

NUCLEAR REGULATORY COMMISSION

ORIGINAL

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:

LONG ISLAND LIGHTING COMPANY

(Shoreham Nuclear Power Station)

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DOCKET NO. 50-322-OL

DATE: November 10, 1982

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AT: Bethesda, Maryland

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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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Bethesda, Maryland  
Wednesday, November 10, 1982

The hearing in the above-entitled matter  
reconvened, pursuant to recess, at 9:10 a.m.

BEFORE:

LAWRENCE BRENNER, Chairman  
Administrative Judge

JAMES CARPENTER, Member  
Administrative Judge

PETER A. MORRIS, Member  
Administrative Judge



## 1 APPEARANCES:

2

3 On behalf of Applicant:

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9

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11 BERNARD BORDENICK, Esq.

12 Washington, D.C.

13

14 On behalf of Suffolk County:

15 LAWRENCE COE LANPHER, Esq.

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17 Christopher &amp; Phillips

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19 Washington, D.C. 20036

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1	<u>C O N T E N T S</u>				
2	<u>WITNESSES:</u>	<u>DIRECT</u>	<u>CROSS</u>	<u>REDIRECT</u>	<u>RECROSS</u> <u>BOARD</u>
3	T. Tracy Arrington,				
4	Frederick B. Baldwin,				
5	William M. Eifert,				
6	T. Frank Gerecke,				
7	Donald G. Long,				
8	William J. Museler and				
9	Robert G. Burns (Resumed)				
10	By Mr. Ellis				13,477

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(Afternoon Session.....13,577)

1	T. Tracy Arrington,				
2	Frederick B. Baldwin,				
3	William M. Eifert,				
4	T. Frank Gerecke,				
5	Donald G. Long,				
6	William J. Museler and				
7	Robert G. Burns (Resumed)				
8	By Mr. Ellis				13,590

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E X H I B I T S

1					
2	<u>NUMBER</u>	<u>IDENTIFIED</u>	<u>RECEIVED</u>		<u>BOUND IN</u>
3					<u>TRANSCRIPT</u>
4	LILCO 27				13,474
5	LILCO 28	13,550			13,551
6	Suffolk County 78	13,577			
7	Suffolk County 79	13,578			13,578

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RECESSES:

Morning - 13,522  
Noon - 13,576  
Afternoon - 13,630

1                                    P R O C E E D I N G S

2                    JUDGE BRENNER: Let's go on the record.

3                    We are prepared to begin. Are there any  
4 preliminary matters unrelated to the examination of  
5 these witnesses?

6                    MR. LANPHER: Judge Brenner, just for the  
7 record, I delivered to the Board this morning an offer  
8 of proof by Suffolk County on OQA. Obviously, you  
9 haven't had a chance to review it yet. I also provided  
10 a copy of a document which I believe explains Suffolk  
11 County Exhibit 73, the Storage Surveillance Summaries,  
12 and at an appropriate time, I would be happy to discuss  
13 those.

14                    JUDGE BRENNER: All right. Let's put them  
15 aside for now.

16                    MR. ELLIS: Judge Brenner, one preliminary  
17 matter. We delivered to the Board and the parties today  
18 three preliminary findings of Teledyne.

19                    JUDGE BRENNER: Are these findings that were  
20 not included within the report that was previously  
21 supplied?

22                    MR. ELLIS: This is Teledyne, not Torrey Pines.

23                    JUDGE BRENNER: I will get them straight one  
24 of these days. Thank you.

25                    One thing we had left pending which will

1 continue to remain pending for a day or two, at the  
2 most, is to set as a certainty the time frame for  
3 responding to LILCO's Motion for Summary Disposition.  
4 The reason I mention it today is I want to hear from the  
5 Staff when we discuss the time frames as to whether it  
6 plans to respond, and if so, in what time frame. And  
7 remember, we are shooting for a tight time frame.

8 MR. BORDENICK: What time today would you like  
9 to hear about that?

10 JUDGE BRENNER: Well, the problem is Mr.  
11 Lanpher has to coordinate with other people, so I want  
12 to take it up at the same time we hear as to when the  
13 County believes it can respond. I'm sorry if I said  
14 today. I didn't mean that it had to be today. I just  
15 want to know in the next day or so.

16 MR. BORDENICK: Fine.

17 JUDGE BRENNER: Why don't all the parties  
18 discuss it among themselves and then bring it back to the  
19 Board when the parties together are ready, and I hope  
20 that is tomorrow, or Friday morning, at the latest. The  
21 message is that unless there is a good reason as to why  
22 a response cannot be filed reasonably promptly, we want  
23 to be able to be in a position possibly to rule on it  
24 very close to the time we are going to rule on motions  
25 to strike: that is, November 22nd.

1           Now, we may not be able to meet that  
2 ourselves, but we would like to be in a position to try.  
3 The obvious reason is it is going to set the scope of  
4 the emergency planning litigation and as to that issue  
5 and issues, and depending on what we do, that may occur  
6 very quickly.

7           All right. Let's start out by binding in  
8 LILCO Exhibit 27 for identification, which was  
9 identified yesterday. We are binding it in today  
10 because we knew that questions on it would take place  
11 today.

12           [The document referred to, LILCO Exhibit 27,  
13 entitled "Document Control," follows:]

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DOCUMENT CONTROL

1. Procedure Related OBSERVATIONS - Practice vs. Formal Instructions

A. Recommendations

<u>Recommendations</u>	<u>Date</u>	<u>Description</u>
No. 4 Audit of LILCO Purchasing Dept. page 1, bottom paragraph	11/73	Procedure for purchase order register
Audit 1 S&W, FQC Attachment, Item 1.A.1	7/72	Interim QC Procedure 9.1 for receipt of material
S&W FQC Audit 1, Attached page 1, bottom portion re training	2/75	Procedures for PQC document review and inspector training in PGH
QA Audit 6 LILCO Purchasing Dept. page 3 re recommendation A	10/75	Procedures for generation of purchase order and addendum
Audit 81-11 LILCO Purchasing Dept. page 4, open item 1	3/81	Procedures for control of LILCO generated procurement document
April 8, 1981, Memo fr Mr. Gerecke thru next to last para. on 1st page	4/81	Procedures for control of LILCO initiated procurements
QA Audit 77-8 Observation #3	8/77	S&W Project procedure for records retention

B. Invalid Observations

QA Audit 77-8 Observation #4	8/77	S&W procedure for significant conditions adverse to quality with regard to vendor activity
Site QA Audit #7	8/73	Purchase Orders

2. Legibility

<u>Audits</u>	<u>Date</u>	<u>Description</u>
FQC 23, F.3	8/77	Each of the audit observations relates to auditor's recommendation to expedite previously identified drawings which were illegible or not reproducible on the Document Corrective Action List
FQC 25, K.1	2/78	
FQC 26, K.3	6/78	

<u>Audits</u>	<u>Date</u>	<u>Description</u>
FQC 27, K.2	8/78	
FQC 28, K.2	11/78	
FQC 29, K.2	2/79	
FQC 30, K.2	5/79	
FQC 31, K.2	8/79	

3.A. Miscellaneous Observations Relating to indices, logs, files, manuals, procedures and instructions

1. Observations where manual holders were not keeping their manuals up-to-date

<u>Audits</u>	<u>Date</u>	<u>Description</u>
EA 18, p. 2 #4	8/76	Project Manual
EA 22, 021 (2)	8/77	Project Manual
EA 38, 141 (1)	12/81	Project Manual
EA 30, 104 (4)	10/79	Project Manual
EA 19, 2.B.2	12/76	EAP Manual
EA 23, 037	12/77	EAP Manual
EA 27, 078	12/78	EAP Manual
FQC Audit 14 (A.1)	5/75	FQC Manuals and NDT Manual in LILCO
FQC Audit 14 (B.2)	5/75	FQC Manuals ASME Manual EAP Manual PQC Manual



<u>Audits</u>	<u>Date</u>	<u>Description</u>
FQC Audit 14 (D.2)	5/75	FQC Manuals ASME in Const.
FQC Audit 14 (D.3)	5/75	FQC Manual in accounting
FQC Audit 16 (B.2.A thru E.)	12/75	FQC Manuals
FQC Audit 16 (D.4)	12/75	FQC Manual in const.
2. Concerns with "LILCO Job Only" manual		
EA 30,097 (2a)	10/79	
EA 24, 050 (1)	3/78	
3. Concerns with how the Project was preparing and up-dating the Project Manual content		
EA 30,104-2	10/79	
EA 38, 141-2	12/81	
EA 26, 066-3	9/78	
4. Concerns with timely re-issue of Project Manual Indices		
EA 38, 141-1	12/81	
EA 22,021-1	8/77	
EA 26,066-2	9/78	
EA 30,104-1	10/79	

<u>Audits</u>	<u>Date</u>	<u>Description</u>
5. Concerns with timely re-issue of FQC QCI Table of Contents		
FQC 18, B/1	5/75	
6. Random Indexing Observations		
EA 22,020 (4)	7/77	Individuals responsible for "controlled" file could not produce their copy of index
*EA 26,067 (2c)	9/78	Project pipe support cal. index. does not show superseded/superseding numbers
EA 39,152	1/82	Project Job Book Sketch index not be maintained
EA 40,155	4/82	ESK index out of date when used No system index of Loop Diagrams
*EA 40,159 (1st paragraph)	4/82	Structural Mechanics. Calc. index not up to date (mgt. info)

\*delete from document control topic - these will be included in discussion of calculations

### 3 B. Drawing revisions in the files

EA Audit 19, Finding 2.B.3	12/76	Mfg drawing in Project MAC files
EA 27, Observation 074	12/78	Mfg drawing in Project MAC files
FQC 9, Finding 06676(1)	7/74	Flow and elevation drawings
FQC 16, Finding D.2	12/75	Isometric sketches

<u>Audits</u>	<u>Date</u>	<u>Description</u>
FQC 19, Finding K.1	8/76	Vendor drawings and sketches
FQC 22, Finding (L.4)	5/77	Reactor Controls Inc. - Distribution to San Jose
FQC 26, Finding (L.4B)	6/78	Isometrics
From Suffolk County Group E&DCRs		
FA 602, 4.3	7/77	Drawings not to latest revision
FA 654, 4.7	11/77	Drawings not to latest revision
FA 718, 4.4	3/78	Drawings not to latest revision

1 JUDGE BRENNER: We can proceed with redirect.

2 MR. ELLIS: Thank you, Judge Brenner. For the  
3 Board's convenience, we are at Roman III of the redirect  
4 plan, and I propose to take first the transcript  
5 questions before the questions relating to LILCO Exhibit  
6 27. We have previously distributed to the Board and the  
7 parties a list of the transcript page numbers. The  
8 first page number is 12,053.

9 JUDGE BRENNER: Mr. Ellis, one thing. When  
10 you said for our convenience, it may have just been a  
11 courtesy as to how you phrased it. It was my  
12 impression, but I never got this expressly on the  
13 record, that the LILCO plan for the redirect examination  
14 of its witnesses had been served on all parties, unlike  
15 cross-examination plans. Is that wrong?

16 MR. ELLIS: That is wrong. We gave it only to  
17 the Board. We have given to the other parties the  
18 transcript page numbers and the other matters in advance  
19 and will continue to try to do so; but we did not serve  
20 the redirect plan on all parties.

21 JUDGE BRENNER: I don't have any problem with  
22 that, nor have I thought it through. However, it occurs  
23 to me that an important distinction between the way you  
24 would treat a redirect plan and a cross plan is that you  
25 don't serve a cross plan because you are cross-examining

1 hostile witnesses, that is, witnesses of the other  
2 counsel, whereas you are redirecting your own witnesses.  
3 You are not worried about tipping your hand to the  
4 witnesses. And it might assist other counsel in  
5 following along and knowing where you are going and in  
6 planning their follow-up questions to have the plan.

7 But I am certainly not going to say supply it  
8 as of this moment, particularly since you obviously had  
9 not planned to do so as you were preparing it, but you  
10 may want to think about it, and if you don't have any  
11 problem turning it over, it might be helpful. I will  
12 leave it up to you.

13 MR. ELLIS: Thank you, Judge Brenner. I think  
14 the only thing that might concern me is that we are  
15 always looking to streamline, and if we omit something,  
16 it may be for any number of reasons, and I think it  
17 would be better if the omission were our decision  
18 unencumbered, so to speak; but I will certainly be glad  
19 to tell Mr. Lanpher which areas we are going to next.  
20 This area that we are in now, of course, is document  
21 control, and I would expect that the next area we will  
22 go into is E&DCRs.

23 JUDGE BRENNER: All right. He does, of  
24 course, have the listings of the audit reports and so  
25 on. All right. The point you just made is also a good

1 one as to your hesitation in wanting to turn it over.

2 Let's just proceed.

3 Whereupon,

4 T. TRACY ARRINGTON,  
5 FREDERICK B. BALDWIN,  
6 WILLIAM M. EIFERT,  
7 T. FRANK GERECKE,  
8 DONALD G. LONG,  
9 WILLIAM J. MUSELER and  
10 ROBERT G. BURNS,

11 the witnesses on the stand at the time of recess, having  
12 been previously sworn, resumed the stand and testified  
13 further as follows:

14 REDIRECT EXAMINATION -- Resumed

15 BY MR. ELLIS:

16 Q Mr. Eifert, on transcript page 12,053, you  
17 were asked if the index referred to in Audit Observation  
18 020, Part 4, Engineering Assurance Audit 22, did in fact  
19 exist. Have you since been able to determine the answer  
20 to that question?

21 A (WITNESS EIFERT) Yes, I have. Subsequent to  
22 the cross-examination, I was able to go back and look at  
23 additional information, and we were able to verify that  
24 the project was maintaining appropriate indices up to  
25 date at that point in time. This was a question of

1 whether or not the specific individual responsible for  
2 the control file could demonstrate to the auditor that  
3 he had his copy of the index, but indexes were being  
4 issued, they were up to date, and they were being  
5 prepared according to the project instructions.

6 Q Now, Mr. Eifert, turning your attention to  
7 transcript page number 12,055, you were asked there  
8 about Engineering Assurance Audit 39, Audit Observation  
9 152, involving a sketch index. Do you have that, sir?

10 A (WITNESS EIFERT) Yes, I do.

11 Q Does that audit observation, in your view,  
12 have an impact on the design or construction of  
13 Shoreham; and if not, why not?

14 A (WITNESS EIFERT) In direct answer to that  
15 question, no, it would not have an impact on the  
16 integrity of the design of the Shoreham plant. This was  
17 the audit observation that indicated that the project  
18 job book index of sketches was not being maintained up  
19 to date, and we on cross-examination explained that  
20 these particular sketches are not in themselves control  
21 design documents, but rather they are sketches which are  
22 included in control design documents such as in  
23 specifications.

24 This would not, in my judgment, have an impact  
25 on the design because the sketches are fully reviewed



1 and approved as part of that design document. In this  
2 case, the example of the specification, the control, the  
3 distribution, the use, all of the document control  
4 aspects that ensure that the appropriate people receive  
5 those and use those and reference those in their work  
6 are handled through that control design document.

7           Therefore, the fact that the project job book  
8 index was not completely up to date is of no  
9 significance to the design.

10         Q     The next transcript page number 12,130. Mr.  
11 Gerecke, would you turn your attention to that page,  
12 please, sir?

13         A     (WITNESS GERECKE) Yes, Mr. Ellis, I have the  
14 page.

15         Q     On that page you mention that you were unable  
16 to find any specific documentation describing the  
17 corrective action taken in response to QA Audit Number  
18 7. Is there, however, any documentation indicating that  
19 the audit was satisfactorily closed out?

20         A     (WITNESS GERECKE) Yes, Mr. Ellis, there is.  
21 We have located the documentation which closes out each  
22 of the audit findings on Site QA Audit Number 7. This is  
23 the audit referred to on transcript page 12,130.

24         Q     All right, Mr. Gerecke. Would you turn now to  
25 transcript page number 11,161 through 165 -- 12,161

1 through 165, I'm sorry. Do you have those pages, Mr.  
2 Gerecke?

3 A (WITNESS GERECKE) Yes, Mr. Ellis, I do.

4 Q On those pages you discussed an audit of the  
5 LILCO Purchasing Department, Number 81-11, page 4, Open  
6 Item 1. And as part of the corrective action, you  
7 stated that "LILCO-initiated procurements for Shoreham  
8 were reviewed." Would you explain, please, the scope of  
9 that review and describe its results?

10 A (WITNESS GERECKE) Yes. There were 12 such  
11 procurements that had been identified. LILCO Quality  
12 Assurance reviewed the procurement documents for all 12  
13 of these procurements. Each was found to have included  
14 the necessary quality requirements. From this review I  
15 conclude that the persons originating the procurements  
16 were aware of the essential quality requirements,  
17 although in these specific cases they had not noted the  
18 QA categories specifically on the procurement documents  
19 or they had failed to use a purchase release form.  
20 However, they had included the essential requirements in  
21 the procurement documents.

22 Q By the "essential requirements," do you mean  
23 the quality requirements, the quality program  
24 requirements?

25 A (WITNESS GERECKE) Yes, the essential quality

1 program requirements.

2 Q All right, Mr. Gerecke. With respect to that  
3 same audit finding or observation, on transcript page  
4 12,166 you were asked questions concerning a comment in  
5 your April 8th memorandum attached to the audit. Do you  
6 have that in front of you, the transcript page reference?

7 A (WITNESS GERECKE) Yes, Mr. Ellis, I do.

8 Q Based on the review that you have just  
9 described, where you indicated that the overall quality  
10 program requirements were included in the documents, is  
11 the statement that is contained in your memorandum,  
12 stating that LILCO organizations were originating  
13 procurements without considering overall quality program  
14 requirements, entirely accurate?

15 A (WITNESS GERECKE) Mr. Gerecke, I think the  
16 word "overall" might have been somewhat misleading. As  
17 I have just testified, the personnel preparing these  
18 procurement documents were aware of and were complying  
19 with the essential quality program requirements,  
20 although they had in these cases overlooked the  
21 requirement to use purchase release forms or to note the  
22 QA category on the procurement documents.

23 Q By not noting the QA category or using the  
24 purchase release forms, would that in any way have  
25 affected the quality requirements that the vendors would

1 have to meet and would realize that they would have to  
2 meet?

3 A (WITNESS GERECKE) No. All of the vendor  
4 requirements had been included. This was verified  
5 during the quality assurance review of these procurement  
6 documents.

7 Q All right. Mr. Eifert, yours is the next  
8 transcript reference, 12,191. Do you have that, sir?

9 A (WITNESS EIFERT) Yes, I do.

10 Q All right. On that page you testified  
11 concerning QA Audit 77-8, Finding 3 with respect to  
12 Stone and Webster's procedures for the inclusion of  
13 records in the permanent plant file. Would you explain,  
14 please, the significance with respect to the integrity  
15 of the design of the plant, the significance of that  
16 audit observation and the basis for your conclusions?

17 A (WITNESS EIFERT) There is no significance in  
18 that audit observation with respect to the integrity of  
19 the design of the plant. I believe on cross-examination  
20 I explained that the procedure that we were discussing  
21 here was a procedure which would describe how Stone and  
22 Webster and LILCO working together would get the records  
23 into the permanent plant file. This in no way affects  
24 the basic design and construction process. It was not a  
25 question of the control in any way of the records being

1 used to design or construct Shoreham; it was simply a  
2 case of procedures to take those records as they are  
3 completed and get them into the permanent plant file.  
4 Therefore, there would be no significance or even impact  
5 on the design process or the construction process that  
6 we were carrying out.

7 MR. ELLIS: Judge Brenner, that concludes the  
8 specific transcript questions, and I propose now to turn  
9 to questions relating to what has been marked and bound  
10 in as LILCO Exhibit No. 27.

11 BY MR. ELLIS: (Resuming)

12 Q Members of the panel -- and I think I am  
13 referring more specifically to Mr. Arrington, Mr.  
14 Baldwin, Mr. Museler, Gerecke and Mr. Eifert -- you were  
15 asked a number of questions concerning audit  
16 observations related to document control. Have you all  
17 at my request reviewed the transcript to develop a list  
18 of the audit observations Mr. Lanpher asked you about on  
19 document control?

20 A (WITNESS ARRINGTON) Yes, we have.

21 Q And is that list what has been marked LILCO  
22 Exhibit No. 27?

23 A (WITNESS ARRINGTON) It is.

24 Q The list divides the audit observations into a  
25 number of categories. What was the basis for those

1 categories?

2           A       (WITNESS ARRINGTON) The findings in these  
3 categories were grouped in this manner as a result of  
4 the review of the audits themselves, the nature of the  
5 items that were discussed in the audits, discussion with  
6 personnel involved with the audits, as well as the cause  
7 and the significance of the findings in the audits.

8           Q       All right. Let me direct your attention first  
9 to the Category No. 1, entitled "Procedure-Related  
10 Observations, Practice vs. Formal Instructions." Can  
11 you generally characterize what these audit observations  
12 reflect, giving examples where appropriate?

13          A       (WITNESS ARRINGTON) Yes, Mr. Ellis. These  
14 observations fall into two groups, the valid ones and  
15 the invalid ones. The valid ones make recommendations  
16 as to the methods that were being performed under the  
17 various document reviews as well as the  
18 procurement-related activities. This recommendations  
19 typically address improving the work process with  
20 respect to timeliness, efficiency, clarification or more  
21 formalization of procedures and instructions. And in  
22 all cases in the valid group procedures did exist to the  
23 extent that they were considered necessary.

24                   The invalid audit observations and their  
25 respective recommendations stem from the auditors' lack



1 of total familiarity with regard to the in-depth work  
2 processes, as was discussed in LILCO's QA Site Audit 7,  
3 where the auditor had some concern or misunderstanding,  
4 in my opinion, with the difference between the verbal  
5 contact with the contractor or vendors as opposed to the  
6 formalization of a purchase audit with that vendor.

7           This was discussed in detail in the cross with  
8 Suffolk County. Also in QA Site Audit 77-8, Item 4,  
9 where the auditor was not aware of the other responsible  
10 organizations within Stone and Webster that had already  
11 identified these conditions that were cited in the LILCO  
12 audit, and corrective action was already under way  
13 within the Stone and Webster system, this item in  
14 particular was discussed in detail in the transcript as  
15 well.

16           MR. LANPHER: Judge Brenner, I would like to  
17 make an inquiry of the Board. I refrained yesterday on  
18 this matter. But it appears to me that the answers on  
19 redirect are being read, and given the complexity of the  
20 situation, I can understand the need for detailed notes  
21 and a lot of this. Are we entitled to have copies of  
22 these materials? Especially when they are being read  
23 very fast, it is hard to take notes, and I think it is  
24 important to have guidance. I don't want to spring this  
25 at the last minute, but I can imagine Mr. Hubbard, our



1 witnesses when they testify would be in a similar  
2 situation.

3           So I am not objecting to the witnesses having  
4 notes or even having things written out.

5           JUDGE BRENNER: It is a matter of judgment,  
6 and these are the considerations. If it is a very  
7 lengthy answer or a series of answers such that  
8 cumulatively it becomes lengthy and the witness is, in  
9 fact, essentially reading it word for word with only  
10 minor editorial adjustments, I would require that it be  
11 made available so you can follow it.

12           On the other hand, if the witness is working  
13 from notes that are the witness's pulling together of  
14 what he plans to say but they are very rough notes and  
15 he is merely using it to refresh his recollection and  
16 then formulating the words thereafter, I would not turn  
17 them over. And the way I describe the circumstances  
18 applies to redirect. Cross-examination might be  
19 different. That is, I might well even have notes turned  
20 over on cross. But it is typical on redirect that the  
21 witness would have some notes prepared.

22           So the question is how rough it is. I will  
23 ask it in this case if you want. If we can all follow  
24 it pretty easily, there is no need to turn it over. But  
25 you are having difficulty following it?

1 MR. LANPHER: Well, I will be very up front.  
2 Yesterday I had the feeling that Mr. Eifert was really  
3 pulling together diverse notes, and I could understand  
4 the situation. I had the feeling this morning on the  
5 answer that was just provided that it was very close, if  
6 not precisely, read. It was a very fast answer and I  
7 marked in my margin --

8 JUDGE BRENNER: Okay, we will find out. As to  
9 yesterday, I agree with you, it didn't appear to me that  
10 Mr. Eifert was reading the answer. He may have had  
11 phrases here and there, but he had enough trouble  
12 pulling the audit reports together. I am sure he had  
13 notes. In fact, I know he had notes. But I agree with  
14 your observation that he wasn't reading it.

15 There is nothing wrong with reading it, Mr.  
16 Arrington, but the consideration is it is hard to  
17 follow. I will ask you. If your counsel wants to  
18 answer he can. Do you essentially have all of your  
19 answers very close to the way you are going to read  
20 them? And also I will ask a separate question as to the  
21 answer we just heard.

22 WITNESS ARRINGTON: Judge Brenner, what I did  
23 is I took my notes and had them typed up because of  
24 different comments that had been put on these as we went  
25 back through the various audit observations. So I have

1 had them typed up. There are some written items that I  
2 put in at the last minute this morning, but basically I  
3 put my answers down in the context that I am prepared to  
4 answer them in. I just had them typed up as a matter of  
5 efficiency.

6 JUDGE BRENNER: Well, whether they are typing  
7 or handwritten doesn't matter, so don't feel badly that  
8 you did that. Are they essentially the way you are  
9 going to give the answer as opposed to just background?

10 WITNESS ARRINGTON: Not necessarily. I think  
11 it is going to be both cases. These audits cover  
12 various organizations, and in order for me to have the  
13 right frame of mind when I am responding to this, I put  
14 my answer down as complete as I possibly could, because  
15 given the time frame, and these audit observations do  
16 cover various organizations, so I tried to be as  
17 thorough as I could in my writeup in order to be able to  
18 keep it in the proper context.

19 JUDGE BRENNER: It is close to the way you  
20 expect to present the answer although you may vary it at  
21 the time you actually present it?

22 WITNESS ARRINGTON: From time to time, yes,  
23 sir.

24 MR. ELLIS: In addition to that, Judge  
25 Brenner, I'm not sure that I'm going to ask the

1 questions, necessarily, so I would certainly object to  
2 that. If there is a problem with Mr. Lanpher following  
3 it, I would be glad to go slower or do anything else,  
4 but I certainly would not want him to have our work  
5 product because I don't think the answers are going to  
6 be verbatim from anything that I have.

7 JUDGE BRENNER: We are talking about what Mr.  
8 Arrington has.

9 MR. ELLIS: Judge Brenner, if I can suggest,  
10 given the fact that there has just been one answer this  
11 morning, I certainly don't think that is a basis for  
12 anything in terms of his future answers.

13 JUDGE BRENNER: There is nothing wrong with  
14 what Mr. Arrington is doing. The only point is it is as  
15 if he has it prepared in writing, and it would certainly  
16 be easier to follow. The hesitation I have is the  
17 extent of his possible variation as well as your  
18 possible elimination of questions.

19 MR. LANPHER: Judge Brenner, I would just like  
20 to repeat one of my concerns. I don't want to be in a  
21 position of waiving some right that I may have to get  
22 theirs and then all of a sudden, when Mr. Hubbard is  
23 testifying from notes or whatever, have the same  
24 request. I think it is important to settle the issue  
25 somewhat up front, and again, I recognize the

1 complexity. I don't object to these witnesses having  
2 notes.

3 JUDGE BRENNER: Well, if it was background  
4 information that was not previously in the record, you  
5 would be entitled to it, and I am not talking about a  
6 compilation of work product information. So if Mr.  
7 Hubbard has that, that is going to be a different  
8 situation, and that is not what Mr. Arrington has now.  
9 He is pulling together things from the reports that we  
10 already had in the record, plus perhaps follow-up with  
11 other personnel that he has had a chance to check with.

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1                   WITNESS ARRINGTON: Judge Brenner, there's an  
2 awful lot of details and we are required to research  
3 through these audit observations. It's very difficult  
4 for me as an individual to be able to keep the flow  
5 consistent without using thorough notes. Other people  
6 might be able to recall these things in more detail  
7 because they particularly pertain to their disciplines.  
8 I for one can't, so that is one reason why I'm using  
9 these detailed notes.

