam line restraint number 30 within primary containment.
2. The cover sheets for safety related E&DCRs F39112 and F39190 did not specify that drawing number 1.61-207 was affected by these E&DCRs.
3. No discrepancy had been noted in elementary diagram 1.61-207F although testing conducted per CG 000.007-5 on the Yellow Line Master Drawing 1.61-207E indicated that E&DCRs F39112 and F39190 had been incorporated into Reactor Core Isolation Cooling System circuitry.

Each of the observed conditions will be addressed separately.

(1) A portion of the quality assurance program requires construction to advise FQC of work being performed after FQC has inspected previous work. This is true in the case of both inprocess and final inspection. Under this procedural control, construction advises FQC by submittal of an appropriate notification form. This is a redundant procedural control over and above the direct receipt by FQC of any document which directs work to be performed at the plant which must ultimately be inspected by FQC.

In the specific instances raised in this portion of the violation, the work involved was structural steel activity. In one case, platform 21 in the secondary containment was being modified, and, in the second case, additional structural steel in the form of a monorail was being attached to a main steam restraint (MSR-30). LILCO agrees that in these instances a notification form should have been submitted to FQC but was not. In each case, however, notification was achieved through the delivery to FQC of the documents to which the work was being performed. These documents would have triggered additional inspection by FQC. In addition, the final inspection remained for the installations in both activities in question. Although the notice of violation indicates that this procedure is used whenever work activity affects final QC-accepted items, that it not the case. The procedure applies, as we have stated, following completion of <sup>both</sup> ~~either~~ in-process and final QC inspections.

In these cases, the notification forms were not submitted by construction as the construction force was not aware that FQC in-process inspection had been performed on these items. In the structural steel area, in-process inspection is an ongoing activity and no formal notification of completed inspections is required to be submitted by FQC to Construction. In the particular case of the attachment of a monorail to the main steam restraint, the structural steel

monorail attachment to the restraint was not part of the restraint and came under a separate, new inspection which would assure that both the monorail was properly installed, and the restraint continued to be acceptable after installation of the monorail. The monorail installation was a new and separate component requiring full FQC inspection after completion of the work.

To facilitate identification of work which requires notification to FQC, FQC has initiated a procedure which requires the tagging of all items which have received FQC inspections as well as formal notification to the construction organization. This will allow for more positive determination by construction of the need for a notification form when work is conducted.

(2) We have evaluated the situation involving E&DCRs F-39112 and F-39190 and have determined that the appropriate document control program requirements were applied and functioned properly. These E&DCRs did list the correct affected drawing numbers on them. The referenced drawings were multiple sheet drawings, and the E&DCR properly noted only the SWEC number of the first sheet. Accordingly, no corrective or preventive action is required.

(3) The NRC's concern was the apparent failure of the responsible test engineer to note, as a discrepancy, the fact

there were outstanding E&DCRs not posted on the drawing being used for the test. In fact, the E&DCRs were correctly posted on the first sheet of a multi-sheet drawing (Revision E) being used by the test engineer. Thus, there was no discrepancy to note. The inspector identified on site a later revision (Revision F) which was issued after the test and which did not have the E&DCRs incorporated. In fact, the E&DCRs were issued after Revision F and were correctly posted on the first sheet of the Revision F drawing, as they had been on the Revision E drawing of record for the test. In fact, Revision G was issued on December 4, 1982, in Boston, and was in transit to the site at the time of the inspection. This revision does incorporate the E&DCRs in question. Therefore, no corrective or preventive actions are required.

Q. Please give LILCO's response to paragraph D of Appendix A and, if appropriate, include in your response the LILCO corrective or preventive action.

A. Paragraph D of Appendix A notes that the inspectors observed the following conditions:

1. A tubular support weld varied from its design drawing detail because it failed to wrap around the entire fit-up joint, as required;
2. A welding technique used in the rework was not qualified for the angular orientation encountered in the field; and

3. High-strength bolting installations did not conform to applicable AISC Code requirements in that several bolted joints had their washers missing, and ASTM A490 bolts in these installations had been retorqued.

Conditions 1 and 2 are essentially the same and will be treated together, and condition 3 will be treated separately.

(1) Conditions 1 and 2 are the same condition resulting directly from the physical configuration of the joint. This situation involved a tubular support attached to a flat surface at a sharp angle, resulting in a small area that was unweldable due to lack of accessibility. A four-sided weld was called for using a technique suitable for either three-sided or four-sided welding. The weld was performed to the extent possible considering the inaccessibility of the small angle portion of the installation. The inspector accepted the weld because he did not observe the small amount ( $\sim 1/2"$ ) of weld material missing. This has been confirmed in an interview with the inspector. The weld technique which had been used in the field was qualified for the orientation except that it could not be used in the area where the setup angle was less than 30 degrees. The weld could not be performed in full compliance with the drawing because of the accessibility considerations. Actual installation resulted in an angle of less than 30 degrees. As we now know from the evaluation, a full, four-sided

circumferential weld is not required for this support member. Had engineering known that field adjustment would result in less than 30 degrees, a three-sided weld would have been called for using the same weld technique, which is in fact the final installation achieved. This was an isolated instance of an inspector failing to observe a small amount of missing weld. Only two other welds of this type exist, and, in the remaining two cases, the angle was greater than 30 degrees, making the joint fully accessible. The installation matched exactly the engineering requirements.

The corrective and preventive action required for these two conditions was to confirm by engineering review that the small amount of weld material missing was acceptable. No rework was required. All documentation will be conformed to the actual installation. Additional corrective and preventive actions included review of the other two similar installations which were found to be correct. This matter has been thoroughly discussed and reviewed with the inspector and the welder. As a result of this interview with the inspector, it was apparent that the inspector was aware of the requirement for a full circumferential weld and conducted his inspection to that requirement, but simply missed it. The welder, who had performed a number of welds of this tupe, thought he had satisfactorily completed this weld. Further, when asked, the welder stated that he was familiar with and complied with the

requirement to obtain Engineering approval for deviations from design drawings. Accordingly, we believe this to be an isolated instance.

(2) The third condition in paragraph D of Appendix A involved specific high strength bolting installations where washers were not used as required by the applicable code and where bolts were retorqued. We have reviewed all work done by the start-up support personnel and have confirmed that this was the only instance where they were required to use high strength bolting material on hangars. This high strength bolting material is used in only a few locations throughout the plant. For example, we reviewed 250 pipe supports for this condition and found only three instances where A490 bolts were called for and used, and in these three instances the bolting configuration was confirmed to be correct. We have reviewed the site programs for this type of bolting material and performed additional field inspections and ascertained that this was an isolated instance limited to these three particular turbocharger supports. It should be noted, however, that an engineering review of these conditions (both the absence of washers and the retorquing) was performed and the adequacy of the support confirmed notwithstanding the discrepant conditions noted by the NRC.

The corrective and preventive action for these conditions is to install new bolts and washers in the turbocharger support. By additional training, start-up support personnel and OQA inspectors will be informed of this specific requirement relating to A490 high strength bolts.

Q. On page 7, paragraph 6, of Inspection Report No. 50-322/83-02, the inspection team noted a concern regarding housekeeping. What is LILCO's response concerning housekeeping?

A. With regard to the overall cleanliness of the Plant, it is pertinent to note that the NRC Inspector's perspective was one of a plant within one month of fuel load, whereas Shoreham, at that point, was actually four to five months from fuel load. This perspective, LILCO believes, had an effect on the NRC assessment. LILCO believes that the general condition of the Plant during the inspection was compatible with the stage of construction at the time. For example, at the time of the inspection, LILCO had been striving to complete both construction in the elevation 8 area of the reactor building and to initiate a general clean-up of this area by the end of January in order to effect access control and turn over the area to Plant Staff. The NRC believed that a clean-up should have been made independent of the turnover of this area to Plant Staff. In any event, LILCO took the immediate action

requested by the NRC inspectors and notes that many of these actions would have occurred under the normal construction and start-up program by late January or early February.

LILCO believes that the specific cleanliness observations made by the NRC inspectors were not conditions adverse to quality.<sup>1/</sup> LILCO's existing housekeeping program is designed to ensure that conditions adverse to quality do not occur or if they occur, are detected and remedied. In LILCO's view it was more efficient to postpone a final and extensive general clean-up until the remaining construction activity was closer to completion. LILCO had planned such a clean-up program to address all of the general concerns expressed by the NRC inspectors. The NRC inspectors disagree with this approach and therefore LILCO has undertaken the following measures:

(a) A general clean-up of the major buildings in the Plant will be conducted on at least a weekly basis. Additional craft personnel will be assigned full-time to housekeeping duties until Plant readiness is acceptable to NRC inspectors. Fifty additional laborers have already been dedicated full-time to this process.

(b) Specific eating areas were established in the Plant even within zone 5 areas which normally permit eating and smoking.

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<sup>1/</sup> For example, the NRC conducted an internal inspection of an RCIC barometric condenser at elevation 8 and this inspection revealed no degradation attributable to lack of cleanliness.

(c) Specific verbal instructions have been and will continue to be provided to Plant personnel and to all manual construction personnel regarding housekeeping policies.

(d) Inspections have been and will be conducted of all areas by LILCO management personnel and these inspections will be documented.

(e) Field quality assurance will monitor these additional activities as part of their normal surveillance program.

(f) LILCO has initiated weekly Monday morning walking tours of the reactor building, control building, and screenwell with the following personnel generally in attendance:

1. Manager of Construction and Engineering;
2. General Superintendent of Construction;
3. Safety Supervisor (head of Plant clean-up program);
4. NRC Resident Inspector; and
5. Field Quality Assurance Manager.

Three of these inspections have already been conducted and improvement has been noted in all areas of the Plant. The NRC Inspector concurs in this assessment, although both the NRC and LILCO agree that additional improvement can still be achieved.

LILCO has now committed to increasing the housekeeping effort until the Plant obtains the cleanliness level sought by the NRC inspectors. LILCO does not believe that the NRC's

dissatisfaction with housekeeping at Shoreham reflects poorly on LILCO management attitudes. Rather, it represents a difference of opinion between professionals, in an area in which judgment plays a substantial role. Prior LILCO management involvement in housekeeping during the construction phase of the project is illustrated by the following points:

(a) LILCO has maintained a comprehensive housekeeping program throughout the project documented by formal construction site instructions.

(b) At various appropriate times in the construction process, general roll-backs and clean-ups of various buildings have been initiated in order to keep unused construction material and debris from accumulating.

(c) LILCO field quality assurance has maintained an ongoing audit program of the site housekeeping program.

(d) LILCO's manager of construction and engineering personally reviews every FQA audit report.

(e) Various areas of the plant which have equipment turned over to start-up or plant staff have been separately caged for cleanliness control.

(f) The LILCO start-up manager and the LILCO plant manager have communicated directly with the UNICO construction manager on numerous occasions requesting special clean-up activities or increased attention in some areas. Joint tours of various areas have been conducted by the LILCO start-up manager and the UNICO construction manager.

In summary, we believe that LILCO management has been directly and appropriately involved in the housekeeping activities at Shoreham. LILCO believes that the actions it has now taken in response to the NRC Inspector's request have resulted in cleanliness improvements and that no further action will be required by the NRC in this matter. It should also be noted that during the RAT assessment, the NRC inspected several areas of the Plant which have reached the state of completion approaching operational status. Specifically, the upper elevations of the primary containment and the radwaste building fall into this category, and the NRC concurred that cleanliness levels in this area, while not perfect, were appropriate for an area where construction was essentially completed. This confirms, in our judgment, that LILCO's previously established programs and philosophy were achieving the desired goal.

Q. On page 1, paragraph 2 of report no. 50-322/8302 NRC inspectors noted certain FQC inspection rejection rates that had been identified as complete by LILCO and also listed additional measures LILCO would take to ensure quality and effectiveness of construction and FQC inspections. The cover letter to the report indicates that LILCO should give particular attention in its response to those actions taken or planned to ensure the effectiveness of the final inspection program. What is LILCO's response to this?

A. This matter can be best understood by placing those rates in perspective. The following points are relevant in this respect:

- (1) The overall quality assurance program provides an extremely detailed review and inspection of the final product and associated documentation. Therefore, many "findings" are not unusual given this extreme level of detail; most are minor in nature and inconsequential from a technical standpoint.
- (2) Many of the reasons for rejection included in the cited FQC percentages have no bearing at all on even the extremely detailed level of attribute verification. For example, inspection packages are returned if any FQC inspector temporarily cannot obtain access to an area or component to perform his inspection.
- (3) A review of FQC inspection findings for the period November through December, 1982 reveals a relatively low percentage of findings actually requiring any hardware modifications in the field.

In any event, in order to evaluate the final inspection findings in more detail and to ascertain whether or not any corrective action is required, and also to respond to any specific NRC concerns in this area, LILCO has initiated the actions listed in the Report on page 1, including the following:

(1) A detailed review has been conducted of all FQC inspection findings from November 1, 1982 through late January, 1983. This detailed review has thus far confirmed, as noted above, that the largest percentage of those findings resulting in N & D's, 95 percent do not require modifications to hardware in the field. Based on the total number of components inspected, only approximately two percent involve any component rework as delineated on N & D's. Lower level inspection findings as reflected on DCO's result in a larger number of findings which, through requiring correction in accordance with our program, do not constitute significant deficiencies. As an example, small bore pipe support DCO's for the last three-week period resulted in an average rework rate of 9 percent.

(2) Individual construction personnel accountability has been established for the major inspection areas, such as large bore and small bore hangers, in order to evaluate whether or not recurrent inspection rejects are attributable to specific construction personnel. This program will provide the same type of information to construction management that the welder "report card" program did during the welding effort on the project.

(3) In order to establish direct accountability for cable tray supports, an additional construction inspection program has been initiated. This program, though it will slow the

final inspection and signoff process in the CAB TRAP area, is designed to decrease the number of cable tray supports returned to construction after final inspection. It is worth noting, as described in previous testimony, that the cable tray support building program (CAB TRAP) is a program unique in the industry. The CAB TRAP program acknowledges that FQC will generally inspect each cable tray support at least twice and therefore FQC inspections are generally categorized as preliminary and final as indicated in the cabtrap reports. All FQC inspections, however, including the initial inspection, are included in the reject statistics. This is an important reason for the apparent magnitude of the rejection rates. Also, as noted, this program is unique at Shoreham. Where general configuration conformance has been an acceptable criteria for this type of support in the past, the detailed dimensional and hardware requirements imposed at Shoreham have resulted in a number of minor deviations from these self-imposed, detailed criteria.

(4) Field reviews of components previously accepted by FQC will be conducted on a regular basis for a two-month period by LILCO field quality assurance (FQA). This program will be evaluated by the quality assurance and construction and engineering departments. To date, the program has identified only three minor deviations out of 180 specific attributes checked. These field reviews are actual hardware checks and not merely documentation checks. The three minor deviations

will be evaluated by LILCO quality assurance, construction and engineering and SWEC engineering, and will be dispositioned in accordance with existing Project Procedures. On the basis of this limited data, we believe the final inspection program is functioning adequately. However, this program will be continued at least through the end of March and longer if the results indicate additional inspections are required.

(5) FQC working hours were reviewed to ensure that excessive overtime was not involved in the inspection effort and an additional ten FQC inspectors were added to the job site on February 1. It should be noted that LILCO and SWEC had already identified the need for additional inspectors prior to the RAT inspection and 15 additional FQC inspectors had been added to the job site on January 1, 1983. As a result of our review, we have verified that the average overtime level for inspectors is consistent with industry practice for this stage of construction.

In summary, an examination of the significance of the rejection rates and the results of the reinspections to date confirm that the construction, construction inspection and final FQC inspection programs at Shoreham are and have been effective in producing quality hardware in the field and the appropriate documentation associated with that hardware. LILCO does not believe that the number of findings is excessive, even

including those that have no significance with respect to the hardware.

The fact that there are a large number of findings is a reflection of the magnitude of the inspection program itself and of the detailed attribute reviews required by the LILCO-SWEC program. We believe that the fact that these items are identified and corrected where necessary is a positive indication that the program works and that the discrepancies are identified and properly dispositioned.

The absolute number of findings is also, we believe, not excessive. If the number of individual attribute deviations is compared to the total number of attributes requiring inspection, the percentages of findings during the final inspection process is in the one to two percent range. In addition, the number of findings covered in the November, 1982 through January, 1983 time period when inspection activity was at a very high level, is not excessive on a per inspector basis. Nonetheless, LILCO agrees with the NRC inspectors that the additional measures undertaken by LILCO in response to the concerns of the NRC inspectors will provide added assurance of the quality of the installations and bolster the effectiveness of the construction and FQC inspection programs.

CERTIFICATE OF SERVICE

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

I hereby certify that copies of Supplemental Testimony  
Of Messrs. Museler, Arrington, And Kelly Concerning I&E  
Inspection Report No. 50-322/83-02 were served this date upon  
the following by first-class mail, postage prepaid.

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U.S. Nuclear Regulatory  
Commission  
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Dr. James H. Carpenter  
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Secretary of the Commission  
U.S. Nuclear Regulatory  
Commission  
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Atomic Safety and Licensing  
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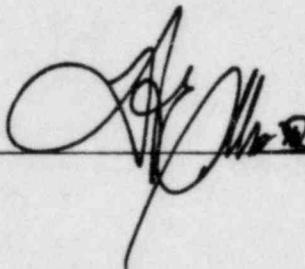
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DATED: February 15, 1982

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(Shoreham Nuclear Power Station, Unit 1)  
Docket No. 50-322 (OL)

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DATED: February 15, 1982

1 JUDGE BRENNER: Do you have anything else, Mr.  
2 Ellis?

3 MR. ELLIS: No, sir. The panel is ready for  
4 cross-examination.

5 JUDGE BRENNER: Mr. Bordenick, since we now  
6 have the witnesses here, we thought it would be good to  
7 get a few minutes from one of the Staff witnesses on the  
8 purposes of the RAT inspection, and including in that  
9 the timing and just what it was all about and why I&E  
10 performed that inspection at that time and what the  
11 goals of the inspection were and the scope of the  
12 inspection, reasonably concisely, if you could.

13 WITNESS GREENMAN: I will try to address them  
14 one at a time. The readiness inspection team was  
15 conducted generally 10th through 15th, and it was  
16 designed as discussed on page 1 of the Inspection Report  
17 Number 83-02 to assess the licensee's readiness status  
18 for an operating license.

19 The Staff believed at that time that we had a  
20 very clear need to determine for ourselves how close  
21 LILCO was to licensing. It involved decisions that  
22 related to our commitment of resources.

23 The readiness assessment team inspection was  
24 not an inspection that is covered programmatically in  
25 any of the NRC manual chapters; it was an inspection

1 that was made as the result of a management decision  
2 that I discussed with my management.

3 The timing for that particular inspection was  
4 not designed to particularly follow on the heels of the  
5 OQA inspection. But in light of LILCO's stated position  
6 at that time that they would be ready for fuel load  
7 sometime in late January or February, we believed it was  
8 appropriate to conduct that inspection.

9 JUDGE BRENNER: You answered what was going to  
10 be my follow-up question as to the relationship between  
11 it and the OQA inspection on which you previously filed  
12 supplemental testimony.

13 That is all we have. We can go right into the  
14 County's cross-examination. And as we stated, we have  
15 set a day for that, and this is a short day. And we  
16 will accommodate that by a little bit tomorrow.

17 Mr. Miller.

18 MR. MILLER: Judge Brenner, I assume it would  
19 still be your intent to limit the cross-examination to a  
20 day?

21 JUDGE BRENNER: Yes. We have never said  
22 anything to the contrary, bearing in mind this is one  
23 day on top of I don't know how many weeks over the same  
24 subject area. But we won't go into that again. But  
25 that is the background.

1           MR. MILLER: Well, it is the same subject  
2 area, Judge Brenner, I would agree. But it is also a  
3 different inspection report.

4           JUDGE BRENNER: Yes. Well, you are going to  
5 be limited very closely to the day and probably  
6 exactly. And we told you that from the beginning. And  
7 when you filed your cross-examination plan, we stated it  
8 was going to be very difficult for you to finish that  
9 plan.

10           And I think if you stay very firmly with the  
11 goals in mind that we talked about, because we truly  
12 want to find out what the violations mean in light of  
13 the timing, the time at which they were found by I&E and  
14 whether those violations undercut any of the testimony  
15 we have heard these 3 weeks from witnesses, primarily  
16 for LILCO and also for the Staff. That would be the  
17 focus, and I think you can get at that much more  
18 efficiently than might be indicated by the cross plan.  
19 But let's see, and let's get going.

20           MR. MILLER: Of course, Judge Brenner. We  
21 also do have another 30 pages of supplemental testimony.

22           JUDGE BRENNER: Well, we have had this  
23 conversation before in another context. That  
24 supplemental testimony, if anything, makes it more  
25 efficient rather than less efficient. And we ask that

1 that be filed in order to make your examination more  
2 efficient, so instead of having to drag it out on oral  
3 questions, you have got some meat in front of you that  
4 you can go after.

5 CROSS EXAMINATION

6 BY MR. MILLER:

7 Q Mr. Greenman, has the Staff received and  
8 reviewed LILCO's supplemental testimony to Inspection  
9 Report 83-02?

10 A (WITNESS GREENMAN) Yes.

11 Q Has the Staff received at this time and  
12 reviewed the LILCO formal response to the inspection  
13 report?

14 A (WITNESS GREENMAN) Mr. Higgins received that  
15 response over the weekend. I have not reviewed the  
16 response in that report.

17 Q That would be NRC-843, dated February 18,  
18 1983. Mr. Higgins, have you had a chance to review that  
19 response at this time?

20 A (WITNESS HIGGINS) Yes, I have had a chance to  
21 review it. And I guess I would just like to state that  
22 the review is not complete, although I have read it and  
23 reviewed it. And when we write an inspection report and  
24 we have violations, and when we require response -- I  
25 think we have discussed this before -- our mode of

1 operation is that it would be reviewed by the individual  
2 inspectors involved in the violations and it would be  
3 reviewed by the resident or the project inspector  
4 involved and also by management of the inspectors and  
5 the resident involved.

6 This is only beginning to happen on this one.  
7 There appear that there may be some additional questions  
8 that we have as a result of it, but our review is not  
9 finished.

10 Q Mr. Greenman, do you have a copy of the LILCO  
11 response dated February 19, 1983, with you? I just  
12 would have a couple of questions on that.

13 A (WITNESS GREENMAN) Yes, I do.

14 Q On the very first page of that --

15 JUDGE BRENNER: Mr. Miller.

16 MR. MILLER: Yes, sir.

17 JUDGE BRENNER: We didn't even know of its  
18 existence let alone have a copy. So if you are going to  
19 go into it very much, it might be helpful for us to have  
20 a copy in front of us.

21 MR. MILLER: We just received it last night,  
22 Judge Brenner. I guess I was assuming that LILCO would  
23 have served the Board with it.

24 JUDGE BRENNER: Well, they might have.

25 MR. ELLIS: We have copies for the Board,

1 Judge Brenner, if you need it.

2 JUDGE BRENNER: Thank you.

3 BY MR. MILLER: (Resuming)

4 Q I just have a couple of brief questions, Mr.  
5 Greenman. On the very first page and continuing on to  
6 page 2 there is a reference to a memorandum from Mr.  
7 Museler dated January 17, 1983, to Mr. Higgins. Was  
8 that memorandum ever docketed, to your knowledge, sir?

9 A (WITNESS GREENMAN) To the best of my  
10 knowledge, no.

11 Q With respect to on page 2, the statement that,  
12 "Additional information will be provided to you by March  
13 7, 1983," this also referenced a discussion with you on  
14 February 18, 1983. Mr. Greenman, my question is why is  
15 that extension given until March 7?

16 A (WITNESS GREENMAN) The extension was granted  
17 based on receipt of an initial response containing as  
18 much information as was available at that time.  
19 Specifically, it was granted to permit LILCO to complete  
20 their ongoing work, including some field inspection, to  
21 provide the quality of response that Region I would  
22 require to be able to evaluate the adequacy of the  
23 response.

24 This, I might add, is something that while we  
25 do not do frequently, there are occasions such as this

1 where the NRC will permit such an extension.

2 Q Mr. Greenman, with respect to the initial data  
3 or information provided to you, did that data or  
4 information include LILCO's corrective and preventive  
5 actions?

6 A (WITNESS GREENMAN) With respect to the  
7 February 19th letter?

8 Q Yes, sir. I am referring on page 2 to where  
9 it says, "As discussed with your Mr. Greenman on  
10 February 2, 1983, we will provide additional data,  
11 especially in the areas of corrective and preventive  
12 action, by March 7, 1983."

13 And I was wondering if LILCO has or had  
14 initially provided you with some data in these areas of  
15 the corrective and preventive actions?

16 A (WITNESS GREENMAN) Only as contained in this  
17 letter, which I have not read as yet, and the testimony.

18 (Witnesses conferred.)

19 Q Mr. Greenman, based upon your review of  
20 LILCO's supplemental testimony, did you identify that  
21 additional data or information was required by LILCO in  
22 the areas of corrective and preventive action?

23 MR. ELLIS: I object to the question. I don't  
24 think there has been any testimony that any additional  
25 information was specifically required.

1 JUDGE BRENNER: I think that is the question.

2 MR. MILLER: Judge Brenner, that is not my  
3 question. You are right.

4 JUDGE BRENNER: Wait a minute. I said I  
5 thought it was the question.

6 MR. MILLER: My question, I quoted  
7 specifically from page 2, which starts talking about  
8 additional data, especially in the areas of corrective  
9 and preventive action. That is the way I read that  
10 sentence. I am asking Mr. Greenman if his review of  
11 LILCO's supplemental testimony to the RAT inspection  
12 report in his mind identified the need for such  
13 additional information.

14 WITNESS GREENMAN: That specific review did  
15 not identify that particular need.

16 BY MR. MILLER: (Resuming)

17 Q Have you, sir, at any time identified a need  
18 for additional information by LILCO in the areas of  
19 corrective and preventive action?

20 (Witnesses conferred.)

21 A (WITNESS GREENMAN) I don't believe I am in a  
22 position to really judge that at this point, having just  
23 received the response and having not had an opportunity  
24 to review it. As Mr. Higgins mentioned earlier, the  
25 evaluation process that we complete in judging the

1 adequacy of a licensee response to a violation is a  
2 process that involves not only the inspectors that were  
3 specifically involved in the inspection, it also  
4 involves the senior resident inspector on site, Mr.  
5 Higgins, his section chief and myself in various  
6 layers. And that simply has not been done at this point.

7 Q So, Mr. Greenman, on page 2 of the LILCO  
8 response dated February 19, 1983, and referencing the  
9 discussions with you on February 18, 1983, am I correct  
10 then in understanding those discussions did not include  
11 discussions of LILCO's proposed corrective and  
12 preventive actions?

13 A (WITNESS GREENMAN) Those particular  
14 discussions were discussions about ongoing activities  
15 and results. I think it is implicit in the statement in  
16 the letter that the letter and the response is  
17 incomplete and will in fact be addressed by LILCO at a  
18 later date.

19 Q Mr. Museler, as spokesman for the LILCO  
20 witnesses, if you would, please, could you identify what  
21 areas were the responsibility of yourself, Mr. Kelly,  
22 and Mr. Arrington with respect to LILCO's supplemental  
23 testimony?

24 A (WITNESS MUSELER) Yes, Mr. Miller. I have  
25 been generally responsible for preparing the overall

1 response and in coordinating the activities of the  
2 various engineering, construction and quality assurance  
3 groups that have been involved in this particular I&E  
4 inspection response.

5           Mr. Kelly and Mr. Arrington have been involved  
6 both in their specific areas. The violations that are  
7 cited which refer to FQC, Mr. Arrington has been  
8 directly responsible for. Mr. Kelly has been  
9 responsible for much of violation A, which deals with  
10 Reactor Controls. Both of these gentlemen have also  
11 been involved in pulling together the overall response.

12           However, there have been a large number of  
13 people that have been involved in preparing both the  
14 testimony and the particular response that we sent in to  
15 the NRC on February 19, including the startup manager,  
16 the manager of operating quality assurance, the plant  
17 manager, and a large number of construction and  
18 engineering personnel as well as some of the draft  
19 personnel themselves who were involved in these  
20 activities.

21           Q     Mr. Greenman, going to page 1 of the cover  
22 letter to the RAT inspection report, am I correct that  
23 the inspection determined that a number of areas require  
24 resolution by LILCO before the Staff can reach a  
25 recommendation with respect to Shoreham's readiness for

1 an operating license at this time?

2 A (WITNESS GREENMAN) Yes.

3 Q And are those areas identified in Table 1 of  
4 the inspection report as marked by an asterisk?

5 A (WITNESS GREENMAN) That is correct.

6 Q And in addition to those areas, sir, am I  
7 correct that as referenced by the previous page to Table  
8 1 those areas requiring resolution would also include  
9 the violations noted by the Staff in Inspection Report  
10 83-02? Is that correct?

11 A (WITNESS GREENMAN) Yes.

12 Q From your review, Mr. Higgins, and I  
13 understand it is a quick review, but from the review you  
14 had to LILCO's response dated February 19, 1983, is it  
15 your understanding that LILCO has indicated that it will  
16 be able to resolve these items prior to fuel load?

17 A (WITNESS HIGGINS) Yes.

18 Q Mr. Greenman, with respect again to the RAT  
19 inspection report itself, page 1 of the cover letter,  
20 there is some discussion towards the bottom of the page  
21 regarding that, "The inspection consisted of selected  
22 examinations of procedures and representative records,  
23 interviews with personnel, and observations by  
24 inspectors."

25 Could you briefly identify for me those

1 procedures and the records which were reviewed by the  
2 Staff?

3 A (WITNESS GREENMAN) I will try to do that  
4 briefly.

5 JUDGE BRENNER: Wait a minute. Do you mean  
6 everything for the whole inspection, Mr. Miller?

7 MR. MILLER: Well, if it can be done briefly,  
8 Judge Brenner.

9 JUDGE BRENNER: That is ridiculous. That is  
10 going from the very general. Let's just focus in on the  
11 items they found, and then you can back out from those  
12 items to find out what they looked at for the particular  
13 points. It is silly to just get a total laundry list  
14 for the whole inspection.

15 BY MR. MILLER: (Resuming)

16 Q Mr. Greenman, could you identify, could you  
17 explain to me generally, how the Staff selected and why  
18 the Staff selected those procedures and records reviewed?

19 A (WITNESS GREENMAN) Yes. I will have to  
20 answer that in two parts. First, the statement that  
21 appears in the cover letter is a statement that appears  
22 in most, if not all, NRC inspection reports. It is  
23 designed to capture the types of things that the  
24 inspection program looks at. It is not the intent of an  
25 inspection report to list a laundry list of each and

1 every procedure or record that an individual inspector  
2 might look at in the course of the inspection.

3           The types of procedures and records that we  
4 looked at were such things as station procedures,  
5 administrative procedures, abnormal operating  
6 procedures, alarm procedures, engineering procedures,  
7 quality assurance procedures; those things that LILCO  
8 needs and uses to do the job.

9           They were selected for review based on the  
10 overall scope of the inspection and the specific areas  
11 that we examined during the course of that inspection.  
12 They were those procedures that workers use to perform  
13 their tasks in the areas that we were inspecting.

14           JUDGE MORRIS: Excuse me, Mr. Miller. Mr.  
15 Miller, sometime in a previous proceeding we were handed  
16 a two-page outline. I don't think it was ever  
17 identified or went into the record. But it is entitled  
18 "RAT Inspection Outline." And it lists names and it  
19 lists items for inspection.

20           Are you familiar with this, Mr. Greenman?

21           WITNESS ARRINGTON: Yes, Judge, I am.

22           JUDGE MORRIS: And does this adequately hereby  
23 describe the inspection that took place?

24           WITNESS ARRINGTON: It describes basically the  
25 inspection which took place. However, there were some

1 changes and expansions as well as deletions from that  
2 list, just due to the constraints of time.

3 JUDGE MORRIS: Thank you.

4 BY MR. MILLER: (Resuming)

5 Q Mr. Greenman, were these areas of inspection  
6 selected based upon any problems which the Staff had  
7 become aware of at the Shoreham plant?

8 A (WITNESS GREENMAN) That was not the basis of  
9 the selection to those areas. The basis for selecting  
10 those particular areas came, in part, in consultation  
11 with Mr. Higgins in a number of areas where there were  
12 open items. It came, in part, from myself and from  
13 other members of the Region I staff as being areas that  
14 would permit us to make the readiness assessment that we  
15 wished to make.

16 A (WITNESS HIGGINS) Just to add a little bit to  
17 that, Mr. Greenman mentioned that in part of it was we  
18 did take into consideration previous open items that we  
19 had. And you will see in the inspection report that we  
20 did go and look at items that were previously identified  
21 that were open, that had not been closed yet. So in  
22 that aspect you could say that part of it was addressed  
23 at areas that we had run into problems before. But in  
24 general, that was not the intent of the inspection.

25 Q Mr. Greenman, as a general matter, am I

1 correct that the inspection report was careful to point  
2 out the inspection status of items reviewed by the  
3 Staff; that is, whether or not such items had been  
4 finally accepted and inspected by FQC?

5 A (WITNESS GREENMAN) I don't think that. I  
6 think the report reflected the facts. I don't know that  
7 I necessarily understand the meaning of the word  
8 "careful." Those were in fact the facts at the time of  
9 that inspection.

10 Q Well, if I read the inspection report, Mr.  
11 Greenman, the Staff, when it discusses a finding of  
12 discrepancies, points out whether or not those items had  
13 been finally accepted and inspected. And when they  
14 haven't been, they point that out as well. Is that  
15 correct?

16 A (WITNESS GREENMAN) That is correct.

17 Q What significance is attached by the Staff to  
18 work found to be deficient when that work has been  
19 final-inspected and accepted by Shoreham's QA program?

20 A (WITNESS GREENMAN) When an item has been  
21 final-inspected and there is no additional work that  
22 will be done on that particular item, that says that  
23 that particular inspection did not disclose the  
24 particular finding or discrepancy.

25 Q And am I correct that in this inspection

1 report when items were found to be deficient but those  
2 items had not been subjected to final inspection by  
3 LILCO, the Staff did not make such items a violation in  
4 the report? Is that right?

5 (Witnesses conferred.)

6 A (WITNESS HIGGINS) In general, that is our  
7 philosophy, to not write a violation if the final QC  
8 inspection is still remains to be performed. We don't  
9 want to come in and find a lot of problems with the  
10 licensee's plant when the licensee really hasn't  
11 finished building and inspecting it and accepting it.  
12 In some cases -- and I believe there was one case in the  
13 inspection here -- there may be cases where the licensee  
14 has established more than one QC inspection. They may  
15 have an in-process inspection of some sort and then  
16 perhaps a final inspection.

17 If it has gone through the construction phase  
18 and this additional QC inspection and been accepted,  
19 even though there is another one down the road  
20 somewhere, we would in that case generally write a  
21 violation also. So it is not quite as clear-cut as you  
22 characterized it. But that was, in general, accurate.

23 Just to add an additional point which we do  
24 kind of discuss to some extent, in paragraph 2 of the  
25 inspection report we did express some concern in the

1 inspection report and during the inspection as to the  
2 status or the quality of items coming from construction  
3 to the QC organization for final acceptance.

4           And we expressed the opinion -- and I think  
5 LILCO agreed with us -- that there could be more  
6 attention paid to assuring that the things that are  
7 coming to QC for final inspection are submitted in  
8 better condition than they were; that is, so that the  
9 discrepancies that exist get corrected before QC has to  
10 inspect them, thereby giving a higher overall assurance  
11 of quality and really making QC's job easier for them  
12 and giving a higher assurance that if there are any  
13 discrepancies, QC will find them.

14           So we didn't ignore that area, but we didn't  
15 give it the emphasis that we would give to something  
16 that has been through the final QC inspection.

17           Q     Well, let's look at paragraph 2 on page 1A of  
18 the inspection report and look perhaps more carefully.  
19 Mr. Greenman, as I read that paragraph 2, it references  
20 that LILCO has agreed to field quality assurance  
21 reinspection of a sample of FQC-accepted components; is  
22 that correct?

23           A     (WITNESS GREENMAN) That is correct.

24           Q     Do you know the sample size that will be used  
25 by LILCO?

1           A       (WITNESS GREENMAN) Yes, I do. It is  
2 approximately 5 percent.

3           Q       Would the sample be prospective or prospective  
4 only, or do you know?

5           A       (WITNESS GREENMAN) I have not looked at a lot  
6 of specifics in that area at this point. However, it is  
7 a random sample, 5 percent sample. I would add, it is  
8 not the sample size that is important, it is the results  
9 of the inspections that are -- the reinspections -- that  
10 are important.

11          Q       What is your opinion, Mr. Greenman, on a  
12 random sampling of reinspected items?

13          A       (WITNESS HIGGINS) That is not really complete  
14 random the way it was set up. In general, what we have  
15 asked is that for each category of items turned over to  
16 go into those areas -- for example, large bore supports  
17 -- and then take within the large bore supports, take 5  
18 percent random sampling within those, and then of the  
19 small bore supports a 5 percent random sampling of those.

20                   And then the structural steel area they did a  
21 slightly differently, in that they would take it  
22 particular component that was turned over and because of  
23 the complexity of the structural steel components and  
24 the difficulty in breaking it down to components, it was  
25 set up slightly differently.

1           So it is done random, but it is also broken  
2 down to categories. And what we are trying to get from  
3 this, since we had identified in the inspection a number  
4 of components that had been through the final FQC  
5 inspection fairly recently as part of the final  
6 construction completion and turnover process, that the  
7 NRC went out and identified discrepancies in these.

8           And since we can't come back and inspect every  
9 week, we wanted LILCO to go out with some additional  
10 quality assurance and verify that FQC was doing the job  
11 that they were supposed to be doing. And we felt that  
12 there were a lot of things that would assure that. One  
13 would be improving it on the front end, which LILCO has  
14 addressed. Secondly would be addressing the capability  
15 of the FQC inspectors in terms of overtime and this sort  
16 of thing, which they have addressed. And also, final  
17 verification by someone after the fact to see that the  
18 job is being done.

19           So that is where the FQA reinspection comes  
20 in. It is to give us the confidence that the FQC is  
21 finding the new discrepancies that are there.

22       Q     Mr. Higgins, is it your understanding that  
23 LILCO will have a system for setting a priority for  
24 reinspecting items in areas where problems might be  
25 found?

1 A (WITNESS HIGGINS) What do you mean by that?

2 Q We have talked generally about a random  
3 sampling of reinspected items. Suppose that LILCO goes  
4 to an area and finds a sufficient amount of problems  
5 with the final-inspected items that, in your opinion,  
6 there should be a greater sampling of items. Do you  
7 know if the LILCO system incorporates this view?

8 A (WITNESS HIGGINS) Yes, it does.

9 Q In what way? Could you explain that?

10 A (WITNESS HIGGINS) The system is set up such  
11 that the manager of field quality assurance and the  
12 manager of construction are to review any discrepancy  
13 that is found as part of the FQA reinspection.

14 And then that particular discrepancy which is  
15 identified will be evaluated and it will be determined  
16 what caused it and whether or not additional  
17 reinspections are required of components of that type,  
18 additional FQA retraining is required or whether  
19 expansion of the sample size is required. And that  
20 evaluation will take place for any identified  
21 discrepancy in the QA program.

22 Q Mr. Higgins, am I correct then that there are  
23 no fixed criteria at this time for when further  
24 reinspection is warranted?

25 A (WITNESS HIGGINS) There are currently no

1 numerical criteria.

2 Q Is it simply a question of one's judgment then?

3 A (WITNESS HIGGINS) It will be a question of  
4 judgment, and it will be a question of the judgment of  
5 the manager of FQA and the manager of construction for  
6 LILCO. And the NRC also intends to look at each  
7 discrepancy if it is identified in the QA inspection  
8 program.

9 A (WITNESS MUSELER) Mr. Miller, I think we have  
10 committed to the NRC, and I believe it is in one of  
11 these documents, that when Mr. Kelly and I have enough  
12 return data to form any kind of judgment as to what the  
13 results of the rereview of the field items are, Mr.  
14 Kelly's organization is telling us we are going to not  
15 only formulate our own ideas on what that means and what  
16 should be done but that we will discuss that on a  
17 real-time basis with the resident inspector.

18 Q Mr. Higgins, who from the NRC would be  
19 involved in this process of examining and reviewing  
20 results of LILCO's reinspection process?

21 A (WITNESS GREENMAN) Mr. Higgins would be  
22 involved in it initially. The Region will also be  
23 involved in evaluation of what the sample reinspection  
24 results indicate.

25 Q At this time, Mr. Greenman, has the Staff

1 received any results from LILCO?

2 A (WITNESS GREENMAN) Yes, we have. We held a  
3 meeting with Mr. Higgins, Mr. Gallo, others and myself  
4 last week to discuss their first printout of some of  
5 their reinspection work.

6 Q And in general, Mr. Greenman, could you  
7 describe what your evaluation is of those results? Or  
8 maybe you could describe what the results were first?

9 A (WITNESS HIGGINS) I think probably it is a  
10 bit early to draw any conclusions. They are basically  
11 the results that I was able to look at was just the  
12 first week of the FQA reinspection. They did reinspect  
13 5 percent of the items in each category from that first  
14 week.

15 There were two identified discrepancies,  
16 though, which obviously we weren't pleased to see. One  
17 had to do with, I believe, a bolt length. And the other  
18 one had to do -- I don't recall the specific item.  
19 Perhaps LILCO could add that.

20 The two items were discrepancies that were  
21 identified. They were not particularly significant in  
22 and of themselves. But the fact that there were some  
23 identified discrepancies is going to cause some  
24 additional evaluation.

25 Q Mr. Greenman, is there anything you would care

1 to add to that?

2 A (WITNESS GREENMAN) No, I don't think I have  
3 anything to add to that.

4 Q Mr. Greenman, let me return for a second to  
5 whether or not the LILCO reinspection program intends to  
6 include items which had previously been accepted,  
7 final-inspected and accepted by the LILCO QA program.  
8 What is your understanding of that, sir?

9 (Witnesses conferred.)

10 A (WITNESS GREENMAN) If I understand your  
11 question correctly, I don't believe that we have a  
12 clear-cut answer from LILCO on any areas that they may  
13 be examining that preceded our inspection effort.

14 Q What is your opinion, Mr. Greenman, on whether  
15 or not such reinspection should include previously  
16 accepted items?

17 A (WITNESS GREENMAN) My opinion at the moment  
18 is I would rather, with the large number of items that  
19 are coming down for final acceptance, I would rather  
20 wait and see the results of those reinspections before I  
21 drew any conclusions.

22 A (WITNESS HIGGINS) To add something to that  
23 also, our final conclusion on that and whether or not  
24 that needs to be done really depends quite heavily on  
25 the responses to the four violations identified during

1 the readiness inspection. And if there are sufficiently  
2 identified causes for those particular findings such  
3 that it doesn't appear that there was an overall  
4 breakdown or even a breakdown in a particular area for  
5 those particular ones, then that may not be called for.

6 We haven't really finalized our conclusion on  
7 it yet, but we do want to see the final explanation for  
8 the particular violations identified in this inspection  
9 before we can make a final conclusion on that.

10 Q Mr. Museler, has LILCO made a determination at  
11 this time as to whether it will go back in time and look  
12 at and reinspect items that have been final-inspected  
13 and accepted previously by LILCO's QA program?

14 A (WITNESS MUSELER) Mr. Miller, we do that  
15 quite often as a result of sometimes our own inspection  
16 program and sometimes as a result of inspection findings  
17 that the NRC tells us about. In other words, if we  
18 through our own program or through the NRC's inspections  
19 identify problems that might have implications beyond  
20 the specific items written on the specific finding  
21 sheet, we do that as a matter of course where we believe  
22 it is called for.

23 In the particular, in the particular case of  
24 the review some of FQC's work by Mr. Kelly's  
25 organization, we intend to wait and see what the results

1 of this program are. And we will make a determination  
2 at that time. However, I would stress that this is not  
3 the first time that we have gone back and looked at  
4 items that have been constructed and inspected at  
5 various times in the past, even going back many years.

6 Q Mr. Greenman, it is fair to say, isn't it,  
7 that LILCO places heavy reliance on its final inspection  
8 program to identify construction deficiencies?

9 MR. ELLIS: Objection. I don't know that Mr.  
10 Greenman knows what LILCO places heavy reliance on.

11 JUDGE BRENNER: Well, I don't know if he knows  
12 either, but we will let him answer the question and find  
13 out. So I will allow the question.

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1           WITNESS GREENMAN: It is my opinion that LILCO  
2 does, in fact, place a heavy reliance on final  
3 inspection.

4           BY MR. MILLER: (Resuming)

5           Q     And as referenced on page 2 of the cover  
6 letter to the RAT inspection report, that concern was  
7 expressly set forth by the Staff; isn't that correct?  
8 Where it says specifically, "We are concerned about the  
9 apparently overreliance on the final inspection programs  
10 to identify discrepancies."

11           MR. ELLIS: Where are you quoting from?

12           MR. MILLER: Page 2 to the cover letter of the  
13 inspection report.

14           BY MR. MILLER: (Resuming)

15           Q     Mr. Greenman, I am simply asking whether or  
16 not the concern was expressly set forth by the Staff in  
17 the inspection report.

18           A     (WITNESS GREENMAN) Yes, it was.

19           Q     Could you briefly and in a general fashion  
20 explain to me why the Staff has drawn this concern  
21 regarding LILCO's overreliance on the final inspection  
22 program?

23           MR. ELLIS: I think it is fair to put in the  
24 word "apparent" overreliance as long as you are going to  
25 use those words. We would object to the extent that

1 improperly characterizes it.

2 [Panel of witnesses conferring.]

3 WITNESS GREENMAN: The concern that was  
4 expressed related in part to the inspection findings  
5 where the inspectors found items that had, in fact, been  
6 finally accepted. We also found what we believe to be a  
7 high reject or turnback rate. Our concern was that we  
8 believed that the construction items coming over for  
9 acceptance should receive attention on the front end and  
10 that LILCO should not, in fact, rely so heavily on those  
11 final inspections to catch everything.

12 MR. ELLIS: Judge Brenner, is it permissible  
13 for the other witnesses, if they have something to add  
14 at any point, to do so? It seems to me it would be in  
15 the interest of the efficiency of the examination to do  
16 so.

17 JUDGE BRENNER: Well, yes, they can add it,  
18 but I sense Mr. Miller is right in the middle of a  
19 series of questions with Mr. Greenman right now. Is  
20 that right, Mr. Miller?

21 MR. MILLER: Yes, Judge Brenner, and I would  
22 like to continue, if I could.

23 JUDGE BRENNER: All right, let him continue  
24 with Mr. Greenman, and then the LILCO witnesses can add  
25 after if they want to.

1 BY MR. MILLER: (Resuming)

2 Q Mr. Greenman, with respect to the high reject  
3 rate, on page 1 of the inspection report that concern is  
4 expressly set forth, isn't it, where it is stated, "The  
5 inspection of construction areas indicated that  
6 additional licensee attention is needed in the area of  
7 final system inspections." Do you see that, sir?

8 A (WITNESS GREENMAN) Correct.

9 Q Mr. Greenman or Mr. Higgins, are either of you  
10 gentlemen generally or at all familiar with the Torrey  
11 Pines inspection of the Shoreham plant?

12 A (WITNESS HIGGINS) I'm generally familiar.

13 Q With respect to LILCO's apparent overreliance  
14 on final inspection program, isn't it fair to say that  
15 Torrey Pines came to the same conclusion in its report?

16 A (WITNESS HIGGINS) I don't recall that  
17 conclusion.

18 Q Have you reviewed the Torrey Pines report, Mr.  
19 Higgins?

20 A (WITNESS HIGGINS) I have read it. I have  
21 read portions of the Torrey Pines report.

22 A (WITNESS GREENMAN) And I read the executive  
23 summary of that report.

24 Q Have either of you gentlemen read the LILCO  
25 prefiled testimony on the Torrey Pines report?

1 A (WITNESS HIGGINS) No.

2 A (WITNESS GREENMAN) No.

3 Q By Mr. Novarro?

4 A (WITNESS GREENMAN) No.

5 MR. MILLER: Judge Brenner, if the other  
6 witnesses would care to add something at this point,  
7 that would be fine.

8 A (WITNESS MUSELER) Yes, thank you, Mr.  
9 Miller. Covering one of the brief items first, I think  
10 the Torrey Pines report did not conclude that LILCO or  
11 Stone & Webster or any of the other contractors on the  
12 site were overrelying on final inspection. Certainly  
13 final inspections in any phase of the nuclear industry  
14 is a very significant portion of the overall  
15 construction and inspection process.

16 I think the conclusions of the Torrey Pines  
17 report were further confirmed by the panel of  
18 legislative brass consisting of three rather preeminent  
19 authorities in the nuclear industry on Long Island, Mr.  
20 D'Agostino, Mr. Couch and Mr. Aaronson, who generally  
21 concurred with Torrey Pines' conclusions that the  
22 construction and inspection program was adequate.

23 With respect to the NRC's other concern on the  
24 final reliance on final inspection, and especially with  
25 regard to what is termed a high return or reject rate,

1 we believe that -- let me say that while we concur with  
2 the NRC, that it is certainly advantageous to reduce the  
3 number of items that the final inspection process has to  
4 find to a minimum, because that is just a prudent thing  
5 to do.

6 We believe very strongly that the return rates  
7 that are quoted in the NRC report, which are, I believe,  
8 accurately reflected, do not relate to the quality of  
9 the plant or the safety of the plant, and I say that for  
10 a number of reasons. A very large proportion of those  
11 returns are returns for reasons totally unrelated to the  
12 quality of the hardware.

13 For example, if the inspectors cannot get  
14 access to the particular equipment, that is returned and  
15 that is counted as "reject." If the item hasn't been  
16 inspected for a number of months and a particular part  
17 of it has to be looked at by an inspector -- for  
18 instance, if a weld has gotten either rusty or has  
19 gotten some paint on it for some reason, it has to be  
20 cleaned off -- that is counted as a reject. It is  
21 obviously not a reject.

22 There are some of the findings in that area  
23 which do require an actual rework of the hardware in the  
24 field, and that is of concern and we have spent a lot of  
25 time looking at what those findings are and what kinds

1 of rework we have to do. In general they turn out to be  
2 very minor items which are not in accordance with our  
3 program and do have to be reworked, but they generally  
4 turn out to be minor and they turn out to be of such a  
5 nature that when looked at by Engineering -- and we had  
6 some of the ones that were rejected, a sample of 100,  
7 looked at by Engineering to determine what their  
8 significance was. They turned out to be relatively  
9 insignificant items.

10           So I want to make it clear that while we  
11 concur with the NRC and we have taken rather extensive  
12 steps to reduce the rate of those findings, and in fact  
13 have over the last four to six weeks, we don't believe  
14 that they were reflective of a significant magnitude of  
15 problems being found in the field. And I know that is a  
16 difficult thing to try to put in perspective, and we,  
17 quite frankly, were prepared for that question and we  
18 hoped we could put it in perspective by just pointing  
19 out one type of finding that has been common, and we  
20 think we have corrected it now, but just to point out  
21 the meaning of the word "significance" in terms of some  
22 of these findings that did require modifications to the  
23 hardware in the field, and there were others.

24           JUDGE BRENNER: Let me warn you you are going  
25 to have a lot of trouble putting that in with the

1 record, so you had better be orally descriptive. Also,  
2 I am concerned that this is wandering quite a bit beyond  
3 just following up on the question. I will let him doing  
4 it here but I don't want invitations for just  
5 wide-ranging testimony. We have had those conversations  
6 before, Mr. Ellis.

7 MR. ELLIS: Yes, sir.

8 WITNESS MUSELER: What I am putting out here  
9 is a situation in the electrical raceway area, which was  
10 the subject of much of the NRC's RAT inspection. These  
11 particular items are cable tray cover hold-downs. It's  
12 simply bars that hold the cable tray down. The first  
13 one on the top is a factory-supplied item, which is the  
14 way we buy them, the way they are inspected by  
15 Procurement Quality and Quality Control, and the way  
16 they are accepted and analyzed by Engineering.

17 In some installations the length of this bar  
18 becomes a problem because of the tightness of the  
19 installation. We therefore requested from Engineering  
20 permission to shorten the bar. We obtained that on an  
21 E&DCR. The second one represents a modified hold-down  
22 in strict accordance to the Engineering-approved E&DCR.  
23 You can see the differences, that it is shorter and on  
24 one end it is cut straight off and just has a hole  
25 drilled to accommodate the bolt. This is what was

1 approved by Engineering.

2           When the electricians went out into the field  
3 with these particularly modified hold-down bars, and  
4 there are a lot of them, it turned out that in the tight  
5 areas they were working when they installed these, these  
6 sharp edges became a problem both for the electricians  
7 and for the FQC inspectors. They were literally cutting  
8 themselves or ripping their clothes.

9           So what the Field did was it initially took  
10 the Engineering-approved design and tapered the edges  
11 slightly, in some cases rounding them, so they produced  
12 a product which was essentially the same but was  
13 different in that the corners were mitered slightly.

14           Further on down some of the field people  
15 decided that since they were cutting the edges, they  
16 would taper them significantly and make it look exactly  
17 like the factory-supplied end conditions. These latter  
18 two, which we did in the field and which looks different  
19 than the Engineering-approved modification, are  
20 rejects.

21           So that there obviously is no difference in  
22 the design or the analysis or the intent of what  
23 happened in the field relative to the E&DCR that gave us  
24 this approval, but these count as field problems that  
25 get counted in the reject file. And again, there are

1 some findings that we do have to go back and that are  
2 more significant than these, but there are a large  
3 number of them that are in this category.

4 I'm sorry to take this time, but there is one  
5 more that is very significant for illustrative purposes.  
6 This is a washer that is used on a cable tray support,  
7 and if you can see it, it has got a little nick out of  
8 the top in the manufacturing process. That washer is  
9 rejectable. After the bolts were torqued, we had to take  
10 these off in a lot of cases and replace them with one  
11 that didn't have the nick.

12 So I say that just to try to put in  
13 perspective, and I'm sorry Judge Carpenter isn't here  
14 because I think that was one of his concerns. But a  
15 large number of what would count as findings in the  
16 reject rates are items such as this having no bearing on  
17 the quality or the adequacy of the plant. There are  
18 some that do, but the numbers are small and I think we  
19 illustrate in our testimony that we think the number is  
20 between 5 and 9 percent.

21 I'm sorry to take so much of your time, Mr.  
22 Miller.

23 MR. MILLER: Mr. Museler, I think later we  
24 will return to the 5 and 9 percent. I just want one  
25 quick question right now.

1 BY MR. MILLER: (Resuming)

2 Q In terms of your statement that a number of  
3 items are items that LILCO just can't get access to,  
4 what is the percentage of that as it fits into the  
5 listing on page 1 of the inspection report? Have you  
6 made calculations as to the percentage of items that  
7 simply are rejected because access is not attainable?

8 A (WITNESS MUSELER) Sir, I can give you a  
9 number out of the total if you will just give me a  
10 moment to dig out a number.

11 [Pause]

12 A (WITNESS MUSELER) Mr. Miller, it is obviously  
13 a dynamic process with the number of findings, the  
14 number of items inspected every week, but to give you an  
15 example of the population of one type of finding report  
16 which would contain the maximum number of findings in  
17 the field for the period beginning of November through  
18 late January, there were 202 findings that applied to  
19 the cable tray reports. Of those findings, 43 were of  
20 the nature I described where access could not be gained  
21 to the particular piece of equipment.

22 Q Mr. Museler, let me just bring you back to  
23 page 1 of the inspection report. These figures, as I  
24 understand it, are the Staff's figures based upon their  
25 review from September 1, 1982; is that correct?

1           A       (WITNESS MUSELER) No, sir. I think Mr.  
2 Higgins can correct me. I believe those figures were  
3 obtained, the inspectors obtained those figures from Mr.  
4 Arrington's organization, and those are reasonably  
5 accurate reflections of the rates of return for those  
6 items, with just one other proviso. In previous  
7 testimony in the QA area we talked, I think, at length  
8 about the cable tray support program, the CABTRAP  
9 program.

10                   Those findings to include the initial stage of  
11 the cable tray support process as well as the final  
12 stage, so that it has those numbers in them, too, but I  
13 think I tried to put in perspective those are reasonably  
14 accurate numbers of returns, and we are trying to  
15 illustrate what they mean in terms of rework  
16 requirements to the actual plant. Those numbers came  
17 from Mr. Arrington, and I believe it was as a result of  
18 the Staff inspector speaking to the FTC inspectors.