10                   JUDGE BRENNER: I don't think anyone could.  
11 We all understand that, and that's why I tried to  
12 emphasize that that's not the problem. You are entitled  
13 to have whatever you want up there.

14                   All right. I'm not going to require that they  
15 turn it over, and the consideration in my mind is that  
16 they may well vary the answer or not even ask the  
17 question or ask the question in a different fashion than  
18 planned, in which case you would be getting what is  
19 obviously a work product that is not going to be put in  
20 testimony.

21                   If I thought the circumstances were such that  
22 we were going to get a pre-planned sequence that  
23 definitely was going to be asked and he was essentially  
24 going to read it verbatim, -- I'm not saying that it  
25 would have to be precisely verbatim but essentially --



1 then I would have had it turned over to you, because the  
2 work product limitation would not apply in the sense  
3 that we would be hearing it, anyway, and it would make  
4 it easier for you to follow.

5           But for the slight advantage of making it  
6 easier for you to follow, I don't take that to outweigh  
7 the other disadvantages to the other party. And the  
8 same would apply in your case, also. So I think you got  
9 what you wanted basically, in terms of clarifying it at  
10 this point. I think it was a good idea to clarify it,  
11 but remember to keep the distinction in mind that I  
12 pointed out before. If it comes up again, recognize  
13 that distinction.

14           It would also be much quicker, very frankly,  
15 as a litigative practicality, to turn over information  
16 on cross examination which a witness was relying on than  
17 on redirect. I won't go into all the differences, but I  
18 think you recognize there are some. So let's proceed.  
19 If the answer is coming too fast because of a reliance  
20 on notes, just jump in, Mr. Lanpher, and we'll slow it  
21 down.

22           BY MR. ELLIS (Resuming):

23           Q     Mr. Arrington, in the answer that you just gave  
24 where you described the auditor's incomplete  
25 understanding, was that answer with respect to the two



1 audit observations listed in the section entitled "B,  
2 Invalid Observations"?

3 A (WITNESS ARRINGTON) Yes, sir. On page 1 of  
4 Exhibit 27.

5 Q I note that the title to the first section is  
6 "Recommendations." What is the significance of that  
7 title?

8 A (WITNESS ARRINGTON) These are recommendations  
9 that were made as a result of the audits, of the auditor  
10 reviewing the various work activities at both the  
11 project and at the job site. The recommendation was in  
12 order to improve the program, maybe in the auditor's  
13 opinion, to make the program maybe more efficient in the  
14 line of communication and clarification, I think he was  
15 looking for maybe more detail in some cases.

16 Q Do the audit observations in the category B,  
17 "Invalid Observations" also involve recommendations?

18 A (WITNESS ARRINGTON) I believe they were more  
19 in the line of lack of understanding as opposed to  
20 recommendations. We feel that the auditor was not fully  
21 informed or fully knowledgeable about the activities  
22 that were covered in those audit observations.

23 Q Well, Mr. Arrington, with respect to all of  
24 the audit observations in category 1 on LILCO Exhibit  
25 27, was corrective action taken for these?

1           A       (WITNESS ARRINGTON) I believe that since these  
2 observations were more in the line of recommendations as  
3 opposed to deficiencies, corrective action was not  
4 required, as would apply to Appendix B or criterion 16.  
5 But in a number of cases, these recommendations were  
6 adopted and some procedures were beefed up, if you will,  
7 and more formalized programs were instituted as a result  
8 of it.

9                   These were discussed in detail in the  
10 transcript on those items.

11           Q       Given your description of the audit  
12 observations that appear in the first category in LILCO  
13 Exhibit 27; that is, practice versus formal  
14 instructions, would any of these audit observations, in  
15 the opinion of you or Mr. Eifert or others on the panel,  
16 have an impact on the adequacy of the design or  
17 construction of the plant?

18           A       (WITNESS ARRINGTON) No, Mr. Ellis. I think by  
19 their very nature they would not affect the components'  
20 function in that they were administrative in nature.

21           Q       Well, can you be more explicit? What do you  
22 mean by administrative in nature?

23           A       (WITNESS ARRINGTON) Well, the steps during the  
24 procurement cycle were already undertaken. These  
25 observations were recommendations to improve the

1 program. That may be in the line of more detailed  
2 descriptions, things along that line. The activities  
3 were already undertaken by the various organizations  
4 that were being audited.

5 Q Well, by improvement, do you mean to imply  
6 that the program wasn't adequate to begin with?

7 A (WITNESS ARRINGTON) I think a lot of times,  
8 the program was adequate in my opinion, but in a lot of  
9 cases the auditor is looking for ways to make the  
10 program itself more efficient -- in the nature of timely  
11 reviews, responses to QA type questions, interfaces  
12 between organizations, more in the line of additional  
13 details within the procedures.

14 A lot of the observations in this group  
15 represent exactly that. He's looking for more detailed  
16 descriptions in the QA procedures and program.

17 Q Well, Mr. Eifert or Mr. Arrington, either one,  
18 there are nine audit observations contained in the  
19 group; one, practice versus formal instructions in LILCO  
20 Exhibit 27. Do you attach any significance to this  
21 number of observations in this group?

22 A (WITNESS ARRINGTON) No, Mr. Ellis. I think  
23 these audits make recommendations rather than indicate  
24 non-conformances. They cover different organizations  
25 during different timeframes of the job site. They don't

1 appear to be reoccurring in nature, and the conditions  
2 that are cited in the audits seem to occur in the very  
3 early stages of a particular process.

4 Q Mr. Eifert, have you reviewed the observations  
5 in this group number one that appears in LILCO Exhibit  
6 27 and is entitled "Practice versus Formal Instructions"?

7 A (WITNESS EIFERT) Yes, sir, I have.

8 Q You had duties and responsibilities at Stone &  
9 Webster for some period of time relating to procedures?

10 A (WITNESS EIFERT) Yes, sir, I was supervisor of  
11 the design control procedures group for just over five  
12 years, and in that capacity, I was responsible for  
13 developing the Engineering Assurance Procedures Manual  
14 as well as heavily involved in several of the other  
15 procedural systems at Stone & Webster.

16 Q Well, based on your experience of five years  
17 as supervisor of the procedures group, do these  
18 observations contained in Category 1 of LILCO Exhibit 27  
19 constitute or involve, in your opinion, represent  
20 violation of Appendix B?

21 A (WITNESS EIFERT) No, sir. In my opinion, they  
22 don't.

23 Q Would you explain your reasons for your  
24 conclusion?

25 A (WITNESS EIFERT) Yes, I will. If we look at

1 the specific observations in the category of  
2 Recommendations, we see basically two activities. The  
3 primary activity covered in those dealt with  
4 procurement, and the last one involved the Stone &  
5 Webster procedures for records retention.

6 With respect to procurement, the Appendix B  
7 criteria that would be involved in these activities are  
8 criterion 4 and criterion 7. And with respect to  
9 records, we're talking criterion 17.

10 To address criterion 17 first, the situation  
11 was not a violation in that sense because as I indicated  
12 on cross examination, it was a situation where the  
13 procedures were being developed to establish the  
14 permanent plant file at LILCO, and Stone & Webster was  
15 working very closely at that time with LILCO to  
16 establish that permanent plant filing system.

17 It was not a situation where -- it was a  
18 situation where all of the procedures were not yet in  
19 place at the time of the audit, but it was not a  
20 situation where they weren't in place at a time when  
21 they were needed. The procedures were being developed;  
22 the system was set up and the records are getting to the  
23 permanent plant file in a timely way to support the  
24 operation of this plant.

25 With respect to criterion 4 and criterion 7,



1 today's testimony as well as the testimony that we gave  
2 on cross examination I believe clearly indicates that we  
3 did, indeed, have procedures in place for the  
4 appropriate activities, and in view of the requirements  
5 of the two criteria that I mentioned, criterion 4 and  
6 criterion 7, both those criteria require that we have  
7 measures established for controlling the procurement  
8 process. And in that sense, we did have measures  
9 established for controlling the process.

10           The criteria I think that we need to  
11 understand most fully here in terms of our  
12 characterization of these types of things as  
13 recommendations is criterion 5. And the first part of  
14 that criterion indicates that activities affecting  
15 quality shall be prescribed by documented instructions,  
16 procedures or drawings of a type appropriate to the  
17 circumstances, and shall be accomplished in accordance  
18 with those procedures, instructions and drawings.

19           The portion of that statement that I would  
20 emphasize is "appropriate to the circumstances." When  
21 we develop procedural systems to implement our quality  
22 program commitments that are responsive to the various  
23 criteria of Appendix B, in all cases in those procedures  
24 we have to make judgments with respect to the activity  
25 being conducted and the degree to which we need to



1 describe in great detail the procedures and the steps in  
2 that process.

3           There are several things that affect the  
4 amount of detail that you describe in procedures. Not  
5 the least of which is, for example, the numbers of  
6 people in your organization. The degree to which we  
7 want standardization at a detailed level is another very  
8 important criterion.

9           The complexity of the particular activity that  
10 we're talking about would be another criterion. And  
11 certainly, an important criterion is that we would not  
12 want to have an extreme amount of detail in procedures  
13 that would, in effect, override the application of  
14 experienced judgment by qualified people.

15           These factors have always been included in  
16 Stone & Webster procedures. In a lot of our procedures  
17 we go to extreme detail because we're looking for that  
18 standardization at that same level, and I would like to  
19 give you an example of that.

20           We talked yesterday of drawings and of drawing  
21 checklists used for the drafting check. And we do have  
22 a checklist which is used for that process and it's a  
23 fairly precise checklist. However, we have not, for the  
24 design reviews, in all cases developed detailed  
25 checklists for what an engineer must do in each

1 individual design review because that's not a standard  
2 process.

3           We do identify in our procedures his  
4 responsibilities, what he is supposed to do in the  
5 design review, and the topics he's supposed to address,  
6 but we don't use a detailed, step-by-step checklist for  
7 design review because they would have a negative  
8 effect. They would have the effect of limiting the  
9 review to only what's on the checklist. So we have to  
10 be careful that you don't put so much detail in the  
11 procedures that they tend to limit people's perspective  
12 and tend, over a long period of time, to take away that  
13 most important aspect of the use of good, experienced  
14 judgment.

15           In these particular cases, what we're seeing  
16 is --

17       Q     Excuse me. When you say these particular  
18 cases, what are you referring to?

19       A     (WITNESS EIFERT) These particular cases as  
20 identified in LIVEDO Exhibit 27, the first category, the  
21 items under "Recommendations." In these particular  
22 cases, I believe that these all are situations where in  
23 the auditor's judgment, he was looking for more detail  
24 that he felt would be useful. And as Mr. Arrington  
25 characterized them, contribute to efficiency in the work

1 process.

2           As an example, I would use the Stone & Webster  
3 PQC audit, the third item under "Recommendations," where  
4 the situation was that the auditor was recommending that  
5 a more detailed, step-by-step type procedure be prepared  
6 for how the review was made of vendor documentation to  
7 verify that it was being received.

8           This is a situation where there wasn't a  
9 step-by-step procedure, but there was procedure -- it  
10 was a requirement that this process be done. It was a  
11 small number of people who were involved in it, so we  
12 weren't talking about the thousands of engineers, for  
13 example, at Stone & Webster who prepare calculations.  
14 We were talking about a small group of people in the  
15 district office who were reviewing this documentation.

16           So in my judgment, the need for extreme detail  
17 in procedures just is not necessarily required. In this  
18 case, there was no question that the process was being  
19 carried out. And in that respect, it's a recommendation  
20 and clearly not a violation of criterion 5. The  
21 procedure, we believe at the time, was appropriate to  
22 the circumstances under which that activity was being  
23 carried out.

24           And in reviewing again these items under  
25 Category 1 on "Recommendations," all of these categories

1 reflect that type of thing. We weren't talking in these  
2 observations -- and these observations do not in any way  
3 indicate that activities were not being carried out, but  
4 it was that level of detail.

5 MR. ELLIS: Judge Brenner, I would propose now  
6 to go on to the next category on LILCO Exhibit 27.

7 JUDGE BRENNER: I have kind of a bookkeeping  
8 item, since these are not the easily-familiar FQC audits  
9 out of -- or the engineering assurance audits -- out of  
10 either Suffolk County Exhibit 51 or Suffolk County  
11 Exhibit 56. I was trying to find these miscellaneous  
12 type audits, and I found all of them except one in  
13 Suffolk County Exhibit 68. So I wanted to note that,  
14 although the titles used in LILCO's exhibit are not in  
15 all cases the same as the Table of Contents.

16 So you have to check a little more carefully.  
17 But I could not locate the April 8, 1981 memo from Mr.  
18 Gerecke. Can you tell me what exhibit that was?

19 MR. ELLIS: Yes, sir. It's attached, I  
20 believe, to the Audit 81-11. Also, I asked Mr. Gerecke  
21 a question about that in the transcript pages, I think  
22 at 12,160 through 66.

23 JUDGE BRENNER: All right. So it would be  
24 part of tab 24 in Suffolk County Exhibit 68?

25 MR. ELLIS: I believe so. I don't have it

1 right here.

2 JUDGE BRENNER: All right. It is, if it's  
3 attached as you said it is. All right, thank you.

4 MR. ELLIS: I propose now to go to the next  
5 category.

6 BY MR. ELLIS (Resuming):

7 Q Gentlemen, the next category is entitled  
8 "Legibility." Mr. Eifert or Mr. Arrington, would one of  
9 you please characterize generally what the audit  
10 observations that are in this category in LILCO 27  
11 represent?

12 A (WITNESS ARRINGTON) Yes, Mr. Ellis. These  
13 observations are also, in my opinion, recommendations in  
14 that they involve reproducibility as opposed to  
15 legibility. These audits that started in FQC Audit 23  
16 only reflect a situation that has already been captured  
17 in the corrective -- document corrective action list  
18 that had been sent out by the document control center at  
19 the site.

20 I think the auditor was concerned with the  
21 timely resolution of the items that had been identified  
22 by the site document control system.

23 Q What do you mean by they had already been  
24 captured?

25 A (WITNESS ARRINGTON) Well, there's a review



1 that takes place within the document control center at  
2 the job site where drawings are reviewed for legibility,  
3 for reproduction purposes. At this point in time we had  
4 a backlog of drawings. It was in the fairly early  
5 stages of the project. This included both Stone &  
6 Webster and vendor drawings. Most of the Stone &  
7 Webster drawings were resolved in a relatively short  
8 period of time.

9           Subsequent to the cross examination, my  
10 research has indicated that one of the drawings we  
11 discussed on fuel quality control, Audit 23, which was  
12 the drawing number FZ-10C, this drawing had been voided  
13 in 1976 and was approximately one year prior to the site  
14 Audit 23. And what I was saying here is that apparently  
15 the auditor was not aware that this drawing had been  
16 voided. It is required that we maintain these drawings  
17 in the historical file, but I don't think that people  
18 were getting to excited due to the fact that this  
19 drawing was a voided drawing, and the timeliness in  
20 resolving that was not expeditious in that manner.

21           Q     Is this the drawing, that one you referred to,  
22 the one that took until the Audit, I think, 27 in order  
23 to resolve?

24           A     (WITNESS ARRINGTON) That is correct. It was  
25 identified in FQC 27 as being corrected.



1           Q     Mr. Arrington of Mr. Eifert, with respect to  
2 the second group in LILCO Exhibit 27, did any of the  
3 documents involved in these observations that are listed  
4 in category 2, were any of them issued to the end user  
5 of those documents?

6           A     (WITNESS ARRINGTON) No, Mr. Ellis. These  
7 drawings have been captured within the document review  
8 process. They were not or would not have been issued to  
9 the end user or the construction department in that they  
10 were not considered to be legible during the  
11 reproduction cycle.

12                     These were identified to the project for  
13 resolution and they would not be able to be distributed  
14 until that problem had been rectified.

15           Q     Well, if they had not -- any of these drawings  
16 that are referred to in the audit observations in  
17 category 2 of LILCO Exhibit 27 -- had not been issued to  
18 the end user, was there any impact on the design or  
19 construction of the plant?

20           A     (WITNESS ARRINGTON) No, Mr. Ellis. These  
21 drawings, by not being issued to the individuals in the  
22 field, be it the construction department of contractors,  
23 it would have no impact on the design or the  
24 construction of the plant other than a possible impact  
25 on the schedule with the items that are identified on

1 that particular document.

2 I think that had that been a problem it would  
3 have been identified through the normal management  
4 channels and that would have been expedited. But it  
5 would not have been issued to the field, so therefore,  
6 no one could do the work on the items that were  
7 identified on that particular document.

8 Q I think in response to Mr. Lanpher's questions  
9 on cross examination you indicated that it took a  
10 substantial period of time, approximately two years, to  
11 close these observations. Can you explain why that was  
12 so?

13 A (WITNESS ARRINGTON) Well, that was primarily  
14 due to the fact that these drawings had to go back to  
15 the manufacturers themselves. It took some convincing  
16 to have the manufacturer enhance these drawings. I  
17 think Mr. Baldwin had indicated in his testimony that  
18 some of these conditions were very fine lines. The  
19 printing was small on the drawings and it took a while  
20 to convince the vendors that these drawings had to be  
21 upgraded to the point where they could be reproduced at  
22 the job site in order that we could use them in the  
23 field.

24 During this period of time, there was a task  
25 group that was put together by the project to try and

1 expedite what appeared to be an industry-wide situation  
2 dealing with vendors and reproducing their documents.  
3 As a result of the task group -- I'll try to give you an  
4 example. The initial reviewer would take a document  
5 that was recieved from a vendor and make a copy of this  
6 document and he would repeat this process approximately  
7 three, maybe four additional times in order to find out  
8 that the drawing would be acceptable by the time it went  
9 through its last generation of being reproduced at the  
10 job site.

11 By doing this, he would find out on the  
12 initial review that the drawing was or was not  
13 acceptable by the time it had gone through a  
14 reproduction cycle of approximately four additional  
15 times.

16 I think this is the type of response or action  
17 that the auditor was looking for in order to close these  
18 items out. Once the list was down to a relatively low  
19 number, these items were closed out but it did take time  
20 in going back to the vendors to have them reproduce or  
21 redraw these drawings.

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1 Q Mr. Arrington, the subject that you have  
2 described of reproducibility appears in eight audits as  
3 reflected in category 2 of LILCO exhibit number 27. Do  
4 you attach any significance to that fact?

5 A (WITNESS ARRINGTON) Yes, I do. In the  
6 two-year time frame, these items were reoccurring.  
7 There are a large number of drawings that were being  
8 issued, and as I had indicated a few minutes ago, I  
9 think any industry with documents that has a  
10 reproduction cycle will have a similar type condition.  
11 It is not considered significant in the QA scope in that  
12 it had been captured within the review cycle that was  
13 ongoing at the time of the audit.

14 I think from that standpoint I don't consider  
15 it to be significant in the fact that it was captured.  
16 It was not identified necessarily by the auditor. The  
17 situation had already been identified in the review, and  
18 corrective action had already started.

19 (Whereupon, counsel for LILCO conferred.)

20 MR. ELLIS: Judge Brenner, I propose to go to  
21 the third category in LILCO exhibit 27 at this time.

22 BY MR. ELLIS: (Resuming)

23 Q Gentlemen, turn your attention, please, to the  
24 third category, the category entitled Miscellaneous  
25 Observations Relating to Indices, Logs, Files, Manuals,

1 Procedures, and Instructions. Are all of the audit  
2 observations in group 3-A on LILCO exhibit 27 related?

3 (Whereupon, the witnesses conferred.)

4 A (WITNESS EIFERT) Mr. Ellis, what we did in  
5 reviewing the document control topics or the document  
6 control observations is try to categorize them, and we  
7 were able for everything that we put in group 3,  
8 generally relate those to various indices, logs, files,  
9 manuals, procedures, and instructions.

10 If you recall on cross examination for project  
11 engineering alone I indicated that our quality program  
12 procedures require in excess of 300 logs, files, and  
13 indices -- or logs, indices alone with additional many,  
14 many files.

15 What we have done here is related them all to  
16 that general topic. As we have indicated here, we have  
17 then broken them down by the first layer of  
18 categorization, if you will, being observations relating  
19 to manual holders.

20 The concerns with the LILCO job only manual,  
21 which was a Stone and Webster manual on the projects,  
22 concerns with the project, preparing an updating project  
23 manual content, concerns with the timely reissue of the  
24 project manual, and concerns with -- a single case of  
25 concerns with the timely reissue of one of the FQC



1 tables of contents, which was something we couldn't  
2 really relate to any of the other things in this  
3 category other than the general topic of indices.

4 And then, finally, a random grouping of  
5 observations on indexing. The final group under item 3  
6 is some specific problems with drawing revisions which I  
7 think we can address more fully as a single topic.

8 Q You were just referring to 3-B. Is that  
9 correct?

10 A (WITNESS EIFERT) That's correct.

11 Q And in your discussions were you referring to  
12 the subtopic headings, 1 through 6 under 3-A?

13 A (WITNESS EIFERT) Yes, I was.

14 Q Of LILCO exhibit 27?

15 A (WITNESS EIFERT) Yes, I was.

16 Q On number 3, under 3-A, was the final word in  
17 that description "content" or "context?"

18 A (WITNESS EIFERT) Yes, the final word there  
19 should have been "content."

20 MR. ELLIS: Judge Brenner, that is a  
21 correction that we missed.

22 MR. LANPHER: Where are you referring to?

23 JUDGE BRENNER: He is on page 3 of LILCO  
24 exhibit 27, and it is numbered item 3 on that page, the  
25 last word. "Context" should be "content."



1 MR. LANPHER: Thank you.

2 WITNESS EIFERT: I would like to make one  
3 additional correction on page 4, in the subgroup 6. We  
4 have indicated there are two audit observations with an  
5 asterisk indicating that we have included those in the  
6 document control -- excuse me, I mean, in the  
7 calculation discussion yesterday. With respect to EA  
8 audit 40, observation 155, the asterisk should not be on  
9 that item. It should be on the next one, EA 40,  
10 observation 159.

11 BY MR. ELLIS: (Resuming)

12 Q So the two that were discussed in calculations  
13 yesterday are EA 26, 067, 2C, and EA 40, 159, first  
14 paragraph?

15 A (WITNESS EIFERT) Yes, sir.

16 JUDGE BRENNER: All right. Could LILCO make  
17 sure these corrections are made on the exhibit copies  
18 and the copy that is going to be bound in?

19 MR. ELLIS: Yes, sir.

20 BY MR. ELLIS: (Resuming)

21 Q So as I understand, Mr. Eifert, these in these  
22 subgroups were generally related but involved different  
23 organizations and different specific problems? Is that  
24 fair?

25 A (WITNESS EIFERT) Yes, sir. That is a correct

1 characterization.

2 Q Well, then, is there some reason why you  
3 included all of these in the same general category of  
4 miscellaneous observations 3-A?

5 A (WITNESS EIFERT) Yes, sir, there is. Where  
6 we do see one commonality here is in the type of  
7 significance that these observations reflect. We have  
8 indicated that -- or I am indicating that these findings  
9 are all of a type where the potential impact on quality  
10 is extremely remote, and it is on that basis that we  
11 feel that the discussion of these with respect to the  
12 reasons why the potential impact is remote are common.

13 The significance therefore is common, and we  
14 can address them in that way as a group of items.

15 Q Mr. Eifert, you indicated that these can be  
16 addressed collectively because their impact on quality  
17 is extremely remote. Can you generally characterize the  
18 nature of these audit observations in 3-A of LILCO  
19 exhibit 27, and give examples with a view toward giving  
20 us, giving the Board a basis for your view that the  
21 impact on quality is extremely remote?

22 A (WITNESS EIFERT) Okay. I think you have  
23 asked two questions. Let me first go through and  
24 characterize these a little more to remind the Board  
25 what was in these various categories, and then we can

1 describe as a whole the significance aspect of these.

2           The first subgrouping on observation with  
3 manual holders is a situation where the audits found  
4 some problems in some of the manuals with respect to the  
5 pen and ink changes on the manual indexes as well as in  
6 some cases problems with the content of the manual  
7 where, as an example, I know what we find many times in  
8 engineering assurance audits is that people receive a  
9 revised instruction and they put it in their manual  
10 without taking out their earlier revision, and without  
11 marking it clearly to indicate that it has been  
12 superseded by a later revision.

13           This is that general category. As we can see,  
14 they involve a lot of different manuals which would  
15 involve a lot of different people.

16           (Whereupon, the witnesses conferred.)

17           A       (WITNESS EIFERT) When we look at the combined  
18 project and cite number manuals that we have -- manual  
19 holders that are involved here, we are talking on the  
20 order of magnitude of 300. This is the type of finding  
21 in this category, and I will go on and get back to my  
22 feelings with respect to the significance of that in a  
23 moment.

24           The second item I think we discussed in quite  
25 some detail on cross examination. These were two audit

1 observations dealing with what I call here the LILCO job  
2 only manual. I believe that one of the observations  
3 refers to that. The pipe stress and supports manual.

4           It is the same manual, and it was a unique  
5 manual that was developed for pipe stress and support  
6 engineering work at the Shoreham plant, and these simply  
7 reflected difficulties in getting that manual started,  
8 and didn't in any way indicate any concerns with the  
9 adequacy of pipe stress engineering or pipe stress  
10 support work that was being performed on the project.

11           The third category with respect to the  
12 concerns with how the project was preparing and updating  
13 the project manual content, again, we discussed each of  
14 these on cross examination. The information that I was  
15 able to present on cross examination did indicate that  
16 we were able to establish that the kinds of concerns  
17 that the engineering assurance auditors were reporting  
18 here were not of a type that had effect on the  
19 technical, in any way, the technical direction on how to  
20 design or engineer the power plant.

21           And these were administrative aspects of the  
22 project manual.

23           The concerns in the fourth category, the  
24 concerns with the timely reissue of the project manual  
25 index, I think we also discussed a great deal, and this,

1 we described this problem as primarily a difference of  
2 judgment with respect to what the project was doing and  
3 the auditors on how often they needed to fully reissue  
4 the project manual index as a way to make it easier for  
5 the manual holders to have the latest index without  
6 having an index that was marked up to any extensive  
7 nature to indicate what changes were in the manual.

8 That reflects that particular category.

9 Category 5 was an isolated situation with  
10 respect to the field QC manual. The situation was  
11 simply that there was a requirement to issue a revised  
12 table of contents on a quarterly basis, and at the point  
13 in time at the audit it had been five months since the  
14 last index had been issued.

15 I believe we described on cross examination  
16 that we clearly didn't see that as significant. There  
17 had only been two changes issued in that manual in that  
18 period of time. There would not have been any remote  
19 possibility that there would have been any confusion on  
20 the part of the people holding that manual as to what  
21 the situation was.

22 With respect to the random indexing files,  
23 addressing just the three now that we have included in  
24 this category, the first one was one of the questions  
25 that you asked me, a transcript question. Clearly,



1 ir exes were available, and we don't see any  
2 significance in that one.

3           The project job book sketch we also discussed,  
4 and the third one on EA 40, observation 155, again, we  
5 fully described that on cross examination. The problem  
6 with the ESK index was an administrative timing problem  
7 with our OP project. I believe we called it the ATS  
8 group.

9           That is a computer-based system that we used  
10 to maintain a lot of indices and other such documents,  
11 and it was a timing situation there, and that was fully  
12 discussed at that post-audit conference, and the project  
13 took prompt action there to assure that they were  
14 meeting the requirement for getting an accurate and  
15 timely index published.

16           And in addition, as a result of that, the  
17 project actually increased the frequency of issuing the  
18 index, because they and we agreed that the status of  
19 production activities at the construction site were such  
20 that it would probably be useful for them to get an  
21 index even more frequently than their procedures  
22 required.

23           So, as a general characterization, they all  
24 relate to indices, logs, et cetera, but if you look at  
25 what I have just indicated, describing these as well as



1 the other information that is already on the cross  
2 examination transcript, they relate to different  
3 problems. There are different people involved,  
4 different causes, and as I indicated earlier, they are  
5 all of a nature that their potential significance to the  
6 quality of the design or the quality of the construction  
7 of the plant is just very, very remote.

8           The reasons for that are that the manuals that  
9 we're talking about in this case are the administrative  
10 manuals. The one exception to that is that the project  
11 manual does include some technical criteria that we were  
12 able to verify that the problems do not involve those  
13 with respect to the adequacy of those instructions.

14           In some cases, we don't have a specific  
15 breakdown, but in some cases the manuals that are found  
16 in audits are issued to people for information only.

17           Q     When you say you don't have that breakdown,  
18 was that testified to on cross examination?

19           A     (WITNESS EIFERT) Yes.

20           Q     All right, go ahead. You are giving your  
21 reasons for your view that these audit observations have  
22 only if any a remote effect.

23           A     (WITNESS EIFERT) Okay. Going back quickly to  
24 your last question, Mr. Ellis, we testified on cross  
25 examination with respect to the individuals who had

1 manuals for information only, to the extent that we had  
2 that information available. We did not really attempt  
3 to go back and research our records to that extent since  
4 cross examination.

5           But to continue on that, in some cases people  
6 did have the manuals for information only, and they  
7 weren't keeping them up to date. I recall in my cross  
8 examination with respect to engineering assurance I  
9 described a program that we undertook to assure that  
10 only people who actually needed manuals maintained them.

11           We have, I believe, today something like 1,300  
12 copies of our engineering assurance procedures manual  
13 out to           nds of people throughout the company, and  
14 we find that many times there are people who want  
15 manuals because they want all manuals, and not because  
16 they need them, and typically what we found in many  
17 audits. those were the people who weren't keeping them  
18 up to date.

19           Another, with respect to the manuals, another  
20 reason why we are not concerned with the significance is  
21 that the manual itself is not a work checklist, if you  
22 will. There are other means that we use all the time to  
23 assure that the people doing the work know what they are  
24 supposed to be doing, the most important obviously being  
25 the supervisor directing the work is required to know

1 what is going on, and he does know, and the primary way  
2 the requirements are communicated to people doing the  
3 work is through the supervisor, not because we issue a  
4 procedure.

5           These procedures are used primarily as a  
6 reference source for people who have an unusual  
7 situation or who don't recall specifically what a given  
8 situation is to be, how a given situation is to be  
9 handled. They use it as a reference. But these are  
10 procedures that describe these individuals' day to day  
11 activities, and people know their day to day activities  
12 through their supervision as well as through the  
13 training by the supervisor, as well as the formal  
14 training programs that are ongoing.

15           The last and probably the most significant  
16 reason why we don't think these are significant and  
17 which we can show very objective evidence is that all  
18 the activities we're talking about here are audited.

19           Q     What do you mean by all of the activities that  
20 we're talking about here?

21           A     (WITNESS EIFERT) The activities that are  
22 described in the various manuals that we have discussed  
23 in this category, category 3 on LILCO exhibit 27  
24 relating to miscellaneous observations.

25           Q     That is 3-A, Mr. Eifert?

1 A (WITNESS EIFERT) Yes, it is.

2 Q Go ahead.

3 A (WITNESS EIFERT) The activities described by  
4 these manuals are subject to audit by several  
5 organizations as we have discussed in great detail in  
6 these hearings. We are confident that the mechanisms  
7 describing those procedures have been carried out  
8 according to those procedures.

9 I have discussed this with everyone involved  
10 in the auditing process, and none of us to our best  
11 recollection have ever had any kind of a situation of  
12 any significance that we could attribute to the fact  
13 that the cause was that the people didn't have the right  
14 procedure.

15 That isn't the situation that we see when we  
16 identify the implementation. Problems with our program,  
17 we see other causes but have never seen any kind of  
18 recurrent situation, and to my recollection, none of us  
19 could recall actually given a situation where the cause  
20 of the problem was having a lack of procedure.

21 Those are the reasons that I have for why we  
22 do not feel that those concerns identified there in item  
23 1-A in LILCO exhibit 27 would have a significant impact  
24 on the design adequacy or on the quality of the  
25 construction of the Shoreham plant.

1 Q Did you say 1-A or 3-A?

2 A (WITNESS EIFERT) Excuse me. I said 1-A, but  
3 I meant 3-A.

4 Q Thank you.

5 For each of the observations in 3-A of LILCO  
6 exhibit 27, was corrective and preventive action taken?

7 A (WITNESS ARRINGTON) Yes, Mr. Ellis.  
8 Corrective action was taken on each of these items. The  
9 manuals that we indicated in the audit observations were  
10 updated with their indices and the table of contents as  
11 well as the procedures were reinstalled in the manuals.

12 There was also some preventive action that was  
13 taken in the form of training the individuals that was  
14 involved so they would have a full understanding of the  
15 importance of keeping the manuals up to date.

16 As Mr. Eifert has indicated, we do have  
17 conditions where organizations are on distribution for  
18 these manuals only for information only. We do continue  
19 to audit the manual updating indices as a continuing  
20 process.

21 MR. ELLIS: Judge Brenner, I propose now to  
22 proceed to the next subcategory, 3-B.

23 JUDGE BRENNER: Well, we propose to take a  
24 break, and then let you proceed right after.

25 I am going to ask you probably just before the

1 lunch break where you are on your anticipated schedule,  
2 just to find out.

3 We will break until 10:45.

4 (Whereupon, a brief recess was taken.)

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1 JUDGE BRENNER: All right, we are ready to  
2 proceed.

3 As the schedule is evolving towards next week,  
4 we are unsure whether you would like a date certain for  
5 ISEG or whether we would just pick it up at some  
6 transition point whenever that occurs, for example after  
7 the operational QA or before the operational QA or so  
8 on. I think a date certain has some advantages.

9 MR. EARLEY: The ISEG witnesses will be down  
10 here and prepared to go on Tuesday, I believe. We  
11 originally hoped to finish everything up this week. We  
12 may now have OQA going over the way we have broken it  
13 up. They will be here and I think prepared to go on.  
14 Assuming that OQA does not last more than day, they will  
15 be ready. If we put them on after OQA, I think that  
16 will be fine with us.

17 JUDGE BRENNER: In other words, it would be  
18 all right with you to have them here waiting until we  
19 finish OQA?

20 MR. EARLEY: We don't anticipate that it is  
21 going to take that long to finish OQA.

22 JUDGE BRENNER: All right. We will discuss it  
23 again.

24 MR. EARLEY: I would prefer not to have a gap  
25 and I'm not sure that we have anything to fill in the

1 gap.

2 JUDGE BRENNER: What I was thinking of would  
3 be to do ISEG on Tuesday no matter what, but think about  
4 it, and other things may affect this when we discuss the  
5 schedule and we will do it later again today or tomorrow  
6 morning.

7 Incidentally, we have to get the  
8 qualifications for Messrs. McCaffrey and Kubinak,  
9 hopefully this week.

10 MR. EARLEY: That will be delivered today, I  
11 believe.

12 MR. LANPHER: Judge Brenner, when we talk  
13 about ISEG, does the Board have any idea how much  
14 questioning it anticipates? Are we talking about a full  
15 day for ISEG?

16 JUDGE BRENNER: Probably, counting questions  
17 of the other parties. We told Mr. Dynner that he could  
18 ask questions also.

19 MR. LANPHER: But the Board is going to do the  
20 initial questioning. Is my understanding correct?

21 JUDGE BRENNER: Yes. But if we finish early,  
22 we just don't want to sit around. We want things to be  
23 ready.

24 MR. LANPHER: I just want to be able to judge  
25 your time estimates later.

1 BY MR. ELLIS: (Resuming)

2 Q Gentlemen, let me turn your attention, please,  
3 to Category 3B on LILCO Exhibit 27, entitled "Drawing  
4 Revisions in the Files." Can you characterize these  
5 observations generally, please?

6 A (WITNESS ARRINGTON) Yes, sir, Mr. Ellis.  
7 These observations represent instances where a wrong  
8 revision of a drawing was located in the various drawing  
9 holder's files at the time of an audit.

10 Q In each of the instances, each of the audit  
11 observations in Category 3B of LILCO Exhibit 27, was  
12 corrective action and was preventive action taken?

13 A (WITNESS ARRINGTON) Yes, sir. In each case,  
14 the listed drawings were replaced with the required  
15 revisions. The holders of the drawings were  
16 reinstructed on the importance of keeping the drawings  
17 up to date and in order to keep the condition with  
18 up-to-date drawings or documents to a minimum there was  
19 a site-wide surveillance program that was instituted in  
20 1977 by the resident engineer's office.

21 This practice has continued up through the  
22 current time frame. It is a situation where the  
23 resident engineer's office takes samples of all drawings  
24 that are issued on site, including specifications and  
25 procedures. It is a sample of the total documentation

1 issue list to verify that the drawing holders or  
2 specification holders are working with the latest issued  
3 documents.

4           We also have LILCO performing audits at least  
5 three times a year on the document control process.  
6 Field quality control performs surveillance inspections  
7 on an annual basis, the document control process as well  
8 as the Boston quality systems division.

9           A       (WITNESS EIFERT) Excuse me, Mr. Ellis. I  
10 would like to remind the Board with respect to the two  
11 engineering assurance audits that we have included in  
12 this category, numbered item 3B on the drawing  
13 revisions, these were discussed on the cross examination.

14           These particular microfilm aperature card  
15 files were maintained by the project clerical staff and  
16 we were able to identify the specific cause in this  
17 situation to the fact that the people who were supposed  
18 to keep that file up to date were allowing a backlog to  
19 accumulate on their desk and that at some frequency  
20 putting those into the files.

21           So I think that the preventive action was to  
22 instruct these people with respect to the specific time  
23 frame that they had to get the files in the up-to-date  
24 condition. There wouldn't have been a concern with  
25 respect to those particular files because my belief

1 would be that the people using those files would  
2 recognize that they would have to look at that backlog.  
3 That was happening at that point in time.

4 Q Mr. Eifert or Mr. Arrington, is it possible  
5 that the circumstances referred to in these audit  
6 observations could have an impact on the design or  
7 construction of the plant?

8 A (WITNESS ARRINGTON) There is a possibility  
9 that someone could be working to an out-of-date  
10 drawing. I think even if these revisions were used by  
11 the contractor -- the out-of-date revisions of the  
12 drawings, I am referring to -- there are other steps in  
13 the QA process that would discover this before we got to  
14 the final inspection portion of the job.

15 There are various checks and balances in the  
16 system and contractors are required to install and  
17 complete work to the latest engineering requirements.  
18 The construction department, as is the QA department,  
19 have the same responsibilities. The construction and  
20 the QA departments are on distribution for a different  
21 set of drawings.

22 What I am saying here is that even if the  
23 contractor were to use an out-of-date drawing in order  
24 to perform some phase of the job, that it would, in  
25 order for it to be significant you would have to have

1 the construction department as well as the QA department  
2 not have these drawings as well, in order for it to  
3 completely go through the system.

4 Q Are there other steps that are safeguarding in  
5 this circumstance?

6 A (WITNESS ARRINGTON) I guess we have the final  
7 step, which would be during the startup phase of the  
8 job, when you have got the startup organization  
9 performing various tests and inspections with the same  
10 engineering guidelines as the construction department in  
11 the form of drawings or procedures or specifications.  
12 This would be a final check in the system.

13 Q Are there also inspections at -- are there  
14 inspections at the startup preoperational phase?

15 A (WITNESS ARRINGTON) Yes, there are.

16 Q How about at the turnover to plant staff  
17 stage?

18 A (WITNESS ARRINGTON) There would be  
19 inspections, inspections and tests that would be  
20 performed by the startup staff to the latest engineering  
21 guidelines or specifications in this case. As I said,  
22 all of these organizations would have to not be aware of  
23 the similar documents in that the construction  
24 department would install it to one revision of the  
25 drawing and the other organizations would have to also



1 do their inspections or their testing to that same  
2 issued drawing.

3           And that is extremely remote, in that they are  
4 on distribution for different documents. We don't all  
5 use the same distribution.

6           (Counsel for LILCO conferring.)

7           Q     On the Group 3B drawing revisions in files  
8 that you have been talking about, LILCO Exhibit 27, Mr.  
9 Arrington, there is a group of three audits referred to  
10 at the end with the statement above it "From Suffolk  
11 County Group E&DCRs." Would you explain that, please?

12          A     (WITNESS ARRINGTON) Yes, Mr. Ellis.

13           We included those three field audits in the  
14 document control section of the discussions for the  
15 benefit that they were drawings that were not to the  
16 latest revisions that was found during the auditing  
17 process. They were not E&DCR-type conditions. They  
18 were strictly the latest-issued drawing.

19           So for the benefit of continuity, we decided  
20 to include them in the document control process.

21          Q     Mr. Eifert and Mr. Arrington, I think, Mr.  
22 Eifert, you have already indicated your view with  
23 respect to whether the audit observations contained in  
24 Group 1 of LILCO Exhibit 27 were not violations of  
25 Appendix B.

1           Would you -- one or both of you -- tell me  
2 what you consider the audit observations contained in  
3 Categories 2 and 3 of LILCO Exhibit 27 to be violations  
4 of Exhibit B -- of Appendix B?

5           A       (WITNESS EIFERT) Yes. I will answer that  
6 question. I do not believe that any of these --

7           JUDGE BRENNER: We all knew what you meant.  
8 Even Mr. Lanpher didn't get excited.

9           WITNESS EIFERT: In my opinion, none of these  
10 observations reflect a violation of Appendix B and I  
11 believe for Group 1 I addressed Criterion 4 and 7 and  
12 Criterion 5 with respect to the items in that grouping.

13           With respect to the remainder of the items in  
14 the Category Document Control, I believe the appropriate  
15 criteria that we should consider are Criterion 6, as  
16 well as, I believe, we should address Criterion 16 and  
17 Criterion 18 for all of document control.

18           So first, with respect to Criterion 6,  
19 Criterion 6 requires that affected activities -- excuse  
20 me, activities affecting quality shall be prescribed by  
21 document instructions, procedures or drawings of the  
22 type -- excuse me. I am reading from Criterion 5. Let  
23 me start again.

24           Criterion 6 requires that "measures shall be  
25 established to control the issuance of documents, such

1 as instructions, procedures and drawings, including  
2 changes thereto, which prescribe all activities  
3 affecting quality. These measures shall assure that  
4 documents, including changes, are reviewed for adequacy  
5 and approved for release by authorized personnel and are  
6 distributed to and used at the locations where the  
7 prescribed activities are performed.

8 "Changes to documents shall be reviewed and  
9 approved by the same organizations that performed the  
10 original review and approval unless the applicant  
11 designates another responsible organization."

12 It is really the first two aspects of that  
13 criterion that are in the area which we are addressing  
14 here on document control, and the measures were  
15 established. These findings are not indicative that  
16 there was not appropriate measures established from a  
17 document control process. These findings all relate to  
18 instances of implementation difficulties that we  
19 occurred and, therefore, I do not believe that there was  
20 in any way a violation of Criterion 6.

21 With respect to Criterion 18, the situation is  
22 with this entire group of document control is that there  
23 is evidence here that our audit program was working and  
24 was effectively working and that we were not in any way  
25 violating the Criterion 18 requirement that we have an

1 audit program and that our audit program include the  
2 follow-up activities, where appropriate, to ensure that  
3 the deficient areas are continually monitored.

4 I think the group on legibility clearly  
5 indicates that the auditors were extremely persistent in  
6 following up on that concern through the corrective  
7 action follow-up audits that are indicated there, to  
8 ensure that that item was fully addressed.

9 The Criterion 16 aspect that comes into play  
10 here is the requirement that significant conditions  
11 adverse to quality be handled in an appropriate fashion,  
12 with cause and preventive action. I think we fully  
13 characterized all the items in this category with  
14 respect to the significance, and we don't see them as  
15 having a direct impact.

16 We have classified all of these as -- in a  
17 general way. We have called them difficulties with  
18 implementation of our program that would have a remote  
19 possibility of having an impact on the plant. The only  
20 exception to that was the last group that Mr. Arrington  
21 referenced, which is Group 3B. I think we would  
22 characterize these as concerns that are slightly more  
23 than a remote possibility of having an impact, but  
24 certainly situations that because of -- with an  
25 understanding of the entire program the possibility of

1 the impact is still very unlikely.

2 My conclusion with respect to looking at all  
3 of those and considering Criterion 16 is clearly that  
4 none of them would fall into the situation of being a  
5 significant condition adverse to quality. I would add,  
6 again, I know we talk about these and we talk about the  
7 findings that have a remote possibility of having an  
8 impact, and I emphasize again that I believe that our  
9 attention to this level of detail in our program has  
10 ensured that we haven't allowed problems to develop or  
11 problems to exist with the process of designing or  
12 constructing the Shoreham power plant that, if they had  
13 been left unattended or uncorrected, would have led to  
14 something that was more significant.

15 The last category of Item 3B, if we had not  
16 addressed that concern and not paid attention to the  
17 lowest level detail of ensuring that individuals  
18 building the power plant did have the latest drawings,  
19 that could have developed to something that would have  
20 given us a lot of difficulty in the later aspects of the  
21 program.

22 Mr. Arrington's people doing the inspection  
23 would have been identifying a lot of inspections that  
24 were caused by the lack of having the latest drawings.  
25 We avoided those kinds of more important implementation

1 problems with our program by paying this heavy attention  
2 to the first line requirement, if you will, the lowest  
3 level requirement in our procedures to ensure that we  
4 minimized the development of more significant programs.

5 That, to me, is the primary reason why we are  
6 very confident here that our auditing programs have been  
7 very effective as they have been implemented on the  
8 Shoreham project.

9 (Counsel for LILCO conferring.)

10 MR. ELLIS: Judge Brenner, we propose now to  
11 proceed to the next subject matter.

12 JUDGE BRENNER: Just for my own bookkeeping so  
13 that I can find these again someday, the last three  
14 items in LILCO Exhibit 27 are three field audits and, in  
15 sequence, they are Suffolk County Exhibits 55, 57 and  
16 58, from September 22 and September 23. That is, those  
17 dates were when they were discussed and identified, not  
18 the dates of the field audits.

19 MR. ELLIS: Judge Brenner, we earlier handed  
20 out to the Board and the parties a document, three-page  
21 document, entitled "E&DCRs", which lists audit  
22 observations relating to the E&DCR area, which we will  
23 use. However, I intend to turn first to a number of  
24 transcript questions and I believe we have also earlier  
25 handed out to the Board and parties a list of the



1 transcript page numbers.

2 We are trying to get these as early as  
3 possible. Events occasionally are overtaking us.

4 MR. LANPHER: Can we have just a moment? Do  
5 you know what the dates are?

6 MR. EARLEY: September 15, September 23, 24,  
7 and October 12.

8 MR. LANPHER: Thank you.

9 (Pause.)

10 MR. ELLIS: For your convenience, Mr. Lanpher,  
11 I am going to proceed in the order of the sheet that we  
12 delivered to you, but some may be unnecessary in view of  
13 our other examination.

14 MR. LANPHER: I just wanted to have them  
15 handy.

16 JUDGE BRENNER: Let's see how it goes. We  
17 didn't bring up our copies of the transcript during the  
18 break on these pages, and we may have to pause and get  
19 them if it gets too detailed. Let's go ahead for now.

20 BY MR. ELLIS: (Resuming)

21 Q Mr. Museler, let me turn your attention to  
22 transcript pages 10,247 through 50. Do you have that in  
23 front of you?

24 A (WITNESS MUSELER) Yes, Mr. Ellis.

25 Q There you were asked a number of questions

1 concerning the master E&DCR log. Would you explain,  
2 please, Mr. Museler, whether this log lists all E&DCRs  
3 or only those that have not been incorporated in the  
4 affected document?

5 A (WITNESS MUSELER) Yes, sir, Mr. Ellis. The  
6 master E&DCR log includes all E&DCRs which have been  
7 issued, whether or not they have been incorporated into  
8 the applicable design document.

9 MR. ELLIS: Judge Brenner, just for your  
10 convenience, the attachment that we were talking about  
11 would be Attachment 19 to the LIICO testimony.

12 BY MR. ELLIS: (Resuming)

13 Q Let me turn your attention next, panel, to  
14 transcript page 11,027 through 30. There, I think, Mr.  
15 Baldwin, you stated that the situation discussed in FQA  
16 Number 19, page 2 and D.1, that you would have to review  
17 previous audits to determine whether the problem cited  
18 was a recurring one.

19 Have you now reviewed those previous audits?

20 A (WITNESS BALDWIN) Yes, I have.

21 Q Is it a recurring problem?

22 A (WITNESS BALDWIN) Mr. Ellis, we looked at the  
23 previous FQA audits relative to the E&DCR listing and in  
24 attaching requirements, specifically in the turbine and  
25 reactor trailers, as indicated in the audit report. In

1 looking back from that time frame, we see an FQC 17.D.1  
2 that we identified some observations relative to  
3 specification addendas in the turbine trailer or reactor  
4 trailer. But I point out that these weren't E&DCRs, but  
5 addenda conditions -- addenda to specifications.

6           Going back further than that, all of the  
7 previous FQC audits do not identify a reoccurring  
8 problem in these areas for E&DCRs, specifically, the  
9 turbine trailer and the reactor trailer for listing and  
10 attaching requirements to the E&DCRs.

11       Q     Let me turn your attention next to transcript  
12 page 11,054. There, Mr. Baldwin, you were asked whether  
13 FQC number 25.D.2B was a different situation from that  
14 discussed in D.2A. Could you explain, please, the  
15 significance of that situation?

16       A     (WITNESS BALDWIN) Yes, sir. What we are  
17 seeing here in FQC 25 to D.2B, it is not significant, as  
18 was D.2A, as identified elsewhere in the transcript.  
19 The document record card is, as we have indicated  
20 before, I believe, in our cross examination, is for  
21 distribution only. However, this doesn't mean that the  
22 E&DCRs weren't in the hands of the users.

23           I think we also indicated on cross examination  
24 that the requirements for transmittals of these types of  
25 documents where you have to verify a receipt and

1 acknowledge them and send them back, the verification  
2 of -- we have also identified the verification of  
3 correct E&DCRs is to the weekly E&DCR listing or, in  
4 some cases, the master E&DCR log.

5           The last point I would like to make on this  
6 one is, as I recall and my notes indicate, the only  
7 significance I see here is that we checked seven out of  
8 200, which is, looking at it from a percentage point of  
9 view, is above 95 percent.

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1           Q       Gentlemen, let me turn your attention to  
2 transcript page 11,086, where it was stated that, "The  
3 specification under discussion was from the main office  
4 of Comstock-Jackson." Would the workers rely on the  
5 copies in the main office for installation work in the  
6 field, or some others?

7           A       (WITNESS MUSELER) No, sir, they would not.  
8 The actual field installation -- and we are speaking  
9 here about the electrical area -- is either performed to  
10 specific drawings which are utilized in the field  
11 installation, cable tickets, as we described earlier,  
12 which are the official quality document for installation  
13 of cable conduit tickets. In the case of conduit, also  
14 in the case of conduit, detail design drawings that are  
15 made in order to instruct the workers in what to do.

16                       So the specification itself, while the  
17 specification does form the basis for the engineers who  
18 provide the detailed installation documents, the  
19 specification itself, especially in the home office of  
20 one of the contractors, is not a particularly  
21 significant document. The field work is performed to  
22 design documents such as drawings, cable tickets, and  
23 other items such as that; not to the specifications.

24                       JUDGE BRENNER: Can someone please give me the  
25 number of the audit finding which was the subject of

1 that transcript page?

2 MR. ELLIS: Yes, Judge Brenner.

3 (Pause.)

4 MR. LANPHER: I think if you go back to  
5 11,073, I think it's Audit 654. That's just a guess  
6 right now.

7 MR. ELLIS: I think it's Observation 4.6 at  
8 Audit 654, but I would have to verify that. It's the  
9 one relating to Comstock-Jackson. And that's at  
10 transcript 11,076.

11 MR. LANPHER: Which observation?

12 MR. ELLIS: I believe it's 4.6.

13 JUDGE BRENNER: Okay. Field Audit 654 is  
14 Suffolk County Exhibit 57. All right. I will have to  
15 put it together with the transcript afterwards.

16 Mr. Museler, you were talking about just the  
17 Comstock-Jackson aspect of that finding?

18 WITNESS MUSELER: Yes, sir. But the answer is  
19 generally applicable to all the site contractors, in  
20 that specifications are not the installation document.  
21 I should also point out that to the extent that the  
22 E&DCR that was -- or E&DCRs that were cited in the  
23 findings, did affect installation in the field. It's  
24 the E&DCR that would be the installing document. And I  
25 believe we went back to this point extensively in



1 cross-examination, that we believe that the E&DCRs did  
2 in fact reach the people who needed to have them to  
3 actually perform the field work.

4 JUDGE BRENNER: Okay, you may proceed, Mr.  
5 Ellis.

6 BY MR. ELLIS: (Resuming)

7 Q Mr. Museler, turning your attention, please,  
8 to transcript 11,160 to 162 -- Judge Brenner, if we may,  
9 if we could show the Board, it might be helpful to the  
10 Board. This is the portion of the transcript dealing  
11 with E&DCR status, and it might be useful for the Board  
12 to see that.

13 JUDGE BRENNER: Okay. Thank you. We will be  
14 quicker about getting our copies off during the break.  
15 We forgot this last time.

16 BY MR. ELLIS: (Resuming)

17 Q Mr. Museler, on those pages you estimated --  
18 and I am giving an estimate here -- that there were  
19 approximately 1,200 E&DCRs outstanding against drawings  
20 as of August. Do you have that before you, sir? I  
21 think you broke it down into a number of categories,  
22 didn't you?

23 A (WITNESS MUSELER) Yes, sir, we do.

24 Q What is the latest status of the outstanding  
25 E&DCRs?

1           A       (WITNESS MUSELER) Relative to the discussion  
2 we had at that point in the transcript, the current  
3 total is 366 remaining of the 1,203 that were  
4 outstanding at the end of August. I do have to point  
5 out, however, that the list we're looking at is a list  
6 of those drawings which are required to have essentially  
7 all of the E&DCRs incorporated completely into them.  
8 There are other classes of drawings which the E&DCRs  
9 will not be physically incorporated into the drawings.

10                   This list, however, does represent what we  
11 believe to be the agreed-upon list between ourselves and  
12 the NRC for those drawings that have to have the E&DCRs  
13 incorporated in them at the time of operating license.

14           JUDGE CARPENTER: Mr. Museler, do you have an  
15 estimate of when that work will be finished?

16           WITNESS MUSELER: Yes, sir, I do. With the  
17 exception of, you know, E&DCRs which are written  
18 relatively recently, our intent is to have them  
19 incorporated by the first of the year. And the first  
20 comment I made has to do with E&DCRs which may still be  
21 written against some of these drawings, and to that  
22 extent our comment is to have the E&DCR backlog for  
23 these classes of drawings be no more than a 1-month  
24 backlog. But we expect to have all that we know about  
25 at this point incorporated by the first of the year.

1 JUDGE CARPENTER: Thank you.

2 BY MR. ELLIS: (Resuming)

3 Q Mr. Eifert, turn your attention, if you would,  
4 please, sir, to transcript 11,217. You state there that  
5 a specification change would not require any contact  
6 with the vendor to get his concurrence. Does that mean  
7 the vendor would not be aware of the specification  
8 change or changes?

9 A (WITNESS EIFERT) No, it does not, Mr. Ellis.  
10 The context in which I was using that, I did not fully  
11 describe the process. The situation I was describing  
12 was the Stone & Webster approval process for the  
13 specification change itself. And the process by which  
14 the vendor becomes involved is when the specification  
15 change is submitted to him as an amendment to the  
16 contractor purchase order; and he responds to us  
17 indicating acceptance, or acceptance with qualification,  
18 of those requirements in the change. So that the change  
19 that we make to our specifications with respect to  
20 equipment suppliers or service suppliers are approved in  
21 that sense or accepted, at least, by the vendor as his  
22 accepting the change on the purchase order or contract.  
23 I did not make that clear at that point in  
24 cross-examination.