19           A       (WITNESS HIGGINS) Yes, we got those numbers  
20 from FQC.

21           Q       Mr. Museler, in terms of those numbers, then,  
22 on page 1 of your inspection report, has LILCO made  
23 calculations or could you tell me the percentage --  
24 let's just take the first one, large bore pipe supports,  
25 those numbers. Thirty percent have required rework.

1 I'm sorry, have been rejected.

2 Have you calculated or has LILCO calculated  
3 the percentage of 30 percent that were rejected because  
4 the component was inaccessible?

5 A (WITNESS MUSELER) For large bore supports,  
6 sir?

7 Q Well, for any of the six. I took the first  
8 one as an example.

9 A (WITNESS MUSELER) I gave you the example of  
10 43 of 202 findings for the cable tray supports, so that  
11 is about, what is it, about a 20 percent number.

12 Q And with respect to the cable tray supports,  
13 was the 202 -- is that the figure that made up the 42  
14 percent listed on page 1 of the inspection report?

15 A (WITNESS MUSELER) No, sir. As we, I believe,  
16 explained in our testimony, we took what we call our  
17 quality accountability program, which is the subject of  
18 the memo that you asked Mr. Greenman about previously,  
19 on page 1 of our 30-day letter response, and that  
20 program outlined a number of steps to respond to the NRC  
21 concerns in this area and to reduce the number of FQC  
22 findings.

23 One of those steps was to take all findings,  
24 be they on nonconformance and disposition reports and  
25 DCOs, which is the other type of finding that is written

1 up, so that we take all the findings, and one part of  
2 that program is to analyze those findings in terms of  
3 numbers, in terms of significance, in terms of  
4 responsibility to the various field organizations, and  
5 even, in some cases, to the individuals responsible.

6           So our numbers do not track the numbers quoted  
7 in the I&E inspection report directly, but in terms of  
8 rate of return, they are comparable for the period we  
9 looked at. The numbers were comparable to that although  
10 much lower in the small bore support area because we  
11 think we know that number was what it was. That was a  
12 matter of having drawings in the right place so that the  
13 FQC people could refer to the right drawings. But we  
14 essentially, in terms of the rates of return, we have  
15 found the same order of magnitude of rates of return for  
16 the November-December time frame.

17           Q     Mr. Museler, did I understand you correctly a  
18 while ago to say that in your opinion rust is not a  
19 rework item?

20           A     (WITNESS MUSELER) I believe what I said was  
21 rust is an item that I do not count as affecting the  
22 quality of the hardware in the field or one that  
23 requires rework of the item. The rust is removed. The  
24 rust does have to be removed as part of that finding so  
25 that the FQC inspectors can see the weld in the

1 condition they want to inspect it in.

2 My definition of the word "rework," Mr.  
3 Miller, is where I have to go out and physically modify  
4 the hardware because there is something wrong with it.  
5 If a weld is rusty because it just for reasons of  
6 backlog was not looked at for in some cases as little as  
7 a couple of weeks, it has to be recleaned. But it is,  
8 it does require some physical work to do that. I don't  
9 classify that as rework of a component.

10 [Counsel for Suffolk County conferring.]

11 Q Mr. Greenman, listening to Mr. Museler's  
12 response and with respect to the reinspection and the  
13 Staff views on page 1 of the inspection report, what are  
14 your views on Mr. Museler's views?

15 MR. ELLIS: Judge Brenner, I know there is  
16 broad latitude given, but I think the question is  
17 objectionable because it has no focus.

18 JUDGE BRENNER: Yes, that is a little too  
19 broad. You want to know whether he thinks the high  
20 reject rates are in part explainable by matters not  
21 related to the safety and integrity of the hardware. Is  
22 that your question, Mr. Miller?

23 MR. MILLER: Judge Brenner, I think we heard a  
24 long explanation from Mr. Museler about why these  
25 percentages, in Mr. Museler's opinion, are high, or

1 higher than they really are. I thought the purpose of  
2 having one panel was so we could ask these questions.

3 JUDGE BRENNER: I just want to know what  
4 question you are asking him, and your question is very  
5 broad.

6 MR. MILLER: My question is I am asking Mr.  
7 Greenman for his opinion on Mr. Museler's comment on the  
8 reinspection rates.

9 JUDGE BRENNER: That is too broad. Ask him  
10 something more particular than that. I was trying to  
11 help you.

12 Mr. Greenman, have you looked at the reasons  
13 for those reject rates? Have you had an opportunity to  
14 do that?

15 WITNESS GREENMAN: Yes, Judge, very, very  
16 briefly. I think that LILCO is being responsive to what  
17 our concern was with respect to the reject rates. We  
18 have that and we will wait to see how the program  
19 develops and see what it means. If it does in fact mean  
20 that a reject rate is high because a piece of paper was  
21 not attached to a package, then the premise is correct,  
22 it has no effect at all on the quality of the  
23 construction.

24 What the Staff's concern was was that the  
25 workload should, in fact, be shifted from QC back to the

1 construction area. In other words, LILCO should be in a  
2 position where on the construction end they have cleaned  
3 up all of those items prior to the time they are turned  
4 over to go through all of this final work, and we  
5 believe that the licensee has, in fact, been responsive  
6 to those particular concerns.

7 JUDGE BRENNER: Is it typical in your  
8 experience, Mr. Greenman, for a utility to have a system  
9 that lumps rejects for real hardware discrepancy reasons  
10 in the same statistic that would also include not  
11 inspections for reason of lack of access or a paper  
12 against which to inspect not being available and that  
13 type of thing?

14 A (WITNESS GREENMAN) I would not expect based  
15 upon my past experience that they would be lumped  
16 together. And in fact I do believe that LILCO does  
17 break those things out. We did not attempt to  
18 differentiate within the time frame that we conducted  
19 that inspection. The instructions that I gave to the  
20 inspectors that were involved with the team was that if  
21 they did not immediately get an answer, to document the  
22 answer that we did have and go on to something else.

23 JUDGE BRENNER: Mr. Museler or Mr. Arrington  
24 either one, does FQC lump those things together or do  
25 you keep separate statistics, and if so, how did they

1 all get reported together on page 1 of the inspection  
2 report?

3 WITNESS MUSELER: Judge Brenner, those  
4 statistics are generally -- they can be broken out and  
5 they are now broken out that way. But the normal way --  
6 and Mr. Arrington can correct me if I am wrong, but the  
7 normal way Mr. Arrington decides whether an item is  
8 returned or rejected includes both those attributes. He  
9 just turns it back to us to correct it.

10 WITNESS ARRINGTON: Judge Brenner, up until  
11 the first of the year, our weekly reports that I was  
12 sending out on our production figures did include the  
13 reject column as well as the return column, and since  
14 the first of the year, we have decided to consolidate  
15 those two columns in order to get the total production  
16 of the incoming items and the items that we inspected  
17 during that week.

18 Mr. Museler was interested in the items that  
19 we accepted, and we specifically have discussed those  
20 items that we do return. So since the first of the year  
21 we have included rejected and returned items in the same  
22 category. Prior to then, we broke them out separately.  
23 When Mr. Higgins came into my office and asked for the  
24 information on the production figures, we keep track of  
25 our production work on an acceptance basis. We don't

1 call it rejection, we call it acceptance, and I  
2 converted the information.

3           Take, for example, the large-bore pipe  
4 supports. The reject rate would have been -- the  
5 acceptance rate, the information we were putting in our  
6 report was 70 percent, so I just simply turned it around  
7 and gave them the 30 percent, and I did explain to him  
8 that that included items that were returned, and most of  
9 the time these items are returned in bulk form.

10           They are not one a day. There are sometimes 15  
11 or 20 at a time because additional information is needed  
12 in order for us to perform our inspection. And with the  
13 Stone & Webster system, and I think this holds true for  
14 all of our job sites, if you are going to perform an  
15 inspection, if you accept it, there is going to be  
16 documenting additional information.

17           If it is unacceptable, meaning and including  
18 access, you have to identify that to the construction  
19 department, and the documents we use would be a  
20 nonconformance report, which would require the  
21 engineering disposition or discrepancy report that says  
22 that I need scaffolding to get to the support to do my  
23 inspection.

24           We have no other choice of documenting  
25 conditions that are not acceptable. When we perform our

1 inspections, it is either acceptable or unacceptable.  
2 If it is unacceptable we have two choices to document  
3 it.  
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1           JUDGE BRENNER: But when you count it that  
2 way, doesn't that prevent management from determining  
3 readily how much of that work is being rejected because  
4 it is poor work as distinguished from the normal  
5 scheduling problems of access during inspection or  
6 documentation being readily available when the FQC  
7 inspector wanted to see it?

8           WITNESS ARRINGTON: When that happens, when we  
9 have a real hardware problem in the field we have a  
10 discussion with the construction superintendents as well  
11 as the construction manager on what our concerns are in  
12 those areas. They are aware that we do return these  
13 items because of accessibility.

14           And some of it is because of our own backlog  
15 that we were not able to perform the inspections in the  
16 quantities that they were being turned over to us in.  
17 And we explain that to construction, and sometimes we do  
18 have to have welds cleaned up because these are  
19 carbon-steel welds for us to perform our inspection.

20           But we specifically talk to the construction  
21 management about those items.

22           MR. MILLER: Judge Brenner, I am ready to  
23 start going through the particular violations. And if  
24 we would start with violation A-1, which is discussed in  
25 the inspection report at pages 14 to 15, and also of

1 course in Appendix A.

2 JUDGE BRENNER: Mr. Miller, for your purposes,  
3 let's go for about another 10 or 15 minutes, and then  
4 when you find a convenient point there we will stop for  
5 lunch.

6 BY MR. MILLER: (Resuming)

7 Q Mr. Greenman or Mr. Higgins, it might be  
8 helpful if you could briefly explain violation A-1 for  
9 us.

10 A (WITNESS HIGGINS) Violation A-1 had to do  
11 with a welding discrepancy that was identified. These  
12 were welds that were on the control rod drive hydraulic  
13 piping supports; in other words, CRD piping supports.  
14 Where the supports were attached or welded to the  
15 structural steel blockout there was specified a  
16 particular weld size, and the weld size that was  
17 specified assumed that there was no fit-up gap between  
18 the component and the structural member.

19 So in effect, what happened was there was a  
20 fit-up gap; namely, the particular member was not long  
21 enough to reach both ends of the structural support that  
22 it was going to be welded to, though there was about, in  
23 some cases, about an eighth of an inch between there.

24 Now, that is permissible by the code, but when  
25 you have that, the amount of weld has to be increased

1 over what would be there if you had no gap, given the  
2 same engineering analyses. And what happened in this  
3 case is it was not clearly specified that you had to  
4 have additional weld added. And the particular welder  
5 and the inspector involved did not pick that up.

6 As a result, the supports did end up being  
7 final-accepted with a weld that was not large enough for  
8 the particular installation. It would have been, had  
9 there not been the gap. But as it turned out, there was  
10 this fit-up gap and, therefore, the weld size should  
11 have been increased and was not.

12 Q Mr. Higgins, let me make sure I understand  
13 that. The violation involved welds which were completed  
14 with a fit-up gap even though the design drawings did  
15 not specify a fit-up gap?

16 A (WITNESS HIGGINS) That is correct.

17 Q But instead required the 3/16ths inch welds  
18 all around, and because of the fit-up gap the welds, the  
19 size of the welds, were not adequate under the design  
20 drawings? Is that correct?

21 MR. ELLIS: May I have that read back? I  
22 think there was a great deal in there?

23 (The reporter read the record as requested.)

24 WITNESS HIGGINS: That is correct.

25 BY MR. MILLER: (Resuming)

1 Q And, Mr. Higgins --

2 MR. ELLIS: Excuse me. I think there were  
3 other members of the panel that wanted to say  
4 something. Does he want to limit it at this point?

5 JUDGE BRENNER: After the last time, I am  
6 inclined to let him limit it. You are still following  
7 up on this A-1 with Mr. Higgins?

8 MR. MILLER: Yes, Judge Brenner. I am trying  
9 to get into the violation itself. I would hope that if  
10 we are going to have a day for this proceeding for our  
11 cross --

12 JUDGE BRENNER: Let him proceed. How do you  
13 know when somebody wants to add something, Mr. Ellis?

14 MR. ELLIS: Because they reach for the  
15 microphone.

16 JUDGE BRENNER: If it is a really important  
17 point, we will let him add it. We can come back at the  
18 end if there is an out-and-out error or something  
19 missing that needs to be put in in order to fill it up.  
20 Otherwise, we will let you come back on redirect,  
21 because we are keeping the time limit on the County.

22 Go ahead, Mr. Miller.

23 BY MR. MILLER: (Resuming)

24 Q Mr. Higgins, these welds also, as noted on  
25 page 15 of the inspection report, had been

1 final-inspected and accepted by Reactor Controls; is that  
2 correct?

3 A (WITNESS HIGGINS) Yes.

4 Q Mr. Higgins, to your knowledge -- well, this  
5 wasn't the first time that the Staff had brought such  
6 problems to LILCO's attention, was it? And I will  
7 specifically refer you to Inspection Report 79-07. And  
8 I have copies of 79-07, if you would like to see it.

9 A (WITNESS HIGGINS) Please.

10 (Document handed to witness.)

11 MR. MILLER: Judge Brenner, what we have  
12 copied here are selected portions of the inspection  
13 report. I don't believe that 79-07 is an exhibit in  
14 this proceeding.

15 BY MR. MILLER: (Resuming)

16 Q But I would refer your attention, Mr. Higgins,  
17 to the bottom of page 4 and at the top of page 5. In  
18 this inspection report the Staff had previously  
19 identified a violation regarding fit-up gaps where  
20 similar to here Reactor Controls had accepted welds with  
21 gaps up to 3/16ths of an inch.

22 MR. ELLIS: Is there a question pending?

23 JUDGE BRENNER: Well, I think the gist of the  
24 question is is this the same situation as was written up  
25 in Inspection Report 79-07 at the bottom of page 4 and

1 over to page 5.

2 (Witnesses conferred.)

3 MR. MILLER: Mr. Higgins, while you are  
4 thinking about whether or not this is the same sort of  
5 situation, I would like to mark this as an exhibit.

6 Judge Morris?

7 JUDGE MORRIS: That will be Suffolk County 115.

8 MR. MILLER: I would mark that for  
9 identification Suffolk County Exhibit Number 115, which  
10 is selected portions of inspection Report 79-07, dated  
11 August 21, 1979.

12 JUDGE BRENNER: I guess you had better tell us  
13 which selected portions.

14 MR. MILLER: Pages, the first two pages, which  
15 is the cover letter, the notice of violation, Appendix  
16 A, which is the following two pages, and then pages 1,  
17 2, 3, 4 and 5 of the inspection report itself.

18 (The document referred to  
19 was marked Suffolk County  
20 Exhibit No. 115 for  
21 identification.)

22 WITNESS HIGGINS: Mr. Miller, I guess, while  
23 not being a welding expert and not having written either  
24 violation, I am not really qualified to compare the two,  
25 there does appear to be some -- there do appear to be

1 some differences between the two and also some  
2 similarities. So as part of the response, as part of  
3 the NRC review of the response to 83-02, we intend to  
4 compare the 79-07 to it. But that would be done by our  
5 welding experts that were involved in the writing of the  
6 violation in 83-02.

7 WITNESS MUSELER: Mr. Miller, they are  
8 significantly different findings in a number of ways. A  
9 different code was involved. The gap in the case of the  
10 earlier one, 79-07, when all was finally said and done,  
11 was acceptable both under the code and from an  
12 engineering standpoint. So that in that particular  
13 case, the gap had been -- the gap referred to -- had  
14 been allowed for during the engineering calculations.  
15 It is not the same case at all as with the item  
16 identified in Inspection 83-02.

17 BY MR. MILLER: (Resuming)

18 Q Well, Mr. Museler, I gather from what Mr.  
19 Higgins just stated, that we will let the Staff  
20 determine that.

21 Mr. Higgins, would you also please look at the  
22 Staff's prefiled QA testimony, particularly at page 21?  
23 Do you have a copy of that with you, sir?

24 A (WITNESS HIGGINS) No.

25 MR. MILLER: We have again selected page of

1 the Staff's testimony that we would be glad to provide.

2 A WITNESS HIGGINS: Let me get it.

3 JUDGE BRENNER: Well, I tell you, let's break  
4 for lunch already. Why don't you give him --

5 MR. MILLER: Judge Brenner, all of these  
6 documents have been identified.

7 JUDGE BRENNER: I know. Let me finish.  
8 Either give him copies through his own counsel or  
9 ascertain that his own counsel and the witness doesn't  
10 have them, and then see if you can get copies made over  
11 lunch. And we could use copies up here too, when we  
12 come back from lunch, of everything you are actually  
13 planning to use, and then we won't have to be handing  
14 papers out for the rest of the day.

15 MR. MILLER: Judge Brenner, right now why  
16 don't we just provide? We have copies for all of the  
17 parties and the Board. We might not use all of these  
18 documents, but why don't we just give everybody the  
19 copies, and if we go to them, then we can use them?

20 JUDGE BRENNER: Fine. Why don't you just  
21 leave it for us as soon as we break for lunch or as soon  
22 as soon as you come back after lunch, whatever is  
23 convenient for you, and that will save you some time.

24 Let's take an hour and a half and come back at  
25 1:50.

1 (Whereupon, at 12:20 p.m., the hearing was  
2 recessed, to reconvene at 1:20 p.m. this same day.)

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## 1 AFTERNOON SESSION

2 [1:50 p.m.]

3 JUDGE BRENNER: We are back on the record.  
4 The County can continue its cross-examination.

5 MR. MILLER: Judge Brenner, we have handed  
6 just now to the parties, the witnesses and the Board,  
7 copies of all of the documents which have been specified  
8 either by letter or in the cross plan that could  
9 conceivably be used or referred to by the County during  
10 the rest of this hearing process.

11 Whereupon,

12 JAMES HIGGINS,

13 EDWARD G. GREENMAN,

14 WILLIAM J. MUSELER,

15 JOSEPH M. KELLY and

16 TRACY T. ARRINGTON,

17 the witnesses on the stand at the time of recess,  
18 resumed the stand and were examined and testified  
19 further as follows:

20 CROSS EXAMINATION

21 BY MR. MILLER:

22 Q Mr. Higgins, right before the lunch break we  
23 were talking about Inspection Report 79-07, and I think  
24 briefly we mentioned the Staff's testimony at page 21.  
25 Excerpts of both of those will be in this package of

1 material we just referred to.

2           Mr. Higgins, with respect to 79-07,  
3 specifically on page 5, and Violation A-1 of the RAT  
4 inspection report, the similarity between the violation  
5 in the RAT inspection and 79-07 concerns the fact that  
6 the fit-up gap was not specified either in the design  
7 drawing or in the weld technique of 79-07; isn't that  
8 correct?

9           A       (WITNESS HIGGINS) The violations in both of  
10 those reports address fit-up gap problems, yes.

11          Q       And my question is, Mr. Higgins, that the  
12 similarity, that neither the weld technique of 79-07 nor  
13 the design drawing of 83-02 violates an A-1 specified, a  
14 fit-up gap; isn't that correct?

15          A       (WITNESS HIGGINS) I would have to review  
16 those to see the specific details, and I think, as we  
17 mentioned beforehand, there are some similarities  
18 between them, obviously. The welding violation in 83-02  
19 would have been put in the list of the particular  
20 welding violation that was in our testimony. As far as  
21 which one and the exact similarities, it is going to  
22 require some further review by our welding people.

23          Q       Okay, Mr. Higgins, I understand, then, that in  
24 terms of the Staff's review of LILCO's response to the  
25 RAT inspection report and violation A-1, the Staff will

1 look at 79-07 in determining the adequacy of LILCO's  
2 response to 83-02; is that correct?

3 A (WITNESS HIGGINS) Yes.

4 Q Mr. Higgins, on page 21 of the Staff's  
5 prefiled QA testimony -- do you have that, sir?

6 A (WITNESS HIGGINS) Yes.

7 Q You will note number 15 at the top talks about  
8 inspection report 79-07, and then paragraph 1, about  
9 midway down, it notes that, among other items, item 15,  
10 referring to 79-07, showed no common pattern, and then  
11 it continues on to talk about the organizations involved  
12 in each of these violations -- well, that the welding  
13 was performed by organizations not involved in any of  
14 the other violations. Do you see that, sir?

15 A (WITNESS HIGGINS) Yes.

16 Q Is it significant to you that Reactor Controls  
17 is the common organization involved in both 79-07 and  
18 83-02?

19 A (WITNESS HIGGINS) Well, it is certainly  
20 worthy of note and it is one of the things that we take  
21 into consideration when we look at violations and when  
22 we have violations that occur that are similar to  
23 previous ones. That is one of the things that we look  
24 at and we keep in mind when we look at the corrective  
25 actions to see if they are adequate to address the

1 particular violation.

2           A       (WITNESS MUSELER) Mr. Miller, one of your  
3 previous questions went to the fact that in the instance  
4 of 79-07, that the fit-up gap was not properly contained  
5 in the procedures that were being used at the time.  
6 That is not accurate. The particular code involved, and  
7 as was subsequently presented to the NRC when they  
8 closed out the item, demonstrated that under those  
9 circumstances with the code involved, the American  
10 Welding Society code, that fit-up gaps were permitted,  
11 did not have to be specifically called out on the  
12 drawing and, in fact, were considered by the engineering  
13 organization to perform the design. So that particular  
14 statement is not correct.

15           Q       Mr. Museler, this is the second time I have  
16 heard that from you, and as I said before, I guess the  
17 Staff will take that into account when they make their  
18 review.

19                   JUDGE BRENNER: Yes, Mr. Miller, but I told  
20 them they could correct errors or add things the absence  
21 of which would lead to a misimpression. I don't care  
22 very much what the Staff is going to do off the record.  
23 I want to get the answers on the record now.

24                               So it is a tough line to draw, and I have  
25 discouraged the witnesses from digressing too much. I

1 don't think that was a digression. So if you made what  
2 the witness considered to be a misstatement, it is okay  
3 for him to correct it.

4 MR. MILLER: It is his opinion of my  
5 statement, Judge Brenner.

6 JUDGE BRENNER: Right, but he is the one who  
7 is testifying

8 BY MR. MILLER: (Resuming)

9 Q Mr. Higgins or Mr. Greenman, with respect to  
10 LILCO's response to Violation A-1, which begins on page  
11 2 of the supplemental testimony and continues over to  
12 page 3, what would be your general view of LILCO's  
13 response to this violation?

14 A (WITNESS GREENMAN) I don't have a general  
15 review with respect to the response to the citation. As  
16 I mentioned early on, we just received that response  
17 today.

18 Q I'm sorry, Mr. Greeman, I should clarify  
19 referring to the supplemental testimony.

20 A (WITNESS GREENMAN) That in fact addresses a  
21 response forthcoming from LILCO which will be evaluated  
22 by the Staff.

23 Q Well, with respect to LILCO's supplemental  
24 testimony and what is stated there, would you have an  
25 opinion, Mr. Greenman, on the adequacy of that response?

1 [Panel of witnesses conferring]

2 A (WITNESS GREENMAN) I will give you my opinion  
3 based on reading this again. I think that the response,  
4 or rather the statement in the supplemental testimony  
5 fairly characterizes what we believe to be the case. We  
6 are most interested in what the detailed analysis that  
7 is under way right now will show. We looked at a sample  
8 of specifically one set of welds.

9 The inspector that performed that particular  
10 aspect of the inspection, although he made no additional  
11 measurements beyond the one that he completed, noted six  
12 other conditions, so my interest in that is what the  
13 final evaluation shows.

14 Q Mr. Greenman, what do you mean by six other  
15 conditions? Could you explain that?

16 A (WITNESS GREENMAN) Well, we did not make 100  
17 percent inspection of all of those welds; we performed a  
18 sampling inspection. Based upon the sample size that we  
19 physically examined and made measurements of -- that was  
20 a sample of one -- we noted six additional areas that we  
21 might consider to have unacceptable weld conditions of  
22 that type. We did not, however, make the measurements  
23 in that area.

24 LILCO is performing 100 percent inspection, as  
25 we would expect them to do. So you asked me what my

1 opinion was. My opinion is that I'm most interested in  
2 seeing the results of that evaluation.

3 Q How many welds did the Staff look at, Mr.  
4 Greenman?

5 A (WITNESS GREENMAN) One set of welds for that  
6 particular condition. This is for the CRDs.

7 Q And with respect to your --

8 A (WITNESS HIGGINS) Just a minute, please.

9 [Panel of witnesses conferring.]

10 A (WITNESS HIGGINS) Could you clarify what you  
11 mean by how many welds did we look at? I'm not sure  
12 that we may have given you the full answer there.

13 Q My question was prompted by Mr. Greenman's  
14 statement that the Staff had looked at six other  
15 conditions. Maybe I just misunderstood.

16 [Panel of witnesses conferring]

17 A (WITNESS HIGGINS) We actually went down and  
18 took fillet weld measurements on one weld. The  
19 inspector involved here looked at a lot more welds. Even  
20 in the CRD system we looked at, I would say, dozens of  
21 welds in the CRD system, and then in other systems as  
22 part of the inspection looked at quite a few other welds  
23 in other systems also. But for this particular case  
24 here where the violation was written, one weld was  
25 actually dealing with the detailed measurements.

1 Q Okay, Mr. Greenman, with respect to your  
2 statement about LILCO's 100 percent reinspection,  
3 relying on the supplemental testimony which I have, I  
4 have sort of an incomplete sentence there which I gather  
5 that is what LILCO is saying, but Mr. Museler, let me  
6 ask you.

7 A (WITNESS MUSELER) That is correct, Mr.  
8 Miller. That statement should have read a reinspection  
9 of 100 percent, et cetera, will be conducted and, in  
10 fact, has been at this point.

11 Q Mr. Greenman, referring to the percents in the  
12 first full paragraph on page 3 of LILCO's supplemental  
13 testimony, it states that, "The cause of this situation  
14 appears to be the lack of specificity with respect to  
15 the gap requirement." This lack of specificity was in  
16 LILCO's drawings, not in the code requirements; isn't  
17 that correct?

18 [Panel of witnesses conferring]

19 A (WITNESS HIGGINS) I think that again we are  
20 starting to get into an area where we are talking about  
21 the detailed weld, the welding details, and neither Mr.  
22 Greenman nor myself are a welding inspector, and we  
23 would prefer not to get into an evaluation of a response  
24 in that area, having just received it and not having had  
25 it reviewed by our welding experts.

1 Q Mr. Greenman, would you care to add anything  
2 to that? We are talking about the supplemental  
3 testimony, now, and not the formal LILCO response.

4 A (WITNESS HIGGINS) Well, in comparing the two  
5 -- the supplemental testimony was just received by us at  
6 the very end of last week and we have not had an  
7 opportunity to get this to our welding people either.  
8 They were involved in the readiness inspection. In  
9 fact, there are very few differences between the  
10 supplemental testimony and the response, the formal  
11 response to Region 1 on 83-02.

12 Q Well, let me try a different question, then.  
13 In your opinion, Mr. Greenman, should Engineering have  
14 specified code requirement on the design drawings in  
15 accordance with Criterion 3 of Appendix B?

16 A (WITNESS GREENMAN) I don't think I can give  
17 you an answer to that question within the context of  
18 that testimony. I can say that the particular procedure  
19 that was involved did not, in fact, specify that a  
20 measurement of that fillet weld be taken.

21 [Counsel for Suffolk County conferring]

22 Q Mr. Greenman, would you agree that design  
23 drawings should unambiguously specify whether or not  
24 fit-up gaps are allowable? Would you agree that that  
25 would be in accord with Criterion 3 of Appendix B?

1 [Panel of witnesses conferring]

2 A (WITNESS GREENMAN) I would agree that design  
3 drawings should not be ambiguous. I think that  
4 accommodation of procedural controls and design  
5 documents are necessary to ensure that you don't have a  
6 problem of this type.

7 Q Would you agree, then, Mr. Greenman, that with  
8 respect to a proposed corrective preventive action by  
9 LILCO, that design drawings of other welds of this kind  
10 here involved the kind of violation that you want should  
11 perhaps be examined to see if code requirements are  
12 specified unambiguously?

13 A (WITNESS GREENMAN) I will have to evaluate  
14 LILCO's response within the context of that particular  
15 violation and then will make a determination as to  
16 whether or not the corrective action they propose is  
17 acceptable. That may be a combination of a number of  
18 things.

19 Q Why don't we go on to Violation A-2. As I  
20 understand it, gentlemen, Violation A-2 is discussed on  
21 pages 15 to 16 of the inspection report. Of course, in  
22 Appendix A it is also discussed, and then in LILCO's  
23 supplemental testimony on pages 3, 4 and 5.

24 Mr. Greenman or Mr. Higgins, could you please  
25 briefly explain Violation A-2?

1           A       (WITNESS HIGGINS) Yes. Violation A-2 had two  
2 parts to it. Basically it related to final QC-accepted  
3 hangars in the residual heat removal system. In one  
4 case it involved torquing of high-strength bolts. The  
5 bolts in question were supposed to be torqued, were  
6 supposed to be tightened only hand-tight, and our  
7 inspector found that they were in excess of that.

8                   And the second one had to do with a type of  
9 pipe support where you had lugs welded to a pipe and  
10 then a pipe support which is basically circumferential,  
11 and the pipe support supported or held the pipe by the  
12 four lugs resting on the pipe support and then the pipe  
13 support was suspended from above, and that is the manner  
14 in which the pipe support was supported or restrained.

15                   The violation related to how much bearing you  
16 had between the lugs and the pipe support member, and the  
17 discrepancy related to the number of contact points or  
18 the number of lugs that had to be in contact with the  
19 particular support, and also with the contact surface  
20 where each lug had basically a rectangular surface on  
21 the bottom, and if it was exactly machined, then you  
22 would have the two, it would be flush and you would have  
23 full contact bearing. If they were at an angle to each  
24 other, then you might have a contact bearing surface  
25 which would be in a line, or if it was cocked at a

1 different angle, then you might just have a point  
2 contact. Or if they were not close enough, you might  
3 have no contact.

4           There were all of these involved to varying  
5 degrees with the particular supports that the inspector  
6 reviewed.

7           Q     Now, Mr. Higgins, am I correct that the pipe  
8 supports inspected by the Staff have been final  
9 inspected and accepted by FQC?

10          A     (WITNESS HIGGINS) That is correct.

11          Q     Now, according to -- well, on page 15 of the  
12 inspection report, it is noted that the Staff inspected  
13 12 pipe supports, and on three of those supports there  
14 were problems identified; is that correct?

15          A     (WITNESS HIGGINS) Yes.

16          Q     Am I correct in assuming that these 12 pipe  
17 supports were selected at random by the Staff?

18          A     (WITNESS HIGGINS) They were selected by the  
19 inspector based on inspector judgment with some degree  
20 of randomness involved. They weren't selected using a  
21 random number generator or anything of that sort; they  
22 were selected by tours in the field as to seeing what  
23 types of supports were out there, what types were  
24 finally inspected, and where the inspector felt problems  
25 might be and also by going through some documentation

1 packages.

2 Q But the selection was not based on the fact  
3 that the Staff had some idea beforehand there would be  
4 problems with the supports; is that correct?

5 A (WITNESS HIGGINS) That is correct.

6 Q If we could take Violation A-2 in its two  
7 separate parts and deal first with the high strength  
8 bolts that were not installed finger tight as required  
9 by the design drawings, how many high strength bolts  
10 were examined by the Staff, Mr. Higgins?

11 A (WITNESS HIGGINS) I don't have a number and  
12 it is not indicated in the inspection report.

13 Q Do you have a number on how many have  
14 problems? In other words, how many were found not to be  
15 finger tight as required by the design drawings?

16 [Panel of witnesses conferring]

17 Q Mr. Museler, do you have some information on  
18 that?

19 A (WITNESS MUSELER) Yes, Mr. Miller. There are  
20 other places in the plant where this bolting material is  
21 used; however, this configuration which is the subject  
22 of this and the hand-tight situation only occurs on the  
23 pipe supports in the case of two pipe supports, both of  
24 which were examined by the NRC, one of which was in  
25 process and had temporary bolts in it, the other of

1 which had three bolts in it with the hand-tight  
2 requirement. I believe that they found two of those  
3 three bolts as not being hand tight when they tried to  
4 move them.

5 Q Mr. Higgins?

6 A (WITNESS HIGGINS) I have looked at the  
7 supporting question and I know that there are three  
8 bolts there. How many the inspector found not  
9 hand-tight, I don't know.

10 Q Mr. Museler, with respect to your last  
11 statement, there are two supports that use high-strength  
12 bolts of this type that are finger-tight in the plant;  
13 is that correct?

14 A (WITNESS MUSELER) The issue here is not  
15 high-strength bolting; the issue here is the torque, the  
16 correct torque in the bolts, and in this case the fact  
17 that they are supposed to be hand-tight and the  
18 inspector could not get them off with his hand, and when  
19 we did break it loose, we weren't able to do it by hand,  
20 we had to use a hand wrench to do it.

21 So you will see later on in the report we  
22 talked about specific high-strength bolting. This issue  
23 had to do with whether the bolts were installed and  
24 tight as required, and in this configuration there are  
25 only two pipe supports the plant can have, a sliding

1 member of this type. In other words, there are only two  
2 pipe supports that have bolts that are supposed to be  
3 hand-tight, there are other pipe supports that have  
4 sliding members, but they are installed with Clevis pins  
5 that raise no issue of how tight it is.

6           So all I was trying to point out was that from  
7 the standpoint of the sample, the inspector was looking  
8 for torque requirements. He could have selected  
9 supports where there was, say, 100 foot pounds. He  
10 opted to select a support which had a hand-tightened  
11 requirement, and there are only two of those.

12           Q     All right. There are only two supports, and I  
13 assume one of which is E11-SPA-109, which is identified  
14 on page 15 of the inspection report and which was the  
15 pipe support which led to this violation; is that  
16 correct?

17           A     (WITNESS MUSELER) That is correct, sir. The  
18 proper terminology is PSA109. That is the one that is  
19 referred to in the NRC inspection report, and that is  
20 one that was final inspected by QC. And as we say in  
21 our testimony, we believe that it was properly installed.

22           Q     And Mr. Museler, the second pipe support of  
23 this kind is talked about on page 17 of the inspection  
24 report; isn't that correct? And that will be pipe  
25 support E11-PSA-055? Paragraph 8.3.4.

1 [Panel of witnesses conferring]

2 A (WITNESS MUSELER) Yes, Mr. Miller, that is  
3 the other pipe support of this type, and as I mentioned,  
4 that support was in process and had temporary bolts  
5 installed, and that is what the inspector noted.

6 Q The inspector also noted, isn't it right, Mr.  
7 Museler, that "this inspection disclosed high-strength  
8 bolts had not been used where required and that the  
9 bolts were tightened in excess of the finger-tight  
10 requirement"?

11 A (WITNESS MUSELER) Yes, sir. The  
12 high-strength bolts were not used. There were temporary  
13 bolts put in there just to hold the support in position  
14 until the high-strength bolts were installed. This was  
15 in process in construction and we were very well aware  
16 of that situation, and this was before QC inspection.  
17 Our own construction procedures require us to control  
18 the bolting material, which we were doing. The  
19 inspector's observation was correct. Those bolts were  
20 just run of the mill, throwaway bolts that we put in to  
21 hold the support in place while we were completing it.

22 Q Mr. Museler, on page 17 it notes that with  
23 respect to support PSA-055, that this support had been  
24 turned over to FQC for a final acceptance; isn't that  
25 right?

1           A       (WITNESS MUSELER) The inspector noted that it  
2 had not been final QC inspected, but the report does say  
3 that it had been turned over. I don't believe that is  
4 the case. I think it was supposed to be a "not" in both  
5 cases, but I can't say for sure. We had not completed  
6 that support.

7           Q       Well, Mr. Museler, if indeed the support had  
8 been turned over to FQC for final inspection, that would  
9 mean that a support with known deficiencies, by your own  
10 testimony, had been turned over for final inspection;  
11 isn't that right?

12                   [Panel of witnesses conferring]

13           A       (WITNESS MUSELER) Mr. Miller, I think based  
14 upon the concluding statement of that paragraph that  
15 there were no unacceptable conditions, I believe that  
16 the support had not been turned over even to FQC. It is  
17 possible that a support may be placed on the list for  
18 final inspection through an error, but our own records  
19 indicated that he had not put the final, put the proper  
20 bolts in that location.

21                   So in direct answer to your question, if we  
22 did submit a component to FQC for a final inspection and  
23 that component was not ready for final inspection  
24 because there was still an error in it, that would give  
25 me concern, and with regard to my own program in terms

1 of making sure that I had completed the work properly  
2 before I sent it over to Mr. Arrington for inspection.

3           However, we have had instances where we had  
4 put an item on the list for final inspection and it  
5 hasn't been quite ready. Our own records indicate that  
6 it wasn't ready and that item is simply returned to us  
7 as not being complete. That doesn't happen very often  
8 but it has happened. If we had gone through our entire  
9 process and gone through all of the construction  
10 inspections which precede the final QC inspection and we  
11 had turned it over to Mr. Arrington and in fact we had  
12 not completed it, I would not be happy with that  
13 situation but I wouldn't be aghast that it couldn't  
14 happen as long as it didn't happen in any frequency.

15           A       (WITNESS ARRINGTON) Mr. Miller, I would like  
16 to add that we did check our logs and we had not  
17 received that support for a final inspection. It is  
18 customary that we receive these supports for in-process  
19 inspection for welding. We do do preliminary weld  
20 inspections because at some point in time some of the  
21 welds may not be accessible for final inspection, so the  
22 supports do come over back and forth for preliminary  
23 inspections, but our logs did not indicate that we had  
24 received that for final inspection.

25           And it is customary that we do find temporary

1 bolts in structural steel components during the erection  
2 phase.

3 Q Mr. Higgins, let's move on to the bearing  
4 between the lugs and the pipe clamp that is talked about  
5 at the bottom of page 15 of the inspection report,  
6 referring to support PSSH-173. Do you know, Mr.  
7 Higgins, how many bearings between lugs and pipe clamps  
8 were inspected by the Staff?

9 A (WITNESS HIGGINS) No, I don't.

10 Q With respect to the additional problem  
11 identified by the Staff in dealing with the "misuse of  
12 two different E&DCRs" talked about at the top of page  
13 16, Mr. Higgins, could you please explain the Staff's  
14 view on the different E&DCRs, how they were different,  
15 for example?

16 A (WITNESS HIGGINS) Well, as written up in the  
17 inspection report, there was a different criteria for a  
18 bearing of the lugs on the pipe supports between the  
19 General Electric-supplied supports and the Stone &  
20 Webster-supplied supports. The General Electric ones  
21 required bearings on three of the four lugs, but the  
22 Stone & Webster criteria for their supports called for a  
23 bearing on all of the lugs.

24 Subsequently -- during the inspection in my  
25 discussion with the inspector involved with this, he was

1 having some difficulty getting a clearcut answer at the  
2 time of the inspection as to which E&DCRs and which  
3 inspection criteria were used for which supports. Since  
4 that time in LILCO's response in their testimony they  
5 have done additional work and they have provided  
6 additional information that would indicate that the G.E.  
7 criteria were used for the G.E. supports and the Stone &  
8 Webster criteria were used for the Stone & Webster  
9 supports.

10           That is the type of thing that we wanted to  
11 find out during the inspection, but that wasn't  
12 available, so that information will be reviewed by the  
13 inspector involved with this to see if the answer is  
14 fully satisfactory, and if so, then we will go back and  
15 do some additional review to see if that is the way it  
16 was in fact carried out.

17           A       (WITNESS MUSELER) Mr. Miller, we have  
18 actually been able to demonstrate by a review of Mr.  
19 Arrington's records that the E&DCRs referenced were  
20 specifically listed on inspection documents for the  
21 G.E. The G.E. E&DCR was listed on the documents to  
22 which the G.E. hangers were inspected, and the Stone &  
23 Webster E&DCR was specifically listed on the documents  
24 to which the Stone & Webster reports were constructed,  
25 and were inspected, too.

1           So we recognize we did not give an adequate  
2 answer to the NRC while it was still on the job site,  
3 but I have spoken to the pipe hanger supervisor involved  
4 in the specific one, who is very knowledgeable about  
5 this particular item. Once he recognized what was going  
6 on -- we had not been doing work on G.E. supports in a  
7 long time and the question caught him cold because he  
8 wasn't familiar at the moment with the G.E. one because  
9 we had been working predominantly on Stone & Webster  
10 ones. But it was clear once we looked into it that the  
11 proper documents had been used in the erection of each  
12 one.

13           Q     Mr. Greenman, if you will turn for a minute to  
14 LILCO's response in supplemental testimony to Violation  
15 A-2, part of which response Mr. Museler was just  
16 referring to, I believe, on pages 3 to 5 of the  
17 supplemental testimony, what would be your general  
18 opinion of LILCO's response to this violation, sir? And  
19 if you would like to address the finger-tight  
20 requirements different and separate from the bearings  
21 between the clamps and lugs, that would be fine.

22                     [Panel of witnesses conferring]

23           A     (WITNESS GREENMAN) My opinion is that the  
24 bottom line is that the citation as written, as far as  
25 full bearings, specifically, was a requirement to have

1 full bearings. Subsequent engineering evaluation  
2 indicates that we will have to look at that, that that  
3 may not necessarily be required from a technical  
4 standpoint, and we will review that during the course of  
5 our normal response.

6 Q But the appropriate E&DCR did require four  
7 bearings, is that correct?

8 A (WITNESS GREENMAN) That is correct.

9 Q With respect to the finger-tight requirement  
10 of the bolts, Mr. Greenman, what would be your opinion  
11 of LILCO's response which is set forth on page 4 of the  
12 supplemental testimony?

13 [Panel of witnesses conferring]

14 A (WITNESS GREENMAN) In my opinion the  
15 explanation that LILCO has provided appears to be  
16 plausible. What they have discussed with us informally  
17 as to what they will do to go back and verify the status  
18 of hand-tight bolts after systems have been run while  
19 the systems are hot, I think, is probably an option that  
20 we will look at and evaluate; but given the equipment  
21 sitting in the plant, I cannot say without any shadow of  
22 a doubt that the hand-tight aspect, that those were in  
23 fact installed properly, nor can I say that they were  
24 not. They may have tightened up and loosened up on  
25 their own during various things that have happened to

1 the system.

2 Q Mr. Greenman, with respect to hand-tightness  
3 of bolts, how does QA inspect for hand-tightness?

4 A (WITNESS GREENMAN) I don't know.

5 Q Mr. Museler, could you --

6 A (WITNESS MUSELER) Mr. Arrington can answer  
7 that.

8 A (WITNESS ARRINGTON) At the time that we would  
9 perform our inspection in this particular case we would  
10 see to it that there would be no locking device on the  
11 outside of the nut to make sure that the nut itself  
12 could be rotated or that the bolt itself could be moved,  
13 indicating that it was snug against the meeting  
14 surface.

15 That inspection is performed to make sure that  
16 the right bolting material is in and that it is  
17 hand-tight. You then apply a jam nut on the balance of  
18 the shank of the bolt to make sure that the nut itself  
19 doesn't back off during the operational phase of the job  
20 site. I think during the application of the jam nut  
21 you can get some rotation of the primary nut itself, and  
22 it was inspected for the hand-tightness. The attributes  
23 were listed, indicating that these things were looked  
24 at. The inspectors were aware of the hand-tight  
25 requirement

1 Q I assume, Mr. Arrington, that there is a  
2 design purpose for hand-tightness? For example, to  
3 allow for thermal expansion. Would that be correct?

4 A (WITNESS ARRINGTON) That is correct. In this  
5 case we had discussed it with the engineers. These are  
6 carbon steel bolts and they are located at elevation 40  
7 in the reactor building. These things did have some  
8 surface rust on them, which you would expect with a  
9 carbon steel unit, and it is not unusual during a  
10 de-torquing operation to have to remove the rust in  
11 order to get a pretorque.

12 And it is my position based upon my  
13 discussions with my inspectors and my supervisors that  
14 that is a condition that we saw down there when we took  
15 these units out, is that we were able to break the jam  
16 nut away from the nut with a breaker bar, which is about  
17 12 or 14 inches in length, so you are not going to get  
18 over 25 or 30 footpounds to back that nut off.

19 A (WITNESS MUSELER) Mr. Miller, we also had  
20 Engineering evaluate what the consequences of  
21 overtightening those nuts were in this particular  
22 situation, and Stone & Webster considered the amount of  
23 overtightening that we might have had if all of the  
24 things that Mr. Arrington just mentioned did not happen,  
25 even though we believed it was installed properly, if it

1 were overtightened to the extent that someone could  
2 tighten it with a hand wrench for this particular  
3 application.

4           And also I have been told for structural  
5 applications of this type, slotted bolt holds which  
6 allowed things to move, the forces involved, the thermal  
7 forces involved are such that even overtightening to  
8 that extent would not reduce the effectiveness of the  
9 support and would not cause it to not be able to expand  
10 when it wanted to.

11           There is some torque that could be harmful but  
12 it would be very, very high, so we think even if it were  
13 tightened slightly because of a jam nut or something,  
14 that has no effect on the adequacy of the support.

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1 Q Mr. Museler, are there other areas or other  
2 components of the plant that require a hand-tightened  
3 bolt, nuts and bolts?

4 A (WITNESS MUSELER) Mr. Miller, as I mentioned,  
5 the principal other area, and we could only find -- and  
6 Stone and Webster looked through all of the pipe  
7 supports and for this attribute could only identify  
8 these particular two supports. There are other supports  
9 in the plant which we did research which do have sliding  
10 connections. However, as I mentioned, they have Clevis  
11 pin-type connections.

12 Are you familiar with the Clevis pin? It is a  
13 cylindrical pin with a neck on one side and a cotter pin  
14 on the other side, which has plenty of room so that it  
15 can't get itself into a condition where it could be  
16 overtight. So that in those locations we do have the  
17 same kind of application, but not with hand-tight nuts.

18 Q What about components or equipment, equipment  
19 mounted, for example, other than pipe supports where  
20 there are requirements for hand-tightness in nuts and  
21 bolts in those instances?

22 A (WITNESS MUSELER) We were able to find no  
23 other instances of pipe supports in the structural  
24 area. We were able to find a couple of connections that  
25 called for slotted, a slotted movement of this type. In

1 a couple of those we actually specified a type of  
2 locking nut, and that nut was tightened to 100  
3 foot-pounds even though the item was still supposed to  
4 slide, which it would if it had to move. So that that  
5 was an application where we had -- where movement was  
6 called for and we actually had the connection tight to a  
7 certain extent because the engineers didn't want it to  
8 rattle around. But that is not for the types of forces  
9 involved. The tightness which was specified to be tight  
10 was specified to 100 foot-pounds for this Anco-type nut  
11 was correct for the application.

12           So we don't have a lot of instances where this  
13 occurs in the plant, and we think we have looked at all  
14 that we can find.

15           JUDGE BRENNER: Mr. Miller, it's your time,  
16 but aren't you going beyond what you need in order to  
17 focus on the key points of whether there was inadequate  
18 QC inspection of a particular item and what lessons we  
19 should draw about the reliability of the QC inspection  
20 program? I mean the amount of detail you are going into  
21 on these hand-torqued nuts are going way beyond that  
22 point in my mind.

23           Now maybe you have got some great thing that  
24 you are going to tie all of this up with later and I am  
25 missing it. But I don't want to hear about each and

1 every item ad infinitum, and it's not going to do you  
2 any good to have that.

3           The idea is to figure out what all of this  
4 says about the QC/QA inspection program, LILCO's own  
5 program. And it is the County's own theme whether  
6 significant gates were missed, that type of thing. And  
7 you have been on this for 45 minutes now.

8           BY MR. MILLER: (Resuming)

9           Q     Mr. Museler, let me just wrap this up. How  
10 does LILCO insure that hand-tightness is maintained over  
11 the 40-year life of the plant?

12          A     (WITNESS MUSELER) With respect to this type  
13 of application, I think we have stated in our testimony  
14 that we found at various times rechecking these since  
15 they were reworked since the NRC inspection, that they  
16 have been variously tight, loose, and tight, which is  
17 what we would expect, given that particular application,  
18 if the pipe or the support were to move slightly, and it  
19 could only move slightly because it is a massive support.

20                We would not be upset to find that it was  
21 tight at one point in time, because that is -- that  
22 would not preclude it from moving in a vertical  
23 direction.

24                However, in response to your question, the  
25 design documents for this particular support, I believe

1 directly on the BZ drawing itself, although Mr.  
2 Arrington can correct me if I am wrong, culls out the  
3 appropriate attributes in this case that those nuts are  
4 hand-tight. That same document will be used whenever  
5 the support is reworked or modified by the plant staff  
6 or its agents during the operational phase of the plant.

7           So we believe that any time that support is  
8 touched, the same documents and the same -- quite  
9 frankly, the same inspection criteria -- the form may  
10 look differently, but the same forms that Mr. Arrington  
11 uses and that my construction people use will be used at  
12 the same time, which is to verify if torque is called  
13 for in 10 foot-pounds or 100 foot-pounds. That's  
14 verified and documented.

15           In this particular case, the hand-tightness of  
16 the nuts would also be documented because that falls  
17 under torque requirement, which is the why the NRC  
18 characterized it that way.

19           Q     Mr. Greenman, if we could look for a minute at  
20 LILCO's supplemental testimony, pages 5 through 7, this  
21 concerns the bearing gaps between the lugs and pipe  
22 clamps, which we briefly touched on earlier.

23           With respect to LILCO's response, Mr.  
24 Greenman, on page 6, it is noted in the second sentence  
25 of the second full paragraph or second paragraph that,

1 "We believe the particular FQC inspector involved found  
2 the condition acceptable based upon his interpretation  
3 of the documentation package to which he was inspecting."

4           Mr. Greenman, who should interpret drawings?  
5 Is that the responsibility of engineering or the  
6 responsibility of inspectors?

7           (Witnesses conferred.)

8           A     (WITNESS HIGGINS) The drawings should be  
9 clear enough that there shouldn't be, when two different  
10 knowledgable people look at it, you come up with  
11 different interpretations. It should be clear enough.

12          Q     Do you think, Mr. Higgins, that FQC inspectors  
13 should make interpretations of drawings?

14          A     (WITNESS HIGGINS) Any time you read a  
15 technical document you are making some sort of  
16 interpretation. But the document should be clear enough  
17 that two knowledgable people make the same  
18 interpretation. If there is a question in a FQC  
19 inspector's mind, then he should get back to engineering  
20 for clarification.

21          Q     Is it your opinion that the inspector in this  
22 case should have gone back to engineering for  
23 clarification?

24          A     (WITNESS HIGGINS) If he did not find the full  
25 bearing that it called for, he should have either gone

1 back for clarification or rejected it, yes.

2 A (WITNESS MUSELER) Mr. Miller, that is our  
3 opinion also. We didn't mean to imply by our testimony  
4 that a proper interpretation was made. We believe that  
5 in this particular case the inspector did not properly  
6 interpret what in our mind he should have. We don't  
7 believe that the requirement was not clear in this case.

8 The reason we stated this in testimony was to  
9 respond to the Board's concerns and the County's  
10 concerns as to why some of these things happened. In  
11 previous QA testimony we have been asked many times why  
12 did it happen. And what we were trying to do here was  
13 to come up -- the inspector is no longer with us -- Mr.  
14 Arrington's people and myself have talked, and that is  
15 our speculation on why the mistake was made. But it was  
16 a mistake. And it was not a matter of ambiguity of the  
17 documents. The E&DCR was clear that full bearings  
18 should have been achieved in this particular case.

19 Q Mr. Museler, with respect to the sentence --  
20 right, I guess the next sentence after what I just  
21 quoted from, it says, "That documentation package  
22 included prior approval grant by Engineering for a  
23 previously identified reduced surface contact condition."

24 Was this approval by Engineering for the  
25 specific pipe supports or this particular condition?

1           A       (WITNESS MUSELER) Sir, it was approved for  
2 this specific pipe support, the pipe support that we  
3 were talking about, the pipe support that the NRC cited  
4 by number. I can't pick the number out right now.

5                   But the Engineering approval was for that  
6 specific pipe support. It was not for the condition  
7 observed, however. That is why I say the inspector did  
8 make the wrong interpretation. It was for a reduction  
9 in the total surface area of the lug, not a reduction  
10 necessarily in the contact area between the two. In  
11 order to install it, that particular lug had to have its  
12 corner ground off to a certain amount. Therefore, the  
13 design surface area of the lug was less than what the  
14 original document called for. So with that reduction in  
15 the corner of the lug Engineering allowed that the  
16 surface contact could be reduced by that amount.

17                   That is not the condition the NRC found. All  
18 we are speculating on is that the only reason we could  
19 come up with as to why that particular human being made  
20 that mistake was that he had that in his inspection  
21 package for that particular support and he may have made  
22 the interpretation that, well, since it was a reduced  
23 area, that means all you need to have is contact and not  
24 100 percent contact.

25                   And there is no more, let's say, certainty to

1 the individual situation than that. And we think that  
2 is why he interpreted it the way he did.

3 A (WITNESS ARRINGTON) I would like to add that  
4 coupled with the fact that with this clamp and lug  
5 design that you do not have parallel services there. So  
6 therefore, you would not be able to get 100 percent  
7 contact. And if you consider those two things and the  
8 fact that these did have different clamp designs  
9 originally, that the inspector felt like that he had  
10 full bearing with all four lugs was the reason he made  
11 that determination.

12 I agree with Mr. Museler, he should not have.  
13 He should have brought it to his supervisor's attention  
14 and it would have been turned over to Engineering. But  
15 nevertheless, he made his decision based upon those  
16 documents that were in the package, and that is the  
17 reason why we have pointed it out, because there is a  
18 reason why he made that determination.

19 A (WITNESS MUSELER) The disposition would have  
20 been the same as it is in this case, that the particular  
21 condition there is acceptable from a technical  
22 standpoint, but the program was not followed in that the  
23 inspector should have asked for engineering analysis of  
24 the situation because it did not meet the specific E&DCR  
25 requirements.

1 Q Mr. Museler, with respect to LILCO's  
2 supplemental testimony at page 5, there is a sentence  
3 about midway down in the paragraph under "Bearing Gaps"  
4 discussion which states that, "The NRC also believed  
5 that on one of the supports only three of the four lugs  
6 were in contact with the pipe clamp."

7 Now, I assume that you are referring to pipe  
8 support PSSH-184, which is discussed at the top of page  
9 16. Is that right?

10 A (WITNESS MUSELER) Either 173 or 184, I forget  
11 which one of them. The inspector noted that one lug was  
12 not in contact at all with the pipe clamp involved.  
13 That is not as easy to determine as it may sound,  
14 sitting here. But I am not sure which one it was. But  
15 one of them, the inspector noted it wasn't in contact.  
16 We subsequently inspected that and found that there was  
17 not full bearing but there was in fact contact.

18 Q Mr. Museler, if I look at PSSH-173 at the  
19 bottom of page 15 of the inspection report, it states  
20 that the clamp bearing was on less than three lugs. So  
21 I assume that on one of the lugs inspected or one of the  
22 pipe bearings or pipe supports inspected there was  
23 contact on two lugs or less and on the other one there  
24 was contact on three lugs. Is that right?

25 A (WITNESS MUSELER) That is what the inspection

1 report says. If you will just give me a moment to  
2 consult some notes, I will try to give you a definitive  
3 answer.

4 (Pause)

5 Q Perhaps we can move on and come back to this.

6 A (WITNESS KELLY) Just one more minute.

7 (Witnesses conferred.)

8 A (WITNESS MUSELER) Mr. Miller, it was Mr.  
9 Arrington's folks along with my construction people who  
10 verified that. And he just confirms what our notes had  
11 told us. And that is that we went back and did verify  
12 that both of those supports did have contact on all four  
13 -- excuse me -- all four lugs on each support.

14 So that again -- and we have looked at these  
15 in the field; when you look at them in the field, you  
16 see -- and I can't speak for the NRC inspector --  
17 certainly, you noted that full bearing was not present  
18 on all four lugs in each case, because it couldn't be  
19 with the angle configuration that the pipe clamp was  
20 made in. And how he interpreted what he saw, Mr.  
21 Higgins or Mr. Greenman may comment on.

22 What we are saying is that the E&DCR did call  
23 for full bearing on those lugs. We know now that full  
24 bearing isn't required. But the point is that the E&DCR  
25 called for it and it was not picked up during the

1 inspection. But we believe we had contact on both of  
2 those supports on all four lugs at the time of the  
3 inspection and subsequent to the inspection.