25 Q And by that point in the cross-examination, we

1 are referring, are we not, to 11,217, lines 9 through 11?

2 A (WITNESS EIFERT) Yes, sir.

3 Q Mr. Eifert, turn your attention now, please,  
4 sir, to transcript 11,223, if you would, please. Do you  
5 have that in front of you?

6 A (WITNESS EIFERT) Yes, sir.

7 Q There in the transcript you refer to a  
8 memorandum included in Attachment 27 of LILCO's prefiled  
9 testimony, which is a memorandum from Mr. Brabazon to  
10 Mr. Shelton, Mr. Brabazon being the Stone & Webster  
11 project engineer. That memorandum I think indicated, as  
12 you indicated in the transcript, stated that in all  
13 cases, approval of vendors for changes in vendor manuals  
14 was being obtained. Have you been able to verify the  
15 accuracy of that statement?

16 A (WITNESS EIFERT) Yes, I have. I wanted to go  
17 back and provide verification here on the  
18 cross-examination testimony to put this in perspective.  
19 What we were discussing here was an engineering  
20 assurance audit observation dealing with use of the  
21 E&DCR to authorize changes to vendor instruction manuals.

22 The audit observation used wording that  
23 clearly indicated that the auditor apparently believed  
24 that the Stone & Webster project engineering people were  
25 authorizing changes to the vendor instruction manuals

1 without getting the vendors' concurrence in these  
2 changes.

3           The project response, Mr. Brabazon's memo,  
4 used the term invariably, I believe, the vendors are  
5 contacted. What we have been able to do since the date  
6 of the cross-examination, I directed my engineering  
7 assurance auditors to go back to the project and take a  
8 large number of E&DCRs involving changes to vendor  
9 instruction manuals and determine if there was  
10 documentary evidence to indicate that Mr. Brabazon's  
11 response to that audit observation was true.

12           What my auditors did in that case, they took a  
13 sample of 57 E&DCRs affecting vendor instruction  
14 manuals, and for 56 of those there was clearly  
15 documentary evidence that the vendors had been contacted  
16 to obtain their concurrence with respect to the changes  
17 to the instruction manual.

18           In one case, it wasn't specifically clear the  
19 extent that we didn't have a documented Telecon or  
20 documentation of the exchange between the engineers and  
21 the vendor. The situation that we did find clearly was  
22 that a marked-up instruction manual that indicated the  
23 changes that we wished to approve had been transmitted  
24 to the vendor. So there is evidence in that case that  
25 the vendor is being involved in that process, but the

1 documentation wasn't quite as precise.

2           In the 56 there's clearly no question at all  
3 that they obtained clear approval, and in the one case  
4 they were definitely working with the vendor but the  
5 documentation was just not quite as precise. So that  
6 additional information, I believe, verifies that the  
7 actions that my people took in closing that audit  
8 observation were valid and verifies that Mr. Brabazon's  
9 statement in his memo was indeed fact.

10           JUDGE BRENNER: Mr. Eifert, in that one case  
11 where the documentation wasn't as complete as you might  
12 have liked, to the extent you just indicated, were you  
13 able to check whether in fact there had been vendor  
14 concurrence in addition to there being the vendor having  
15 been kept informed?

16           WITNESS EIFERT: The information I was given  
17 was that the manual changes were transmitted to the  
18 vendor. I did not ask your follow-up question when I  
19 was given that information.

20           BY MR. ELLIS: (Resuming)

21           Q     Mr. Arrington, would you turn your attention,  
22 please, to transcript page 11,387? You were discussing  
23 there, I believe, FQC Number 26 L.3. Do you have that  
24 before you?

25           A     (WITNESS ARRINGTON) Yes, sir.



1 Q Explain if you would, please, what you meant  
2 when you said that, "The area audited went to  
3 black-on-pink informational drawings subsequent to the  
4 audit"?

5 A (WITNESS ARRINGTON) Yes, Mr. Ellis. I think  
6 this is a clear indication that the area that was being  
7 audited, which was an office file, was only using these  
8 drawings for informational purposes. The black-on-pink  
9 drawings are usually drawings that we use in the system  
10 to mark up the various activities that are taking  
11 place. It's a clear indication that these drawings were  
12 used for informational only purposes, and they were not  
13 being used for installation purposes in the field.  
14 That's the purpose of the black-on-pink drawings.

15 So by this organization going from the  
16 black-on-white control drawing to the black-on-pink  
17 informational drawings, it just indicates that they did  
18 not need the control distribution -- or control  
19 drawings, rather -- in the first place. They were not  
20 being used for installation purposes.

21 Q Gentlemen, turn now to transcript 11,393-394,  
22 where I believe the subject was FQC Number 381.2. Do  
23 you have that, Mr. Arrington and Mr. Baldwin?

24 A (WITNESS BALDWIN) Yes, sir.

25 Q There the auditor stated that, "The Courter &

1 Company personnel were not totally knowledgable about  
2 QAP 4.2 requirements regarding the logging of E&DCRs."  
3 Can you explain that statement?

4 A (WITNESS BALDWIN) Yes, sir. In further  
5 review of this particular item, where, as I recall, both  
6 the audit finding and the transcript, the last sentence  
7 of that section, the auditor offered his feelings, I  
8 guess, where he identified that the people involved were  
9 not totally knowledgable about the requirements of the  
10 particular procedure that we're talking about here.

11 This might have been true, but I would like to  
12 point out that it would also be understandable in  
13 looking back over this, we recall that the  
14 instrumentation group which was one of the groups, and I  
15 believe directly connected to this audit, it was  
16 undergoing a rather extensive reorganization at the time  
17 within its group in that there was quite a turnover of  
18 clerical personnel within that group and others, as I  
19 think Mr. Museler has indicated in the past.

20 I would like to also offer that although the  
21 individuals within that group and the reorganization are  
22 bringing new people on board, they would have been  
23 indoctrinated in their job tasks, as everybody is. But  
24 looking back in the record, we see notice that the  
25 assistant project manager for the contractor identified

1 that all personnel will receive formal training to the  
2 requirements of these procedures. And in this  
3 particular case, it's QAP 4.2.

4 Q Does the use of the term "totally" there  
5 indicate that they had some knowledge, to you?

6 JUDGE BRENNER: You are asking for his  
7 interpretation of the written word and nothing more?

8 MR. ELLIS: Yes, sir. If he knows anything  
9 more, he can say.

10 JUDGE BRENNER: If he doesn't know anything  
11 more, his interpretation is not worth any more than  
12 anyone else reading it. So why don't you ask the  
13 question differently?

14 MR. ELLIS: Yes, sir.

15 (Counsel for LILCO conferred.)

16 BY MR. ELLIS: (Resuming)

17 Q Were you able to determine that the reference  
18 in the audit observation that we have been talking about  
19 meant that the individuals had some knowledge but were  
20 not knowledgable about all of the details of the QAP  
21 procedure?

22 A (WITNESS BALDWIN) Yes, sir.

23 Q How did you determine that?

24 A (WITNESS BALDWIN) In working with our  
25 auditing people over the last several weeks and in

1 particular referring to items such as this, I addressed  
2 that question to them. And their interpretation as  
3 auditors was that they would have had some knowledge in  
4 the area and this was just a remark by the auditor to  
5 draw attention to management.

6 Q Did you address a question to them with  
7 respect to this specific one?

8 A (WITNESS BALDWIN) Yes, sir.

9 MR. ELLIS: Judge Brenner, I don't recall  
10 whether the sheet, the three-page sheet entitled the  
11 "E&DCRs," listing the audit observations in this  
12 category has been marked. I don't think it has. It  
13 should be LILCO Exhibit Number 28.

14 JUDGE BRENNER: Okay.

15 MR. ELLIS: And pursuant to procedure, I would  
16 think it would be useful to bind it in at this point.

17 JUDGE BRENNER: All right. We will do that,  
18 and you can better identify it now either directly or  
19 through the witnesses.

20 MR. ELLIS: Yes. This is a three-page  
21 document entitled "E&DCRs." And it consists of a  
22 listing of audit observations on that subject.

23 (The document referred to  
24 was marked LILCO Exhibit  
25 No. 28 for identification.)

1                    (The document referred to, LILCO Exhibit No.  
2 28, follows:)

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E&DCRs

<u>Category No.</u>	<u>Audit Report</u>	<u>Date</u>	<u>Item</u>	<u>Organization/Location</u>
1 Logging	FA 602	7-5-77	3.1	Auditor Conclusion
			4.5	Courter & C/J
			4.6	S&W Eng. site
	FA 654	11-16-77	4.2	S&W Doc. Control
			4.3	S&W Doc. Control
	EA 22	8-19-77	017- Item 2	S&W Eng.
	EA 23	12-28-77	041- Item 2.C	S&W Eng.
	FQC 38	6-1-81	3.2.B	Courter
	FQC 25	3-17-78	D.2.A	S&W Doc. Control
			D.2.B	S&W Doc. Control
	EA 21	5-20-77	011- Item 1	S&W Project
	FA 718	3-13-78	3.1	S&W Doc. Control
	FQC 35	9-19-80	2.4	Courter
FQC 34	6-11-80	N1,A-C	Doc. Control & Courter	
2 Posting	FA 654	11-16-77	4.6	Contractors (3)
			4.7	Contractors (3)
	FA 718	3-13-78	4.4	Unico & Contractors (3)
	FQC 19	8-18-76	D.1	Turbine Trailer
	FA 602	7-5-77	4.1	S&W Eng. & Contractors
			4.2	S&W Eng. & Contractors
			4.4	Various
	FA 842	11-16-78	4.1	Unico, SEO, FQC & Contractors (3)
	FQC 26	6-26-78	1.3, A-D	Doc. Control
	FQC 33	1-31-80	B.1	FQC Structural Steel Insp. Sect.
FQC 23	9-5-77	D.2	Doc. Control	



<u>Category No.</u>	<u>Audit Report</u>	<u>Date</u>	<u>Item</u>	<u>Organization/Location</u>
3 Additional Uses and Clarifi- cations	EA 13	4-29-75	C.1	Doc. Control
	EA 40	6-4-82	158	S&W Eng.
	FQC 26	6-26-78	F.3	S&W Eng.
	EA 12 (SEO)	1-21-75	1.4.6	Project
	FQC 25	3-17-78	D.2.C	Project
	EA 21	5-20-77	008- Item 1	Various
	EA 23	12-28-77	041- Item 10	Doc. Control
4 Missing from Files	FA 718	3-13-78	4.3	Courter, PSP, Nisco & Unico
	EA 19	12-8-76	2.B.5	S&W Eng.
	FA 970	7-12-79	4.3	Courter
5 Timeliness	FA 654	11-15-77	4.4	Unico
	EA 15	11-14-75	2.B.1	Project
	EA 23	12-28-77	041- Item 4	S&W Eng.
6 Misc., Site	FA 602	7-5-77	4.7	Doc. Control
	FA 654	11-16-77	4.11	Res. Eng.
	FQC 33	3-31-80	B.3	S&W Eng.
			F.1	S&W Eng.
	FQC 38	6-1-81	1.2.A	Courter
7 Misc. Eng.	EA 21	5-20-77	011 Item 4	Project
	EA 23	12-28-77	041 Items 3 and 8	Project
	EA 40	6-4-82	Para 1	Project

<u>Category No.</u>	<u>Audit Report</u>	<u>Date</u>	<u>Item</u>	<u>Organization/Location</u>
8 Invalid	FQC 23		F.2	Doc. Control

1 BY MR. ELLIS: (Resuming)

2 Q Mr. Baldwin, Mr. Museler, Mr. Arrington, and I  
3 think Mr. Eifert, would you look, please, at -- or did  
4 you review the transcript to develop a list of the audit  
5 observations relating to E&DCR about which Mr. Lanpher  
6 asked you on cross-examination?

7 A (WITNESS BALDWIN) Yes, we have, Mr. Ellis.

8 Q Is LILCO Exhibit Number 28 the list of those  
9 audit observations that Mr. Lanpher asked you about?

10 A (WITNESS BALDWIN) Yes, it is.

11 Q And I note that the audit observations have  
12 been placed into eight categories. What is the basis  
13 for your categorization, generally?

14 A (WITNESS BALDWIN) Generally speaking, Mr.  
15 Ellis, the knowledge of the findings contained in each  
16 one of these groups that were categorized, information  
17 relating to the findings that we had available to us,  
18 and discussion with the auditors' personnel from the  
19 construction site in the project, and the auditor  
20 organizations. Now they indicated, I believe, in my  
21 cross-examination, several of us had spent a great deal  
22 of time talking to people at the construction site and  
23 at the project.

24 Q Mr. Baldwin or other members of the panel,  
25 let's turn your attention, please, to the first

1 category, the one entitled "Logging," the first category  
2 of LILCO Exhibit Number 28. Characterize, if you would,  
3 please, what these observations generally reflect and  
4 give specific examples, if appropriate?

5 A (WITNESS BALDWIN) What we're seeing here, Mr.  
6 Ellis, in these findings are conditions where E&DCRs  
7 have not been identified or properly identified on logs  
8 that are established to control and track the E&DCRs to  
9 the parent document. It also identifies the status of  
10 the parent document such as drawings, specs, and  
11 implementing procedures.

12 These logs are maintained by the various  
13 departments and organizations and can be in the form of  
14 several types of documents such as the record cards that  
15 we've talked about, the area document control logs, and  
16 the master document logs.

17 These logs are administrative tools that are  
18 used in the overall document control system, and I point  
19 out a means by which the users of the documents can  
20 perform checks, random checks, to assure that the  
21 documents they have or need are the proper revision.

22 Q Mr. Baldwin, can you give a representative  
23 example of that group entitled "Logging" on LILCO  
24 Exhibit Number 28?

25 A (WITNESS BALDWIN) Yes, sir. If you will use

1 Exhibit 28, one of the examples I would like to address  
2 is field quality control audit 25.

3 Q There are two listed there for 25, Mr.  
4 Baldwin. Both of them or just one of them?

5 A (WITNESS BALDWIN) Just Observation 2.2.A.

6 Q D.2.A?

7 A (WITNESS BALDWIN) Yes. D.2.A. And in that  
8 particular example, what we see is that the auditor had  
9 noted that six of the document record cards out of a  
10 sample of 200 revealed that they contained E&DCRs that  
11 were not up to date, in that they had already been  
12 incorporated into the latest revisions of the drawings.  
13 This means -- well, what this does mean is that the  
14 information contained on the E&DCRs had been  
15 incorporated into the drawing but was presently still  
16 listed on the document record card as not being  
17 incorporated.

18 Another example, I can draw your attention to  
19 F.A 602, section 4.6. And that's a situation where the  
20 E&DCR lists were not up to date for specifications.

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1 Q Mr. Museler or Mr. Baldwin, based on your  
2 review -- or have you reviewed these audit observations  
3 that are in this logging section, Mr. Museler?

4 A (WITNESS MUSELER) Yes, sir, we have.

5 Q Based on your review, would the conditions  
6 observed in these audit observations, had they gone on  
7 undetected, have affected the construction of the plant  
8 as designed or the safety of the plant in any way?

9 A (WITNESS MUSELER) No, they would not, Mr.  
10 Ellis.

11 Q Can you tell us why?

12 A (WITNESS MUSELER) I would characterize these  
13 observations as items where even the potential impact on  
14 the quality of the plant or the adequacy of the plant is  
15 extremely remote. The reasons for that statement are  
16 several.

17 First, I'd like to describe what would have to  
18 happen for one of these audit observations to be  
19 compounded many times to cause an actual problem in the  
20 plant.

21 E&DCRs are distributed to a large number of  
22 people, but I have listed just some significant ones,  
23 all of whom would have to not have gotten a copy of that  
24 document in order for it not to have been implemented in  
25 the plant.



1           The first person is the person who asked the  
2 question, the initiator of the E&DCR. I have just  
3 chosen to be able to be accurate with regard to the  
4 personnel who receive the E&DCR in this area, the  
5 safety-related large bore pipe support. The initiator  
6 obviously would need the document because he is the one  
7 that is responsible for supervising the direct work in  
8 the field, and he's the one that asked for it, so he  
9 would go after it.

10           Secondly, the contractor area, supervisors and  
11 the coordinators and the schedulers in that area receive  
12 copies of the E&DCRs. They would have to not receive  
13 the E&DCR somehow.

14           Third, the Unico Construction management area  
15 responsible for that phase of the work would have to not  
16 receive the E&DCR, again, the supervisors and the  
17 coordinators and the schedulers.

18           Fourth, field quality control would have to  
19 not get that E&DCR so that in final inspection, if  
20 everyone before that didn't get it, if they didn't have  
21 it, then perhaps it could be missed in the final  
22 inspection.

23           That final inspection, by the way, is the  
24 final inspection just for that specific component. As  
25 you will see, there are several other inspections which

1 do inspect the pipe supports and which would also pick  
2 up the fact that there was that E&DCR missing at some  
3 earlier phase in the project.

4           We have discussed the as-built program, the  
5 piping systems and pipe supports. That group receives  
6 copies of the E&DCRs affecting the pipe supports. They  
7 would have to miss it so that it was not incorporated in  
8 the as-built drawings.

9           The stress reconciliation program, which uses  
10 those as-built piping drawings, also gets copies of the  
11 same E&DCRs to ensure that they are incorporated in the  
12 final stress reconciliation in the as-stressed  
13 condition. They would have to miss -- not get the  
14 E&DCR, or the flag would go up, and that would trigger  
15 the appropriate people to get it and implement it in the  
16 field.

17           Those are six. There are even more. I  
18 haven't included, nor am I going to discuss in detail  
19 the fact that the LILCO startup organization, during the  
20 turnover process and the construction turnover group,  
21 also are recipients of the E&DCRs or the list of E&DCRs  
22 to ensure that at the time of turnover, all E&DCRs have  
23 been incorporated into the plant.

24           During the turnover, the plant staff process,  
25 which is another turnover, the same types of checks

1 are done.

2           And finally, I haven't included the A release  
3 process.

4           Q     By the same type of checks, you mean checks to  
5 ensure that the E&DCRs --

6           A     (WITNESS MUSELER) To ensure that all E&DCRs  
7 on the system being turned over have been accounted  
8 for.

9           The A release process is also a quality check  
10 which ensures that all E&DCRs are included in the  
11 systems that are being turned over and/or finally  
12 released to the plant staff.

13           So the first point I would like to make with  
14 regard to my statement that it is extremely remote that  
15 this could get through the net is that all of these  
16 individuals and/or groups would have to not get or not  
17 act on for some reason the E&DCRs, and that possibility  
18 is vanishingly small in my estimation.

19           Secondly, the second major point which is the  
20 basis for my statement is that the bottom line is  
21 whether or not these E&DCRs -- and this is also  
22 applicable to the other categories we are going to be  
23 discussing here under E&DCRs, logging, posting -- is  
24 also applicable to the control of drawing revisions.  
25 The point is that the proof of the pudding is whether or

1 not those E&DCRs have been properly implemented in the  
2 plant.

3           In other words, the question, does the  
4 as-built plant reflect the design documents? That is  
5 the key question. And I am very confident that the  
6 answer to that question is yes. The reason for that is  
7 every time that question is asked and audits are done or  
8 inspections are done, or NRC special investigations due  
9 to allegations are made, the answer is the same. The  
10 answer always comes back that the plant is built in  
11 accordance to the design documents.

12           To cite a few of those types of checks that  
13 the as-built plant conforms to the design documents, we  
14 mentioned in our earlier cross examination that at one  
15 point we did a random audit of 200 E&DCRs and discussed  
16 the fact that none of those were not implemented in the  
17 plant.

18           The SPCR program, which was discussed, is not  
19 of itself intended to be an as-built check of the plant,  
20 but that's what it does for those attributes that it  
21 looks at, including E&DCRs. For all the findings that  
22 we have gotten to date in the SPCR program, none have  
23 indicated that the as-built plant does not conform to  
24 the design documents.

25           The NRC special investigation -- excuse me,

1 special inspection, categorized as the CAT inspection,  
2 the specific pupose of that inspection, as stated in the  
3 report, was to perform an as-built inspection of the  
4 plant, and I would like to just quote a couple of  
5 portions from that report.

6 On page 3, in the summary section under  
7 Section 2.2, it indicates that the RHR system and those  
8 portions of support systems inspected, were built as  
9 described by drawings and specifications.

10 On page 4 in the same area, although the NRC  
11 has a concern with the large number of E&DCRs, they  
12 indicated that "No errors or violations were identified  
13 as a result of this practice," meaning the E&DCRs. That  
14 inspection was specifically intended to investigate  
15 whether or not the as-built plant conformed to the  
16 design documents.

17 MR. LANPHER: Judge Brenner, could we get  
18 those page references again from CAT, if the witness has  
19 them readily available?

20 JUDGE BRENNER: I think the first one was page  
21 2.

22 WITNESS MUSELER: No, it was 3, Judge  
23 Brenner. Unfortunately, the page numbering system is a  
24 little bit difficult in the NRC, so let me indicate  
25 that --



1 MR. LANPHER: There are a lot of page 3s.

2 WITNESS MUSELER: Yes, that's what I mean.

3 JUDGE BRENNER: Your audit reports are not  
4 immune from that.

5 (General laughter.)

6 WITNESS MUSELER: Let me indicate that this is  
7 in Section 2, titled "Inspection Purpose, Summary of  
8 Results," and both citations were in Section 2.2 of that  
9 section. 2.2 is titled "Summary of Inspection  
10 Results."

11 MR. LANPHER: Thank you very much.

12 WITNESS MUSELER: And the final example I  
13 would like to cite, even though again its specific  
14 purpose was not to check the as-built condition of the  
15 plant, it in fact did that in many instances, with the  
16 NRC special investigation of the plant which consumed in  
17 calendar time over six months and many, many man-months  
18 of NRC investigations to 30 specific allegations in the  
19 plant. None of those -- they weren't all related to the  
20 as-built condition, but to the extent that they were, no  
21 deviations between the plant and the as-built condition  
22 were discovered.

23 BY MR. ELLIS: (Resuming)

24 Q You mean no deviations between the plant and  
25 the as-built?



1           A       (WITNESS MUSELER) Yes, sir, between the  
2 plant -- between the plant as built and the design  
3 documents. There were no discrepancies discovered  
4 there.

5           Q       Thank you.

6           A       (WITNESS MUSELER) I did mention in previous  
7 cross examination that to my knowledge -- and I have  
8 been on the job since 1972 -- we have, in the turnover  
9 process, found one E&DCR in an electrical panel, which  
10 had not been incorporated at the time of final FQC  
11 inspection. Mr. Arrington's personnel discovered that  
12 fact, and we subsequently did perform the work.

13                    Again, the point I'm trying to make is the  
14 significance of these items has to be viewed in terms of  
15 what their potential impact is. The potential impact of  
16 not having the plant built as designed is significant.  
17 We don't believe that's the case. Every time that  
18 question has been put to the test on Shoreham, we have  
19 not found deviations between the design documents or the  
20 as-built condition of the plant.

21           JUDGE BRENNER: Excuse me, Mr. Ellis. As long  
22 as you have alluded to it, Mr. Museler, although it was  
23 not specifically in the question, do you have an opinion  
24 on why the NRC staff had a concern about what in their  
25 view was the large number of E&DCRs, and if so, what do

1 you think about that, given all these other good things  
2 you just told us about? Why do they note that?

3 WITNESS MUSELER: Yes, I believe I have an  
4 understanding of the NRC's concerns because we discussed  
5 it and it relates to the previous question Mr. Ellis  
6 asked about the number of E&DCRs outstanding on  
7 drawings. The concerns, I think, can be characterized  
8 into two areas. One is a concern from the operational  
9 side of the plant, that all these E&DCRs get  
10 incorporated in time for the operating people to have  
11 documents that they don't have to have ten E&DCRs to  
12 refer to to understand the key documents in the plant.

13 The second is the sheer number of the E&DCRs  
14 and the implications of being able to control that  
15 number of E&DCRs over the time period that we have been  
16 building this plant, and it is a concern we shared and  
17 share today. We certainly shared it in the 1977  
18 timeframe when many of these audit observations we are  
19 discussing now took place.

20 The concern is with that number of documents,  
21 how do you know that the plant really got built the way  
22 it was supposed to, considering the fact that we've got  
23 69,000 of these things, not all of which require  
24 physical work, but a large number of which do. And that  
25 is the NRC's concern, and it is a legitimate concern.

1           But again, they have looked at it and their  
2 opinion is they don't like it, we don't like it. We  
3 don't like having that many design changes. But the  
4 requirement is to document every single thing you  
5 change, and that results in that.

6           But to answer your question, those were their  
7 two concerns.

8           WITNESS EIFERT: Judge Brenner, I would like  
9 to add a little bit to that. I don't know for a fact if  
10 it is directly applicable to why the NRC was concerned,  
11 but we have the E&DCR system, and it is one system in  
12 effect that does a lot of things. It handles the  
13 interface with the suppliers, it handles the interface  
14 with the field when the field requests changes. It is  
15 the mechanism for Engineering to send advance changes to  
16 the field and so forth.

17           Some people in this business have different  
18 systems for each of those activities. We at Stone &  
19 Webster have chosen to have one system that addresses  
20 everything, and we feel that it has some advantages and  
21 some disadvantages, and the advantages outweigh the  
22 disadvantages. Unfortunately, you always see the large  
23 number as one number, where it is one system that covers  
24 other things.

25           I think that may have been part of the concern

1 with the NRC. It is an overwhelming number, and it is.  
2 But if you really look at the system and what it is  
3 being used for, it isn't that overwhelming. We have  
4 recognized at Stone & Webster that it's a system that  
5 takes a lot of management. It needs management  
6 attention to make sure the system works, and we have  
7 emphasized that to all of our project engineers. But I  
8 think that concept of our system as compared to others  
9 in the industry is significant, I think.

10 BY MR. ELLIS: (Resuming)

11 Q Mr. Baldwin or Mr. Museler, either one, in  
12 your review of the audit observations relating to  
13 logging in Category 1 of LILCO Exhibit 28, was  
14 corrective action taken in each of those instances?

15 A (WITNESS BALDWIN) Yes, it was, Mr. Ellis.

16 Q Can you give me examples of the kinds of  
17 corrective action taken?

18 A (WITNESS BALDWIN) Yes, I can. I'd like to  
19 use the previous two examples that I cited a while ago.  
20 That was FQC 25 D.2.A and FA 602 4.6 as being  
21 representative of this group, not only in all of our  
22 discussions, but in particular here where we are talking  
23 about corrective and preventive action.

24 In the case of FQC 25 D.2.A, in looking back  
25 into that we find the indication that all of the

1 document control cards were reviewed and backfitted to  
2 show incorporation of the E&DCRs.

3           In regard to FA 602 4.6, and that was a rather  
4 broad, sweeping, if you will, corrective and preventive  
5 action situation, and that is where we got involved in  
6 identifying that we would have to complete at this point  
7 in time, which I believe was the summer of 1977,  
8 complete our master computer logging mechanism at the  
9 construction site so it could be used not only there but  
10 could be cross-referenced back to Boston headquarters  
11 and engineering.

12           There was direction given that we would update  
13 the listings of all E&DCRs that had to be incorporated.  
14 There was direction given to review all document record  
15 cards to the then master record log, also direction to  
16 inspect the safety-related E&DCRs to augment the  
17 construction inspection group, to establish quarterly  
18 surveillance by field quality control, modify existing  
19 procedures and instructions where appropriate, and to  
20 undertake a more extensive training program.

21           And that, cast in that light, is why I said it  
22 was rather broadsweeping.

23           Q       Were the actions you just described in  
24 connection with Field Audit 602 taken both at the site  
25 and Boston?



1           A       (WITNESS BALDWIN) In regard to what I was  
2 just discussing, predominantly those actions would have  
3 been taken at the construction site, but there would  
4 have been a spillover in that the completion of the  
5 master log for E&DCRs that was going through its early  
6 debugging stages at the time, would be used ultimately  
7 by Boston Engineering in cross-referencing their manual  
8 log that they were keeping on the project.

9                   Of course, the updating of the E&DCRs to be  
10 incorporated would assist the project with the more  
11 current information.

12                   I think those are probably the only two that  
13 would have direct impact on the projects. The others  
14 would be predominantly related to the field activities.

15           Q       Was the QA department in Boston aware of the  
16 situation, however, and involved in the actions you  
17 described, if you know?

18           A       (WITNESS BALDWIN) Yes, I know. In answer to  
19 your question, and as I recall in the cross examination  
20 there was a great bit of dialogue between us and Suffolk  
21 County where Mr. Lanpher had asked questions of Mr.  
22 Eifert as related to his participation in this  
23 particular audit, and I think both Mr. Eifert and Mr.  
24 Museler answered all of those questions quite  
25 adequately. But I also recall, and specifically reading



1 in the transcript, that in reference to Mr. Costa, that  
2 we indicated he was involved in a coordinating capacity,  
3 and the record I think is left as to what kind of  
4 activities actually took place in relationship to this  
5 particular audit 602 4.6.

6 Q Those are the activities you have just  
7 described?

8 A (WITNESS BALDWIN) Yes, sir. And what  
9 actually did take place between Boston and the  
10 construction site at the time, or as communications and  
11 meetings took place, the formation, for instance, of a  
12 task force of six people to set up this master computer  
13 listing, and a formal program, and with the  
14 understanding and the participation of Boston  
15 headquarters people that it would be an aid and support  
16 to them, and the manual log that they had been keeping  
17 for several years as a cross-check, and this  
18 computer listing would be sent to the Boston E&DCR  
19 coordinator who would compare, as I said earlier, the  
20 listing to their manual listing.

21 This would be sent up to the E&DCR coordinator  
22 on the Boston project, who naturally would review it for  
23 any discrepancies.

24 As looking at the record and talking to the  
25 people involved, besides Mr. Costa -- it went well

1 beyond that -- there were several other people involved,  
2 namely, the most key person at that time being the E&DCR  
3 coordinator who would be the focal point back on the  
4 project between the project and the site.

5 Q Mr. Museler or Mr. Baldwin, Category 1,  
6 entitled "Logging," on IILCO Exhibit 28 contains a number  
7 of audit observations.

8 Do you attribute any significance to this  
9 number?

10 A (WITNESS MUSELER) This audit and the  
11 subsequent audits that address these types of findings,  
12 and the number of observations contained in those audits  
13 were of significant concern to both the quality groups  
14 and to the management of the job.

15 Initially we were concerned for two reasons:  
16 first, that these conditions might have an impact on the  
17 adequacy of the plant, and secondly, that they also  
18 might have an effect on our ability to control the  
19 construction from a cost and schedule standpoint.

20 We looked into the situation in depth at that  
21 time. We have looked at it many times since, and other  
22 people have looked at the situation many times since,  
23 especially with regard to the first concern, that is,  
24 did it affect the safety of the plant.

25 I won't go back through my previous answer,

1 but I believe that that establishes that we do not have  
2 a safety concern with regard to these findings.

3           With regard to our second concern, the impact  
4 that this might have had and did have, to some extent,  
5 on the cost and schedule of the project that was a  
6 concern to us, we took a significant number of  
7 additional measures, training additional personnel,  
8 reorganization within certain contractor organizations,  
9 additional monitoring of this process not just by the  
10 quality groups but by the construction management groups  
11 themselves, a number of rather frank discussions with  
12 contractor's senior management at the presidential  
13 level, all of which was described in our cross  
14 examination, I believe.

15           We believe that our second concern, potential  
16 impact of these numbers of findings, has been  
17 ameliorated, and we believe that for the last several  
18 years that has not been a concern.

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1           From the standpoint of safety, we were  
2 concerned at the time. We established to our  
3 satisfaction and, we believe, to all of the outside  
4 agencies that looked at us to their satisfaction that it  
5 was not a safety concern, and the problem has been  
6 essentially corrected, and we don't believe that it has  
7 any safety significance at this point.

8           Q       And your basis for that conclusion is the  
9 testimony you gave earlier in which you went through the  
10 process and also discussed the number of times in which  
11 the as-built situation had been checked against the  
12 design documents; is that correct?

13          A       (WITNESS MUSELER) Yes, that is correct.

14          MR. ELLIS: Judge Brenner, I would propose now  
15 to proceed to the second category.

16          JUDGE BRENNER: We might as well break for  
17 lunch at this point. Where are you in your time?

18          MR. ELLIS: Judge Brenner, I am proceeding on  
19 the notion that I am going to finish tomorrow noon  
20 because I think that -- and maybe I need guidance on  
21 this. There is, of course, nothing more important to us  
22 than this hearing. Several of the people on the panel  
23 have been here a long time, and a couple of them are  
24 vital to where they need to go and I simply must do  
25 everything I can, assuming it is possible, to have the

1 panel completed this week.

2           And it is my fervent hope that if I complete  
3 them by noon tomorrow on redirect, that that goal will  
4 be achieved.

5           JUDGE BRENNER: I think that is right unless  
6 there is something I don't know. The Board does not  
7 have a lot of questions.

8           MR. ELLIS: Therefore, so that Mr. Lanpher and  
9 the Board might know, I would propose to go from E&DCRs  
10 to probably the category of what has been called the  
11 extra programs, CONQUIP, CONSAP and CABTRAP. I will  
12 skip for a moment storage and housekeeping because that  
13 is going to be the one that may get substantial surgery,  
14 depending on my time.

15           JUDGE BRENNER: I want to hear a little bit  
16 about that on redirect.

17           MR. ELLIS: Yes, sir, we are going to address  
18 storage and housekeeping.

19           JUDGE BRENNER: You can leave out the papers  
20 from the workers eating lunch, though.

21           MR. ELLIS: Yes, and I also have received  
22 direction from the board on puddles, but we will address  
23 some of that. Then we will, for Mr. Lanpher's benefit  
24 and Mr. Bordenick's, also consider the SPCR, FSAR  
25 conformance topic, and then there are some miscellaneous

1 topics that we intend to touch on, and I will try to  
2 provide the Board with some additional information about  
3 that before we do it, also Mr. Lanpher.

4 JUDGE BRENNER: Mr. Lanpher, what is your view  
5 of any follow-up? I haven't heard anything brand new.  
6 I'm not saying that you shouldn't have follow-up. I  
7 expect that you would. But given the volume of the  
8 cross-examination and the, by relative terms, much  
9 lesser volume of redirect, and the fact that the  
10 subjects aren't new even though the focus may be  
11 sharper, what do you think?

12 MR. LANPHER: I think that we will finish  
13 certainly on Friday if he holds to his prediction. I  
14 must say I am going to need a little bit of time,  
15 hopefully starting late this afternoon, to confer with  
16 Mr. Hubbard, who, I should state, is in Washington, but  
17 he is obligated in another NRC proceeding until probably  
18 about 3:00 this afternoon. So without prejudice to  
19 talking with him, I think we will be able to complete it.

20 Judge Brenner, I have a comment on your  
21 comment.

22 JUDGE BRENNER: The one about the paper?

23 MR. LANPHER: About the paper. You asked Mr.  
24 Hubbard to be prepared to address that. I am deeply  
25 concerned that the Board has prejudged the issue.



1 JUDGE BRENNER: I think you wasted our time on  
2 that one sub-item. That is my personal opinion.

3 MR. LANPHER: Do you want Mr. Hubbard to be  
4 prepared to address that?

5 JUDGE BRENNER: Yes, because I am giving you  
6 the benefit of that opinion now so that if we are  
7 missing something, if I am missing something that I  
8 should know about, that is your opportunity to tell us.  
9 That is exactly why I am not remaining quiet. In other  
10 words, as I said, I don't want you to miss that  
11 opportunity. If there is something there that I am  
12 missing, I want to hear about it.

13 MR. LANPHER: Well, I hope the Board is  
14 maintaining an open mind on that.

15 JUDGE BRENNER: I just told you what my  
16 preliminary view is, that there is nothing there on that  
17 one item. If I stayed silent instead of having the  
18 discussion that we had that you just alluded to, I was  
19 afraid that the County would miss the opportunity to  
20 show me what I am missing, and therefore, it is to your  
21 benefit for me to do that. We have discussed this in  
22 many different contexts throughout the proceeding. I  
23 don't want to remain silent when I can stimulate you to  
24 come back and show us what you have.

25 MR. LANPHER: Judge Brenner, I don't mind at

1 all receiving guidance from the Board. In fact, I and,  
2 I think, LILCO and everyone else welcomes it. The  
3 comments that I have heard on this went far beyond  
4 guidance, frankly, and that is why I feel that I had  
5 to --

6 JUDGE BRENNER: I think you wasted my time on  
7 that one sub-item. The time in the total context of  
8 things was not great. I think it was an hour or two at  
9 the most, maybe less. But if there is something I am  
10 missing about what I would call the transient  
11 litter -- and I am not talking about the whole storage  
12 and housekeeping area, I am talking about this one  
13 sub-item -- then I sure missed it in your cross, and  
14 that is why you should --

15 MR. LANPHER: I don't think anyone is supposed  
16 to establish everything in cross.

17 JUDGE BRENNER: That is right, but usually you  
18 get at least some scintilla of something lurking there,  
19 and I didn't even get that, speaking personally, not for  
20 the whole Board. So I want you to, if you think there  
21 is something there -- and maybe after your cross you  
22 conclude there is nothing there also. I don't know.

23 MR. LANPHER: No, I don't conclude that, Judge  
24 Brenner.

25 JUDGE BRENNER: Then okay, you should

1 certainly, through Mr. Hubbard, give us the significance  
2 of that in the context of the contentions and the QA  
3 program, and we will be delighted to hear it, and I will  
4 be delighted to be informed as to what I missed the  
5 first time.

6 All right, let's break for an hour and a half  
7 until 1:50.

8 [Whereupon, at 12:18 p.m. the hearing  
9 recessed, to reconvene at 1:50 p.m. the same day.]

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## 1 AFTERNOON SESSION

2 [1:55 p.m.]

3 JUDGE BRENNER: Good afternoon.

4 We have the two Suffolk County offers of  
5 proof, and we would like to mark them at this point and  
6 then discuss something about one of them. So up to  
7 Suffolk County Exhibit 78. Why don't you describe them,  
8 Mr. Lanpher, taking them in chronological sequence.

9 MR. LANPHER: Judge Brenner, we would like to  
10 then have marked as Suffolk County Exhibit 78 for  
11 identification a document entitled "Suffolk County Offer  
12 of Proof," and in the upper right-hand corner it is  
13 dated November 5, 1982, and this constitutes a two-page  
14 document with attachments which describes, in the design  
15 and construction QA area, additional areas of  
16 examination which would have been pursued if time had  
17 permitted.

18 (The document referred to  
19 was marked Suffolk County  
20 Exhibit No. 78 for  
21 identification.)

22 MR. LANPHER: I would like to have marked as  
23 Suffolk County Exhibit 79 a document entitled "Suffolk  
24 County Offer of Proof (OQA)." It consists of three  
25 pages, and on page 3 it is dated November 9, 1982. This

1 describes areas of examination which would have been  
2 pursued relating to operating quality assurance if the  
3 time had permitted, and I have provided the reporter  
4 with four copies of each.

5 (The document referred to  
6 was marked Suffolk County  
7 Exhibit No. 79 for  
8 identification.)

9 JUDGE BRENNER: All right. As identified,  
10 they will accompany the record to show what the County's  
11 offers of proof are. The first one is a little thick to  
12 bind in. If it had been thinner, I certainly wouldn't  
13 have minded binding it in, but let's bind just the  
14 second one in.

15 MR. LANPHER: Suffolk County 79?

16 JUDGE BRENNER: Yes, for convenience, in  
17 addition to having them both marked for identification.

18 [The document referred to, Suffolk County  
19 Exhibit No. 79 for identification, entitled "Suffolk  
20 County Offer of Proof (OQA)," follows:]

21  
22  
23  
24  
25

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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

Docket No. 50-322 O.L.

SUFFOLK COUNTY OFFER OF PROOF (OQA)

The Licensing Board's time limit (Tr. 11,319-20 and Tr. 13,269) on Suffolk County operating QA/QC examination of the LILCO panel has prevented the County from completing its intended examination. Accordingly, pursuant to 10 C.F.R. § 2.743(e), the County hereby states the substance of the evidence which would have been proffered if the Board had not imposed the limit.

1. The LILCO panel testified that neither the Shoreham FSAR nor the LILCO QA Manual (Attachment 4 to the LILCO Testimony ("LT")) sufficiently provides whether and how the requirements of 10 C.F.R. 50, Appendix B, will be satisfied, but that reference must be made to procedures, which are not specifically identified in those documents. If OQA cross-examination had been permitted to continue, the County would have obtained specific identification of the procedures comprising the LILCO OQA Program. The County would have established that such procedures do not sufficiently provide whether and how the requirements of Appendix B will be satisfied, at least with respect to the following Appendix B criteria: I, II, III, IV, V, VI, VII, IX, X, XII, XIII, XIV, XVI, and XVII, in that at least the following procedures: (i) are



too vague, unspecific and ambiguous to enable the determination of who is responsible, what is to be done, how and when; (ii) lack sufficient cross-references and definitions to permit their effective use; and/or (iii) contain gaps, rely upon undocumented procedures or standards for implementation, and/or fail adequately to implement requirements of the FSAR and the QA Manual: QAP-S-2.1; 2.2; 2.3; 3.1; 4.1; 5.4; 7.1; 7.2; 9.1; 9.2; 10.1; 10.2; 10.4; 12.1; 13.1; 15.3; 16.2; 17.1; and 17.2.

2. If OQA cross-examination had been permitted to continue, the County would have established that at least the following sections of the QA Manual do not provide adequate and specific instructions for the development of procedures which sufficiently provide, and do not themselves sufficiently provide, whether and how the criteria of 10 C.F.R. 50, Appendix B, will be satisfied: Sections 3, 4, 5, 6, 7, 9, 12, 13, 14, and 17.

3. During the course of OQA cross-examination, and particularly on Friday, November 5, the LILCO panel repeatedly sought to explain that gaps and/or ambiguities in written OQA procedures were unimportant and not significant to the satisfaction of 10 C.F.R. 50, Appendix B requirements, because Station OQA personnel were comprehensively and thoroughly trained. The County would have cross-examined the LILCO panel on QAP-S-2.1 (Attachment 45 to LT), which would have established, inter alia, that procedures for training Station OQA personnel as to the OQA Program are incomplete and inadequate, and that all such training is permitted to be accomplished solely by on-the-job training. Such examination would also have established that the Station OQA indoctrination and training procedure does not include familiarizing

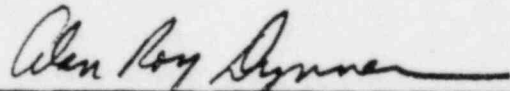
Station OQA personnel with Station Procedures ("SPs"); the LILCO witnesses testified that SPs, or at least some of them, form a part of the OQA Program. Further, such examination would have established that there is no requirement for refresher OQA training for Station OQA personnel.

4. The County would have established that the latest revision of Table 17.2.6-1 of the FSAR (QA document control responsibility) does not conform to Appendix D to the QA Manual currently in effect.

5. The foregoing evidence would have further substantiated the validity of Suffolk County Contention No. 13(a), (b) and (c).

Respectfully submitted,

David J. Gilmartin  
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Suffolk County Department of Law  
Hauppauge, New York 11788



Herbert H. Brown  
Lawrence Coe Lanpher  
Alan Roy Dynner  
KIRKPATRICK, LOCKHART, HILL,  
CHRISTOPHER & PHILLIPS  
Washington, D.C. 20036

November 9, 1982

1           JUDGE BRENNER: With respect to the  
2 operational QA offer of proof, we have looked at it  
3 carefully, as we did the other one. We believe that  
4 Suffolk County has had an opportunity to go through  
5 examples of procedures and, with the procedures, the  
6 references to the QA manual and the FSAR, and in turn  
7 the criterion Appendix B to support its allegation as  
8 part of Contention 13 that LILCO has not shown how it  
9 will implement the QA program through its written  
10 procedures, at least.

11           We are talking about the advanced look as to  
12 the reasonable assurance that the program will be  
13 properly implemented in accordance with the regulations.  
14 So once again, these are good allegations and we believe  
15 the County had an opportunity to prove its case. We  
16 urged the County from the beginning to pick its best  
17 examples.

18           The County's view, and I am reading from its  
19 summary concluding line in the operational QA offer of  
20 proof, is that the evidence in the offer of proof, which  
21 it would have liked more time to pursue, had further  
22 substantiated the validity of portions of the  
23 Contention 13.

24           It is our preliminary view that the County has  
25 not very well substantiated that contention. That is

1 not to say we might not find some things wrong when we  
2 look at the record, and this view is just preliminary.  
3 If there are matters in the remaining procedures and  
4 manual chapters and so on that the County wanted to go  
5 through and didn't get to, it means that there has been,  
6 in our view, a serious miscalculation on the part of the  
7 County of what was important and what wasn't important  
8 on the part of its counsel and experts over the many  
9 months it had to prepare its case.

10           We doubt that this has been the case.  
11 However, it is possible that that has been the case. We  
12 would not want, as if this was a private law suit, for  
13 such a serious error on the part of one party to deprive  
14 us of potentially valuable information. We are not  
15 capable on our own of going through these procedures and  
16 understanding exactly what the County had in mind. If  
17 it is not much different in kind than what the County  
18 has already presented and the alleged ambiguities in the  
19 procedure and that nature, and most of the offer of  
20 proof is along those lines, then we are not missing very  
21 much.

22           The County will either have made some or all  
23 of its points by the examples already presented or it is  
24 not going to make its points, no matter how many days we  
25 sit here, because the points are not there in the

1 evidentiary basis. However, we are going to give the  
2 County one more opportunity to pick its best examples in  
3 the operating QA area along the lines of its offer of  
4 proof.

5           We would plan that that be done in one day of  
6 further cross-examination by the County. The County  
7 should pick, and this is repeating what we have said all  
8 along, its best examples in each of these areas, and  
9 therefore it will either make or not be able to make its  
10 case on the basis of those examples, retaining the right  
11 to let the County have more time after that day if  
12 things become really exciting, so to speak, but don't  
13 expect us to exercise that right. And our failure to  
14 exercise that right would not mean that the County has  
15 not better substantiated the contentions with this  
16 further one-day opportunity; it may mean simply that we  
17 feel we have enough of a perspective given the further  
18 examples.

19           One additional reason we are doing this is we  
20 believe the County made a bad decision in the way it  
21 divided up its time in the five weeks we allowed it. If  
22 it was going to take that much time, and we disagree  
23 strongly that that much time needed to have been taken  
24 in total, but if the County was going to take that much  
25 time, it could have easily, and I emphasize the

1 "easily," cut down the construction QA examination by any  
2 number of days and had more time to pursue these  
3 operational QA examples.

4           However, again, this is not a private law  
5 suit, and the party in retrospect -- and retrospect and  
6 hindsight is always easy -- perhaps should have  
7 allocated things differently. That should not be used  
8 to deprive us of valuable information.

9           This day we are talking about would include  
10 solely the materials in the offer of proof. We have  
11 previously indicated that we would give the County its  
12 estimated one to two hours to pursue NOMIS and NPRDS, as  
13 well as Item Roman I.C.5 of NUREG-0737, all of which  
14 relate to factoring in operational experience from other  
15 reactors and from Shoreham, and that won't be charged  
16 against the day. We will still give that additional  
17 hour or two.

18           Now, the reason we are mentioning this now is  
19 so the parties can discuss the scheduling for next week,  
20 and we would like to hear from the parties certainly by  
21 Friday, perhaps by tomorrow if the parties are ready, as  
22 to how they would schedule things next week. Obviously,  
23 this further opportunity has to be before the LILCO  
24 redirect and before the Staff questions on operational  
25 QA.



1           Figure out when you want the County to pursue  
2 its one to two hours of questioning on these other  
3 matters that I just mentioned. Figure out when you want  
4 the ISEG panel to testify. Estimate a day for that.  
5 Remember, we will take up some time the morning of  
6 Tuesday on settlement matters. I guess that would take  
7 about an hour at most. And give us your proposal, and  
8 unless it creates problems for us, I am sure we will  
9 accept the schedule proposed. My suggestion is pick a  
10 date certain for ISEG and work around it, but you don't  
11 have to do that.

12           In addition, this will push back the first  
13 date of the County's testimony, I guess, the way this  
14 week is going, to Thursday, at the earliest. I mention  
15 that for two reasons. First of all, it helps Mr.  
16 Hubbard with another day. I don't think you were here  
17 that day, Mr. Lanpher. We had a conversation as to  
18 whether we were going to promise him what day he could  
19 start, and I told him we could give it our best  
20 prediction but we wouldn't promise. It turns out our  
21 prediction that he would not get on before Wednesday is  
22 going to be correct.

23           In addition, if LILCO wants to submit its  
24 cross plan later than the Tuesday we asked for, that  
25 would now be acceptable given this time. Mr. Ellis is

1 sighing with relief. Our object was to get it in time  
2 for us to use it. Given all the background we have  
3 already had, we did not need as much lead time as we  
4 have earlier in the proceeding of other subjects, and it  
5 is a supplement, not the first cross plan, and we want  
6 it to be as final as possible.

7           So time it so that we get it the day before,  
8 at the latest. If you want to give it to us two days  
9 before, that is fine. And if that's the same offer as  
10 the County, in terms of the staff's testimony, and that  
11 remains. When you factor in your scheduling, and I am  
12 sure you are way ahead of the Board on this, focus on  
13 which people you need for what areas and whether some of  
14 the ISEG people should overlap with the examination on  
15 NPRDS and NOMIS and how you want to do that. That is  
16 why I want the parties to resolve all these nuances and  
17 come back to us.

18           MR. ELLIS: Judge Brenner, I have already told  
19 Mr. Dynner that while both our sets of witnesses, ISEG  
20 and the OQA witnesses, have some knowledge of both of  
21 them, that my judgment is that it is the ISEG witnesses  
22 who should be the focus of that examination; but  
23 obviously we offer both of them for whatever  
24 examination.

25           I have also given Mr. Dynner whatever

1 information I personally had on the two programs.

2 JUDGE BRENNER: Well, you work it out and come  
3 back to us with the schedule and what witnesses would be  
4 there for which aspect. In addition, we want a very  
5 detailed cross plan from the County on the matters that  
6 we are now giving it an additional opportunity to pursue  
7 in the offer of proof.

8 I would also appreciate but I am not requiring  
9 a separate improved cross plan on the NOMIS and NPRDS  
10 matters. We had a handwritten outline and it is not  
11 very detailed. I think it is acceptable in more  
12 detail. On the matters in the offer of proof, we want a  
13 very detailed outline, very close to the questions that  
14 will be asked so we can judge the pace of things and see  
15 where things are going after these many weeks.

16 I believe my message is clear, Mr. Lanpher,  
17 and at the risk of redundancy, the County should not  
18 spend all its time going seriatim through the items  
19 listed in Paragraph 1 of its offer of proof and thereby  
20 at the end of the day never having gotten to  
21 Paragraph 2. We want best examples, in any order the  
22 County thinks will most support its case.

23 You wanted to say something?

24 MR. LANPHER: I thought better of it.

25 JUDGE BRENNER: You can say it.

1           MR. LANPHER: I realize I can say it. I am  
2 going to supply the transcript to Mr. Dynner, and if he  
3 has any comments, he will do it.

4           JUDGE BRENNER: Okay. That is all I have on  
5 that subject. I don't know if anyone needs any  
6 clarification prior to the full discussion the parties  
7 are going to have.

8           I alluded in passing to the session schedule  
9 Tuesday morning on settlements. We have received no  
10 further proposed settlement agreements. I am  
11 disappointed. We expected to receive something in  
12 advance of Tuesday morning if there is something to  
13 receive. So hopefully we will hear about that tomorrow  
14 or Friday.

15           If parties are still at loggerheads on the few  
16 settlements we have in mind, then we expect to hear what  
17 the bone of contention or bones of contention are that  
18 remain, and maybe we can help. But again, maybe we will  
19 just make it worse.

20           I should add the obvious, that on the other  
21 offer of proof with respect to construction QA, we have  
22 also looked at it carefully. We are mindful of the  
23 record that has been compiled to date, and we believe  
24 that our time limitations were more than fair to the  
25 County, perhaps less than fair to other parties, and we

1 see no reason to vary the fact that the  
2 cross-examination on that aspect has now come to a close  
3 and the offer of proof is in the record.

4 I will add, I thanked the County for its  
5 approach at the time and I thank it again for the  
6 fashion in which it has presented the offer of proof on  
7 both aspects. That has been very helpful to give us  
8 another opportunity to look at things, and it is also  
9 going to be helpful to the County to have that in the  
10 record. So we appreciate the procedural aspects of it.

11 All right, Mr. Ellis, we are ready to continue  
12 your redirect examination.

13 MR. LANPHER: Can I have just a moment? I  
14 want to get a message to Mr. Dynner.

15 JUDGE BRENNER: Surely.

16 MR. LANPHER: Judge Brenner, could I inquire  
17 as a follow-up on this? My understanding is Mr. Ellis  
18 is going to attempt to finish by noon tomorrow and the  
19 Board shortly thereafter. I honestly don't know how  
20 much recross I will have at that time. I might be able  
21 to finish well before 1 o'clock on Friday. It is  
22 certainly conceivable. It is not a promise. Would we  
23 be proposing to go on to OQA at that point?

24 JUDGE BRENNER: Well, I don't know what that  
25 point is.

1           MR. LANPHER: If we finish early Friday  
2 morning. I just want to be able to alert my people. We  
3 have been sort of talking as if next week is the time  
4 for OQA.

5           JUDGE PRENNER: Yes. But, you know, if the  
6 right people are here, it might be a good time to  
7 proceed with the County's cross on part of the OQA  
8 because we are giving the County slightly more than a  
9 day. That is the day for the proof matters, and then  
10 the estimated hour to two, and this was an estimate that  
11 we all mutually agreed was realistic given Mr. Dynner's  
12 preliminary plan on the NPRDS and related matters. So I  
13 would like not to have to sit here for two hours. On  
14 the other hand, if it is only a half-hour, we will let  
15 you leave early for Pennsylvania.

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1           MR. ELLIS: Judge Brenner, Mr. Muller and Mr.  
2 Youngling are here, and I will make them available. I  
3 was going to keep Mr. Youngling here until I heard from  
4 Mr. Dynner this afternoon with regard to the meeting  
5 that you required us to have. Mr. Youngling --

6           JUDGE BRENNER: Yes. I haven't forgotten  
7 that. I know the parties didn't either, but I figured  
8 it was too soon to remind the parties.

9           MR. ELLIS: No, sir, we did not forget. If  
10 for some reason that meeting cannot be held, I was going  
11 to release Mr. Youngling but I will keep them both here  
12 if there is any realistic possibility that the time can  
13 be put to useful purposes.

14           JUDGE BRENNER: Let's judge again at the end  
15 of the day tomorrow, and everybody is unfortunately  
16 going to have to stay flexible. I do not want to lose  
17 several hours of the hearing tomorrow. On the other  
18 hand, if it's only a matter of a short amount of time on  
19 Friday -- I am sorry, not tomorrow. Let's see where we  
20 are near the end of the day tomorrow.

21           MR. ELLIS: Judge Brenner, we have handed to  
22 the Board and the parties a number of papers that we  
23 intend to use and some of which are intended to be  
24 helpful to the Board and the parties in our pursuit of  
25 the FSAR conformance and extra programs area. And I

1 will identify those more precisely when we get to those  
2 areas. But I wanted to mention them because they might  
3 look a little unusual.

4 JUDGE BRENNER: Well, it's more interesting  
5 than the others we have been getting, so don't  
6 apologize. I am glad to see them.