4           Even that point when we have been evaluating  
5 this situation by looking at other supports of a similar  
6 type throughout the plant, we believed that what we were  
7 observing is a situation in which it is normal in any  
8 power plant when systems are loaded and unloaded and  
9 thermally heated up and cooled down and that the pipe  
10 clamps which have a bearing all of their own, the clamps  
11 will hold up on the pipe up to a certain load. The lugs  
12 are only there to take the maximum loads, that when  
13 those pipes load up, they all come up and make contact.

14           So we think even if the inspector, even if the  
15 inspector's comment was right, and it was not, a small  
16 amount of content -- we had been using two mil fuel  
17 gauges to check this on the other supports, pieces of  
18 paper if you will. That does not constitute a situation  
19 where we don't -- where the pipe support is not  
20 operating as it is expected to operate during the  
21 plant.

22           But we do acknowledge that in this case the  
23 inspection criteria called for full bearing, not just  
24 point contact or positive bearing and the inspector,  
25 both our own people and the inspector should have asked

1 the question in advance and not passed that particular  
2 support.

3 Q Mr. Higgins, with respect to the last part of  
4 LILCO's supplemental testimony, and now I am referring  
5 on page seven regarding the Unico supervisor who was  
6 originally questioned by the NRC inspector. Has the  
7 Staff been able to verify the accuracy of the  
8 information in this paragraph?

9 A (WITNESS HIGGINS) You asked a part about the  
10 difference between the GE and Stone and Webster criteria.

11 Q Yes.

12 A (WITNESS HIGGINS) And we have not come back  
13 and relooked at that again since the inspection but we  
14 intend to.

15 (Counsel for Suffolk County conferred.)

16 Q With respect to the proposed corrective action  
17 here, Mr. Greenman or Mr. Higgins, regarding the pipe  
18 supports and the bearings, shouldn't that -- wouldn't it  
19 be appropriate for proposed preventive action to include  
20 instructions to FQC inspectors not to interpret drawings?

21 (The witnesses conferred.)

22 A (WITNESS GREENMAN) I am not sure if that  
23 interpretation is really pertinent when we said earlier  
24 that you expect the inspector to be able to read those  
25 technical documents and to understand them.

1 Q Mr. Greenman, do you have an understanding  
2 from LILCO as to what, when they say on page seven that  
3 they are reinspecting all supports of a similar  
4 configuration, do you have an understanding as to what  
5 the similar configuration is, that means?

6 A (WITNESS HIGGINS) Yes. In our brief chance  
7 that we have had to review this, we asked that question  
8 and what was stated was that, though anyone where you  
9 had this type of an arrangement you had the arrangement  
10 where you had pipe lugs in bearing surfaces, and the  
11 numbers that we got back were that there were 25 that in  
12 the secondary containment had this clamp lug arrangement  
13 and 13 in the primary containment that had this, a type  
14 of clamp and lug arrangement.

15 It is not just the exact type that was here but any  
16 one at all where you had a bearing surface to clamp type  
17 arrangement that they are going back to reinspect.

18 A (WITNESS ARRINGTON) Mr. Miller, I would like  
19 to add that with respect to the training of the  
20 inspectors, we did have a training session with all of  
21 our inspectors on this particular subject of the clamp  
22 to bearing design discrepancy that was found by the  
23 NRC.

24 And you are always going to have situations where  
25 inspectors are going to have to interpret documents. I

1 agree with Mr. Higgins that the documents ought to be  
2 written in a manner that, two reasonable people  
3 reviewing it, should come up with the same  
4 interpretations. But you are going to have inspectors  
5 and instruction personnel and engineers interpreting the  
6 documentation. That is why you ought to have  
7 experienced people doing the work.

8 Q Gentlemen, let's turn to Violation A 3 which  
9 is discussed at pages 13 and 14 of the inspection  
10 report. Mr. Higgins, we might look for a minute at the  
11 bottom of page 12, the discussion of electrical as-built  
12 programs.

13 Am I correct that the purpose of Shoreham's  
14 electrical as-built programs is set forth by the Staff  
15 at the bottom of page 12 and continuing over to the top  
16 of page 13?

17 A (WITNESS HIGGINS) Yes.

18 Q And that purpose includes, doesn't it, "to  
19 ensure that quality control inspections are performed  
20 with updated corrected documentation" which is at the  
21 top of page 13; is that right?

22 A (WITNESS HIGGINS) Yes.

23 Q Is this an important program from a QA/QC  
24 perspective, in your opinion?

25 A (WITNESS HIGGINS) Yes.

1 Q Would you please briefly explain Violation A  
2 3, which deals with the cable tray supports?

3 A (WITNESS HIGGINS) Yes. The inspector in this  
4 case examined cable tray supports which were completed  
5 and finally inspected by the licensee. What the  
6 inspector did was ask for -- ask which cable tray  
7 supports had completed the inspection, had been fully  
8 through the inspection program. And, then, the  
9 inspector selected from that group nine cable tray  
10 supports and got the documentation packages on those and  
11 then went back in the field with those packages and  
12 inspected these supports in the field themself.

13 In the process of that, he ran into several areas  
14 that violated the inspection, the design criteria or the  
15 inspection criteria, and those were written up in the  
16 violation.

17 Q Mr. Higgins, I don't think we need to go into  
18 the details of the particular supports. We can do that  
19 when we go through LILCO's response. Let me ask you a  
20 couple of brief, preliminary questions, though.

21 At the bottom of page seven of LILCO's supplemental  
22 testimony, the very first sentence in fact states "This  
23 situation involves three observed conditions on cable  
24 tray supports." It is really an inaccurate statement,  
25 isn't it?

1           There were four supports and there were certainly  
2 more than one discrepancy on some of these supports, or  
3 some of these particular supports. Isn't that correct?

4           A       (WITNESS HIGGINS) We only cited three in the  
5 violation. There were -- there was an additional  
6 discrepancy on one other support that was written up in  
7 the body of the inspection report itself.

8           A       (WITNESS MUSELER) Mr. Miller, our testimony  
9 responds to the violations and those are the three  
10 supports that were cited in the violations.

11           We obviously, since the other item is an open item,  
12 we will be providing the NRC with the appropriate  
13 information on that one also. But it is not materially  
14 different in kind than the three that are cited as  
15 violations.

16           Q       Mr. Higgins, why wasn't support RB215B cited  
17 as part of the violation?

18           A       (WITNESS HIGGINS) I don't have that  
19 information. I would have to check on that and get back  
20 to you.

21           Q       That support is discussed at the bottom of --  
22 towards the bottom of page 13. Over to page 14, the  
23 inspection report, didn't that support discuss at least  
24 three different discrepancies?

25           MR. ELLIS: Judge Brenner, I object to

1 questions on RB215B. I recall the instructions that we  
2 were given was to focus on the violations and we did  
3 so.

4 And for that reason, I would object to this on the  
5 ground that it is outside the scope of what was set for  
6 this examination and this testimony.

7 JUDGE BRENNER: Well, I think your objection  
8 generally is well-taken, but I think we will give him  
9 some leeway to ask them one or two questions of the  
10 Staff that he has now asked. In light -- why are they  
11 separate, why didn't they include that one given the  
12 apparent similarity. And the answer is Mr. Higgins  
13 doesn't know.

14 BY MR. MILLER (Resuming)

15 Q Mr. Greenman, do you have any knowledge on  
16 that?

17 A (WITNESS GREENMAN) No, I don't.

18 Q Mr. Higgins, there's really no difference,  
19 though, in terms of the problems identified by the Staff  
20 in terms of support 215B and the other three supports,  
21 is there?

22 A (WITNESS HIGGINS) I can't answer that, I'm  
23 sorry. You will -- we will have to get back to you on  
24 215B after we speak with the particular inspector  
25 involved.

1 Q Well, why don't we take the supports that are  
2 identified as violations by the Staff, one at a time?

3 It is true, isn't it, Mr. Higgins, that all of  
4 these cable tray supports have been final QC inspected;  
5 isn't that right?

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1           MR. ELLIS: Let me object. It is not clear to  
2 me -- he said let's turn to these and take them one at a  
3 time, and then he said is it true that all of these. So  
4 I am going to object on the ground that it is unclear  
5 whether the question refers to RB100B, as I thought the  
6 preface indicated, or whether it refers to more than  
7 that.

8           MR. MILLER: Judge Brenner, I will clarify the  
9 question.

10          JUDGE BRENNER: All right. Why don't you  
11 re-ask the question.

12          [Panel of witnesses conferring]

13          JUDGE BRENNER: Wait a minute. He is going to  
14 rephrase the question, Mr. Museler.

15          BY MR. MILLER: (Resuming)

16          Q     Mr. Higgins, let me just rephrase the  
17 question. It is correct, isn't it, that the Staff  
18 looked at nine cable tray supports, and of those nine,  
19 four supports did not conform to the design drawings;  
20 isn't that right?

21          A     (WITNESS HIGGINS) Yes.

22          Q     And referring toward the bottom of page 13 in  
23 the inspection report, and it is true also that --

24          MR. ELLIS: Let me object to the question. I  
25 think I am a little late, but I think before there is

1 any misunderstanding, we ought to be clear about what is  
2 meant by design drawing.

3 JUDGE BRENNER: He asked the question and he  
4 got an answer. If you have a problem with it later, you  
5 can come back.

6 BY MR. MILLER: (Resuming)

7 Q And Mr. Higgins, with respect to these  
8 supports, they had all been final inspected and accepted  
9 by FQC, isn't that correct?

10 A (WITNESS HIGGINS) I believe that is correct.

11 Q Am I correct, Mr. Higgins, that these nine  
12 cable tray supports that were inspected by the Staff  
13 were among the 350 cable tray supports that are referred  
14 to in the paragraph, first paragraph of 8.2.2 on page 13  
15 of the inspection report?

16 A (WITNESS HIGGINS) Yes.

17 Q And to your knowledge, were these nine cable  
18 tray supports -- had they also passed through the LILCO  
19 CABTRAP program?

20 A (WITNESS HIGGINS) I believe the answer to  
21 that is yes but I am not 100 percent sure.

22 Q Am I correct in assuming, Mr. Higgins, that  
23 the Staff randomly selected these nine supports from  
24 among the 350 cable tray supports that had been final  
25 inspected by LILCO?

1           A       (WITNESS HIGGINS) I'm not sure exactly how  
2 our inspector selected those nine. I believe it was  
3 random but I'm not sure of that.

4           Q       Mr. Higgins, are you generally familiar with  
5 LILCO's CABTRAP program?

6           A       (WITNESS HIGGINS) Not with the details of it,  
7 no.

8           Q       Well, referring you to page 187 of LILCO's  
9 prefiled QA testimony, which would be in that package of  
10 documents -- it is a single page, Mr. Higgins. In the  
11 first sentence of that testimony filed by LILCO, it  
12 states that the "CABTRAP verifies that all cable tray  
13 supports conform to engineering criteria." Do you see  
14 that, sir?

15          A       (WITNESS HIGGINS) Yes.

16                   JUDGE BRENNER: Mr. Miller, I am sorry, let me  
17 interrupt. They need to straighten something out on the  
18 reporter's connection. It should take just a few  
19 minutes. Why don't we take a short break of ten minutes  
20 and come back at 3:15?

21                   [Recess]

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1 JUDGE BRENNER: We are back on the record.

2 During the break we received the Suffolk  
3 County filing regarding Mr. Conran's affidavit, and we  
4 assume we will receive the same by about 5 o'clock today  
5 from LILCO and the Staff.

6 Mr. Miller, sorry for the interruption. You  
7 may continue at this point.

8 BY MR. MILLER: (Resuming)

9 Q Mr. Higgins, why don't we pick up with LILCO's  
10 response, supplemental testimony on support RB100B,  
11 which would be on page 8 in LILCO's supplemental  
12 testimony. I assume the Staff received LILCO's amended  
13 response on this support; is that correct?

14 A (WITNESS HIGGINS) Yes.

15 Q Now Mr. Higgins, referring to support RB100B,  
16 LILCO's explanation ignores the extra brace on the  
17 support, which was not found in the drawings as  
18 discussed on page 14 of the inspection report; isn't  
19 that correct?

20 A (WITNESS HIGGINS) I would have to read it to  
21 see. As I say, we haven't finished our full review on  
22 this.

23 Q Mr. Higgins, let me refer you to the sentence  
24 on page 14, which reads, "The supports also had a  
25 lateral brace extending from the east verticle strut to

1 the center of the ceiling brace, which was not shown on  
2 the drawings." And my question is: LILCO's supplemental  
3 testimony does not discuss this extra brace; isn't that  
4 correct?

5 A (WITNESS HIGGINS) I see the discussion in the  
6 inspection report about the lateral brace and I don't  
7 see any discussion in the supplemental testimony on that.

8 Q Now Mr. Higgins, with respect to LILCO's  
9 general response on RB100B, what is your general opinion  
10 of LILCO's response?

11 [Panel of witnesses conferring]

12 A (WITNESS GREENMAN) I'm going to answer the  
13 question just as we have answered the other questions,  
14 in that we have not finished our review on that  
15 particular item. It may or may not -- LILCO's response  
16 may or may not go far enough. I simply don't know at  
17 this point in time.

18 A (WITNESS MUSELER) Mr. Miller, I would like to  
19 make sure the record is clear that we do not disagree  
20 with the observations made by the NRC inspectors;  
21 however, the characterization of them earlier as being  
22 that in these three particular cases that the cable tray  
23 support was not erected in accordance with the design  
24 drawings is a mischaracterization situation.

25 In one case there was a slight difference in

1 the way the support was installed vis-a-vis the way the  
2 support called for being installed. We looked into that  
3 one in some depth to find out what had happened and we  
4 think we know why that happened, but it turned out to be  
5 a minor deviation.

6 In the other two cases the support itself was  
7 installed properly. The reason that the NRC inspector  
8 correctly noted a difference was that the final as-built  
9 drawing did have an error in it but the errors that were  
10 identified in the as-built drawings had no bearing on  
11 the proper installation or the design installation of  
12 the pipe supports. In both cases -- excuse me, the  
13 cable tray supports.

14 In both cases those cable tray supports were  
15 installed properly. We had some drafting problems in  
16 those two as-built cases and we have gone out and looked  
17 at a number of other cable tray supports to see whether  
18 or not we had similar problems, and we are going out and  
19 are going to be looking at even more cable tray supports  
20 to verify that those problems don't exist in other areas.

21 But the observations the NRC made were  
22 correct; however, two out of those three were properly  
23 installed and the third one represented a minor  
24 difference. In no case do those three supports require  
25 any rework to make them adequate.

1 Q Mr. Museler, I assumed that it would be  
2 LILCO's position that the problems with these cable tray  
3 supports were problems with drafting of the as-built  
4 drawings; is that correct?

5 [Panel of witnesses conferring]

6 A (WITNESS MUSELER) Mr. Miller, I believe I did  
7 say that in one of the cases the NRC inspectors'  
8 observations indicated a difference in the attachment  
9 point of one of the braces, and that was not in  
10 conformance with our program even though it turned out  
11 to be acceptable.

12 The other differences in the as-built drawings  
13 we consider to have been mistakes during the final  
14 drafting process of these drawings, and we would like  
15 all of these drawings to be exactly accurate; but the  
16 kinds of things that we have observed here, and we are  
17 looking further to make sure we understand the scope of  
18 the particular situation, are not the kinds of things  
19 that give us any concern, at least from what we know  
20 today, about the adequacy of this program.

21 You quoted the objective of the cable tray  
22 support analysis program being to verify that the cable  
23 tray supports conform to the engineering criteria. We  
24 think that program does that. We think there is nothing  
25 in these observations that takes away from that. We

1 think it demonstrates that the program does produce  
2 cable tray supports that conform to the engineering  
3 requirements, although there are some minor differences  
4 in the final paperwork, and in one case there is a minor  
5 difference in the final product. We think the  
6 objective is certainly being attained.

7 Q Mr. Museler, if you could briefly just tell me  
8 what are as-built drawings used for?

9 A (WITNESS MUSELER) I'm going to answer the  
10 question with regard to the cable tray supports because  
11 I believe that is the subject we are on. The reason  
12 that we embarked on the cable tray support program, the  
13 CABTRAB program, was to produce as-built drawings, first  
14 for ease of maintenance and modification by the plant  
15 staff and associated contractors after the plant goes  
16 into operation.

17 Secondly, the program recognized the  
18 increasing degree of detail with which raceway support  
19 in general, cable tray and conduit, is being subjected  
20 to as a result of increased scrutiny by the industry and  
21 by the NRC. And we embarked on this program, including  
22 the as-built portion, the as-built drawing portion of  
23 the program in order to ensure that there wouldn't be  
24 any question about the adequacy of Shoreham's cable tray  
25 supports and conduit supports as we approached operation.

1           We think the level of detail that we used to  
2 construct, and especially to inspect to, which I  
3 referred to this morning, is an exceedingly fine level  
4 of detail that we think is unique and that we think  
5 produces some findings in the area of very minor things  
6 but which certainly ensures that anything of substance  
7 is properly addressed.

8           Q     Mr. Higgins, is it your understanding that FQC  
9 inspectors use as-built drawings in performing final  
10 inspections at the plant?

11          A     (WITNESS HIGGINS) In some cases they do. In  
12 some cases the as-built drawings are not available at  
13 the time of the inspection and they have to use the  
14 drawings that are available, which are as modified by  
15 the design change documents or E&DCRs.

16          Q     Is it your opinion, Mr. Higgins, that as-built  
17 drawings should be compatible and in accordance with  
18 design drawings?

19          A     (WITNESS HIGGINS) I guess I don't completely  
20 understand it because sometimes they are the same. I  
21 mean you could call an as-built drawing a design drawing.

22          Q     But in either event, Mr. Higgins, as stated at  
23 the bottom of page 12, the intent of the as-built  
24 program is to "provide accurate drawings of installed  
25 electrical equipment." Isn't that correct?

1 A (WITNESS HIGGINS) Yes.

2 Q Now, with respect to these particular cable  
3 tray supports, four of the nine of these supports  
4 inspected by the Staff, the as-built drawings -- well,  
5 let me back up on that. How many of the nine cable tray  
6 supports looked at by the Staff involved in the  
7 aggregate as-built drawings?

8 A (WITNESS HIGGINS) Of the nine that we looked  
9 at, there were problems on four, and it hasn't been 100  
10 percent sorted out but it appears at this time that  
11 probably all four will end up drawing corrections that  
12 are required and not hardware corrections, so that you  
13 might call them four drawing problems out of nine. And  
14 certainly if that is the way it does shake out, and that  
15 is what our review confirms, that we would be looking  
16 for some corrective action in the area of drawings as  
17 opposed to hardware.

18 Q Now, with respect to support, RB100B, Mr.  
19 Higgins, on page 8, am I correct that LILCO's response  
20 indicates that the problem was that modifications were  
21 not picked up by the draftsman in preparing the as-built  
22 drawing?

23 A (WITNESS HIGGINS) There were some drafting  
24 errors in the final preparation of that, yes.

25 Q Is it your understanding that FQC should

1 review changes or modifications made in drafting  
2 as-built drawings to ensure the accuracy of the drawings?

3 A (WITNESS HIGGINS) It depends upon the  
4 timing. If the as-built drawing is made before FQC  
5 performs their inspection and they are doing their  
6 inspection to the as-built drawing, then yes, they would  
7 be comparing what is on the drawing to the actual  
8 installation. As far as the drawing approval process, I  
9 am not certain if FQC is in that cycle.

10 Q Let me follow up with Mr. Higgins for a  
11 second, please.

12 Mr. Higgins, if the process is that a drafting  
13 change can be made and not subsequently reviewed to  
14 ensure the accuracy of the drawing, isn't that a  
15 significant loophole in the process itself?

16 A (WITNESS HIGGINS) If that were the case, it  
17 would be. A drawing cannot have as its final item that  
18 is done to it the draftsman. The draftsman who did the  
19 design drawing has to have a checker involved, or a  
20 checker, reviewer approval, whatever you want to call  
21 it, has to take place after that drawing is drafted.  
22 And obviously our concern in this area is certainly with  
23 the draftsman but also in the design review or approval,  
24 whatever you want to call the individual, and that is  
25 one of the things that we would be looking at and

1 discussing with LILCO when we reviewed this response.

2           A       (WITNESS MUSELER) Mr. Miller, what the  
3 implication was, that a designer simply somehow changed  
4 the drawing and then produced the as-built drawing.  
5 What in effect happened in this case is the walkdown in  
6 the field correctly noted all of the conditions on the  
7 cable tray support. In this case the discrepancy we are  
8 talking about is the fact that on the third tier, one  
9 cable tray is shown, and in effect there are two in the  
10 field.

11                   We verified that the field notes indicated  
12 correctly that there were two on that strut. We also  
13 verified that the analysis for that cable tray was done  
14 with two on that strut. As a matter of fact, we  
15 mentioned we use it whether it says one or two, but the  
16 original as-built information was correct. The process  
17 of drafting from the previous drawing utilizing the  
18 as-built field notes to produce the final drawing  
19 somehow omitted showing the second cable tray.

20                   It has no effect on the cable tray support,  
21 which is the subject, but the drawing should be accurate  
22 in whatever it depicts. It has no bearing on the  
23 adequacy of the support at all. The suggestion that  
24 changing the document is something that is subject to  
25 specific QC or QA review of each part of the process is

1 just not part of anyone's process. That is part of the  
2 engineering control process.

3           The quality assurance aspects of it in this  
4 case are covered by Stone & Webster's engineering  
5 assurance program, but that is a programmatic approach  
6 to it which says that Engineering is responsible for  
7 making sure that those notes are properly transcribed,  
8 and in this case the checker should have picked up that  
9 the fellow, the draftsman who produced the final drawing  
10 neglected to transcribe the second cable tray as shown  
11 on the drawing.

12           Now, as I said, we looked at a dozen in the  
13 field for several configuration attributes and we are  
14 looking at a number more. We didn't find any problems  
15 with those 12 except one section which we noted in our  
16 testimony. We are looking at 15 more to ensure  
17 ourselves that we don't have a situation where some  
18 checkers or some draftsmen were missing more than they  
19 should have or missing any kind of a significant number.

20           But I think you have to keep in perspective  
21 what we are talking about here. We are not talking  
22 about an uncontrolled design process which requires Mr.  
23 Arrington to review every change we make to a drawing;  
24 we are talking about a very detailed design as-built  
25 program with a very detailed inspection attribute which

1 we think is really producing a very fine quality product  
2 out there, albeit there are some minor problems with  
3 some of the drawings. We don't think they are  
4 significant.

5 Q But Mr. Museler, in this particular case the  
6 drafter made a mistake in not picking up the correct  
7 field notes in preparing the drawing; is that correct?  
8 Referring to RB100B?

9 A (WITNESS MUSELER) No, sir. He had the  
10 correct field notes. He didn't transcribe that one  
11 piece of information properly. That is the mistake he  
12 made.

13 Q And the checker who would check the as-built  
14 drawing didn't pick up the mistake either; isn't that  
15 correct?

16 A (WITNESS MUSELER) That is correct, sir.

17 Q And we are talking two mistakes here, the fact  
18 that the second cable tray wasn't evidenced and the fact  
19 that the extra brace was not evidence; is that correct?

20 A (WITNESS MUSELER) We did not address the  
21 extra brace in our response because we didn't believe  
22 that it was specifically part of the violation, and I  
23 can't respond to that because I have not done the  
24 research on that particular brace.

25 With respect to the cable tray which is not

1 shown on the final as-built drawing, both those  
2 gentlemen did make a mistake and we are looking into it  
3 to find out whether it was more than an isolated  
4 instance. We don't think so but we are looking further  
5 into it.

6 Q What was the basis for LILCO's conclusion that  
7 the extra brace was not part of the violation for  
8 RD100B, Mr. Museler?

9 [Panel of witnesses conferring]

10 A (WITNESS MUSELER) Mr. Killer, we don't  
11 believe that brace is attached to that particular  
12 support. We do intend to respond to the NRC's open item  
13 on that subject, but we don't believe it is germane to  
14 this pipe support -- excuse me, to this cable tray  
15 support.

16 Q Well, if LILCO believes that the brace isn't  
17 attached to the support, I'm curious as to why that is  
18 not just stated in your testimony, Mr. Museler. Wouldn't  
19 that be the answer?

20 A (WITNESS MUSELER) Mr. Miller, as we state in  
21 our 30-day letter to the NRC, we asked for some  
22 additional time before we forwarded our final response  
23 to the NRC on these matters because we have not finished  
24 doing all of the research that we want to do to make  
25 sure we provide an adequate answer; so I can't give you

1 a direct answer to your question.

2 Q Mr. Museler, let me try one more time. On  
3 page 14 of the inspection report, it states, "The  
4 licensee stated that the support has been analyzed for  
5 two-tray loading on the third horizontal brace, and that  
6 the drawing error was an oversight; however, at the  
7 conclusion of the inspection, the licensee had not  
8 determined why the support contained the extra brace."

9 A Yes?

10 A (WITNESS MUSELER) And you are saying now that  
11 you don't think there is an extra brace?

12 A (WITNESS MUSELER) There is an extra brace in  
13 that area. Mr. Arrington, who physically looked at that  
14 particular one -- I did not -- informs me that that  
15 brace is not part of this cable tray support. It is in  
16 the same proximity. It is in proximity to it and we  
17 believe that it may not belong there. But you asked why  
18 we didn't address it as part of this one. Because this  
19 specific finding addresses this particular cable tray  
20 support, we don't believe it is germane to it.

21 Our final response will certainly address that  
22 extra brace.

23 A (WITNESS ARRINGTON) Mr. Miller, that  
24 additional brace was installed as a result of the E&DCR  
25 that was issued. I'm not sure of the date. It was

1 after the inspection had been performed on the support  
2 itself, and it was listed to be installed on the south  
3 side of the concrete beam, which was approximately six  
4 or eight feet from the support RB100B. So we did not  
5 take it that that brace was installed on this particular  
6 support, but we did investigate to find out whether the  
7 brace was installed in accordance with the engineering  
8 documents.

9 Q Mr. Greenman or Mr. Higgins, with respect to  
10 the last sentence of page 8 of LILCO's supplemental  
11 testimony, it is noted that LILCO "has no reason to  
12 believe, no basis to believe that this is other than an  
13 isolated human error," referring to the drafting error  
14 of the as-built drawing.

15 Does the Staff have any evidence that this was  
16 an "isolated human error"?

17 A (WITNESS HIGGINS) Well, we haven't really --  
18 and I hate to keep repeating this -- finished our  
19 review. There does appear to be more than one drawing  
20 drafting error involved with this particular violation.  
21 There is at least two and perhaps a third just involved  
22 with these four supports that we are discussing here, so  
23 that is something we are going to be looking at and  
24 trying to decide: if everything that needs to have been  
25 done has been done with drafting on these as-built

1 drawings for the cable tray supports.

2           Speaking of the drafting versus the hardware,  
3 if I may just add something additional here, just before  
4 the short break was took it was asked why RB215B was not  
5 included in the violation, and during the break I  
6 managed to get ahold of the inspector that wrote this on  
7 the phone, and as a matter of fact, that is why I was  
8 late getting back, I was talking to him and I didn't get  
9 to finish the conversation.

10           However, what he stated in the few moments  
11 that he had to give me was that of the four supports  
12 that he looked at and four discrepancies identified, it  
13 appeared during the time of the inspection that three of  
14 them involved hardware deficiencies or potential  
15 hardware deficiencies, and those were the ones that were  
16 written up in the violation.

17           It appeared to him at the time that RB215B  
18 just involved some clarification of the drawings and  
19 that there was not a hardware problem there and there  
20 was a conflict between the two drawings on the lower  
21 brace and then there was a light bit of confusion in  
22 one of the sectional views of the drawing, although the  
23 rest of it had it installed as it was supposed to be.

24           And it was noted in the report because of the  
25 discrepancies, and the understanding that he had with

1 the licensee people is that the drawings would be  
2 corrected such that they would accurately reflect and  
3 not be in conflict with each other, but since it  
4 appeared to be just a paperwork kind of thing, that that  
5 was not included in the violation.

6           When you take that into account for the other  
7 ones and what we are getting back in answer to the other  
8 ones, it appears that perhaps the issue that needs to be  
9 addressed here is in producing fully accurate drawings.

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1 Q Then, Mr. Higgins, am I correct that in your  
2 opinion if the purpose of the as-built drawings is to  
3 provide accurate drawings of the installed electrical  
4 equipment, I assume you would not agree with LILCO's  
5 statement at the bottom of page 8 that there are no  
6 implications with respect to the adequacy of the plant,  
7 if these drawings are indeed not accurate?