7 MR. ELLIS: May I proceed?

8 JUDGE BRENNER: Yes.

9 Whereupon,

10

11 T. TRACY ARRINGTON,  
12 FREDERICK B. BALDWIN,  
13 WILLIAM M. EIFERT,  
14 T. FRANK GERECKE,  
15 DONALD G. LONG,  
16 WILLIAM J. MUSELER and  
17 ROBERT G. BURNS,

18 the witnesses on the stand at the time of recess, having  
19 been previously sworn, resumed the stand and testified  
20 further as follows:

21 REDIRECT EXAMINATION -- Resumed

22 BY MR. ELLIS:

23 Q Mr. Arrington, Baldwin, and Museler, when we  
24 broke for lunch, we had completed the first category of  
25 LILCO Exhibit Number 28. And I want to turn your

1 attention now to the second category, entitled  
2 "Posting." Would one of you please generally  
3 characterize what the observations in this category  
4 reflect or consist of, giving examples, where  
5 appropriate, please?

6 A (WITNESS BALDWIN) Mr. Ellis, these findings  
7 generally reflect a condition whereby the E&D numbers  
8 have not been noted on the affected documents.

9 Q When you said "E&D," did you mean E&DCRs?

10 A (WITNESS BALDWIN) E&DCRs, yes. However,  
11 where the number was not posted, it does not necessarily  
12 mean that the E&DCR was not filed with or near the  
13 document. Additionally, I would like to point out that  
14 these conditions do not necessarily indicate that the  
15 individual who needed or requested the information in  
16 his job working with the installation activities did not  
17 have it.

18 Q Can you give some examples of that, please,  
19 that come out of the second category on LILCO Exhibit 28?

20 A (WITNESS BALDWIN) In looking at the second  
21 category of Exhibit 28, Posting, I identify FQC 19  
22 Observation D.1, where the auditor noted that four out  
23 of 30 documents reviewed did not have the E&DCR listed  
24 on or attached to the document.

25 However, I would like to point out that the

1 auditor did note that with one exception the E&DCRs were  
2 found and filed in the work area. In this particular  
3 case, it was the turbine trailer. As to an explanation  
4 of the, with the one exception, I can only assume a few  
5 things that possibly could have been in use or hadn't  
6 gotten there as yet.

7 My other example is FA 654, item 4.6. And as  
8 we discussed previously, this is a sample of five  
9 specifications in three procedures where it was  
10 indicated that copies have not been -- copies in this  
11 case -- E&DCRs had not been prefaced with the proper  
12 E&DCR numbers.

13 Q Mr. Baldwin, in your answer you said you could  
14 only assume. I take it from that you don't have any  
15 knowledge of what actually happened either on your own  
16 or from the auditors involved, do you?

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

18 Q And that was with respect to that one  
19 exception?

20 A (WITNESS BALDWIN) That's right, sir.

21 Q Mr. Baldwin and Mr. Museler, Mr. Arrington,  
22 have you all reviewed these audit observations that are  
23 in the second category on LILCO Exhibit 28?

24 A (WITNESS BALDWIN) Yes, we have. And I would  
25 characterize these two examples that I have just been

1 referring to as typical of that group.

2 Q Gentlemen, based on your review, is it your  
3 opinion that had these conditions that are observed in  
4 these audit observations gone undetected, would they  
5 have affected the construction, the integrity of the  
6 design or construction of the plant?

7 A (WITNESS BALDWIN) Mr. Ellis, no. I would  
8 characterize these observations as items for which the  
9 potential impact on quality is extremely remote.

10 Q What do you base that on, Mr. Baldwin?

11 A (WITNESS BALDWIN) Well, sir, I could spend  
12 the time and go back over what Mr. Museler said this  
13 morning relative to logging, but I thought he adequately  
14 addressed it. He may want to add to it now. But my  
15 thoughts and message would be along the same lines.

16 Q Are you referring to Mr. Museler's testimony  
17 concerning the various inspections and testing and the  
18 testimony concerning the checks on the as-built as  
19 compared to the design and specifications?

20 A (WITNESS BALDWIN) Yes, sir.

21 Q Mr. Museler, is that also your view?

22 A (WITNESS MUSELER) Yes, sir, Mr. Ellis, it  
23 is. I believe I indicated in the answer to that  
24 question that the answer I gave was also applicable to  
25 the other categories in the E&DCR area.

1 Q By "other categories," are you referring to  
2 the other categories; that is, 2 through 7 or 8 of  
3 LILCO Exhibit Number 28? Or would you prefer that we  
4 take them one at a time?

5 A (WITNESS MUSELER) I was referring to those  
6 categories, sir.

7 Q Let me take the categories one at a time, Mr.  
8 Museler. Does the failure to post E&DCRs on drawings of  
9 specifications mean that the E&DCRs involved are not  
10 actually used or incorporated in the construction of the  
11 plant?

12 A (WITNESS MUSELER) No, sir, it does not.

13 Q Why is that?

14 A (WITNESS MUSELER) The posting of the E&DCR is  
15 relative to, if we are speaking in terms of drawings,  
16 we're speaking in terms of the drawings that the E&DCR  
17 has some involvement with. I believe we said before  
18 that the predominant case is that the E&DCR in and of  
19 itself becomes the installing document for that portion  
20 of the drawing which it is referenced to.

21 The drawing itself, especially the copies that  
22 are kept in the office areas, is not the document that  
23 is used by the installer. The installer utilizes in  
24 most cases the E&DCR; or if the drawing has incorporated  
25 the E&DCR, he would use the drawing. So my belief that



1 this is not a fact that posting of the drawings has not  
2 affected the plant is based on that. And again, I will  
3 refer back to the answer I gave this morning that  
4 everytime the accuracy of the overall system to ensure  
5 that E&DCRs are in fact incorporated into the as-built  
6 plant, everytime that check has been made the answer has  
7 been the same; and that is that the plant does reflect  
8 the design documents, including the E&DCRs.

9 I should mention again that despite the fact  
10 that there is an E&DCR verification program and despite  
11 the fact that every safety-related E&DCR is inspected or  
12 included in Mr. Arrington's FQC final inspection  
13 program, all of the E&DCRs are verified, if you will, by  
14 various organizations on the site at the time of system  
15 completion. There are a large number of redundant  
16 checks to ensure that the E&DCRs are incorporated into  
17 the plant.

18 The bottom line is that after that entire  
19 process has taken place and after the final FQC  
20 inspection has taken place, when additional third-party  
21 looks are taken at that situation, the as-built plant  
22 has reflected the design documents, including the E&DCRs.

23 Q Mr. Baldwin, was corrective action taken in  
24 each of the instances of the observations in this second  
25 category, LILCO Exhibit 28?

1           A       (WITNESS BALDWIN) Yes, sir.

2           Q       Can you describe generally for the Board the  
3 kinds of corrective action representative of this group?

4           A       (WITNESS BALDWIN) Yes, sir. I would like to  
5 describe not only the corrective action but the  
6 associated preventive action. In using the two examples  
7 again, FA 65# 4.6, what we see here in history at that  
8 point in time, which I believe was November of '77, the  
9 construction manager at the time directed to the  
10 contractors in the major departments on the Shoreham  
11 site an edict, if you will, where he outlined several  
12 programs that had to either be developed and implemented  
13 or had to be continued.

14                   In one particular case he identified to the  
15 contractors -- and I think this has been referred to  
16 before by Mr. Arrington -- identified to the contractors  
17 if they did not have a need for the particular  
18 documents, such as specs, which had the requisite  
19 E&DCRs, that they were to return them. And that was  
20 established.

21                   He also directed a program of increased  
22 frequency of self-audits of these groups. Additionally,  
23 he set up with his associates to have more support of  
24 the different groups involved in document control,  
25 identified that there should be ongoing and continuous

1 reviews of documents or discrepancies, directed that  
2 there be assurance given that reviews be made for the  
3 accuracy of the weekly lists and the distribution lists.

4 He also indicated to certain parties that he  
5 would like to see if it was possible to reduce the  
6 quantity of E&DCRs further. As I talked to 602, that to  
7 continue with the training of personnel and hire or  
8 reassign required people in these areas. And once  
9 again, as I mentioned this morning, in the review and  
10 revision of procedures as appropriate and as necessary.

11 In regard to FQC 19 D.1, what we see here is  
12 that construction conducted a review of all of the  
13 documents and corrected the E&DCR situations where it  
14 was necessary.

15 Q With respect to the two examples that you  
16 gave, Mr. Baldwin, did the corrective action involve in  
17 either case a review of other than those in the audit;  
18 that is, E&DCRs other than the audit? Do you understand  
19 my question?

20 A (WITNESS BALDWIN) Yes, sir. Other than the  
21 specific ones that were found efficient, as I recall  
22 reading that directive, it was addressed to the whole  
23 population, not just those two that were identified by  
24 the auditor.

25 A (WITNESS MUSELER) And, Mr. Ellis, it also

1 included a review not just of the E&DCRs that were  
2 included in the audit, not just expanding that  
3 population to all the contractors, but in fact requiring  
4 a recheck utilizing the master logs of all of the E&DCRs  
5 assigned or distributed to the various contractors at  
6 various points throughout the corrective action for  
7 those audits that were conducted in the '77-'78 time  
8 frame.

9           So the corrective action -- and the corrective  
10 action included essentially all; I can't say absolutely  
11 that the entire population of E&DCRs distributed to the  
12 contractors was re-reviewed -- but essentially all of  
13 them were included in that directive. And that was  
14 followed up on by construction management during that  
15 time frame.

16           And I think we mentioned also that one of the  
17 activities of preventive action that was instituted was  
18 for the construction management organization to perform  
19 its own checks of the E&DCR posting and logging on the  
20 contractors and on ourselves and on the construction  
21 management organizations.

22           A       (WITNESS BALDWIN) Mr. Ellis, I would also  
23 like to add to that to make sure that the record is  
24 clear, that this management directive that we're talking  
25 about that was issued by the construction manager

1 addressed not only the particular item 4.6 but all of  
2 the items within that audit report.

3 MR. LANPHER: Judge Brenner, you said this  
4 morning to jump in if I needed to. I would like to  
5 request a copy of what was referred to as the  
6 "management directive." I don't know the title of this  
7 document. There has been reference to it. I could wait  
8 until I start asking questions tomorrow. I may have no  
9 questions whatsoever on it. But I think it would lead  
10 to greater efficiency if I could ask for it now.

11 JUDGE BRENNER: Mr. Ellis?

12 MR. ELLIS: Judge Brenner, I am not sure  
13 whether we have it here. Maybe we should ask the  
14 witnesses that. But it seems to me that they have been  
15 able to testify about it without the need to reference  
16 it. And I think, given the way that we have proceeded,  
17 that that isn't something that has to be produced.

18 JUDGE BRENNER: Well, I haven't reached that  
19 point of decision in my thinking so far in the last 20  
20 seconds since this was raised. And if I have to reach  
21 that point, I will. I guess the initial question is do  
22 you have it and will you let him look at it? And if you  
23 tell me no, I have to rule. Then I will rule.

24 MR. ELLIS: May we ask the witnesses now?

25 JUDGE BRENNER: Or you can think about it and

1 get back to Mr. Lanpher during the break if you want and  
2 then back to the Board after the break.

3 MR. ELLIS: All right, we will do it that way,  
4 Judge Brenner. Thank you.

5 BY MR. ELLIS: (Resuming)

6 Q Mr. Baldwin, Mr. Museler, do you attach any  
7 significance to the number of audit observations  
8 contained in the group number 2 entitled "Posting" in  
9 LILCO Exhibit Number 28?

10 A (WITNESS BALDWIN) No, sir, we don't.

11 Q Can you tell us why not?

12 A (WITNESS BALDWIN) Well, in brief summary  
13 form, Mr. Ellis, what we're seeing here is at that point  
14 in time, as I mentioned, the latter part of 1977, there  
15 were several contractor organizations on site with  
16 numerous people and a need for these types of  
17 documents. There was also several construction  
18 organizations and departments on the construction site.  
19 There were -- I don't know the particular number -- but  
20 I would say at least three or four quality assurance  
21 organizations on site.

22 Referring to the numbers that we spoke about  
23 before, and given the total populations of the documents  
24 that we're talking about, both E&DCRs and drawings and  
25 specifications which are probably in the neighborhood of



1 hundreds of thousands, all of this taken alone gives a  
2 total population as compared to those relatively few  
3 findings over the organizations that we're talking about  
4 within the time frame that we're mentioning.

5 A (WITNESS MUSELER) Mr. Ellis, I would just  
6 like to refer back to a similar question on logging.  
7 And in terms of impact and comments relative to the  
8 number of findings, my answer is essentially the same as  
9 it was this morning; that is, that we did have concerns  
10 at the time and I think I explained what those concerns  
11 are. We assured ourselves that the safety aspects of it  
12 were satisfied, so we were not concerned about the plant  
13 and we took rather vigorous action to reduce the number  
14 of those types of findings.

15 Q And did that effort succeed, Mr. Museler?

16 A (WITNESS MUSELER) Yes, it did, sir.

17 MR. ELLIS: Judge Brenner, I propose now to  
18 proceed to the next section, section 3 of LILCO Exhibit  
19 28, entitled "Additional Uses and Clarifications."

20 BY MR. ELLIS: (Resuming)

21 Q Mr. Baldwin or Mr. Museler, turning your  
22 attention to the category 3, LILCO Exhibit 28, entitled  
23 "Additional Uses and Clarifications," would you  
24 characterize what these observations generally reflect  
25 and give a representative example, please?

1           A       (WITNESS BALDWIN) Yes, sir. These findings  
2 generally reflect two situations. The first situation  
3 is that E&DCRs were used to control an aspect of the  
4 design process that the procedures did not anticipate in  
5 two instances where the E&DCR procedures needed some  
6 clarification.

7                    The example I would like to cite, and I  
8 believe it's also referred to in the testimony, is EA  
9 Audit 12 Number 1.4.6. And I believe that was a site  
10 engineering office audit; that meaning engineering  
11 assurance, Mr. Eifert's group auditing the engineering  
12 group at the construction site.

13                   In this particular item, what we see is the  
14 auditor noted a unique situation in that personnel were  
15 using E&DCRs to document changes to manufacturer's  
16 instruction manuals. This condition was not addressed  
17 specifically in the procedures. As I recall, both the  
18 EAP and --

19           Q       Is this the finding that was discussed in  
20 cross-examination?

21           A       (WITNESS BALDWIN) Yes, it is. I hadn't  
22 finished. I was trying to recollect whether it was the  
23 project procedure or the EAP, but I believe it was the  
24 project procedure. However, the project had identified  
25 to the engineering assurance division where they were

1 looking for the authority to continue to do this  
2 practice.

3 Q What was used in that instance was not  
4 prohibited by any procedure, was it?

5 A (WITNESS BALDWIN) No, sir, it wasn't. But it  
6 wasn't explicitly identified in the project  
7 instruction. However, before the audit took place, the  
8 project had identified to the engineering assurance  
9 division of their needs, and that authorization had been  
10 granted.

11 JUDGE BRENNER: Excuse me. And I am sure I am  
12 doing something wrong again, so I need help. I have got  
13 engineering assurance audit 12 from Suffolk County  
14 Exhibit 51, and I have not yet been able to locate an  
15 item 1.4.6.

16 WITNESS BALDWIN: I believe that's because  
17 it's an exhibit in our prefiled testimony. Is that  
18 right?

19 MR. ELLIS: No. On LILCO Exhibit Number 28  
20 there is reference to 1.4.6.

21 JUDGE BRENNER: LILCO Exhibit 28?

22 MR. ELLIS: Yes. LILCO Exhibit 28.

23 JUDGE BRENNER: Reference to 1.4.6?

24 WITNESS EIFERT: I believe that's Audit  
25 Observation 146, not a paragraph reference.

1           MR. LANPHER: Why don't I try to help you,  
2 Judge Brenner? Look at Attachment 27 to the LILCO  
3 prefiled testimony. I think that is -- well, they will  
4 let us know if that is what they are referring to. Is  
5 that it?

6           MR. ELLIS: Yes.

7           JUDGE BRENNER: Everytime I think I have  
8 everything in hand, we get something else.

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1 BY MR. ELLIS (Resuming):

2 Q Is that correct, Mr. Baldwin? Attachment 27  
3 to the pre-filed testimony? Do you have that?

4 A (WITNESS BALDWIN) I don't have the attachment,  
5 no, but I'm pretty sure that's it.

6 JUDGE BRENNER: Off the record a moment.

7 (Discussion off the record.)

8 JUDGE BRENNER: Back on the record. I think  
9 we figured out that in category 3 to LILCO Exhibit 28 in  
10 the reference to EA 12 should be SEO 12. And it's Audit  
11 Observation 146, and that may be found within Attachment  
12 27 to LILCO's pre-filed direct testimony. There appears  
13 to be a date discrepancy also between what is in LILCO  
14 Exhibit 28 and the date that appears in Audit  
15 Observation 146, that I have.

16 So are we talking about the same thing here?

17 BY MR. ELLIS (Resuming):

18 Q Mr. Eifert, can you clarify?

19 A (WITNESS EIFERT) Yes. In LILCO Exhibit 28,  
20 the category 3, the proper line entry for the fourth  
21 entry should be SEO Audit EA 12, dated December 14th,  
22 1981.

23 JUDGE BRENNER: All right, the date that  
24 appeared originally is actually the date of regular EA  
25 12, I think.

1 WITNESS EIFERT: Probably.

2 JUDGE BRENNER: And it's item 146, not 1.4.6.

3 WITNESS EIFERT: Yes, sir.

4 WITNESS BALDWIN: Does anybody want the  
5 transcript number? Would that help?

6 JUDGE BRENNER: I just wanted to make sure  
7 that the testimony you just gave was on the item I just  
8 had in front of me. I'm sorry if it seems picky at  
9 times, but we have to put all this together later and  
10 I'm going to have enough trouble.

11 If you have the transcript, I'll take it.  
12 Every little bit helps.

13 WITNESS BALDWIN: The page is 11,208 through  
14 11,249.

15 JUDGE BRENNER: Okay, thank you very much.  
16 Okay. Thank you all for your help. Let's proceed.

17 BY MR. ELLIS (Resuming):

18 Q Mr. Baldwin or Mr. Eifert, based on your  
19 review of these audit observations contained in category  
20 3 in LILCO Exhibit 28, did any of them or would any of  
21 them, had they gone undetected, have any effect on the  
22 integrity of the design or construction of the plant?

23 A (WITNESS BALDWIN) No, sir.

24 Q Why not?

25 A (WITNESS BALDWIN) I would categorize these



1 observations as items for which there was no impact on  
2 quality. In fact, the practices cited in EA 13 C.1, FA  
3 40 A0158, EA 12, SEO -- EA 12, number 146, and EA 21  
4 008, item 1 in my opinion were enhancements to the E&DCR  
5 program and were later incorporated into the procedures  
6 for these types of conditions and items.

7 Q Mr. Baldwin, I'm not sure I heard you  
8 correctly. Did you say EA 40 A0158, or FA 40?

9 A (WITNESS BALDWIN) That's EA.

10 Q Thank you.

11 A (WITNESS EIFERT) Mr. Ellis, I would like to  
12 add one point to Mr. Baldwin's last statement with  
13 respect to these particular items. These would not have  
14 been in any way significant to the quality of the plant  
15 in a negative way because what the audits identified was  
16 that there was a practice of using the E&DCRs that in  
17 itself was not ineffective, but was not specifically  
18 authorized by our procedures.

19 So the practices being implemented by the  
20 project were effective practices to proceed in a  
21 controlled manner in engineering and building this power  
22 plant.

23 The enhancement aspect that Mr. Baldwin is  
24 referring to involves the changes that Stone & Webster  
25 subsequently made to its standard procedures in these

1 areas.

2 MR. ELLIS: Judge Brenner, I now propose to do  
3 go the next category number four in LILCO Exhibit 28.

4 BY MR. ELLIS (Resuming):

5 Q Mr. Baldwin or Mr. Eifert or Mr. Museler, the  
6 fourth category on LILCO Exhibit 28 is entitled "Missing  
7 from Files." Can you characterize what the audit  
8 observations in this category generally involving,  
9 giving representative examples, if appropriate, please?

10 A (WITNESS BALDWIN) Yes, sir. These findings  
11 generally reflect a condition where the auditor found  
12 E&DCRs or specifications that were missing from the  
13 files. As an example, FA 718, Observation 4.3 revealed  
14 that out of a sample of 259 E&DCRs, 35 were not filed  
15 with their respective specifications or procedures.

16 Q Well, Mr. Baldwin, based on your review of the  
17 audit observations in category 4, would these conditions  
18 observed in these audit observations have affect, or did  
19 they affect the integrity of the design or construction  
20 of the plant?

21 A (WITNESS BALDWIN) No, sir.

22 Q And what is your basis for that answer?

23 A (WITNESS BALDWIN) Well, there are three areas  
24 that I'd like to discuss. One, if the user did not have  
25 the copy of the E&DCR, he would simply request a copy

1 prior to performing the work. The other reason is, as I  
2 mentioned before, we have a very large distribution of  
3 the E&DCRs, thousands, and it would be extremely  
4 unlikely that the other departments or organizations  
5 performing the work on the item would not have a copy in  
6 their possession. And I think Mr. Museler mentioned  
7 that this morning when we were talking to Audit 602.

8           Even if the work was performed without the  
9 knowledge of E&DCR, other groups would be picking this  
10 up. And both Mr. Museler and Mr. Arrington have  
11 mentioned this several times -- the different layers of  
12 inspection that take place at the construction site,  
13 both in process and surveillance, final, checkout, A  
14 release, as-built and so on.

15           And, of course, we have mentioned before the  
16 E&DCR verification program.

17           Q     Mr. Baldwin, in your review of these audit  
18 observations in the fourth category, "Missing from  
19 Files," was corrective action taken in each instance?

20           A     (WITNESS BALDWIN) Yes, sir.

21           Q     And was that corrective action verified in  
22 subsequent audits?

23           A     (WITNESS BALDWIN) Yes, sir. Copies of the  
24 missing E&DCRs were replaced in the files; the files  
25 were updated and as we mentioned before, corrective

1 action was verified in subsequent audits.

2           Specifically in regard to Field Audit 718,  
3 Observation 4.3, in particular I note that that was  
4 where field quality control had indicated that they were  
5 establishing a stricter surveillance inspection program  
6 within this discipline. And again, that the contractors  
7 had scheduled training sessions for all of its personnel  
8 involved in document and control activities.

9           A       (WITNESS MUSELER) Mr. Ellis, I'd just like to  
10 add to that. I think one also has to ask why are we  
11 keeping files of E&DCRs. The objective is not to make  
12 sure that we have every E&DCR in a file drawer, because  
13 that doesn't do anyone any good in a file drawer.  
14 Certainly, not all of these instances but a good number  
15 of these instances where the E&DCRs were not in the file  
16 drawer, the reason for that is that someone had taken  
17 them out, presumably to use them for something. Either  
18 for reference, or if they happened to be  
19 black-on-whites, for a field installation.

20           So, many of the observations were true in that  
21 the files -- somebody had probably taken drawings and  
22 not replaced them as they should have. But I just want  
23 it to be clear that the reason we want to keep these  
24 files is so that people can use them, and when the  
25 auditors find some drawings, some of the E&DCRs or

1 specifications or drawings missing from the files, the  
2 reason for that is because someone is using the  
3 document. Not in every case, but in a good number of  
4 cases.

5 JUDGE MORRIS: Just a quick question, Mr.  
6 Museler. If they remove one from the file, do they  
7 leave a card saying that they have removed it, and their  
8 identity?

9 (Panel of witnesses conferring.)

10 WITNESS MUSELER: Judge Morris, they're  
11 supposed to do that.

12 JUDGE MORRIS: In these cases where the  
13 findings said that the E&DCR was missing, had they  
14 failed to do that?

15 (Panel of witnesses conferring.)

16 WITNESS MUSELER: Judge Morris, Mr. Arrington  
17 reminds me that that requirement of putting a card in to  
18 sign out the drawing or the specification is a  
19 requirement only in the control areas; specifically,  
20 document control. In the areas that were the subject of  
21 these audits, that requirement does not exist.

22 In other words, they did not have to sign out  
23 for a drawing. So there is no definitive answer to --  
24 well, your question was: is there a card to sign out in  
25 the turbine area, the reactor area, the areas that are

1 generally covered by these audits. So that was not a  
2 requirement.

3 WITNESS ARRINGTON: Judge Morris, I'd like to  
4 add that that is one reason why we have two requirements  
5 on the E&DCRs. One that we post them, and two, that we  
6 file them. So we have a cross-check to make sure that  
7 we do have the E&DCRs that are required to be either  
8 attached or noted on the documents. Be it the  
9 specification procedures or the drawings. It is a  
10 cross-index of what is required.

11 It is not unusual in work areas that E&DCRs be  
12 taken out of the files, because it might be the only  
13 copy; it might be the only control copy in the area.

14 JUDGE MORRIS: Did I understand correctly that  
15 where it is a control document it is required to put in  
16 a removal card?

17 (Panel of witnesses conferring.)

18 WITNESS MUSELER: Judge Morris, the  
19 distribution that we're speaking of is a controlled  
20 distribution. Those are called control documents.  
21 Whether they are in document control or whether they are  
22 in the turbine area, the reactor area or another area of  
23 the plant. However, there is a difference between  
24 control documents and control area. And the control  
25 area, as Mr. Arrington reminds me, is the document



1 control area, and he can address whether there are any  
2 others. I'm not familiar with that.

3 But the work areas are not control areas; they  
4 utilize control documents but in those work areas, there  
5 is no requirement to put this card in and sign out an  
6 E&DCR or a specification or a drawing.

7 JUDGE MORRIS: Yes, I understand there is a  
8 difference here.

9 WITNESS MUSELER: So your original question:  
10 could we tell whether or not someone had signed out the  
11 drawings that were found as missing in the audit, the  
12 answer to that is no. The auditors wouldn't know that.

13 JUDGE MORRIS: So in some cases there would be  
14 a requirement and in other cases there would not be a  
15 requirement.

16 WITNESS MUSELER: That's correct.

17 JUDGE MORRIS: In terms of these audit  
18 findings, did they fit in one category or the other, or  
19 some of both?

20 WITNESS MUSELER: The majority of them fell  
21 into the category where the card sign-out was not  
22 required. I believe some of those audits may have  
23 audited document control, and to that extent, in the  
24 document control area they would have had that  
25 requirement, and that would not have been counted as a

1 deficiency by the auditor.

2 MR. ELLIS: Judge Morris, maybe if we can  
3 refer to -- did you have in mind the audits in category  
4 four?

5 JUDGE MORRIS: Correct.

6 BY MR. ELLIS (Resuming):

7 Q Would you all look at those and respond to  
8 Judge Morris's question on the basis of those three that  
9 are contained in category four of LILCO Exhibit 28?

10 JUDGE MORRIS: Just to clarify that, because  
11 you were puzzled, Mr. Lanpher --

12 MR. LANPHER: My puzzlement is I think we  
13 should let the Board, when it is asking questions,  
14 complete its questions. I am concerned that --

15 JUDGE MORRIS: Don't worry.

16 JUDGE BRENNER: We can protect ourselves.

17 MR. LANPHER: I wasn't puzzled, Judge Morris.

18 JUDGE MORRIS: Well, let me just say what I  
19 intended. I am interested in, specifically, these three  
20 items in category four, but I was also interested in the  
21 general question of these two different kinds of  
22 situations. So I wanted to satisfy myself on both.

23 (Panel of witnesses conferring.)

24 WITNESS MUSELER: Judge Morris, in group four,  
25 the three audits, Field Audit 718, Field Audit 970, and

1 EA Audit 19, all of those areas -- or rather, none of  
2 those areas were of the type that required the sign-out  
3 card.

4 JUDGE MORRIS: Well, just as a matter of  
5 curiosity, why don't they? Why don't they all require  
6 sign-out cards?

7 (Panel of witnesses conferring.)

8 WITNESS MUSELER: Judge Morris, I think the  
9 answer to that is that the entire system, which consists  
10 of filing the E&DCRs, posting the E&DCRs on the  
11 appropriate drawings where required, and maintaining the  
12 logs which the clerical or administrative personnel  
13 within these areas are supposed to utilize to maintain  
14 those files up to date, was judged to be adequate for  
15 the control of the E&DCRs.

16 The system you mentioned, the sign-out card  
17 system, is a useful system, but in dealing with the many  
18 thousands of E&DCRs and specifications and drawings, our  
19 ability to get the construction personnel and the  
20 contractor personnel to utilize that system is and would  
21 have been extremely difficult. And I think the judgment  
22 was made that the controlling and the attempt to  
23 maintain those E&DCR files and to maintain the posting  
24 properly was judged to be a better way to do it.

25 If you had that system, that would be another

1 system that would be subject to -- if you depended on it  
2 as the only control, you would then have to insure that  
3 you enforced that system. And I think my own experience  
4 with that -- because we did utilize that system on the  
5 Shoreham project within the LILCO organization for a  
6 while -- was that it was -- it turned out to not work  
7 very well because somebody who's in a hurry who wants a  
8 specification just takes it. And unless you control it  
9 -- and in areas where we have the central files within  
10 the construction organization, we do use that type of  
11 system where it's enforceable, because you have to get  
12 the document from a person.

13           But where you've got file cabinets that are  
14 accessible, it becomes not a voluntary but it depends on  
15 the compliance of individuals taking the time to fill  
16 out those cards. We found that that just didn't work.

17           If you have something where someone has to  
18 hand it to you so that you control that situation, then  
19 we do have a log on it.

20           JUDGE MORRIS: Judge Brenner pointed to our  
21 own experience in our law library where we have a  
22 sign-out card system which doesn't work very  
23 effectively. But nevertheless, it seems to me that if I  
24 can invoke Judge Carpenter's shiboleth of common sense,  
25 that the people who want those documents are the working

1 people. They are the ones who need to know whether they  
2 have the most up-to-date and available E&DCRs. And if  
3 they go to the files and look in the proper place and  
4 there's nothing there, they've got to assume that they  
5 don't have to look any further.

6 But what you're telling me, if I understand  
7 you correctly, is you could not make that system work  
8 with the people who use those files. Is that correct?

9 WITNESS MUSELER: We never attempted to use  
10 that system in the construction area. We attempted to  
11 use it, as I said, in the LILCO project office, for  
12 one. Also, I believe that the other reason is that one  
13 of the reasons we have as many clerks as we do to  
14 maintain those files is that we believe it's, number  
15 one, more efficient to use clerical personnel to keep  
16 those records up to date, even though from these audits  
17 you can see that is not a perfect system either, but  
18 that it is more efficient to to try to do it that way.  
19 And in the real world, more effective.

20 It's more effective to try to have clerical  
21 personnel whose only job, or one of their main jobs, is  
22 to insure that those files of the E&DCRs, that the  
23 posting is done, than it is to try to have the end users  
24 get involved in the administrative aspects of it.

25 In essence, to try to free the field people as

1 much as possible from the administrative part of this,  
2 and let them concentrate on building the plant and try  
3 to have the administrative details handled by  
4 administrative type people. It's not a perfect system,  
5 but if we had it to do all over again, I think I would  
6 do it the same way.

7 JUDGE MORRIS: As you can tell, I'm trying to  
8 educate myself, not having lived in this world. It  
9 would seem to me that the system requires extra effort  
10 on the part of the file keepers, the clerks and the  
11 auditors, which are going to detect mistakes which might  
12 have been caused by the absence of these documents from  
13 the files which might have been prevented had there been  
14 a way of knowing that the file was complete.

15 Let me ask this question, Mr. Museler. Would  
16 the person who needs a document, a design drawing let's  
17 say, go to a master list to check on what the latest  
18 E&DCR was before he went to get the drawing?

19 WITNESS MUSELER: The person who needs the  
20 E&DCR is generally the person who wrote it because  
21 generally, it is a field change, and he's the one who  
22 needs the information. So he would know what the E&DCR  
23 number is, and he would just go after that one E&DCR.

24 But if an E&DCR was written by someone else  
25 and still needed to be installed by this one individual,



1 when I went through the list this morning of the various  
2 individuals who have to get copies of the E&DCR, those  
3 individuals -- and by that I mean the supervisors and  
4 the planning personnel within the areas -- get copies  
5 directly and also get copies of the log.

6           One of the things that they are charged to do  
7 is for planning the work to know all the E&DCRs  
8 applicable to, say, a pipe support or pipe isometric  
9 drawing or an electrical cabinet drawing. So those  
10 people would utilize the E&DCRs, and then would,  
11 depending on the point in the process, check the log  
12 also to insure that they have all of the E&DCRs  
13 accounted for, so that somebody knows we have to go and  
14 implement those E&DCRs.

15           So the end user, if he didn't ask the  
16 question, the end user, the final end user probably  
17 wouldn't go after it, but the supervisory people who are  
18 planning and scheduling the work and who are responsible  
19 for system completion, they would. And it would get  
20 picked up that way. They would then tell that person  
21 that he's got another E&DCR to implement that he may not  
22 have known about.

23           And if it go through that, as I said, Mr.  
24 Arrington's organization which performs a final  
25 inspection would pick it up at that point. That doesn't

1 happen very often. If it gets to the point where we are  
2 completing work on a system or an area and all of a  
3 sudden it's a surprise that we've got an E&DCR that we  
4 didn't know about that has been out for any substantial  
5 period of time, anything over a month, that is cause for  
6 considerable receipt of wrath on the part of the people  
7 who are responsible for doing the field work.

8           So I know that process does work, but it is  
9 not the most perfect process in the world. But it does  
10 work. We don't miss many of them, and if it does get  
11 through the field supervisor, it gets picked up by field  
12 quality control and usually long before then.

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1 JUDGE MORRIS: Thank you very much.

2 JUDGE BRENNER: I infer from that answer that  
3 the field supervisor doesn't use the same files as the  
4 other people working for him in his work area.

5 WITNESS MUSELER: That's correct, Judge  
6 Brenner. The list I went over this morning, all of  
7 those various areas would get separate copies of the  
8 E&DCRs.

9 JUDGE BRENNER: You say all those separate  
10 areas. If the field supervisor is in the area, he is  
11 supervising the work there.

12 WITNESS MUSELER: No. By area, sir, I meant  
13 the non-manual areas. In other words, a field  
14 supervisor deals with the drawings in the field, and  
15 generally I'm talking about either or generally both the  
16 deputy foreman and the immediate nonmanual supervisor of  
17 that deputy foreman; they would have a copy in the  
18 field.

19 In the office of say Courter and Company there  
20 is what's called an area that corresponds to the work  
21 area in the field. They would have a separate file.  
22 The Unico Construction management group that is  
23 responsible for that area would also have a separate  
24 file. So there are a number of redundant files all  
25 relative to the same area of work.

1           JUDGE BRENNER: Let me make sure I have asked  
2 my question right. The workman who is in the geographic  
3 area of the work, he or his team pulls a drawing with  
4 the E&DCRs out of the field file located close to where  
5 they work. They don't put it back. Or somebody else  
6 pulls it so they don't know that an E&DCR is missing.

7           Their immediate supervisor and the immediate  
8 level supervision, the next or the ones beyond that, the  
9 ones out in the field, what source do they rely on for  
10 their E&DCR copies? Aren't they the ones also out in  
11 the field that is the very same file?

12          WITNESS MUSELER: No, sir. They would be --  
13 once you leave the work area, you then go to what I  
14 believe I characterized as the contractor nonmanual  
15 area, and there is a different file there. In fact, the  
16 work area file is maintained by the contractor foreman.  
17 In the reactor building it happens to be a trailer. But  
18 that is the area where all of the steamfitter copies of  
19 the E&DCRs reside.

20          Then in another area which is geographically  
21 several hundred yards away is where the contractor  
22 nonmanual supervisory area is. They have a file there.  
23 And then in yet another geographical area are the Unico  
24 Construction management personnel who have their file of  
25 the same documents. And then Mr. Arrington has a file,

1 and then there are a number of other files. But those  
2 are the principal ones involved in that process.

3 JUDGE BRENNER: Okay.

4 WITNESS ARRINGTON: Judge Brenner, I would  
5 like to add, just so you get an idea of the distribution  
6 of the E&DCRs, each E&DCR is distributed to 65 different  
7 locations on site; so if you multiply that times 70,000  
8 E&DCRs, it would give you some idea of the numbers of  
9 documents that are distributed out there.

10 One of the reasons for doing that is that  
11 there are so many different locations that people can  
12 get this information from.

13 JUDGE BRENNER: I knew they went to a lot of  
14 places. My question was to find out where the immediate  
15 first level of supervisors were to see there could be a  
16 common mode failure, so to speak, of one E&DCR missing  
17 from a workman's file also affecting him. And Mr.  
18 Museler answered that question.

19 BY MR. ELLIS: (Resuming)

20 Q Mr. Arrington, or Mr. Baldwin, or Mr. Museler,  
21 there are three audit observations in this category  
22 number 4. Do you attribute any significance to this  
23 number of observations in this category?

24 A (WITNESS BALDWIN) No, sir.

25 Q Why is that?

1           A       (WITNESS BURNS) Two of the audit observations  
2 have to do with field activities. The other one took  
3 place on the project, which was an isolated case. And,  
4 in fact, later on our procedures were changed so this  
5 would not happen again.

6                   The other major reason would be I just don't  
7 feel it has happened that frequently.

8           Q       You said one of them was I think you said  
9 isolated or unique. Which one was that?

10          A       (WITNESS BALDWIN) EA 19 2.B.5. In that  
11 particular case we are talking about one particular  
12 engineer that hadn't been maintaining his file of E&DCRs  
13 at his work area, his desk, applying to the specs, some  
14 of the specs that he was working with. Files were  
15 updated and subsequently after that I believe the  
16 requirement was changed. In fact, I know it was.

17                   MR. ELLIS: Judge Brenner, I propose to go now  
18 to the next section entitled "Timeliness" and LILCO  
19 Exhibit 28.

20                   BY MR. ELLIS: (Resuming)

21          Q       Mr. Baldwin, or Mr. Arrington, or Mr. Museler,  
22 with respect to this category in LILCO Exhibit 28  
23 entitled "Timeliness" would you characterize what these  
24 audit observations generally reflect and give us some  
25 examples, please?



1           A       (WITNESS BALDWIN) Yes, sir. In this  
2 particular area of observations we're talking about  
3 three different types of situations: one, the timely  
4 distribution of site E&DCR change records to Boston; and  
5 the timely weekly distribution of E&DCR change records  
6 to the site; and, third, the timeliness of incorporation  
7 of E&DCRs in the parent document.

8                   As an example, my example is EA 15 2.B.1, and  
9 in that particular case the project was not distributed  
10 E&DCR change records weekly as required by engineering  
11 assurance procedure 6.3, the guidance thereof.

12                   The project was distributing these change  
13 records monthly, and in this particular area the project  
14 had been communicating with the construction site and  
15 also the field quality control division, and had  
16 identified to them whether this type of a distribution  
17 would be a problem to them -- in other words, monthly  
18 rather than weekly. And they indicated back to the  
19 project that it wouldn't be.

20                   In addition, the project had requested and  
21 received approval to deviate or receive approval for the  
22 authorization to deviate from the engineering assurance  
23 procedure. Of particular notice here is that -- and I  
24 believe it was Shoreham -- that subsequent to this the  
25 EAP was modified, and it went from a weekly distribution

1 to a monthly distribution. That would have affected all  
2 projects.

3 Q Mr. Baldwin, would the audit observations that  
4 are contained in this section entitled "Timeliness" in  
5 LILCO Exhibit 28, had they gone undetected would they  
6 have affected the integrity or the safe construction of  
7 the plant?

8 A (WITNESS BALDWIN) No, sir, it wouldn't. I  
9 would categorize these observations as items which would  
10 not in any way impact the quality of the plant.

11 Q What are your reasons for that answer?

12 A (WITNESS BALDWIN) Again, I'd like to dwell on  
13 three reasons, and in each one of them I will identify  
14 to the audit reports within this grouping. The site  
15 master log being sent to Boston for cross-referencing  
16 purposes was eventually sent to Boston, and that was in  
17 a relatively short period of time. It started in FA 602  
18 and carried to FA 654, which we're talking about right  
19 here, Field Audit 654 4.4.

20 And I point out here that this was the point  
21 in time in late summer and the fall of '77 when the  
22 construction site was in its final developmental stages  
23 and going into implementation with the master computer  
24 log that was going to be used at the job site, and that  
25 this would be sent to Boston for cross-referencing

1 purposes to identify to them the E&DCRs that were being  
2 generated down at the construction site.

3 I would like to also point out -- and I think  
4 I had mentioned this earlier -- that although this list  
5 was being generated at the site, there was also a manual  
6 list that had been -- manual control log list on the  
7 project that had been in effect since I believe '72 or  
8 '73 in that the project had on a regular basis been  
9 receiving the E&DCRs that were being generated from the  
10 construction site. They were receiving them at Boston  
11 headquarters and identifying them on their manual log.

12 The second part is the project distribution of  
13 monthly change records versus weekly was in accordance  
14 with their needs, and that was the one I singled out  
15 when I was talking a moment ago. That was EAP 15 2.B.1.

16 Q You said EAP. You mean EA, don't you?

17 A (WITNESS BALDWIN) EA, excuse me.

18 Q Go ahead, please, Mr. Baldwin.

19 A (WITNESS BALDWIN) The third condition is the  
20 condition of E&DCRs being incorporated into the parent  
21 documents. That's a case where this would have been  
22 accomplished in subsequent revisions anyway, and that is  
23 EA 23 041, item 4.

24 That particular situation, as we mentioned in  
25 the transcript, was a case where we had outstanding

1 EEDCRs that weren't incorporated in the new revision to  
2 a specification at the time of the specification being  
3 amended. I believe that Mr. Eifert in the transcript at  
4 great length talked about this particular one and  
5 identified that.

6 Q You don't need to repeat it here, Mr.  
7 Baldwin. Do you want to identify the transcript page  
8 number, if you have it? That would be fine, but there's  
9 no need to repeat it.

10 A (WITNESS BALDWIN) 11,140 to 11,550. It's in  
11 there some place. I'm sorry. That's what I noted in my  
12 notes.

13 JUDGE BRENNER: Maybe it was at great length.

14 WITNESS BALDWIN: Knowing Mr. Eifert, I think  
15 it was.

16 JUDGE BRENNER: I'm sure you meant the  
17 adjective to apply to your view of the substance and not  
18 the volume.

19 BY MR. ELLIS: (Resuming)

20 Q Mr. Baldwin, with respect to the audit  
21 observations contained in this category number 5 in  
22 LILCO Exhibit 28 was corrective action taken in each  
23 instance, and if so, can you characterize it generally?

24 A (WITNESS BALDWIN) Yes, sir. In FA 654 the  
25 site listing of field-generated EEDCRs, as I said, did

1 get to the Boston project for cross-referencing even  
2 though they had their own system or were receiving the  
3 E&DCRs. And as I recall, that was verified by auditors  
4 in either January or February of '78.

5 As to the EA 15 --

6 Q Is that the one where you say there was  
7 concurrence in the time and that the procedure was  
8 subsequently changed?

9 A (WITNESS BALDWIN) Yes, sir.

10 Q You don't need to repeat that one. Go to the  
11 next one, please.

12 A (WITNESS BALDWIN) In this particular case, EA  
13 23 041, number 4, the particular action that took place  
14 in this case was that the project was informed of the  
15 present requirements. The requirements in this  
16 particular case were new as of three months prior to the  
17 audit. And as I pointed out, and I noted that Mr.  
18 Eifert had it, that these were just guidelines, and they  
19 weren't hard and fast rules.

20 So specifically there wasn't any corrective  
21 action other than the recommendation from the auditing  
22 group, which was Mr. Eifert's auditors. However, we  
23 have indicated that the project did inform all of the  
24 people on the project of this requirement. It was  
25 followed up by Mr. Eifert's group in subsequent audits.

1 MR. ELLIS: Judge Brenner, I propose to go on  
2 to the remaining sections.

3 JUDGE BRENNER: Let's take a break at this  
4 point, and then we will continue on. Let's come back at  
5 3:40.

6 (Recess.)

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1 JUDGE BRENNER: All right. We're ready to  
2 proceed.

3 BY MR. ELLIS: (Resuming)

4 Q Mr. Baldwin, and Mr. Museler, and Mr.  
5 Arrington, presumably Mr. Baldwin, let me see if we can  
6 take both category 6 and 7 together; that is, in LILCO  
7 Exhibit 28 entitled "Miscellaneous Site and  
8 Miscellaneous Engineering."

9 These are entitled "Miscellaneous." Why did  
10 you entitle them "Miscellaneous?"

11 A (WITNESS BALDWIN) Mr. Ellis, what we see here  
12 is a situation where we have several observations that  
13 fell into a category that I am identifying as  
14 miscellaneous. And further, I'd like to identify  
15 there's a distinction between this category, and I  
16 distinguish it between the construction activities and  
17 the engineering activities.

18 Q All right. But can you characterize the  
19 observations that are in numbers 6 and 7 in LILCO  
20 Exhibit 28?

21 A (WITNESS BALDWIN) Yes, sir, I can. My  
22 characterization is what we see here is several random  
23 events spread over time at both the construction site  
24 and within our engineering activities. I would point  
25 out the only commonality between these activities is

1 what we're talking about, the E&DCR system.

2 In reviewing each and every one of these we  
3 cannot either recognize a trend or a pattern; in fact,  
4 what we see is that the majority of these items are  
5 non-problems.

6 My general characterization of these groups --  
7 and we have explained them, I believe practically all of  
8 them in the transcript, but I will take each one of them  
9 and talk to it briefly.

10 Talking to the miscellaneous category for  
11 construction, what we have here is one person that -- in  
12 this particular case a record clerk who was not totally  
13 informed of the latest procedures covering the control  
14 and distribution of E&DCRs, although in auditing her  
15 particular -- her or his particular area the records  
16 were complete. And as identified -- this is FA 602,  
17 observation 4.7 -- and as identified by the auditor this  
18 was an open item and specifically identified as "not a  
19 violation."

20 The second was the question of timeliness of  
21 the E&D implementation/verification program, and this  
22 was a situation where in the auditor's judgment he was  
23 making a remark as to the timeliness in that certain  
24 E&Ds, written E&Ds to date have not been accounted for  
25 in the implementation/verification status log maintained

1 by the resident engineer. And there was some question  
2 as to the target dates, but particularly in this one,  
3 just as the other one, 602; this is FA 654, observation  
4 4.11. This was just an open item and specifically not  
5 identified as a violation.

6           The corrective -- well, I won't go into the  
7 corrective action on that one. I'll sum that up later.

8           The next item is the ambiguity between two  
9 sheets of an E&DCR for the site installation of  
10 hangers. And again, this was in the transcript when Mr.  
11 Arrington spoke to that. That's FQC 33 B.3, which was  
12 the portion to which he was addressing, and the other  
13 subsequent portion was F 1, which would have been the  
14 other side of it as identified to engineering.

15           The next item within this grouping and the  
16 characterization of it was in the FQC 38, item 1.2.A,  
17 and this had to do with one of the contractors in the  
18 procedure 4.2, paragraph 3.2(b) requiring EAPs in the  
19 front-up specification. And contrary to this, E&DCRs  
20 for one spec held by the contractor in the  
21 instrumentation group were filed in cabinets, boxes and  
22 in the general file in the general area.

23           The cause for this particular item was -- and  
24 I mentioned this earlier -- the instrumentation group  
25 was being reorganized at the time of the audit. Also,

1 there was a turnover of clerical help at the time.

2 I'd also point out that what we see here is  
3 that the E&DCRs were in the area. Again, I will address  
4 corrective action later.

5 In addressing those, the characterization of  
6 the other items of miscellaneous within engineering,  
7 what we see is the forwarding of E&DCRs to our  
8 procurement/quality control personnel but not the change  
9 record. This is EA 21 0011, number 4. The E&DCRs, not  
10 the change records, the E&DCRs were in fact being sent  
11 to these people.

12 The next item is the resident engineer and his  
13 authorization to sign certain E&DCRs, which is EA 23  
14 041, item 3. In this particular case the project  
15 procedure number 19 allows the resident engineer to  
16 approve certain E&DCRs without required headquarters  
17 approval. This happens to be authorized by other E&DCRs  
18 which contain these approvals.

19 The situation here, that there were three or  
20 four of the E&Ds affected where he had signed these  
21 E&DCRs and did not have the authorization for same, this  
22 was an isolated case.

23 The next item is a new change in the project  
24 administration of E&DCRs and the listing of E&DCRs on  
25 the drawing, and this is EA 40, paragraph 1, which I

1 believe Mr. Eifert addressed in the transcript. I  
2 identify it as a non-problem, because as enumerated in  
3 the audit report and what Mr. Eifert said, it was just a  
4 recommendation by the auditor and not a finding.

5           The project procedure number 38 suggests that  
6 will be incorporated, E&Ds may be incorporated in the  
7 drawing, by reviewing the drawings to the listed  
8 E&DCRs. At this time the activity had just started, and  
9 what the auditor in the audit report indicated was that  
10 -- to project personnel was that more attention ought to  
11 be given to this area.

12           The last item within this grouping of  
13 miscellaneous engineering and its characterization is  
14 addressing the cross-referencing of E&DCRs, and that is  
15 EA 23 041, item 8. And that was a case where seven of  
16 approximately 40 E&DCRs which revise other E&DCRs did  
17 not contain a cross-reference to the revised E&DCRs.

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1 Q Are you done, Mr. Baldwin?

2 A (WITNESS BALDWIN) Yes, sir.

3 Q Mr. Museler, have you reviewed these audit  
4 observations as well?

5 A (WITNESS MUSELER) Yes, sir.

6 Q Mr. Baldwin and Mr. Museler, based on your  
7 review of these audit observations and recommendations,  
8 would they, in your view, have had any effect on the  
9 integrity of the design or construction of the plant?

10 A (WITNESS BALDWIN) No, sir.

11 Q On what basis do you make that answer?

12 A (WITNESS BALDWIN) The same reasons both  
13 myself and Mr. Museler indicated earlier, relative to  
14 logging and posting and the description of the different  
15 checks and balances, the different programs in effect,  
16 in-process inspection, surveillance, final, as-built,  
17 those types of programs.

18 Q Do you attach any significance to the number  
19 of these audit observations or recommendations, Mr.  
20 Baldwin?

21 A (WITNESS BALDWIN) No, sir, I don't. The  
22 basic reason that I don't attach any significance to  
23 them is, as I indicated earlier in my characterization  
24 of these items, I feel that they are random, they  
25 happened at different times, they involved several



1 groups of individuals. I have also identified that I  
2 thought they were non-problems, particularly as  
3 identified by the LILCO audits and their field audits,  
4 two of them.

5           Given the number of E&DCRs, you would expect a  
6 few anomalies of this nature.

7           Q     Mr. Baldwin, was corrective action taken in  
8 the case of each of these audit observations that are  
9 listed in these two categories, 6 and 7, in LILCO  
10 Exhibit 28?

11          A     (WITNESS BALDWIN) Yes, sir, it was. In  
12 addressing the corrective and preventive action for the  
13 site miscellaneous items, the auditors checked the  
14 implementation verification status of the E&DCRs and  
15 found that satisfactory. That was Field Audit 654, Item  
16 4.11. Formal training was also given to all personnel,  
17 and Quality Assurance Procedure 4.2, specifically  
18 relative to E&DCR filing, and that had to do with FQC  
19 Audit 38 1.2.A, and FA Audit 602 4.7. It identified the  
20 corrective and preventive action for the engineering  
21 miscellaneous items.

22           We indicate that we made the change records  
23 available to the POA personnel and, in fact, had revised  
24 the Project Procedure No. 4.12 to more adequately  
25 identify those requirements, and this has to do with EA

1 Audit 21 011, No. 4.

2 In regard to the resident engineer and what I  
3 spoke to as his authorizations to sign certain E&DCRs,  
4 the obvious preventive action there was to sit down with  
5 the resident engineer and explain things to him, which  
6 was accomplished. Additionally, what we found was that  
7 they took all of the E&DCRs that were in question,  
8 approximately 30, recycled them through Engineering to  
9 assure ourselves that his judgments were right and  
10 proper. This was done and it was not a problem.

11 MR. ELLIS: Judge Brenner, I propose now to  
12 proceed to the final category.

13 BY MR. ELLIS: (Resuming)

14 Q Mr. Baldwin, the final category is No. 8. It  
15 contains one finding. Would you confirm for me, please,  
16 that that was discussed at transcript page 11,149  
17 through 152?

18 A (WITNESS BALDWIN) Yes, I confirm that.

19 MR. ELLIS: Judge Brenner, we don't have  
20 anything to add to that discussion and we propose now to  
21 leave this portion and go to the extra programs  
22 portion. Oh, I'm sorry, I omitted something. I beg  
23 your pardon.

24 BY MR. ELLIS: (Resuming)

25 Q Mr. Baldwin, do any of the audit observations

1 or recommendations in LILCO Exhibit 28 indicate or  
2 constitute a violation of Appendix B? And this need not  
3 be limited to you, Mr. Baldwin.

4       A       (WITNESS BALDWIN) No, sir, in my opinion they  
5 don't. And I would like to address some of the  
6 appropriate criteria to this E&DCR category and  
7 subcategorizations that we have been talking about,  
8 namely, that is, Criterion 3, Design Control. I will  
9 just enumerate, quote from the Appendix B a few  
10 sections, that "The design control measures shall  
11 provide for verifying or checking the adequacy of  
12 design."

13               The last paragraph of Criterion 3 reads,  
14 "Design changes, including field changes, shall be  
15 subject to design control measures commensurate with  
16 those applied to the original design and be approved by  
17 the organization that performed the original design  
18 unless the applicant designates another responsible  
19 organization."

20               In that particular paragraph what we are  
21 talking about is the design control measures having to  
22 do with design changes, and particularly in relationship  
23 to the E&DCR system. And briefly, those measures that  
24 we have been talking about are the control system for  
25 changing specifications, drawings and procedures, both

1 Stone and Webster's and LILCO's, the formal review  
2 mechanism by the same functional group responsible for  
3 the design, which I believe has come out a controlled  
4 system, the E&DCR system being a controlled system for  
5 tracking and verifying that the change has been  
6 accomplished, and as we have identified frequently, the  
7 E&DCR system being an administrative tool and method for  
8 the distribution and handling of E&DCRs.

9           The next criteria that I will reference is  
10 Criteria 5, instructions, procedures and drawings, and I  
11 will only read the first sentence, which says,  
12 "Activities affecting quality shall be prescribed by  
13 documented instructions, procedures or drawings of a  
14 type appropriate to the circumstances and shall be  
15 accomplished in accordance with these instructions,  
16 procedures or drawings."

17           In this particular case what we have been  
18 talking about for E&DCRs is primarily Engineering  
19 Assurance 6.3, which is the procedure that identifies  
20 the E&DCR system and is in accordance with Criterion 5,  
21 and also PGI 4.112, which is the project general  
22 instructions. That section identifies several other  
23 procedures having to do with design changes.

24           Document Control, which Mr. Eifert spoke to  
25 earlier in his discussions with document control, E&DCRs

1 being a part of a subsystem, if you will, to the  
2 document control system. Mr. Eifert adequately  
3 described the measures required of that system, and that  
4 also applies, his description also applies in this case  
5 to the E&DCR system.

6           Turning to Criterion 16, our corrective  
7 action, I point out certain sentences and clauses. It  
8 is pertinent here that measures shall be established to  
9 assure that the conditions adverse to quality, such as  
10 failures, malfunctions and deficiencies, deviations,  
11 defective material, equipment and nonconformances, are  
12 promptly identified and corrected.

13           It goes on to talk about significant  
14 conditions. The cause of the condition is determined,  
15 the corrective action is taken to preclude its  
16 repetition, and that these shall be documented and  
17 reported to appropriate levels of management.

18           And I think what we have discussed here in  
19 discussing the E&DCR system and the audit program as  
20 applied to it by both LILCO in its field audits, Stone  
21 and Webster quality assurance and engineering assurance,  
22 that we have applied the program in this particular  
23 area. We did note that we had some important concerns.  
24 I think those were identified by Mr. Museler in  
25 discussing the posting and logging situation, the

1 conditions primarily isolated to 1977 with a few  
2 contractaors.