8 A (WITNESS HIGGINS) Well, what I interpreted  
9 that to mean was that the hardware was installed as it  
10 should be, and it appears that that is the case. What  
11 appears was not the case was that the drawings were  
12 fully accurate or adequate. And that is what needs to  
13 be addressed.

14 Q Mr. Higgins and Mr. Greenman, if we could turn  
15 to LILCO's supplemental testimony at page 9, the  
16 discussion of support RV-208A, could you briefly give me  
17 your view of LILCO's response as set forth on page 9 of  
18 its testimony?

19 A (WITNESS GREENMAN) My view, without  
20 evaluating LILCO's response, is that, number one, the  
21 inspector looked at that brace the wrong way. I do not  
22 believe, in my opinion, that it had any effect at all on  
23 the adequacy of the installation.

24 Q Mr. Greenman, when you say the inspector, you  
25 are talking about the FQC inspector?

1 A (WITNESS GREENMAN) Yes, sir, that is correct.

2 Q So, Mr. Greenman, am I correct that the error  
3 with this particular cable tray support was both a  
4 drafting error, as stated by LILCO, and also an  
5 inspection error in that the inspector did not pick up  
6 the inaccuracy of the drawing?

7 A (WITNESS GREENMAN) I am not positive that I  
8 can reach that conclusion today.

9 A (WITNESS ARRINGTON) Mr. Miller, I would like  
10 to point out that the brace itself in question here was  
11 installed in accordance with the engineering document.  
12 However, the reference points that we used on the E&DCR  
13 was not listed properly on the E&DCR itself. There was  
14 a concrete beam that was drawn up on the left side of  
15 the support, looking from the east to west, when in fact  
16 the concrete beam was on the right side of the support,  
17 looking from the east to the west.

18 The brace itself was listed as a result of the  
19 walkdown by the designer to be an additional component  
20 to be installed on this trapeze-type support. And it  
21 was installed in accordance with the E&DCR, the brace  
22 itself, as a separate item. Looking east to west, it is  
23 installed in accordance with the E&DCR. And I think the  
24 inspector performed his inspection in just that manner.  
25 The reference points that are used there that he should

1 have also used shows that it was backwards.

2 A (WITNESS MUSELER) And we also, Mr. Miller,  
3 looked at -- we went out and looked at twelve other  
4 cable tray supports that had this east-west orientation  
5 listed on them and found that for those twelve the  
6 geometry was correct, as noted on the as-built drawing.

7 Q Mr. Museler, let's continue on that point for  
8 a second. On the supplemental testimony LILCO talks  
9 about a field check of twelve additional cable tray  
10 supports and then later mentions that one minor  
11 discrepancy was observed. With respect to the one minor  
12 discrepancy, was that within the twelve additional cable  
13 tray supports looked at?

14 A (WITNESS MUSELER) Yes, sir.

15 Q Isn't the one minor discrepancy, as  
16 characterized as a discrepancy of a section view, isn't  
17 that the same problem that we are talking about in  
18 RB-208A?

19 A (WITNESS MUSELER) No, I don't think it is,  
20 Mr. Miller. The way that the section view was portrayed  
21 on the drawing and the way that the section view would  
22 be looked at by the inspector -- excuse me, the section  
23 view not only indicated the arrows showing the section  
24 view but it also indicated the configuration. The way  
25 that a person would look at that particular geometry on

1 the drawing, in my opinion, would not be subject to  
2 making a -- possibly making a mistake as a result of it  
3 with respect to RB-208, if we were erecting to that  
4 drawing. We were not. We were erecting to an original  
5 installation drawing, which by the way did correctly  
6 reflect the entire geometry.

7           But if we had been erecting to the as-built  
8 drawing, someone might have been able to make the  
9 mistake, although it is very difficult to perceive how  
10 he could have made a mistake in the fact that the wall  
11 was there for reference.

12           But in the case of what we noted on the  
13 section view, which was a section view of the bolt  
14 pattern, not of the support, I do not believe that one  
15 could misconstrue that particular way that the bolt  
16 pattern was depicted on the drawing. Again, the section  
17 view should have been shown the other way. We don't  
18 deny that. That was an error in that particular  
19 drawing. We just don't think it had any meaning, and it  
20 is not the same as 208, in my view.

21           Q     Mr. Greenman, let me ask you again if I could  
22 -- well, let's assume that FQC used or uses the as-built  
23 drawings in its inspections, used this particular  
24 RB-208A drawing in its inspections. In doing so, the  
25 discrepancy of this drawing should have been picked up

1 by the inspector. Isn't that correct?

2 MR. ELLIS: Objection. There is no basis in  
3 the record for the hypothetical. There is no evidence  
4 that the FQC inspectors used the as-built drawings they  
5 used rather than the design installation documents.

6 JUDGE BRENNER: Well, I guess you worked in  
7 your earlier point without waiting for redirect.

8 Why don't you ask him the basic question,  
9 because there may be some problem between design and  
10 as-built drawings, although, Mr. Ellis, I want you to  
11 keep in mind he asked Mr. Higgins a direct question and  
12 got the answer he got, and then he even asked a  
13 follow-up a little bit later and got an answer that  
14 equated the two.

15 But let's make Mr. Ellis happy and ask the  
16 premise, because LILCO may be using the terms  
17 differently than Mr. Higgins.

18 (Counsel for Suffolk County conferred.)

19 BY MR. MILLER: (Resuming)

20 Q Mr. Higgins, to your knowledge, does LILCO use  
21 the as-built drawings in their final inspections?

22 A (WITNESS HIGGINS) I think, as I said earlier,  
23 in some cases they do and other cases they don't. For  
24 this particular one I just don't know which ones were  
25 used.

1 (Counsel for Suffolk County conferred.)

2 Q Well, Mr. Higgins, assuming that the as-built  
3 drawing is used by FQC in a final inspection --

4 JUDGE BRENNER: Why don't you ask LILCO which  
5 one they used, and then we can take it from there.

6 MR. MILLER: For this particular cable tray  
7 support?

8 JUDGE BRENNER: Well, in general for the cable  
9 tray support program, unless this one is unique.

10 BY MR. MILLER: (Resuming)

11 Q Mr. Arrington?

12 A (WITNESS ARRINGTON) In this particular case,  
13 we used the as-built drawing coupled with the E&DCRs  
14 that was applicable to that drawing on the day that we  
15 went out to perform our inspection. And as I noted  
16 earlier, the E&DCR did indicate that this support was to  
17 be installed in the exact location that -- the diagonal  
18 brace, rather, for this support was installed in the  
19 exact location as the E&DCR called for.

20 However, the reference points on the as-built  
21 drawing was exactly opposite that that was drawn on the  
22 E&DCR itself. So we used two documents in this case to  
23 do our inspections.

24 (Counsel for Suffolk County conferred.)

25 Q Mr. Arrington, are you saying that the two

1 documents then were in conflict with each other in that  
2 your inspectors did not catch that?

3       A       (WITNESS ARRINGTON) As far as the east-west  
4 location is concerned, that would be correct. With  
5 regards to the brace, I am saying that the brace was  
6 installed to the E&DCR that came out subsequent to the  
7 as-built drawing being issued. That is not unusual. In  
8 fact, the E&DCR was a result of a walkdown with the  
9 as-built drawings. The engineers decided they needed a  
10 brace. This brace was installed to that E&DCR  
11 requirement and was inspected to that requirement.

12       A       (WITNESS MUSELER) Mr. Miller, I think I can  
13 clarify this to some extent. If the inspector stood in  
14 front of that support looking to the west, which is the  
15 way the as-built drawing view stated, both the E&DCR and  
16 the as-built drawing show that brace as being descending  
17 from left to right, which is the way it was in fact  
18 installed in the field.

19               The difference in the as-built drawing was  
20 which side of the brace the wall was on. And that was  
21 the difference in the as-built drawing. So from the  
22 inspector's standpoint, he is looking at a trapeze brace  
23 to see if it is in the right configuration, looking at  
24 it from the upper side and ignoring the wall. What he  
25 saw was what he should have seen. If he wanted to have

1 the wall on the proper side, he would have had to look  
2 at it from the other side and then in the  
3 east-versus-west would have been incorrect and the brace  
4 would have been going the wrong way.

5 I don't know if that helps or not, but that is  
6 what the inspector as when he looked at the brace. He  
7 saw the brace descending from left to right. The  
8 original E&DCR, which did not specify east versus west  
9 but had the wall on the proper side, specified it  
10 exactly that way. The original E&DCR is exactly the way  
11 the field is. That's exactly the way the as-built  
12 condition is.

13 The as-built drawing, God knows how they  
14 transposed the wall onto the other side of the drawing.  
15 But that is what the difference was. And I just submit  
16 that in the process of evaluating what this kind of a  
17 situation means, it doesn't mean anything in terms of  
18 the adequacy of the plant.

19 Q Mr. Museler, with respect to the formal  
20 training program, which is discussed in the next-to-last  
21 sentence of LILCO's supplemental testimony on page 9,  
22 when was this training program held?

23 A (WITNESS MUSELER) Mr. Arrington can respond.  
24 It is his training program.

25 A (WITNESS ARRINGTON) The training program

1 itself was held subsequent to the RAT inspection. We  
2 went through all of the cable tray supports, the  
3 violations with the cable tray support inspectors and  
4 made them aware of the particular items that were cited  
5 in this report and basically told them to pay more  
6 attention to the conflicts, if you will, between the  
7 various documents that they have to use and come in  
8 contact with on a daily basis.

9 Q How long was the program in terms of duration?

10 A (WITNESS ARRINGTON) The training session  
11 itself?

12 Q Yes.

13 A (WITNESS ARRINGTON) I believe it was at least  
14 45 minutes. It may have run over a little bit beyond  
15 that. But there was about eight people involved with it.

16 Q How was the QA program changed, if at all, as  
17 a result of the violations noted by the Staff with these  
18 cable tray supports?

19 A (WITNESS ARRINGTON) The QA program itself was  
20 not changed. It was just reemphasized to the inspectors  
21 the importance of every detail that is on that drawing  
22 that they are required to look at and any discrepancies  
23 that they find to bring it to the attention of the  
24 engineers or their supervisors.

25 A (WITNESS MUSELER) Mr. Miller, the program on

1 the construction end was changed considerably as a  
2 result of this. I think we explain that in our  
3 testimony, so I won't repeat it. But on the  
4 construction side, we took some significant measures in  
5 the cable tray support area to reduce the number of  
6 findings by field quality control.

7 Q Let's go on to support RB-131, which is  
8 discussed by LILCO on page 10 of its supplemental  
9 testimony.

10 Mr. Higgins or Mr. Greenman, what would be the  
11 Staff's general view of LILCO's response to the Staff's  
12 finding regarding RB-131?

13 A (WITNESS HIGGINS) This one is a little bit  
14 more involved than the other ones. And there are some  
15 unique aspects to it. And therefore, we especially on  
16 this one need to have some discussions with our  
17 electrical inspector as to the adequacy of what happens  
18 here and what the response is.

19 Q Mr. Higgins, looking at page 10 of LILCO's  
20 supplemental testimony, it states that the FQC inspector  
21 identified the need to install and modify hardware at  
22 the lower termination point of the brace. Do you have  
23 an understanding of how this FQC inspector identified  
24 this need?

25 A (WITNESS HIGGINS) It was my understanding

1 that the hardware that was installed was not correction  
2 accordance with all of the design documents and,  
3 therefore, they needed different hardware.

4 Q Is it appropriate for an FQC inspector to make  
5 that kind of determination or is that an engineering  
6 determination?

7 A (WITNESS HIGGINS) No. What I am saying is  
8 that the hardware that was installed, when it was  
9 submitted for the FQC inspection was incorrect. And  
10 therefore, it did not conform to the drawings and,  
11 therefore, the FQC inspector sent it back for installing  
12 the correct hardware.

13 Now, if that is wrong, perhaps I could be  
14 corrected.

15 A (WITNESS ARRINGTON) Yes, Mr. Miller. As a  
16 result of our initial inspection with this particular  
17 support, we identified the fact that the hardware that  
18 was called for on the drawing was not in fact installed  
19 due to a configuration. And it was written up on the  
20 DCO to install the correct hardware. And as a result of  
21 installing the correct hardware, this support had to be  
22 moved up an additional 11 inches because of the  
23 configuration of the support itself.

24 A (WITNESS HIGGINS) Perhaps I can see your  
25 confusion. And if the word "correct" instead of

1 "modified" were used there, perhaps that confusion  
2 wouldn't exist. "Modified" is probably not a good  
3 choice of words in that case.

4       A       (WITNESS MUSELER) Mr. Miller, all of the  
5 hardware on a cable tray support drawing has a part  
6 number, so it is specifically culled out as "part number  
7 XYZ," and that is what the FQC inspector was working  
8 from. So instead of XYZ, the particular connection  
9 point said ABC instead of XYZ, which was not correct.  
10 So that is just normally what happens during the  
11 inspection process. So it does exemplify the kind of  
12 detail that we go into to inspect this.

13               Some of the hardware, the difference in this  
14 hardware between the hardware called for now and the  
15 hardware previously acceptable is very minor. But if it  
16 is not in accordance with the currently-called-for part  
17 numbers, even though when it was originally installed,  
18 the drawing to which it was installed to had the proper  
19 hardware.

20               But because of design changes and the like, it  
21 now calls for -- and that is where the word "modified"  
22 comes from -- now calls for modified hardware. It is  
23 our word that the NRC had just utilized and that is the  
24 basis for that confusion.

25               But it is very normal that FQC would pick out

1 and check the part numbers on all these to make sure  
2 they are the ones called for today, not 5 years ago.

3 Q Mr. Higgins, with respect to LILCO's  
4 supplemental testimony, the second sentence notes that  
5 the brace was originally installed in the correct  
6 location. Do you know, Mr. Higgins, if that brace was  
7 installed and inspected in the correct location?

8 A (WITNESS HIGGINS) Yes, it was. And that was  
9 at that time that the incorrect hardware was identified.

10 Q And if that is the case, Mr. Higgins, wouldn't  
11 FQC Procedure 15.4 have applied to this particular  
12 support, that procedure requiring that FQC be notified  
13 of rework to this particular support?

14 A (WITNESS HIGGINS) I believe in this instance  
15 they would be doing the rework under the deficiency  
16 correction order or the DCO as opposed to the 15.4  
17 procedure.

18 A (WITNESS ARRINGTON) That is correct. They  
19 did not rework this support after we had performed our  
20 final inspection. The results of the rework were based  
21 upon our initial inspection of the support itself. So  
22 they were simply fixing a condition that we considered  
23 to be discrepant during their initial inspection. It is  
24 not a rework condition as far as the final inspection or  
25 in-process inspection is concerned.

1           A       (WITNESS HIGGINS) The problem is in this case  
2 that they did more than that. What they were supposed  
3 to have done was just change the hardware. In fact, in  
4 order to change the hardware, they moved the location of  
5 the brace up about a foot, and that was not supposed to  
6 be done in accordance with the DCO.

7                       So that is the crux of the problem here, and  
8 that is, as I stated, one of the things that we want to  
9 give additional review to when we do our review of this  
10 item is as to how that happened and controls over that  
11 type of thing.

12           A       (WITNESS MUSELER) Mr. Miller, I have to say  
13 that Mr. Higgins is correct in characterizing the  
14 situation. However, this was not a case where we moved  
15 the brace up a foot because someone thought that it was  
16 a good idea. In order to accommodate the new modified  
17 hardware, the only position that brace could be located  
18 in physically, the only way that that hardware as called  
19 for could be installed and have the brace connection  
20 made was in the location it was moved to. In other  
21 words, the hardware just precluded putting it back where  
22 it was. So it wasn't a matter of the field wanting to  
23 move it to another location. In order to accommodate  
24 the proper hardware, we had to move it up 11 inches.

25                       We should have requested an E&DCR to do that

1 so that that does represent something that is not in  
2 accordance with our program, but it was done in order to  
3 accommodate the original engineering direction to  
4 install the modified hardware.

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1 Q Mr. Museler, in addition I assume the  
2 inspector should also have, when he reinspected,  
3 verified that the location was correct, isn't that  
4 right?

5 A (WITNESS MUSELER) No, sir, I don't believe  
6 that is correct. He might have noted that, but -- and  
7 we have reviewed the DCO itself. The DCO is very  
8 specific in calling for a replacement of the hardware  
9 with a certain type of hardware. The brace location had  
10 already been verified as being in the appropriate  
11 location.

12 When we write a deficiency order or a  
13 nonconformance report, we correct that nonconformance  
14 and FQC inspects for that particular nonconformance.  
15 Now, since they have eyes and they are instructed to  
16 report any nonconformances or any deviations they  
17 observe, they could well have observed it and reported  
18 it at that time.

19 That is not how the system works, however.  
20 All parts of a support or all parts of anything that are  
21 inspected, if a deviation is identified and the rest is  
22 okay, only the deviation is addressed.

23 The problem here was that in moving it in  
24 order to put it, to put the proper hardware in, we  
25 should have notified engineering and gotten an E&DCR,

1 and then Mr. Arrington would have reinspected to make  
2 sure that we put the 11 inches up that we requested.

3           Engineering has subsequently evaluated this  
4 and found, as we expected, that from a structural  
5 standpoint there is virtually no difference. The  
6 problem was not in the FQC inspector. He went back to  
7 look at the hardware and that is what he should have  
8 looked at.

9           If he noticed the fact that we had moved the  
10 brace he would have reported it. He just didn't notice  
11 it, nor would the program require him to do it. We're  
12 not supposed to move things without having the  
13 engineering authorization. In this case we did, and  
14 that was the discrepancy in this case.

15         Q     Mr. Museler, are you saying that under a DCO  
16 installed equipment can be modified?

17         A     (WITNESS MUSELER) No, sir. The only  
18 condition that should be addressed on a DCO is the  
19 condition specifically identified. In this particular  
20 case the DCO said, replace hardware XYZ with hardware  
21 ABC. That modification is done under that DCO.

22           The movement of the brace to a position 11  
23 inches higher is not authorized by that DCO.

24         Q     How does QA/QC control such modifications to  
25 inspect the equipment?

1           A       (WITNESS MUSELER)   The only way that one could  
2 ensure, because it doesn't apply just when you are  
3 doing, when you are performing rework in accordance with  
4 the DCO or an NND -- I think you're implying that, if  
5 somebody moves something out in the plant, how does QC  
6 know that we moved something out in the plant. The  
7 obvious answer is they don't, nor do we move something  
8 out in the plant without getting preapproval.

9           We have noted that there are a few instances  
10 where, on primarily in the structural area, where there  
11 is some process inspections, we have not notified QC of  
12 the fact that we're working on QC-inspected equipment,  
13 although in those cases it would be picked up during the  
14 final QC inspection.

15           There have been a few instances, and I believe  
16 a very few, in the plant where final inspected  
17 components have been moved, touched, or otherwise  
18 modified after final QC acceptance without the  
19 appropriate engineering or quality assurance documents  
20 having been utilized.

21           But the only way one could assure that it  
22 never happened would be to reinspect the entire plant,  
23 and we don't think there are any instances of it that  
24 would cause us to believe that the hardware is not  
25 there, nor -- or wouldn't be installed properly.

1           The real answer to your question is, the only  
2 way anybody could ensure that would be to reinspect  
3 everything in the plant to make sure nobody has touched  
4 it since Mr. Arrington inspected it.

5           A       (WITNESS ARRINGTON) Our inspections are  
6 usually the last activity on a component anyway. That  
7 is the very last thing that is done to an installed  
8 component, is the final inspection. So I don't see any  
9 reason why there would be any rework on it, unless there  
10 is an engineering change that would come out.

11          A       (WITNESS MUSELER) Although there are various  
12 programs. For example, during turnover processes all of  
13 the hangers are rewalked to make they are installed in  
14 the right location. It is not the full reinspection by  
15 QC, but it is a reinspection to ensure that they are all  
16 in the right location.

17               All of the snubbers in the plant, when they  
18 are uncovered, because they are protected right now,  
19 when they are uncovered, all of the snubbers in the  
20 plant will be again looked at to make sure that they are  
21 in the right location and that nobody removed them.

22               The subject of violation C -- we are being  
23 more rigorous in our documentation, but it was always  
24 intended that all of the spring hangers in the plant  
25 would be reinspected just prior to fuel load to make

1 sure that they are in place. So while we don't do it  
2 across the board, there are various programs for large  
3 numbers of components which do verify that they are at  
4 least in the proper configuration, again even though  
5 this is after final FQC inspection.

6 Q Mr. Museler, I would hope that the next time  
7 when I get a time estimate from the Board as to how long  
8 I've taken on some of my questions, that the Board will  
9 take into consideration some of the answers I am getting  
10 right now.

11 JUDGE BRENNER: Mr. Miller, you've invited  
12 this comment by me. You are asking some very general  
13 questions, and when that occurs you get some  
14 wide-ranging answers.

15 Now, human beings are not perfectly efficient  
16 in either the manner in which questions are asked or the  
17 manner in which answers are given, and I guess I can ask  
18 both witnesses and the questioner to try to stay more on  
19 the point. But it isn't all so one-sided that I'm going  
20 to cast the blame on one side of the table or the  
21 other.

22 MR. MILLER: I'm saying that I don't think  
23 there was a need to have as much, two or three times  
24 getting answers to the one question from various  
25 people.

1           JUDGE BRENNER: I know, and I don't think,  
2 sitting here, that there is a need for some of the  
3 general questions, either. I also agree with you with  
4 some of the answers. But that is the hearing process  
5 and it is factored into our time estimates, and it  
6 hasn't been so bad on one side or the other.

7           But I'm not going to berate the witnesses at  
8 this point. I did make a comment earlier this morning  
9 and that comment applied in the circumstance in which it  
10 was made. But you are asking some very general  
11 questions and we are hearing stuff that we have heard 10  
12 these many weeks of hearing, and I think you ought to  
13 start very quickly focusing in on some of the  
14 particulars here.

15           MR. MILLER: Judge Brenner, the questions are  
16 drawn specifically from the inspection report and from  
17 LILCO's testimony. They are from nowhere else. And I  
18 don't think the County is waltzing around. The  
19 questions are focused. If the answers are focused we  
20 will make it through. If they don't we won't make it  
21 through, and it will be because the Board has set an  
22 arbitrary time limit on this hearing process.

23           JUDGE BRENNER: Well, we disagree with you  
24 very strenuously, Mr. Miller. And you're taking away  
25 from your time right now.

1 MR. MILLER: Well, let's move on.

2 JUDGE BRENNER: Good.

3 BY MR. MILLER: (Resuming)

4 Q Mr. Museler, with respect to the bottom of  
5 page 10 of LILCO's supplemental testimony, the  
6 engineering review referred to, when was that  
7 engineering review performed? Before or after the RAT  
8 inspection?

9 A (WITNESS MUSELER) It was performed after the  
10 RAT inspection, as a result of the finding of the NRC.  
11 We were not aware of this situation until it was pointed  
12 out to us.

13 We first wanted to verify that there was no  
14 structural problem here, even though the dimension was  
15 incorrect.

16 Q So the brace termination location was moved  
17 without receiving prior engineering approval; is that  
18 correct?

19 MR. ELLIS: Objection. Asked and answered a  
20 number of times.

21 JUDGE BRENNER: Let's get it one more time,  
22 because it will be quicker.

23 WITNESS MUSELER: Yes, sir.

24 BY MR. MILLER: (Resuming)

25 Q With respect to the interviews Mr. Museler

1 referred to at the bottom of page 10 and over to page  
2 11, when you say that, interviews of personnel  
3 performing work in the field, can you give me a general  
4 idea of who we're talking about and the numbers?

5 A (WITNESS MUSELER) Yes, sir. I think Mr.  
6 Arrington can also speak, because we are referring to  
7 both the construction and the inspection process.

8 With respect to the construction process, in  
9 terms of specific individuals, I spoke to at least four  
10 contractor personnel and at least the same number of  
11 Unico construction management supervisory personnel on  
12 this matter.

13 The objective of those discussions was to  
14 ensure that people were not taking that liberty and  
15 assuming that we had the liberty to make a modification,  
16 such as was done on RB-131, without obtaining prior  
17 engineering approval. The answer was that the craftsmen  
18 as well as the supervisory personnel were aware that  
19 prior engineering approval was required before we could  
20 make a modification to a design document.

21 And Mr. Arrington can, I think, speak for the  
22 quality assurance personnel.

23 A (WITNESS ARRINGTON) This was also covered in  
24 our training program. Our inspectors have always been  
25 aware that any deviations are required to be approved by

1 engineering. So we just went through these particular  
2 instances here to bring it to their attention, that it  
3 was a situation that did occur and we did not pick it  
4 up.

5 But they were aware of the requirement for the  
6 prior approval before changes were made.

7 Q Mr. Greenman, with respect to the Staff's  
8 finding on violation A-3, the cable tray supports in  
9 general, does it surprise you that at this stage of the  
10 construction process four of nine final-inspected cable  
11 tray supports would have had these sort of  
12 discrepancies?

13 A (WITNESS GREENMAN) I did not expect that kind  
14 of a finding when I went out to make the readiness  
15 assessment team inspection.

16 Q Does that say something to you, Mr. Greenman,  
17 about the adequacy of the Shoreham QA/QC program?

18 A (WITNESS GREENMAN) Those particular citations  
19 in and among themselves, no.

20 Q What was the significance to you of seeing  
21 four of nine inspected supports have these problems?

22 A (WITNESS GREENMAN) I think we classified the  
23 significance that we placed on those violations, as we  
24 characterize them under the enforcement policy, as  
25 severity level four violations.

1 Q Mr. Higgins and Mr. Greenman, if you would  
2 look at page 14 of the inspection report, paragraph  
3 8.2.3. This paragraph discusses, among other things,  
4 the workload of the electrical QC group.

5 Mr. Greenman, do you find an average of 60  
6 hours per week to be -- well, what is your opinion of 60  
7 hours per week for on the average for these FQC  
8 inspectors?

9 A (WITNESS GREENMAN) In my own opinion, 60  
10 hours a week for an extended period of time is a lot of  
11 hours.

12 Q Do you know the period of time involved here,  
13 Mr. Greenman, in terms of the 60 hours per week  
14 average?

15 A (WITNESS GREENMAN) No, I do not know the  
16 total period of time. As I recollect the discussions  
17 during the inspection, it was more than several months.

18 Q Was it a long enough period of time to give  
19 you some concern?

20 A (WITNESS GREENMAN) We would not have called  
21 it out in the inspection report were it not a concern to  
22 us. That concern manifested itself in our interest in  
23 what LILCO was doing with respect to staffing in that  
24 area as they approached the licensing process.

25 Q With respect to the last sentence of that

1 paragraph, where it notes that the QC supervisor stated  
2 that he felt adequate inspections would be maintained,  
3 what is the Staff's view of the supervisor and the  
4 statement made regarding maintaining adequacy of the QA  
5 program?

6 Does the Staff agree with that Shoreham?

7 (Panel of witnesses conferring.)

8 MR. ELLIS: I would just register an  
9 objection. I don't know which question is being asked.  
10 There was a compound question there.

11 JUDGE BRENNER: We will assume it is the last  
12 one being asked. He can ask him again if he still wants  
13 to find out what he thinks of the inspector, or his  
14 supervisor.

15 WITNESS GREENMAN: I think I can characterize  
16 our view at the time of the inspection and of that  
17 particular inspector. I instructed each of the  
18 inspectors to write down specifically what they were  
19 told at the time.

20 We felt and continue to feel after the  
21 inspection that that was an inordinate number of hours  
22 to be working for an extended period of time. LILCO  
23 responded to us, pointed out that prior to the time of  
24 the readiness assessment team inspection they had added  
25 additional people, and they have also added additional

1 staff subsequent to the readiness assessment team  
2 inspection and are continuing to evaluate it, as we will  
3 do.

4 JUDGE BRENNER: Mr. Greenman, can you tell me  
5 over how many days that 60 hours per week was being  
6 worked, if you and Mr. Higgins know? Was it seven days  
7 or six days or five days?

8 WITNESS GREENMAN: Yes, Judge Brenner, we were  
9 told it was over a seven-day period. In some cases it  
10 approached 12 hours per day.

11 WITNESS ARRINGTON: Judge Brenner, it does  
12 normally run six days. We work a basic work week when  
13 we have a backlog of five ten's, this is Monday through  
14 Friday ten hours a day and eight hours on Saturday. And  
15 we do rotate our inspectors so they don't work every  
16 weekend, week in and week out.

17 Occasionally, due to supporting an effort in  
18 the field where you have got craftspeople working, they  
19 may occasionally work over an hour or so in order to  
20 finish up the documentation or the actual verification  
21 in the field.

22 But we did do a review and we found out that  
23 we average roughly 14 hours a week from, I think it was  
24 the end of the year of '82 through the end of January  
25 for our inspection people. This was considering all the

1 people working divided by the number of hours worked,  
2 and we do average around 14 hours per week.

3 We do have individuals that work in excess of  
4 14 or scmethings 20 hours a week overtime, but that is  
5 not considered to be excessive as far as I'm concerned.

6 WITNESS MUSELER: I would also note, Judge  
7 Brenner, that we typically have a policy when we are  
8 working extended overtime hours and extended work weeks  
9 that our average is to work three weeks on with heavy  
10 overtime work and then the fourth weekend -- or it may  
11 vary a little if there's a holiday weekend such as this  
12 past weekend -- to essentially stand down both the  
13 construction effort and the QC effort.

14 That is not absolute, but we do work some  
15 people in some critical items, especially if they are  
16 supporting startup. But generally, in addition to what  
17 Mr. Arrington has mentioned where he makes sure his  
18 inspectors don't work every weekend, we try not to have  
19 the whole site working eight or ten weeks in a row, six  
20 day weeks, because you wind up, just from a practical  
21 matter, you wind up getting five days production in six  
22 days.

23 So the overall policy has been to keep it  
24 limited, although we do work overtime when we're trying  
25 to hold a schedule or reduce a backlog.

1 JUDGE BRENNER: Mr. Miller, we would propose,  
2 speaking of overtime, to run a little later today, until  
3 about 5:30, and make up some of the late starting time.  
4 So one thing we could do is take just a ten-minute break  
5 at this time until 4:30, and we will come back and run  
6 until 5:30, and then we will finish up the County's  
7 cross-examination tomorrow morning.

8 MR. MILLER: Judge Brenner, I have one more  
9 question. Then I would be through with violation A, if  
10 I could ask that before the break.

11 JUDGE BRENNER: Okay.

12 BY MR. MILLER: (Resuming)

13 Q Mr. Greenman, with respect to the general  
14 corrective action plan proposed by LILCO regarding the  
15 cable tray supports, what would be your opinion, Mr.  
16 Greenman, regarding -- because it seems that you have  
17 some concerns with the problems in the cable tray  
18 supports and the problems that have been detected --  
19 reinspection of all 350 cable tray supports which at  
20 this time LILCO says have been finally inspected by its  
21 FQC program, or at least some percentage thereof?

22 Would that in your opinion be an appropriate  
23 corrective action plan by LILCO regarding the cable tray  
24 supports?

25 A (WITNESS GREENMAN) If LILCO proposed a

1 reinspection of some portion of that, I would evaluate  
2 that and I would consider that to be responsive to our  
3 concern.

4 JUDGE BRENNER: You didn't answer his  
5 question, Mr. Greenman, I don't believe. He wants to  
6 know if you think there should be a reinspection of all  
7 of those supports.

8 WITNESS GREENMAN: No. Given the findings, I  
9 don't think there should be a reinspection of all of the  
10 supports. I think there should be a sampling  
11 reinspection. Based upon that sample, then the Licensee  
12 and the Staff could make a determination as to the  
13 adequacy.

14 MR. MILLER: That's fine.

15 JUDGE BRENNER: All right, let's take a really  
16 short break and -- well, let's make it ten minutes and  
17 come back at 4:35.

18 (Whereupon, at 4:25 p.m., the hearing in the  
19 above-entitled matter was recessed, to reconvene at 4:35  
20 p.m. the same day.)

21

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25

1 (4:35 p.m.)

2 JUDGE BRENNER: Back on the record.

3 In terms of what we plan to do with timing,  
4 this is our suggestion. We will run for another hour  
5 today and then, giving the County the benefit of the  
6 doubt, we will give them an hour and a half to finish up  
7 tomorrow morning. We will start at 8:30 tomorrow  
8 morning.

9 If the followup questions, including the few  
10 questions I have on the other submission, are such that  
11 we can complete all of the RAT examination midday  
12 tomorrow or early afternoon tomorrow, we will go right  
13 into the examination of OQA organization.

14 And if we make reasonable progress on the  
15 County's cross-examination of the Staff witness, that is  
16 in essence finish that cross-examination -- and the  
17 estimate we had was a couple of hours in our telephone  
18 conference call that we had on the subject -- we will  
19 then be able to avoid running tomorrow evening, because  
20 we will have a few hours to finish up on Thursday after  
21 the emergency planning.

22 So we will see how it goes, but everybody  
23 should be prepared to immediately go into the OQA  
24 organizational subject. So I don't want to hear that  
25 somebody didn't get here.

1 MR. BORDENICK: Judge Brenner, I just wanted  
2 to make sure that we will not have reached the OQA  
3 structure matter until at least noon, then; is that  
4 right?

5 JUDGE BRENNER: That is probably a good  
6 assumption, but I'm not going to guarantee it. How much  
7 do you have of followup of this panel?

8 MR. BORDENICK: As of right now I would say  
9 very, very little.

10 JUDGE BRENNER: Mr. Ellis?

11 MR. ELLIS: I haven't reviewed it, but I would  
12 think that as of this time I have less than 30 minutes.

13 JUDGE BRENNER: Then the answer is we might  
14 get to it before noon and we might not. If we are  
15 within a few minutes we won't insist on it, but I don't  
16 want to lose an hour, because if we finish early  
17 Thursday that is acceptable also.

18 MR. BORDENICK: It is certainly acceptable to  
19 me. I will have the Staff witness take the morning  
20 plane up just to make sure.

21 JUDGE BRENNER: I think that is a good idea,  
22 so we don't sit here and glare at you for an hour.

23 (Laughter.)

24 MR. MILLER: Judge Brenner, would you -- I was  
25 hoping that the Board would consider giving the County

1 until the lunch break tomorrow to finish up on the RAT  
2 cross. We didn't start until 11:00 o'clock this  
3 morning, and there have been --

4 JUDGE BRENNER: Yes, I know, and we're giving  
5 you the benefit of the doubt by giving you an hour and a  
6 half tomorrow, even though the 10:30 starting time  
7 assumed the normal things that occur at a hearing.

8 MR. MILLER: I had understood that the County  
9 was going to be given a full hearing day.

10 JUDGE BRENNER: Yes, and you will get that if  
11 we go for another hour now and then an hour and a half  
12 tomorrow, and that assumes that you didn't start your  
13 cross until 11:00 o'clock today,

14 MR. MILLER: That doesn't take into  
15 consideration the nature of the answers that we have  
16 been given today in terms of the length, either.

17 JUDGE BRENNER: Let's proceed, Mr. Miller,  
18 because we are having this debate every hour.

19 BY MR. MILLER: (Resuming)

20 Q Gentlemen, let's turn to violation D if you  
21 would, please, which is discussed on pages 23 to 24 of  
22 the inspection report, as well as Appendix A.

23 Mr. Greenman and Mr. Higgins, could you  
24 generally describe violation D for us?

25 (Panel of witnesses conferring.)

1           A       (WITNESS MUSELER) Did you say "D" or "C", Mr.  
2 Miller?

3           Q       "D".

4           A       (WITNESS MUSELER) As in "dog"?

5           Q       Yes.

6           A       (WITNESS HIGGINS) Violation D involved a  
7 support with the diesel generator turbocharger. The  
8 support was one that was added via repair rework and an  
9 E&DCR in order to take care of some turbocharger  
10 vibration problems that were identified during the  
11 startup test program.

12                   The inspector involved reviewed portions of  
13 all three supports on the three diesel generators. With  
14 one of them he identified some problems, as identified  
15 in the violation. There were three specific problems  
16 involved.

17                   One involved a weld around a tubular support  
18 which did not go completely around the attachment where  
19 the tubular support attached onto the main part of the  
20 support, and the part that it didn't completely go  
21 around was on the underneath portion where there was an  
22 acute angle.

23                   The second part of it related also to the  
24 acute angle, in that the welding technique was not  
25 qualified for as sharp an angle as was involved.

1           And the third part related to the bolting that  
2 was used in several portions of the support, in that the  
3 applicable code requirements for bolting were not  
4 followed, namely that some washers were not installed as  
5 they were supposed to be and that the particular bolts  
6 involved were high-strength bolts, which are supposed to  
7 be torqued only once and it turns out in this instance  
8 they were torqued at least twice.

9           Q     Now, Mr. Higgins, am I correct, then, that the  
10 nonconforming conditions that you just described had  
11 been completed and accepted by OQA inspection at the  
12 time of the RAT inspection?

13          A     (WITNESS HIGGINS) That is correct.

14          Q     And the Staff only examined one completed  
15 rework modification to the A diesel generator; is that  
16 correct? One rework modification that OQA had inspected  
17 to the diesel generator; is that correct?

18                   (Panel of witnesses conferring.)

19          Q     I'm referring, Mr. Higgins, on page 23 where  
20 it states in the first sentence, "The inspector examined  
21 one in-process rework to replace the governor servo  
22 booster and one completed rework modification to install  
23 turbocharger supports."

24                   (Panel of witnesses conferring.)

25          A     (WITNESS HIGGINS) Yes. What I'm not sure of

1 is whether or not that one rework for the turbocharger  
2 installed the turbocharger supports actually within that  
3 one rework, had the support for each diesel. So it was  
4 my impression that he actually looked at aspects of the  
5 supports on each of the three diesels, but that may have  
6 been included all within the one rework.

7 Q Was this the only instance of a Staff  
8 examination of inspection by the OQA organization of  
9 reworked items?

10 A (WITNESS HIGGINS) No, we have looked at that  
11 in previous inspections.

12 Q During this particular inspection?

13 A (WITNESS HIGGINS) I'm not sure. There may  
14 have been some other instances.

15 I think Mr. Greenman wants to add something to  
16 that.

17 Q Yes, Mr. Greenman.

18 A (WITNESS GREENMAN) It's my understanding in  
19 talking to the inspectors that we did in fact look at  
20 some of the work packages. We didn't happen to write up  
21 any other conditions, good or bad. We didn't find any  
22 other discrepant conditions.

23 JUDGE BRENNER: I'm sorry, I didn't hear you,  
24 Mr. Greenman.

25 WITNESS GREENMAN: Yes, Judge Brenner. Within

1 the context of the inspection we did look at other  
2 packages. We do not normally write up everything that  
3 we look at in the inspection report. We did not,  
4 however, identify any other discrepant conditions as a  
5 result of that review.

6 WITNESS MUSELER: The repair rework referenced  
7 by Mr. Higgins was applicable to engine 101 only, so the  
8 particular one that the inspector was using was  
9 applicable only to the one engine.

10 BY MR. MILLER: (Resuming)

11 Q Mr. Greenman, these packages were packages  
12 that were worked on by OQA; is that correct?

13 A (WITNESS GREENMAN) I am not positive which  
14 group worked on them. I am only aware that we looked at  
15 other packages.

16 A (WITNESS MUSELER) Mr. Miller, OQA is the  
17 inspecting agency. The construction forces were not  
18 OQA. I'm sorry, that is just the way it came out. OQA  
19 did the inspections on these. The work itself, the  
20 actual physical work, was performed by startup support.

21 Q I understand that, Mr. Museler. It is set  
22 forth on the Appendix A.

23 It is my understanding that the OQA  
24 organization is delegated responsibility to perform  
25 inspections of repair and rework items. Is that

1 correct, Mr. Higgins?

2 A (WITNESS HIGGINS) For repair rework items,  
3 OQA does have responsibility in that area. Other  
4 quality assurance groups or quality control groups  
5 sometimes also can be designated, but in this particular  
6 case OQA was the designated organization.

7 Q Mr. Higgins, with respect to the particular  
8 welding violations discussed on page 24 of the  
9 inspection report, do you know how many welds were  
10 inspected by the Staff?

11 A (WITNESS HIGGINS) No, I don't. I know that  
12 -- I have looked at the support myself and I know there  
13 are a number of welds on the support. I don't know the  
14 number that were reviewed, however.

15 Q And am I correct that the tubular support weld  
16 failed to wrap around the entire joint as required by  
17 the design drawing; is that correct?

18 A (WITNESS HIGGINS) Yes.

19 Q And that the technique used to do this welding  
20 was unqualified for welding at the angle required; is  
21 that correct?

22 A (WITNESS HIGGINS) That is correct.

23 A (WITNESS MUSELER) Excuse me, Mr. Miller.  
24 That is not entirely -- the NRC inspector's notation in  
25 terms of this particular item was correct. The

1 particular weld procedure involved is qualified for this  
2 kind of weld. What it is not qualified for is the  
3 actual bottom portion of the weld, where the sharp angle  
4 exists.

5           And the actual discrepancy there was not the  
6 calling out of that weld procedure, but the fact that  
7 the symbol on the drawing called for a complete weld all  
8 the way around the particular tubular beam instead of a  
9 three-sided weld, which is what is normally called for  
10 with that procedure, with an angle of less than 25  
11 degrees -- excuse me, with an angle of less than 30  
12 degrees.

13           This is not an uncommon situation, and the  
14 E&DCR should have said that the weld should not be a  
15 complete weld. But the procedure for this type of a  
16 configuration is a qualified procedure. It is not  
17 supposed to be specified as a complete 360-degree weld  
18 or four-sided weld, is the way it is normally  
19 designated.

20           A       (WITNESS HIGGINS) That clarification is  
21 consistent with our writeup in the report.

22           Q       Mr. Higgins, there have been other occasions  
23 where the Staff has cited LILCO for violations for the  
24 use of unqualified welding techniques; is that right?  
25 And I refer you specifically to inspection reports 78-12

1 and 78-15, which should be in that package of material  
2 provided after the lunch break.

3 A (WITNESS HIGGINS) We have had other welding  
4 violations and we have had welding violations which have  
5 some aspects of similarity with this. I'm not really  
6 qualified to go into the details and compare them,  
7 however.

8 A (WITNESS MUSELER) Mr. Miller, we have looked  
9 at those that you provided the citations for earlier and  
10 they do relate to weld qualifications at various angles  
11 of attachment for structural steel shapes, so that they  
12 are similar in that respect.

13 However, they are not similar in that the  
14 previous two that you mentioned, if I am recalling  
15 correctly, were a matter of ensuring that the particular  
16 procedures in question at the time were -- that the  
17 attributes did cover the angles less than the angle  
18 specified. It is not the exact -- it is not the same  
19 procedures, and the results or the final closeout of  
20 those items indicated that the procedures we did have  
21 were qualified for the angles that were observed but  
22 that they had not been designated as being qualified for  
23 those angles.

24 We had to go back and do some research to  
25 assure that the essential variables were adequate for

1 those angles, so that we should have done that. But the  
2 difference is that those weld procedures in question, at  
3 least to my recollection, our surveillance was to go and  
4 verify that those weld procedures were applicable for  
5 those angles.

6           In this particular case, this weld procedure,  
7 while it can be used for the angle, can't be used to  
8 weld at the 25-degree angle. So that they are  
9 different. This weld procedure should have designated  
10 the three-sided welding in this particular case in the  
11 RAT inspection.

12           In the previous ones -- I'm not sure if I'm  
13 absolutely certain of one of them -- what we did was we  
14 went back and verified that the procedure that we were  
15 using was applicable exactly as it was to the particular  
16 angle, less than 60 or less than 45, whatever it was at  
17 that time.

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1 Q Mr. Higgins, with respect to Violation D, the  
2 Staff cites LILCO for a violation of Criterion 10; is  
3 that correct, Criterion 10 of Appendix B?

4 A (WITNESS HIGGINS) That is correct.

5 Q Wouldn't this also be a violation of Criterion  
6 9 of Appendix B? That is, in that Criterion 9 requires  
7 that there be qualified procedures, including welding  
8 procedures?

9 A (WITNESS HIGGINS) I think in the earlier  
10 testimony we had back in December we went into a lot of  
11 discussion about which criteria you cite against, and  
12 some of the judgments that we used, as we said before,  
13 are the details of the particular violation and the  
14 particular corrective action that we are looking for  
15 that we think would be most appropriate to address the  
16 particular violation.

17 When we write up a violation, we try to make  
18 an evaluation and decide which criterion is the most  
19 appropriate. In some cases there is more than one that  
20 you could possibly consider to write up a violation  
21 against, and in this one we went through that process  
22 and decided that the most appropriate ones were as  
23 indicated here.

24 Q Would Criterion 9 have also been appropriate,  
25 Mr. Higgins?

1           A       (WITNESS HIGGINS) I wasn't involved in  
2 writing this one since I wasn't the welding inspector  
3 that was involved with it.

4           Q       Mr. Greenman?

5           A       (WITNESS GREENMAN) I was involved in the  
6 writing and the review of that particular citation and  
7 the discussions that the Staff had at the time of the  
8 inspection. We believed that Criterion 10 was more  
9 appropriate and also elected to treat that as a separate  
10 Criterion 10 citation because it involved OQA rather  
11 than including it with the other criteria.

12          Q       Do you believe, Mr. Greenman, that Criterion 9  
13 also would have been appropriate to this particular  
14 violation?

15                   MR. ELLIS: Objection. Asked and answered.

16                   JUDGE BRENNER: It was asked but it wasn't  
17 answered by Mr. Greenman. Go ahead, Mr. Greenman.

18                   WITNESS GREENMAN: Do you want me to go ahead,  
19 Judge?

20                   JUDGE BRENNER: Yes. Do you remember the last  
21 question? Let me rephrase it.

22                   He wants to know if you think it is also a  
23 violation of Criterion 9, notwithstanding your previous  
24 answer that you thought Criterion 10 was most  
25 appropriate.

1           WITNESS GREENMAN: No, I did not at the time  
2 and I don't now, and that involved the discussion of not  
3 only Criterion 10 but Criterion 5, as well, given the  
4 details of that particular citation.

5           BY MR. MILLER: (Resuming)

6           Q     Mr. Greenman, given your remarks about this  
7 being a separate violation of Criterion 10 because it  
8 involved the OQA organization, do you have specific  
9 concerns about the OQA organization at Shoreham with  
10 respect to its inspection capabilities?

11          A     (WITNESS GREENMAN) I do not have a concern  
12 with respect to, in particular within the context of  
13 Violation D, to the inspection program itself. The  
14 inspection that was conducted was a timely inspection;  
15 it simply was not an adequate inspection. It is now  
16 LILCO's responsibility to respond as to why that was the  
17 case.

18          Q     Well in general, Mr. Greenman, do you have a  
19 concern with the adequacy of OQA inspections?

20                   [Panel of witnesses conferring]

21          A     (WITNESS GREENMAN) I think, to answer the  
22 question as briefly and simplistically as I can, the  
23 violations that resulted from the readiness assessment  
24 team inspections are of concern to us and we clearly are  
25 going to be looking at the licensee's response and their

1 corrective action as it relates to the overall QA/QC  
2 program.

3 A (WITNESS MUSELER) Mr. Miller, a significant  
4 number of the inspectors who work for OQA were formerly  
5 FQC inspectors on the job site, and a number of them are  
6 FQC inspectors assigned to OQA, so a large measure of  
7 the inspection force up there is an experienced  
8 inspection force that comes right from the construction  
9 side of the process.

10 Q Mr. Greenman, what would be your opinion of  
11 the appropriateness of requiring reverification of OQA  
12 final inspections conducted to date?

13 MR. ELLIS: I object to the question. I don't  
14 see how that is raised in any of the four violations  
15 that we were asked to address or anything else that we  
16 were asked to address, and I don't see the relevance at  
17 all to what we are about today. In essence I suppose he  
18 is asking whether he thinks the plant ought to be  
19 reinspected.

20 JUDGE BRENNER: That sounded very general.  
21 Could I get the question again, Mr. Miller? Could you  
22 repeat it?

23 MR. MILLER: Judge Brenner, I am referring to  
24 page 24, and my question would be Mr. Greenman's opinion  
25 of the appropriateness of a reverification of OQA final

1 inspections conducted to date.

2 JUDGE BRENNER: Of everything? I mean you are  
3 asking the question that generally?

4 MR. MILLER: I have asked the question that  
5 generally before and he has come back to me with maybe a  
6 sampling would be appropriate, and maybe that would be  
7 his opinion again but I think it is clearly tied to  
8 Violation D and the concern set forth on page 24 of the  
9 inspection report.

10 JUDGE BRENNER: I think a question that  
11 general is unlikely to be helpful. In essence you have  
12 asked that question at least once in a particular area.  
13 Why don't you ask it again about the matters which are  
14 the subject of Violation D?

15 MR. MILLER: Judge Brenner, I think the  
16 concerns that have been referenced by Mr. Greenman and  
17 are referenced in this inspection report go to the OQA  
18 inspection responsibilities regarding reworked items. I  
19 don't believe it is tied necessarily to a particular  
20 violation, and therefore I think it is appropriate to  
21 ask the general questions of Mr. Greenman.

22 JUDGE BRENNER: All right, we will see where  
23 it goes. Why don't you ask your last question first.

24 MR. MILLER: I'm not sure what my last  
25 question was.

1 JUDGE BRENNER: All right.

2 Mr. Greenman, is it correct that Violation D  
3 is of the nature that gives rise to a Staff concern as  
4 to the overall adequacy of the OQA inspections as  
5 implemented? That is, the quality of the inspections  
6 being performed by OQA.

7 WITNESS GREENMAN: It is a fair statement that  
8 Citation D causes me concern as to the adequacy of those  
9 final inspections. I don't have enough information  
10 today on root causes to be able to draw any conclusion  
11 with respect to the overall adequacy of the program. I  
12 think that what Citation D tells me is that that  
13 particular finding in and of itself did not have major  
14 technical significance, in my opinion.

15 WITNESS MUSELER: Judge Brenner, we did review  
16 the other two similar supports on the diesel generators,  
17 the welding of those supports, which were inspected by  
18 the same OQA inspector. We also reviewed nine previous  
19 inspections involving welding by that particular  
20 inspector and we verified that those nine plus the  
21 additional two on the diesel generators were properly  
22 constructed and properly inspected.

23 We also reviewed five other welds, the only  
24 other welds performed by this particular LILCO welder,  
25 and verified that those other five welds were properly

1 performed and properly inspected. We are still looking  
2 to this matter, but that is information that we have  
3 been able to gather so far and we have not uncovered any  
4 previous problems in the examples that I have cited with  
5 either the inspector involved or the welder involved.

6 JUDGE BRENNER: Okay, Mr. Miller.

7 BY MR. MILLER: (Resuming)

8 Q Mr. Greenman, as part of the root causes, part  
9 of the additional information that you will be looking  
10 for from LILCO, would you consider, based upon the  
11 information that you will be receiving, a sampling of  
12 OQA final inspections and reworked items to be an  
13 appropriate corrective action by LILCO?

14 [Panel of witnesses conferring]

15 MR. ELLIS: I object to the question. It is  
16 open-ended and hypothetical, and he said would you  
17 consider something, and I don't imagine there is  
18 anything he would maybe dismiss at this point, so I  
19 don't see the relevancy or the materiality of the  
20 question in the way that it is phrased.

21 JUDGE BRENNER: Well, I have already expressed  
22 my view that I don't know how helpful it is, but I asked  
23 the question going to the premise, and the answer was  
24 such that I will allow this one now; but let's not spend  
25 too much time on glittering generalities here.

1           WITNESS GREENMAN: Very frankly, I'm simply  
2 not in a position today to make that judgment.

3           BY MR. MILLER: (Resuming)

4           Q     Mr. Higgins, let's turn back for a minute to  
5 the comments I was making about the welding violations  
6 discussed on page 24 of the inspection report. If you  
7 would look for a minute at page 22 of the Staff's  
8 prefiled testimony, the QA testimony, paragraph number  
9 6, which discusses items 9 and 10, which were other  
10 violations found by the Staff of welding techniques not  
11 being prequalified, and it is noted in that paragraph  
12 that these were repetitive violations and that the  
13 licensee was requested to give the matter particular  
14 attention, do you see that?

15          A     (WITNESS HIGGINS) Yes.

16          Q     It is also noted, Mr. Higgins, in the last  
17 sentence of that paragraph, that there have been no  
18 recurrences of similar violations since that  
19 inspection. Would it be the Staff's intent at this time  
20 that -- Well, what is your view with respect to whether  
21 or not the violation discussed in the RAT inspection  
22 report on page 24 is a recurrence of a similar violation?

23          A     (WITNESS HIGGINS) We haven't made that  
24 determination yet. One thing that we intend to do with  
25 the responses to the violations is to have our previous

1 construction project inspector, Mr. Narrow, review  
2 those. Mr. Narrow was not part of the readiness  
3 inspection, and Mr. Narrow, I guess, was on a previous  
4 panel and was involved in the preparation of this  
5 previous testimony, and in fact, the portion that we are  
6 talking about right now in the welding area was prepared  
7 principally by Mr. Narrow.

8           So our intent is to have Mr. Narrow review.  
9 In addition to the particular inspectors involved in the  
10 readiness inspection, we wanted to have Mr. Narrow also  
11 review those to get his viewpoint on it because we feel  
12 that he can provide us some valuable input in terms of  
13 what has happened previously on the site in terms of the  
14 welding area, and it is important to get that at the  
15 time when we are reviewing the adequacy of the  
16 corrective and preventive actions.

17           Q     Would it be the Staff's intent, then, Mr.  
18 Higgins, as we earlier discussed with inspection report  
19 79-07 in Violation A-1, here with respect to Violation  
20 D, the Staff will look at LILCO's response in light of  
21 I&E reports 78-12 and 78-15?

22           A     (WITNESS HIGGINS) That would certainly be one  
23 of the things that Mr. Narrow would be looking at when  
24 he does his review of the entire response, yes.

25           Q     Mr. Greenman and Mr. Higgins, if you look at

1 LILCO's supplemental testimony, its response to  
2 Violation D, for the moment regarding the welding  
3 violations discussed in Violation D, and I think that  
4 discussion comes on pages 16 through up to the top of  
5 page 19 in supplemental testimony, what would be your  
6 general view of LILCO's supplemental testimony in this  
7 regard, Mr. Higgins?

8 MR. ELLIS: Objection to the question, the  
9 form of the question. Unfocused. And I don't see how  
10 the answer can be very probative or significant if he  
11 wants to know a general opinion on three pages of  
12 testimony.

13 JUDGE BRENNER: If you insist, I will allow  
14 the question, Mr. Miller, in the interest of your  
15 efficiency, but I suggest it would be better, if you  
16 have a particular aspect in mind, that you focus the  
17 witness' attention to it. Now you have asked the  
18 question a few times in the way you just did and I let  
19 it go, but it would be more helpful if you could focus  
20 it.

21 I also recognize if there had been an  
22 opportunity for further testimony from the Staff, that  
23 might have assisted you, too.

24 MR. MILLER: Judge Brenner, I think it is  
25 helpful for the County just to get a general impression

1 from the Staff.

2 JUDGE BRENNER: You don't have anything  
3 particular in mind?

4 MR. MILLER: I might, depending upon what the  
5 answer I hear is.

6 JUDGE BRENNER: You don't have anything in  
7 particular in mind now? You can say "no" and I will  
8 allow the question. I just wanted to know.

9 MR. MILLER: Then the answer is no, Judge  
10 Brenner.

11 [Laughter]

12 JUDGE BRENNER: You see, it is not so easy  
13 when you are answering questions.

14 [Laughter]

15 All right. Let's allow the question.

16 WITNESS GREENMAN: I wouldn't attempt to make  
17 a detailed response to that particular testimony without  
18 talking to the construction inspector that was  
19 involved. As far as the circumstances surrounding the  
20 citation, we would look carefully to confirm that in  
21 fact it only extends to those particular assemblies as  
22 LILCO has so stated in their testimony.

23 BY MR. MILLER: (Resuming)

24 Q Mr. Greenman or Mr. Higgins, at this time,  
25 based upon the review you had of LILCO's supplemental

1 testimony, do you have any areas of disagreement with  
2 that testimony? I am talking about pages 16 through the  
3 top of 19 concerning Violation D.

4 [Panel of witnesses conferring]

5 A (WITNESS HIGGINS) I guess what you are asking  
6 is for the initial impression that I have or Mr.  
7 Greenman has, and I guess we feel that while we may have  
8 some questions on it, it is not particularly valuable to  
9 go in and discuss those because what we really need to  
10 do is discuss that with the particular inspector  
11 involved here, and also who is much more familiar with  
12 this type of work and the significance of the finding  
13 and the corrective actions proposed.

14 We do have some questions that we want to  
15 discuss with that inspector and then probably back with  
16 LILCO again, but it really is quite preliminary to be of  
17 any use, I feel.

18 Q Well, you would look, please, at page 18 of  
19 LILCO's supplemental testimony. Let me direct my  
20 question to Mr. Museler.

21 Mr. Museler, at the bottom of the page there  
22 is a discussion about the welder thought he had  
23 satisfactorily completed the weld. Could you explain to  
24 me what is the basis for this statement by LILCO? And  
25 let me narrow that specifically.

1           Did the welder talk to or contact Engineering  
2 at the time of making the weld, to your knowledge, or is  
3 this statement just that the welder thought he had  
4 completed the four-sided weld?

5           A       (WITNESS MUSELER) As I believe I stated  
6 earlier, Mr. Miller, in this particular case I spoke to  
7 this welder myself because he was a LILCO welder, and we  
8 have very few instances where LILCO welders are  
9 performing. These are our own employees as opposed to  
10 contractor employees, so I wanted to make sure I  
11 understood what this particular welder knew and what he  
12 didn't know.

13           So when I interviewed him, one of the aspects  
14 I interviewed him on was whether or not he was familiar  
15 with what he was supposed to do, if he observed a  
16 deviation from a design document or if he was not able  
17 to complete something in accordance with the design  
18 document.

19           In this particular case the welder's  
20 statement, the particular welder involved appeared to be  
21 a very knowledgeable welder in terms of not just what  
22 the procedure requires but in terms of what some of the  
23 parameters mean. He stated that he was aware that if he  
24 deviated from the drawing or the procedure, that he was  
25 supposed to obtain engineering concurrence.

1           In this particular case I asked him if he  
2 recognized that the weld symbol said he was supposed to  
3 weld all the way around, and he indicated that yes, he  
4 did know that. He had done two other supports in the  
5 diesel generator room which were of a slightly different  
6 configuration, but both, all of the other two being  
7 turbo-charger supports having a similar location for  
8 welds although at a bigger angle, and he indicated that  
9 yes, he believed he was supposed to weld all the way  
10 around, and in fact he thought he had because he had to  
11 come in from both sides of the weld in order to complete  
12 the weld underneath the very limited angle that was  
13 available to him.

14           So that he was aware that he was supposed to  
15 obtain engineering concurrence if he deviated from  
16 that. He did not. He thought that he had completed the  
17 weld. That was the man's statement. And again, as this  
18 particular welder exhibited what I consider to be a very  
19 good knowledge of the process in that if he was having  
20 trouble getting into a gap, he built up the weld to  
21 ensure that he had enough weld actually in contact with  
22 the various members, so he understood the basis of the  
23 process, not just the mechanics of the process. He  
24 thought he had completed the weld the way he had  
25 completed the other two, and he had not.

1           Now, if you look at the situation in the  
2 field, it is not impossible to observe that he wouldn't  
3 have completed the weld, and he might well have been  
4 expected to see that he missed this half-inch out of  
5 this entire circumference. On the other hand, with the  
6 tightness of the space and coming in from both sides the  
7 way he was, I can also see where he might have thought  
8 he completed it and not looked carefully enough to  
9 ensure he had carried the bead completely across the  
10 particular area under the angle.

11           So he was aware that he was supposed to obtain  
12 engineering concurrence. The reason he did not is he  
13 believed that he had completed the weld properly. The  
14 inspector noted the same thing. I also interviewed the  
15 inspector myself and the inspector was knowledgeable in  
16 terms of requiring an engineering disposition if it  
17 deviated from the engineering documents.

18           The particular inspector involved frankly  
19 stated that he missed it, he didn't see it, which I  
20 think lends some credence to the welder not having seen  
21 it, although both of them should have seen it. I think  
22 that is responsive to your question that he didn't know  
23 he was supposed to obtain engineering concurrence. He  
24 did not obtain engineering concurrence because he  
25 thought he had completed the job properly.

1 Q So the welder's error was that he did not  
2 complete the weld, though he thought he had completed  
3 the weld. Correct?

4 JUDGE BRENNER: Mr. Miller, Mr. Museler stated  
5 that at least four times in his answer and now you've  
6 asked him yet again. It is your time, but why?

7 MR. MILLER: It is my time. I'm not sure of  
8 that anymore, Judge Brenner.

9 JUDGE BRENNER: That question has been asked  
10 and answered and we just heard the answer four times in  
11 the last few minutes. Let's move on to the next one.

12 BY MR. MILLER (Resuming):

13 Q There were two errors here, then, Mr.  
14 Museler. The welder had made the error and the  
15 inspector made the error in not discovering the missing  
16 weld. Correct?

17 A (WITNESS MUSELER) Both the welder and the  
18 inspector missed it, yes, sir.

19 Q And moving on to the missing washers and the  
20 bolts having been retorqued, was th's the same inspector?

21 A (WITNESS MUSELER) No, sir.

22 Q So a different OQA inspector missed the  
23 missing washers and the retorque in the bolts? With  
24 respect to those discrepancies, Mr. Higgins, does the  
25 staff have an opinion on LILCO's response in its

1 supplemental testimony, which would be on page 19,  
2 continuing over to the top of page 20?

3 A (WITNESS HIGGINS) No, we haven't finished our  
4 review of that area yet.

5 Q Mr. Higgins, how would inspectors miss  
6 something like missing washers?

7 A (WITNESS HIGGINS) If you're asking me to  
8 hypothese, I could come up with a number of ways.

9 Q Well, I won't ask you to do that. On page 19,  
10 Mr. Higgins, if you would take a look, LILCO states  
11 toward the bottom of the page that they have reviewed  
12 these site programs for this type of bolting material,  
13 and performed additional field inspections and  
14 ascertained that this was an isolated instance limited  
15 to these three particular turbo-charger supports.

16 Do you know whether LILCO has made a review of  
17 all of the usages of bolting material of this type?

18 A (WITNESS HIGGINS) Well, it was my  
19 understanding that there are not many instances on site  
20 where this type of high strength bolting material is  
21 used. My understanding of the response also is -- and  
22 some additional discussions that we have had -- is that  
23 the problem was involved here with the startup support  
24 personnel that were not familiar with the requirements  
25 of the code for this particular high strength bolting

1 material, and that they did go back and do some reviews  
2 of high strength bolting added by construction  
3 personnel, and no discrepancies were found there.

4           But they did review all of the instances where  
5 it had been installed by the startup support personnel  
6 to see if there were problems there. That is the type  
7 of thing that we want to look at in our review of this.  
8 That is, in terms of the startup support personnel that  
9 have been involved and whether or not the response is  
10 fully adequate in that area.

11           And as I said, our review is just in the first  
12 stages on that aspect.

13           Q     So, Mr. Higgins, in the case of the missing  
14 washers and the bolts being retorqued, again, it was a  
15 double error by LILCO; isn't that right? The  
16 installation was wrong by startup personnel, and was  
17 missed by OQA inspection?

18           A     (WITNESS HIGGINS) Yes.

19           A     (WITNESS MUSELER) Mr. Miller, we, in the  
20 interest of identifying the causes of problems, I think  
21 we pointed out what we believed to be the cause of this  
22 particular incidence, which is different than the  
23 welding instance where both personnel were familiar with  
24 the requirements.

25           In this particular instance, the LILCO

1 construction personnel who were temporarily assigned to  
2 startup support to perform the bolting work were not  
3 familiar with the high strength bolting requirements.  
4 This is the only instance where they have worked on high  
5 strength bolts.

6 We also checked the only other work that this  
7 particular group of LILCO personnel had performed work  
8 in the plant, HVAC duct supports, and we verified that  
9 it was not high strength bolting material, but we did  
10 verify that that work was performed properly.

11 With respect to the plant, the construction  
12 side of the plant, we believe that our procedures, both  
13 on the construction side and on the QC side have  
14 verified that we don't have this problem. And as we  
15 state in our testimony, we were hard pressed to find  
16 examples of this. Where we did find examples of it, it  
17 was all properly installed.

18 Q Mr. Museler, with respect to the training mix  
19 at the top of page 20 of LILCO's testimony, has that  
20 training taken place at this time?

21 A (WITNESS MUSELER) The OQA training referenced  
22 on page 20 has been conducted by Mr. Muller in his  
23 management of the OQA inspectors. With respect to the  
24 startup support personnel associated with this -- and by  
25 this I mean LILCO construction personnel -- we have not

1 reinstructed those personnel. We have precluded them  
2 from working on permanent plant equipment until they are  
3 reinstructed. Those personnel are supplied to us out of  
4 a pool, and we do have a program to train all of the  
5 LILCO personnel who will be working at the plant.

6           Mr. Youngling, the startup manager, and Mr.  
7 Carey, the startup support manager, have assured that  
8 those personnel assigned permanent plant work will only  
9 be personnel who have received the requisite training.  
10 The reason we didn't train these particular people is  
11 that they are back in some other part of the company  
12 right now performing other work.

13           Q     Mr. Museler, do you know the extent of this  
14 training in terms of the time duration?

15           A     (WITNESS MUSELER) Not exactly, Mr. Miller. My  
16 discussions with Mr. Muller indicated it was the same  
17 type of training Mr. Arrington alluded to, which was  
18 about a 45 minute sessions, specifically on bolt  
19 torqueing and the use of high strength bolting material.

20           Q     Mr. Higgins or Mr. Greenman, on page 24, the  
21 last paragraph on that page indicates some concerns with  
22 the OQA department and its reinspection efforts at this  
23 time. Have the staff's concerns regarding the adequacy  
24 of OQA been resolved?

25           A     (WITNESS HIGGINS) Could you repeat that,

1 please?

2 Q I was wondering if the staff's concerns, as  
3 expressed on page 24 of the inspection report at this  
4 time have been resolved, or are those concerns still  
5 open?

6 (Panel of witnesses conferring.)

7 A (WITNESS HIGGINS) Since this was written up in  
8 the inspection report, we have done some additional  
9 review in the area of the types of training  
10 qualification that the OQA personnel have, and that has  
11 eliminated our concern to some extent but not  
12 completely. The information we have gotten indicates  
13 that the personnel do receive training in these areas.  
14 In fact, a lot of them are qualified in construction  
15 inspection fully to the detailed construction  
16 requirements that FQC has.

17 And as I said, that alleviates our concerns  
18 somewhat; not completely because of the discrepancies  
19 that were identified in violation (d), and that is one  
20 of the areas where we are performing additional review  
21 now that we have gotten a response back, and we can see  
22 exactly what the specific corrective and preventive  
23 actions proposed are. And we can discuss it with the  
24 inspectors and also, with LILCO.

25 Q Mr. Greenman, with respect to violation (d) on

1 page 23 of the inspection report, it is noted that the  
2 repair/rework was initiated in response to an E&DCR;  
3 specifically E&DCR F-3764 6E. Is that correct?

4 A (WITNESS GREENMAN) Yes, that is correct.

5 Q Did your inspectors observe a large number of  
6 E&DCRs at Shoreham resulting in changes?

7 MR. ELLIS: I object to the question. I have  
8 a very difficult time seeing the relevance or  
9 materiality of that question to the violations that are  
10 cited here. In essence, as I understand the question it  
11 is are there a lot of changes in E&DCRs at Shoreham. I  
12 can't imagine that that question has any relevance or  
13 materiality to these issues or, indeed, to any issue.

14 JUDGE BRENNER: Mr. Miller, do you want to  
15 respond to the objection?

16 MR. MILLER: I think this is entirely  
17 relevant, Judge Brenner.

18 JUDGE BRENNER: Do you have a particular  
19 connection? Can you ask the question more specifically?

20 MR. MILLER: Well, I think in two or three  
21 questions I will be through with the area. It will go  
22 very quickly, if I can just proceed.

23 JUDGE BRENNER: Yes, but I would like you to  
24 ask it more specifically.

25 BY MR. MILLER (Resuming):

1 Q Mr. Greenman, do you have a concern about the  
2 QA/QC inspection of changes resulting from E&DCRs?

3 (Panel of witnesses conferring.)

4 Based upon that inspection report.

5 A (WITNESS GREENMAN) No.

6 (Counsel for Suffolk County conferring.)

7 MR. MILLER: Judge Brenner, if you would like  
8 we could try to get into violation (b).

9 JUDGE BRENNER: Well, how long will it take  
10 you?

11 MR. MILLER: I certainly would not finish by  
12 5:30.

13 JUDGE BRENNER: It's up to you. I will let  
14 you run for 5 or 10 more minutes, or we can stop here.

15 MR. MILLER: I don't think we can get through  
16 violation (b) in 5 or 10 minutes. If the criterion is I  
17 have to complete it --

18 JUDGE BRENNER: You don't have to complete  
19 it. Do you want to start it?

20 MR. MILLER: I can certainly get started with  
21 it.

22 JUDGE BRENNER: Okay.

23 BY MR. MILLER (Resuming):

24 Q Gentlemen, if you would look at violation (b)  
25 which is discussed on page 16 of the inspection report,

1 Mr. Higgins, if you could give me a brief explanation of  
2 violation (b), please.

3 A (WITNESS HIGGINS) Yes. This involved a  
4 documentation as to what the condition of the cold set  
5 of the spring hangers was in the plant, and the  
6 inspector found that adequate documentation was not  
7 maintained in accordance with the site program for  
8 whether or not the cold set conditions of the spring  
9 hangers had been finalized.

10 Q So, Mr. Higgins, am I correct that the hangers  
11 had not been adjusted to cold set but they had been  
12 removed from the master punch list?

13 A (WITNESS HIGGINS) Well, some had and some  
14 hadn't and it gets complicated by the fact that actually  
15 enough of them had been originally cold set but then the  
16 hangers had been replaced because of reworks, repairs,  
17 what have you, and then the new hangers that were  
18 installed were as from the factory without the cold set  
19 performed. And therefore, one that had the cold set  
20 originally performed, it does not now have the cold set  
21 performed.

22 And the licensee had correctly tracked this,  
23 we felt, through his program and through all the  
24 documentation. We acknowledged that there were some  
25 additional checks and some additional things that

1 probably would have picked it up. However, we felt that  
2 the documentation trail was not per the site program and  
3 was not as rigorous as we expected to see.

4           The licensee's response to it has, in this  
5 instance, appeared to go quite far in addressing our  
6 concern and in establishing an additional program which  
7 will establish the documentation trail that we are  
8 looking for.

9           Q     Mr. Higgins, with respect to the inspection  
10 report on page 16, item 2, I think is where it talks  
11 about rework to the spring supports. Is that correct?

12           A     (WITNESS HIGGINS) What was the question?

13           Q     The question is, is it item 2 on page 16  
14 towards the bottom that discusses the staff's concerns  
15 regarding rework to the spring supports?

16           A     (WITNESS HIGGINS) Yes. Item 2 on that page  
17 does discuss rework of spring supports.

18           Q     To your knowledge, Mr. Higgins, is rework to  
19 spring supports that had already been cold set, if there  
20 is no notification of such rework, is that a violation  
21 of QC Procedure 15.4?

22           A     (WITNESS HIGGINS) If there was a separate  
23 document, for example, a non-conformance and disposition  
24 report, or a deficiency correction order, then it could  
25 be done under that particular one. I'm not sure what --

1 or even a repair/rework request. And I'm not sure in  
2 this instance what document those were reworked to. I  
3 just don't know.

4       A       (WITNESS MUSELER) Mr. Miller, I can clarify  
5 this. The -- whenever a pipe support is reworked,  
6 whether it has been final inspected or not, that  
7 informatio is automatically transmitted to Mr. Arrington  
8 generally by the E&DCR itself. Most of the  
9 modifications are performed by E&DCRs. Mr. Arrington  
10 gets copies of all of those E&DCRs and his program calls  
11 for him to incorporate that into his final inspection if  
12 that has not occurred, and if that inspection has  
13 occurred it automatically opens his file, so that there  
14 is something that indicates that that report is not  
15 satisfactory and hasn't been final inspected.

16               So in this particular case, there is no  
17 question of the proper control of the rework or the fact  
18 that they would have been -- that the rework would have  
19 be reinspected. The finding really comes down to the  
20 pulling of the pins on the spring cans which is when the  
21 cold set is verified. And we agree with the NRC that it  
22 is appropriate to put that information on a system basis  
23 on the master punch list, and we have proceeded to, we  
24 believe, produce a program which makes sure, with a  
25 double check, that that information -- that that

1 inspection is performed.

2           We also pointed out in our response that we  
3 have already, prior to the RAT inspection, we already  
4 had intended to reinspect all of the spring cans in the  
5 plant prior to fuel load to insure that the pins were  
6 pulled and the cold set was appropriate, and we have a  
7 memo which we -- I'm not sure if we supplied it or just  
8 told them the date of it, but there are two memos which  
9 pre-exist which define the fact that this would have  
10 occurred, but we agreed that it is appropriate to put it  
11 on the master punch list and to have the particular  
12 reinspections tracked more rigorously.

13           Q     Mr. Higgins, would you look, please, at page  
14 11 of LILCO's supplemental testimony which discusses  
15 violation (b)? Towards the bottom of the page where it  
16 states, "The observed condition was not different from  
17 the required condition, but rather, was appropriate and  
18 controlled." Do you agree with that statement, Mr.  
19 Higgins?

20           A     (WITNESS HIGGINS) No, we didn't agree that it  
21 was entirely appropriate, and that is why we wrote the  
22 violation.

23           Q     Was it controlled?

24           A     (WITNESS HIGGINS) There were some controls  
25 there, but we felt in this case that they were not fully

1 adequate from a documentation standpoint.

2 Q And in fact, Mr. Higgins, the controls that  
3 they had in place allowed these support hangers, the  
4 spring hangers, to be removed from the master punch  
5 list, isn't that right, so the system itself wasn't  
6 working. Isn't that right?

7 MR. ELLIS: Objection, compound questions; one  
8 question at a time.

9 JUDGE BRENNER: That's close enough to be  
10 considered one question.

11 WITNESS HIGGINS: Certain aspects of the  
12 program in this case were working and certain aspects we  
13 felt were not. And that is why we felt that the area  
14 was a bit confused in terms of what was being done and  
15 what wasn't, and what was being documented. and that is  
16 why we wrote the violation and that is why we asked for  
17 additional commitments in the area to clarify exactly  
18 how these would be treated, and I believe in our initial  
19 review of the response that we have gotten those  
20 additional commitments that we looked for.

21 WITNESS MUSELER: I have to say, Mr. Miller,  
22 that we are confident, based upon the pre-existing  
23 commitments of Construction which predated the RAT  
24 inspection, that we had already committed to a full  
25 reinspection of all spring cam hangers, both in the

1 primary and secondary, both on category 1 safety-related  
2 and category 2 non-safety related equipment, because  
3 that is a prudent construction and operational thing to  
4 do. And that is why we had already made that decision.

5 BY MR. MILLER (Resuming):

6 Q Mr. Greenman or Mr. Higgins, with respect to  
7 page 12 of LILCO's testimony and the proposed additional  
8 program, I suppose, that program does not involve QA or  
9 QC; is that correct?

10 (Pause.)

11 In other words, Mr. Higgins, it is a  
12 construction inspection program, isn't that right?

13 A (WITNESS HIGGINS) I'm not sure.

14 Q Mr. Museler?

15 A (WITNESS MUSELER) Yes, sir, that is correct,  
16 it is going to be conducted by the operating staff and  
17 by the construction supervisory staff. If the quality  
18 assurance organizations wish to physically inspect the  
19 field work because they will be given copies of all of  
20 the documentation, they may well opt to do that, but the  
21 program we committed to the NRC is a program that Mr.  
22 Rivello's people and my people are going to conduct.

23 Q Mr. Greenman or Mr. Higgins, in your view,  
24 would it be appropriate to have involvement by QA/QC in  
25 this program?

1           A       (WITNESS HIGGINS) I guess it is difficult at  
2 this point to say, to give our final position on it. We  
3 have, in fact, had some preliminary discussions on the  
4 proposed program with the construction inspector  
5 involved with this, and he said, informed us over the  
6 phone that it sounded to him like the proposed program  
7 would do the job in terms of getting these cold set  
8 hangers established properly. An also, that it  
9 appeared appropriate in terms of his experience in what  
10 he had seen at other plants for cold set of the hangers.

11           Q       Mr. Higgins, --

12                   JUDGE BRENNER: Mr. Miller, why don't you come  
13 to a stopping point.

14                   MR. MILLER: Judge Brenner, I think probably  
15 within five minutes I can finish up on (b). I am  
16 surprising even myself. If you would give me the five  
17 minutes.

18                   JUDGE BRENNER: I don't have great confidence  
19 in your estimate. Why don't we stop here?

20                   MR. MILLER: Judge Brenner, I intend to finish  
21 violation (b) if we only take five more minutes.

22                   JUDGE BRENNER: All right, five minutes.

23                   BY MR. MILLER (Resuming):

24           Q       Thank you. Mr. Higgins, again with respect to  
25 page 12 of LILCO's testimony, that proposed program does

1 not address rework of accepted items, does it?

2 (Panel of witnesses conferring.)

3 Mr. Museler, do you have something you would  
4 like to add, or maybe you could answer the question.

5 A (WITNESS MUSELER) Mr. Miller, that will be a  
6 moot point. The answer is it does address all rework  
7 situations because it will be done at a point when all  
8 of the supports are in their final configuration  
9 subsequent to the stress reconciliation program, and all  
10 of the other programs that have required modification to  
11 the pipe supports. So it will be done to the final  
12 configuration and the final documents of those  
13 particular types of supports. They will all have gone  
14 through whatever reworks are required by the time that  
15 inspection is done.

16 Q Mr. Museler, are you saying that after the  
17 construction inspection program, there will never be any  
18 modifications or rework to the spring hangers?

19 A (WITNESS MUSELER) No, sir, Mr. Miller, I'm  
20 sorry. I may have misread your question. If there is a  
21 rework to this hanger -- and I'm assuming now we're  
22 going to the operational phase -- the same type of  
23 attributes that are used during this program will be  
24 applied to the installation and to the inspection of  
25 those spring cams and all the other aspects of the

1 hangers at that time.

2           I would have to mention that part of the  
3 construction inspection program utilizes the same check  
4 sheets that the quality assurance people use to verify  
5 the various attributes of pipe supports. One of those  
6 attributes specifically addresses the cold set of the  
7 spring cams.

8           For the programs we have outlined to the NRC,  
9 in addition to that, that program, the same check sheet  
10 with only one attribute highlighted with an arrow to it,  
11 that attribute being cold set, is being added to the  
12 program. That will be continued into the operating  
13 phase so that that specific attribute, if the support is  
14 reworked and that attribute is touched or if a new  
15 spring cam, which is a common thing -- if you put in a  
16 new cam because you changed the load on it, if that is  
17 added, the same attribute will be reverified, not only  
18 by construction. At that point, it will be reverified  
19 by whatever quality organization is involved.

20           So that does extend beyond -- this isn't just  
21 a one-time thing and then we never look at pulling of  
22 the pins or the cold sets again. We carry on in the  
23 operation later.

24           A       (WITNESS HIGGINS) The one thing that I would  
25 add to that is that for any safety-related hanger, as

1 with any other safety-related component, after the  
2 construction program is done -- and that would be for  
3 hangers, this particular described program here is  
4 finished -- then the NRC would expect and I believe  
5 LILCO's program would require that any reworks would be  
6 done within the confines of their rework program. If  
7 it's under startup's control it would be done under the  
8 repair/rework which would specify the pertinent  
9 inspections. And if it was under the plant's --  
10 jurisdiction, it would be done under the MWR formula  
11 form.

12 So we would effect any reworks done to hangers and  
13 spring cams would -- that LILCO would in fact fill out  
14 those appropriate documents and that the rework and  
15 inspections would be done to those documents. And we  
16 would inspect them to those criteria.

17 Q Mr. Higgins, doesn't Violation B raise a  
18 concern about the adequacy of Shoreham's master punch  
19 list which is used to identify and control outstanding  
20 items?

21 A (WITNESS HIGGINS) Well, it raised a concern  
22 for the punch list in the area of spring hangers and  
23 therefore, we expected some action to be taken, not for  
24 just these specific spring hanger but for all spring  
25 hangers. And I believe that has been done.

1 (Counsel for Suffolk County conferred.)

2 A (WITNESS HIGGINS) I would just add one  
3 additional comment, as we did have some additional  
4 concerns in the inspection report on the master punch  
5 list and the control of that. And we wrote up some  
6 concerns in the report. Since that time, LILCO has  
7 written and approved a master punch list control  
8 procedure which I have looked at in the course of  
9 follow-up, and that does provide additional controls for  
10 the punch list that we were looking for.

11 Q Mr. Higgins, the Staff does have some other  
12 concerns regarding the master punch list; isn't that  
13 correct?

14 A (WITNESS HIGGINS) That is what I was just  
15 discussing.

16 Q They are set forth on pages 34 and 35, is that  
17 right? Or on page 34?

18 MR. ELLIS: I object to questions concerning  
19 matters outside the violations which we are prepared for.

20 JUDGE BRENNER: Well, we won't go too far into  
21 it but he has got the nexus into what the corrective  
22 action would be for this violation and the relationship  
23 thereby. I take it you are not going whole hog into the  
24 other area, Mr. Miller.

25 MR. MILLER: I have just this one question.

1 BY MR. MILLER (Resuming)

2 Q The question, Mr. Higgins, is whether or not  
3 the Staff's other concerns are set forth on page 34 of  
4 the inspection report?

5 MR. ELLIS: Well, Judge Brenner --

6 JUDGE BRENNER: I would allow the question for  
7 the reason I indicated.

8 MR. ELLIS: All right, but I would like to be  
9 heard after the answer.

10 JUDGE BRENNER: You can be heard tomorrow, if  
11 you still think it is important.

12 WITNESS HIGGINS: Yes. The items that I just  
13 described are as laid out on page 34.

14 MR. MILLER: Judge Brenner, that would  
15 conclude our questions on Violation B.

16 JUDGE BRENNER: All right. As we stated, we  
17 will resume at 8:30 tomorrow morning. I wanted to ask  
18 the Staff, Mr. Bordenick, who the witness is going to be  
19 on the organizational reporting aspect.

20 MR. BORDENICK: Messrs. Gilray and Cafton.

21 JUDGE BRENNER: Mr. Cafton, then, is from the  
22 region?

23 MR. BORDENICK: Yes.

24 JUDGE BRENNER: All right. I take it as soon  
25 as we adjourn, we will get LILCO's filing on Mr.

1 Conran's affidavit. Is that right, Mr. Ellis?

2 MR. ELLIS: That is right, Judge Brenner.

3 MR. BORDENICK: Judge Brenner, one brief  
4 item. On the Staff filing in that regard, it has been  
5 called to my attention that on page 10 of the filing,  
6 there's a typographical error. Mr. Conran, on page 10,  
7 the first line, is referred to as Mr. Conner instead of  
8 Mr. Conran. Lest the Board think that we had another  
9 witness that they hadn't seen before.

10 JUDGE BRENNER: We would have figured it out  
11 but thank you. Mr. Miller, did you have something?

12 MR. MILLER: Yes, Judge Brenner, I gathered  
13 from this morning's discussion that the parties are  
14 expected to discuss Teledyne tonight so we can discuss  
15 that tomorrow morning. Is that correct?

16 JUDGE BRENNER: Let's not do that first  
17 thing. I want you to finish your cross-examination and  
18 also, Judge Carpenter might be here tomorrow. We don't  
19 know, but if he is here, it would not be as early as  
20 8:30.

21 So let's hear about Teledyne right after lunch and  
22 then that will give you a further opportunity to talk to  
23 each other. I don't expect you all to solve or resolve  
24 whatever disagreements you have. Just in the name of  
25 efficiency I want you to understand each other's views

1 so you can focus whatever you want to say before us.

2 And we will take that up right after lunch.

3 All right, we are adjourned until 8:30 tomorrow

4 morning.

5 (Whereupon, at 5:40 p.m., the hearing was

6 adjourned, to be reconvened at 8:30 a.m., the following

7 day, Wednesday, February 23, 1983.)

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NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the  
Before the Atomic Safety and Licensing Board

in the matter of: LONG ISLAND LIGHTING COMPANY (Shoreham Nuclear Power  
Station)

Date of Proceeding: February 22, 1983

Docket Number: 50-322-OL

Place of Proceeding: Hauppauge, New York

were held as herein appears, and that this is the original transcript  
thereof for the file of the Commission.

Ray Heer

Official Reporter (Typed)

Ray Heer

Official Reporter (Signature)