3           In my opinion we did not have significant  
4 conditions adverse to quality. Mr. Museler did identify  
5 important concerns, important management concerns in the  
6 actions that they took. It is my opinion that they  
7 don't fall particularly within that area. I share his  
8 same concern, his important concern with this. Even  
9 though all of these findings as we have addressed in the  
10 different categories, including the miscellaneous ones,  
11 what we find here is that all of the concerns, including  
12 the important concerns that Mr. Museler identified, have  
13 been in line with the corrective action portion of the  
14 18 criteria in that the cause of the conditions have  
15 been identified to preclude repetition and reports have  
16 been sent to management, and one of which we are making  
17 available to Mr. Lanpher.

18           In the last criterion, Criterion 18, it is my  
19 opinion that we have had no violations in this criteria  
20 as in the others. I think we have adequately described  
21 that we have a comprehensive system, it has been planned  
22 and periodic and systematic, that we have had written  
23 procedures and checklists, that audits have been taken,  
24 have taken place over time in the responsible areas, and  
25 that these reports from the audit program have been



1 reviewed by management, and adequate follow-up has been  
2 taken.

3           A       (WITNESS EIFERT) Mr. Ellis, I would like to  
4 add just a few comments that I think will be pertinent  
5 to Judge Morris' question with respect to why we do or  
6 do not require sign-out cards for all of our files.  
7 Again referring to my earlier remarks this morning on  
8 document control, the first group in document control  
9 where I discussed the process that we must go through  
10 when we are developing procedures to determine the  
11 detail that we put in procedures, with specific  
12 reference to Criterion 5, the guidance that we get there  
13 is that the procedure shall be of a type appropriate to  
14 the circumstances for which they are being applied.

15                   I have been involved in developing procedures  
16 for document control, both in engineering organizations  
17 and document control systems for construction sites, and  
18 the type of question that you were asking comes up all  
19 the time. We have to determine to what level of  
20 detailed control we are going to, at least initially,  
21 establish the program to. We have to decide if we are  
22 going to have such things as a sign-out system for each  
23 piece of paper and each file or in which files and so  
24 forth.

25                   The process of initially developing that

1 system has to consider those kinds of things, and we do,  
2 and we have considered sign-out systems for the  
3 construction site files, the working files. And thus  
4 far it has always been judged that that would be such an  
5 enormous administrative burden on the construction crew  
6 themselves that we wouldn't impose that unless we  
7 determined that it was appropriate to those  
8 circumstances. And we monitor those programs through  
9 auditing.

10 We look at the results of inspection programs  
11 to determine if sign-out cards, in this case, would be  
12 appropriate. If we had situations where we saw a  
13 widespread problem with construction not being built to  
14 the latest drawings or the latest E&DCRs, we would then  
15 have to consider whether or not initial program decision  
16 not to have sign-out mechanisms was appropriate.

17 In the case of the Shoreham project and,  
18 frankly, all of the other projects that I have been  
19 involved in at Stone and Webster, we have not  
20 encountered the situation where the document control  
21 measure as we established it without such sign-out was  
22 such that we had a problem that required us to go back  
23 and institute an individual sign-out system for every  
24 working file at the construction site.

25 MR. ELLIS: Judge Brenner, I propose now to go

1 to the next area.

2 JUDGE BRENNER: Two quick things. I didn't  
3 hear when you would make this management directive  
4 available. Did somebody say that?

5 MR. ELLIS: I think we have it right now and  
6 we had to recopy it because it had handwritten notations  
7 on it.

8 JUDGE BRENNER: Can we get a copy?

9 MR. ELLIS: Yes, sir.

10 JUDGE BRENNER: All right. That is number  
11 one. Number two, I don't know who I am going to help by  
12 this point and was not going to mention it, but since  
13 you made a point of saying that you forgot to ask does  
14 this violate Appendix V, you didn't ask that question in  
15 another category yesterday, on 6B, within the  
16 calculations. That is in the timeliness category within  
17 LILCO Exhibit 24. At transcript page 13,429, that is  
18 where you left the category. I point it out for whoever  
19 may benefit. If you left it out inadvertently, you may  
20 want to ask the question. If the answer is different  
21 and that is why you didn't ask it, Mr. Lanpher may want  
22 to ask the question.

23 MR. ELLIS: Thank you, Judge Brenner. We will  
24 look at that.

25 JUDGE BRENNER: I may be sorry I pointed it

1 out after the answer we just heard.

2 BY MR. ELLIS: (Resuming)

3 Q Mr. Eifert, are you familiar with 6B right now?

4 A (WITNESS EIFERT) Yes, I am. I believe it was  
5 inadvertent that we didn't ask. There were three audit  
6 observations.

7 JUDGE BRENNER: You are supposed to answer  
8 even if he doesn't ask.

9 WITNESS EIFERT: In that grouping, the audit  
10 observations, having looked at the backup information on  
11 those three, we were able to identify that in all three  
12 situations the auditor had been reporting the timely  
13 completion of calculations and that none of the  
14 situations involved in any way the use of unapproved  
15 results of calculations. We discussed that in detail  
16 yesterday.

17 With respect to any violation of Appendix B,  
18 there were none.

19 MR. ELLIS: Judge Brenner, I propose now to  
20 turn to the extra program group.

21 JUDGE BRENNER: Judge Morris has some  
22 questions -- I'm sorry, I was slow -- on the subjects we  
23 just left.

24 JUDGE MORRIS: Before we leave the E&DCRs, we  
25 have been down in the details long enough that I forget

1 some of the perspective. I believe you mentioned this  
2 morning that there were some 63,000 E&DCRs.

3 A (WITNESS MUSELER) 69,000, Judge Morris.

4 JUDGE MORRIS: And I believe Mr. Eifert also  
5 mentioned that the program was used for several  
6 functions. Was that correct?

7 WITNESS EIFERT: Yes, sir, I did.

8 JUDGE MORRIS: Could you briefly tell us some  
9 of those functions?

10 WITNESS EIFERT: My remarks this morning were  
11 specifically to indicate that Stone and Webster has the  
12 one system and we could have several systems. For  
13 example, we use the E&DCR to resolve concerns identified  
14 by our construction forces. In that mechanism, they  
15 initiate the E&DCR. That could be one system and is in  
16 many organizations. We also use the E&DCR as a  
17 mechanism for our engineering people to initiate a  
18 change which is urgently needed by the construction  
19 site.

20 If Engineering is changing the design for some  
21 reason and coordinating the activities with the  
22 Construction Department, Construction needs that  
23 information rapidly because they are working in that  
24 particular area, then we use the E&DCR. That could be a  
25 second system.

1           We use the E&DCR as a mechanism to document  
2 the specification changes that develop in the process of  
3 -- in the time frame in equipment manufacturing and  
4 design when equipment is in the shop. So we are using  
5 E&DCRs which are the basis to get engineering approval  
6 for the communications between the engineering  
7 organization and the suppliers organization of  
8 specification changes. That could be a third system.

9           We use E&DCRs as a mechanism to change  
10 manufacturers' drawings. We discussed that several  
11 times. We have chosen to allow for the use of that  
12 process, the E&DCR process, to change manufacturers'  
13 drawings, again because of the urgent nature of some of  
14 the changes, urgent in the sense that the construction  
15 site may need them.

16           The system provides for doing that and  
17 interfacing with the supplier and getting his  
18 concurrence and so forth. But that is another use which  
19 could be -- am I up to four or five different  
20 processes? The other example is respect to the Shoreham  
21 project it is being used for a mechanism to obtain the  
22 concurrence of the vendor to changes to his construction  
23 manuals, which we discussed. So there are several  
24 mechanisms, in my experience.

25           In talking to other people in the industry,



1 many people have different systems for those different  
2 mechanisms. We have chosen to have one system, and we  
3 feel the advantages outweigh the disadvantages and  
4 recognize that with that system, we do have to answer  
5 questions with respect to why we have such a large  
6 number.

7 JUDGE MORRIS: Is it correct that your system,  
8 which covers these various functions, is not  
9 commensurate with, let us say, the Appendix B quality  
10 assurance program for the Shoreham project? In other  
11 words, you can't look at the two in the same  
12 two-dimensional reference frame? They have different  
13 dimensions to them, is that correct? Do you understand  
14 what I am trying to say?

15 WITNESS EIFERT: No, I don't. I'm sorry.

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1 JUDGE MORRIS: Let's start with the QA program  
2 to meet the objectives of Appendix B. If you had no  
3 E&DCR program, you could set up such a program to  
4 achieve that objective -- compliance with Appendix B.

5 WITNESS EIFERT: If we didn't have our E&DCR  
6 system we could set up alternative systems, or we could  
7 require that all changes be processed through actual  
8 revisions to the design document in question, rather  
9 than allowing for an advanced change mechanism.

10 JUDGE MORRIS: Well, without trying to lead  
11 you, do you consider the E&DCR system as part of your  
12 program to comply with Appendix B?

13 WITNESS EIFERT: Yes, sir. There's absolutely  
14 no question about that. It is one of our Appendix B  
15 programs. We apply it across the board to the entire  
16 plant, in that all changes, whether they are in QA  
17 category 1 or non-QA category 1 areas of the plant, are  
18 processed through that system. But it is a mechanism  
19 for what is simply stated -- is allowing for advanced  
20 changes fully approved, not preliminary, fully approved  
21 changes to the design. But in advance of the actual  
22 processing of a formal revision to the design document.

23 We have designed that system. We use it for a  
24 lot of different specific applications, but in each  
25 application we meet the Appendix B requirements with

1 respect to such things as the control, the review and  
2 approval by the proper organizations responsible and so  
3 forth.

4 JUDGE MORRIS: I guess that's what I was  
5 trying to get at; whether it covers structures, systems  
6 and components that are not category 1.

7 WITNESS EIFERT: Yes, sir, it does. The basic  
8 policy that Stone & Webster has been using for a number  
9 of years is that all changes to the released engineering  
10 documents, documents that we released for construction,  
11 must be approved by Engineering. We have not, as a  
12 practice and not at all on the Shoreham project, allowed  
13 for a system where construction proceeded based on their  
14 own interpretation of what the engineering requirement  
15 was, at any level.

16 JUDGE MORRIS: Are you able to roughly  
17 categorize what fraction of E&DCRs applied to category 1?

18 (Panel of witnesses conferring.)

19 WITNESS MUSELER: Judge Morris, we don't have  
20 an automatic system that keeps track of how many E&DCRs  
21 are safety related versus non-safety related. We have  
22 at various times tried to determine that, and some are,  
23 because they tend to cover safety and non-safety related  
24 systems, are marked category 1, 2 and 3. But about half  
25 of the E&DCRs are either non-safety related in cat 1

1 or cat 1, 2, and 3.

2 A significant number of those, as well as a  
3 significant number of the non-safety related ones, are  
4 information-only E&DCRs also. So they're not all  
5 changes to the plant, but it's approximately half and  
6 half in terms of safety-related and non-safety related  
7 E&DCRs.

8 JUDGE MORRIS: That is the feeling I wanted to  
9 get. I wasn't interested for two significant figures.  
10 Were there any cases where construction actually  
11 proceeded and a structure, system or component was built  
12 which didn't comply with a current E&DCR?

13 WITNESS MUSELER: At the final inspection  
14 stage, I believe we mentioned that there was an  
15 electrical panel example we gave. That was an instance  
16 where we had completed the work on that panel and  
17 submitted it for inspection, and the one outstanding  
18 E&DCR on that panel had not been incorporated.

19 There are ongoing instances affecting just the  
20 timing of E&DCRs that result in that situation that  
21 don't result in any degradation of quality. For  
22 example, we have not a small number of instances because  
23 of the ongoing stress reconciliation program where we  
24 have completed a hanger pipe support and may have it  
25 signed off to the latest revision at the time we

1 completed it, or to the latest revision that was in the  
2 field at the time we completed it, in that from the time  
3 we completed our work and submitted it for inspection,  
4 or sometimes after the inspection, a subsequent issue of  
5 that E&DCR would come out. That time period can  
6 sometimes be months.

7           So that we would have completed the work and  
8 an E&DCR that was issued subsequent to when we completed  
9 it comes out. Therefore, at that instant in time what  
10 is in the field is not to the latest revision. All that  
11 occurs in that instance is if it hasn't been inspected  
12 yet, construction takes the E&DCR and re-modifies --  
13 modifies the pipe support and then submits it for  
14 inspection. If it had been inspected, we get it. Mr.  
15 Arrington has a process to indicate that he has to  
16 re-inspect that hanger after we incorporate the latest  
17 revision of the E&DCR.

18           So it does happen. It happens. We're  
19 generating a large number of E&DCRs daily, so to the  
20 extent that we finish the work on those components that  
21 an E&DCR is written against, we will have to go back and  
22 backfit them.

23           JUDGE MORRIS: I was more interested in the  
24 class where construction took place because of some  
25 failure in the E&DCR system to meet that first hurdle of

1 construction, according to the existing, simultaneous  
2 existing E&DCR.

3 WITNESS MUSELER: As I said, sir, one of those  
4 instances occurred where it had gotten all the way to  
5 Mr. Arrington's organization and we, construction,  
6 should have -- that E&DCR was very old. We should have  
7 incorporated that one and we had not.

8 In the in-process work, again because of  
9 timing, we currently run into, at a lower gate we will  
10 find out that we thought we were done but there's an  
11 E&DCR that we have not incorporated, and we would go in  
12 and incorporate it at that point, long before the final  
13 inspection.

14 JUDGE MORRIS: So to the best of your  
15 knowledge, there's only one instance that you've  
16 described which reached that particular --

17 WITNESS MUSELER: To the best of my knowledge,  
18 sir, that's the only one that I'm familiar with, and I  
19 would be -- I think myself and Mr. Arrington would be  
20 fairly familiar with those.

21 JUDGE MORRIS: And what was your diagnosis for  
22 the reason for that single case?

23 WITNESS MUSELER: We could not determine that,  
24 sir. It was an old E&DCR. It was not one that was not  
25 logged. We don't know why it wasn't picked up. The



1 only thing we can surmise is that the physical E&DCR --  
2 well, the E&DCR was written long before the field work  
3 commenced in this particular instance. And we're just  
4 speculating that that E&DCR just got missed through the  
5 system. We don't really know the reason why that one  
6 didn't get picked up by Construction.

7 JUDGE MORRIS: I guess you testified earlier  
8 that -- well, currently at least, the E&DCRs go to 65  
9 different locations, I've forgotten how many  
10 organizations get them, and there's a hierarchy of these  
11 groups that look to see whether or not compliance is  
12 achieved.

13 The thought that occurred to me, and I'm  
14 speculating, is there a possible common mode failure  
15 where no distribution gets made after your initial  
16 preparation?

17 WITNESS MUSELER: I don't believe we've ever  
18 experienced that, sir, and it wasn't a common mode  
19 failure in this particular case because Mr. Arrington  
20 had the E&DCR. So it did get distributed.

21 JUDGE MORRIS: I wasn't implying that it was  
22 in that case, but I'm just exploring whether you have  
23 thought of any such mechanism.

24 WITNESS MUSELER: No, sir. We thought about  
25 this one a bit at the time, not just recently, because

1 of the potential implications of it. We could not  
2 ascertain a reason for it. Apparently, it was an  
3 anomaly that we are unable to explain.

4 JUDGE MORRIS: Thank you very much.

5 JUDGE BRENNER: Well, I may be pushing this  
6 beyond your ability to answer, given what you just said.  
7 But remember all those things that had to go wrong that  
8 you told us about before something like this could  
9 happen, before it got to FQC? Did all those things go  
10 wrong in that instance? That is, none of those people  
11 received the E&DCR, or was the E&DCR there and ignored?  
12 Or what were you able to find out?

13 WITNESS MUSELER: We were able to find out  
14 that that wasn't the only copy of the E&DCR. We did  
15 have a copy in the Construction Department. Why it was  
16 not put on our schedules to complete that work, and why  
17 when we did our final check it didn't show up, I can't  
18 answer that question, sir.

19 JUDGE BRENNER: Is it not too difficult for  
20 you to describe what the change involved was on the  
21 E&DCR without getting into too much technical detail?

22 WITNESS MUSELER: It was a wiring change in a  
23 general electrical panel which even if Mr. Arrington had  
24 missed it, Mr. Youngling would have picked up, because  
25 the system wouldn't have worked in accordance with the

1 test procedures. I don't know the specifics of the  
2 wiring change. It did involve some termination changes  
3 in the panel.

4 JUDGE BRENNER: I was trying to get a feel for  
5 how physically apparent something like that was. That  
6 is, somebody walking by would look at it and say that's  
7 not right. And it sounds like it doesn't fall into that  
8 category.

9 WITNESS MUSELER: No, sir, it doesn't.

10 JUDGE BRENNER: That's all we have, Mr. Ellis.

11 MR. ELLIS: Judge Brenner, I'm now going to  
12 the extra programs and general transcript pages we will  
13 be referring to that are involved -- I don't think we  
14 will be referring to any of them specifically -- are  
15 12,498 to 531. I believe the county's exhibits that are  
16 involved are 74 and 75. There may be an additional  
17 one. 74 relates to CONSAP and 75 to CABTRAP.

18 JUDGE BRENNER: Thank you.

19 BY MR. ELLIS (Resuming):

20 Q Mr. Museler, for context, if you would,  
21 please, describe very briefly the three extra programs  
22 relating to raceway qualification.

23 JUDGE BRENNER: In addition to what we already  
24 have?

25 MR. ELLIS: Yes. I was just doing it for

1 context, very briefly.

2 JUDGE BRENNER: Go ahead if you want to, if  
3 it's very brief.

4 WITNESS MUSELER: It is. Taken together,  
5 these three programs represent an integrated  
6 construction and inspection approach to activities in  
7 the raceway design area. The CONQUIP program provides  
8 the final conduit checks such as hardware checks, bend  
9 radii checks, separation markers and grounding.

10 The CONSAP program provides for the final  
11 seismic design incorporation of all conduit supports  
12 required by the appropriate specifications. The CABTRAP  
13 program provides for the final seismic design and  
14 construction completion and inspection of the cable tray  
15 supports, and assures that these components meet their  
16 latest design bases.

17 BY MR. ELLIS (Resuming):

18 Q All right, Mr. Museler, are these programs, in  
19 your view, extra or unique in any way?

20 A (WITNESS MUSELER) Yes, they are, Mr. Ellis.

21 Q Explain very briefly your reasons, please.

22 A (WITNESS MUSELER) The programs incorporate  
23 some portions of the normal construction process, as  
24 well as the normal inspection process. But there are  
25 three aspects of them that do make them extra and unique.

1           The first aspect is that the programs result  
2 in as-built drawings of conduit, conduit supports and  
3 cable tray supports. The second aspect of them that is  
4 unique is that they provide a more rigorous engineering  
5 assessment of how the specification requirements, as  
6 implemented in the field, are met.

7           The third aspect that I believe is unique is  
8 the fact that these programs provide for a continuous  
9 maintenance of the various aspects of these programs  
10 throughout the life of the plant to insure that all  
11 added and/or reworked raceway meets the same high  
12 quality standards that the original installation will  
13 have met.

14           Q     When you say unique, do you have reference to  
15 the practice in the industry? Is it the practice in the  
16 industry to do these or not?

17           A     (WITNESS MUSELER) No, sir, I don't believe it  
18 is.

19           Q     During cross examination by Mr. Lanpher, there  
20 was some discussion regarding rework. Have you had an  
21 opportunity to review the transcript pages that I  
22 referred to, 12,498 to 531?

23           A     (WITNESS MUSELER) Yes, sir, I have.

24           Q     Now, as the term was used in your cross  
25 examination, did that rework include both work after the

1 final FQC inspection and work that might have been done  
2 prior to the final FQC inspection during in-process  
3 inspections?

4 A (WITNESS MUSELER) Yes, it did, sir.

5 Q And how do you normally understand the word  
6 "rework"?

7 A (WITNESS MUSELER) Mr. Ellis, the word "rework"  
8 is used rather loosely in various aspects of the job,  
9 and in fact, it's used differently in some respects by  
10 different disciplines. But the context of the  
11 discussion we were having during Mr. Lanpher's  
12 questioning and during Judge Morris's questions I  
13 believe was the context referring to work that would have  
14 to be done by Construction as a result of the final FQC  
15 inspection.

16 In other words, after the raceway was supposed  
17 to be complete and in its final condition for  
18 inspection. When inspected by the quality control  
19 organizations; any work subsequent to that I believe was  
20 the context that Mr. Lanpher and Judge Morris were  
21 referring to "rework" as. And in that context, the  
22 rework associated with these programs is minimal.

23 Much of the confusion arose from the CONSAP  
24 and CONQUIP progress reports which we were using at the  
25 time, which contained various columns of rework. Those



1 columns do not indicate rework in the sense that I have  
2 just defined it.

3           One of the confusing factors was that there  
4 were several columns titled "FQC Initial Inspection"  
5 which is not the final FQC inspection, and in fact, is  
6 not an FQC inspection in the traditional sense of the  
7 word. We utilize FQC -- as I mentioned, this is an  
8 integrated program. We utilize FQC as part of our  
9 in-process inspection team to perform inspections that  
10 could and sometimes are performed by construction  
11 personnel.

12           So I believe that was the primary cause of the  
13 confusion. The rework associated with additional work  
14 that we have to perform on these raceway systems after  
15 the final FQC inspection or as part of the final FQC  
16 inspection is a very small number.

17           Q     Well, could you qualify for the Board the  
18 amount of rework, using that term in the sense of work  
19 required either as a result of the final inspection, in  
20 connection with the programs that you have outlined?  
21 That is, CONQUIP, CONSAP and CABTRAP.

22           A     (WITNESS MUSELER) We have been able to  
23 establish quantitatively in the context of CONSAP, which  
24 is the conduit support program, what that amount of  
25 rework is. And approximately four percent of the

1 conduit supports submitted for final FQC inspection have  
2 required some type of minor rework as a result of that  
3 final FQC inspection.

4 Most of this rework, more than half of it, is  
5 in the area of hardware, tightening nuts and bolts and  
6 other hardware adjustments such as that.

7 Other aspects which have required additional  
8 attention after the FQC final inspection have included  
9 anchor bolts, weld touch-up and rust removal.

10 Q How many man hours have you consumed in this  
11 connection of using rework in the sense that you used it  
12 in your answer?

13 A (WITNESS MUSELER) Of the entire CONSAP  
14 program, which is approximately 120,000 man hours, we  
15 have consumed approximately 1000 man hours in this  
16 effort. The program is over 50 percent complete at the  
17 present time, and that 1000 hours has to be contrasted  
18 to the overall CONSAP program estimate of 120,000 man  
19 hours, and the overall conduit installation man hour  
20 expenditures of over one million man hours.

21 JUDGE BRENNER: Let me see if Mr. Lanpher  
22 needs to clarify something.

23 MR. LANPHER: Judge Brenner, rather than wait,  
24 is it possible for Mr. Museler to relate this to the  
25 chart? He was relating to -- and it's perhaps my

1 confusion. But in Suffolk County Exhibit 74, which we  
2 had asked about before, is this rework to the right, on  
3 page 2 to the right of Final FQC? Is that a new  
4 category that's not even on this chart?

5 JUDGE BRENNER: You have rework in 75, also.

6 MR. LANPHER: He was just talking about CONSAP  
7 here, I think.

8 JUDGE BRENNER: I think that would be helpful.

9 MR. ELLIS: I think his remarks --

10 BY MR. ELLIS (Resuming):

11 Q Mr. Museler, were your remarks concerning  
12 rework applicable to both CONSAP and to CABTRAP?

13 A (WITNESS MUSELER) It was applicable to the  
14 entire raceway qualification area.

15 MR. LANPHER: Four percent was for both  
16 programs?

17 JUDGE BRENNER: We have your message. Now let  
18 Mr. Ellis develop it for you.

19 MR. LANPHER: Fine.

20 BY MR. ELLIS (Resuming):

21 Q Just so that the record is clear, then, your  
22 use of the term "rework" and saying that it was a  
23 minimal amount of rework, did that apply just to  
24 CONQUIP, CONSAP or to all three?

25 A (WITNESS MUSELER) The characterization of that

1 rework as minimal is applicable to all three. The  
2 specific example we were speaking of in terms of the  
3 amount of man hours we were able to quantify and the  
4 percent of supports requiring attention after FQC was  
5 specifically related to the CONSAP program.

6           We do not have the detailed breakdown of man  
7 hours for the other programs because we don't keep track  
8 of it that way. We were able to establish by  
9 discussions with the contractor that his opinion based  
10 on his experience in knowing how his work forces are  
11 allocated is that the CONQUIP program is at  
12 approximately the same order of magnitude as the CONSAP  
13 program in terms of man hour expenditures for rework  
14 after the final FQC inspection.

15           The CABTRAP program does not lend itself very  
16 easily to that type of analysis. Our discussions with  
17 the appropriate management and contractor personnel  
18 indicate that after the final inspection, they believe  
19 that the rework is properly characterized as minimal,  
20 but we cannot quantify it.

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1           JUDGE BRENNER: Staying with your breakdown  
2 for concept, which was Suffolk County Exhibit 74 and the  
3 description of the rework that you were talking about at  
4 the point that Mr. Lanpher jumped in, the question is,  
5 is that rework after and over and above the rework  
6 indicated in the charts in that exhibit? Or are you  
7 talking about the chart in that exhibit; and if so,  
8 which rework?

9           WITNESS MUSELER: No, sir, it is over and  
10 above that chart. The rework in that chart is if we had  
11 not chosen to involve FQC in the in-process inspections  
12 other than they do have responsibility for in-process  
13 inspection independent of these programs, but other than  
14 that, if we had chosen not to include FQC in the  
15 in-process inspection portions of these programs, none  
16 of those columns would be rework subsequent to FQC  
17 inspection.

18           JUDGE BRENNER: I am not sure I followed it,  
19 but I may be the only one with a problem. I was with  
20 you up until the last thing you said.

21           WITNESS MUSELER: Okay. Rework, probably what  
22 I added doesn't really have a lot of relationship to the  
23 base question, which is, is the 1,000 hours CONSAP  
24 rework, does that relate to anything shown on this  
25 chart? And the answer to that is no, it does not. It

1 is after that final FQC inspection as part of the final  
2 process. It doesn't get signed off until that rework is  
3 complete.

4 BY MR. ELLIS: (Resuming)

5 Q For the record, Mr. Museler, which chart are  
6 you referring to?

7 A (WITNESS MUSELER) The title of it is "CONSAP  
8 Progress Summary."

9 JUDGE BRENNER: It's the second page of  
10 Exhibit 74, Suffolk County Exhibit 74.

11 BY MR. ELLIS: (Resuming)

12 Q So the term "rework" as it appears in that  
13 table then is not used in the classic sense of rework  
14 that you have defined, that is work being done as a  
15 result of the final FQC inspection?

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

17 Q Mr. Museler, which sorts of situations are  
18 being identified in the CONQUIP program, if you can  
19 characterize those, please, sir?

20 A (WITNESS MUSELER) Yes, sir. These are items  
21 which are the items requiring correction as a result of  
22 the final FQC inspection. And the bulk of this is  
23 associated with rework for labels. The conduit is  
24 required to be labeled with its number and also with  
25 redundancy markers for the various safety divisions of



1 the electrical systems.

2           For example, labels might be 5-1/5 feet apart  
3 when the specification requires them to be 5 feet apart,  
4 and we would have to go back and fix that. Labels may  
5 also be missing because for various reasons sometimes  
6 they disappear from the time they are first applied to  
7 the time the FQC performs the inspection. So we would  
8 have to go back and reapply those labels.

9           In a few cases we have found some loose  
10 hardware in junction boxes and junction fittings on the  
11 conduit itself; not in a lot, but we have found that in  
12 a few places.

13           That forms the bulk of the types of things  
14 that were reworked in the CONQUIP program.

15           Q     Based on your familiarity then with the  
16 situations found in the CONQUIP program, have you found  
17 any situations you would characterize as significant?

18           A     (WITNESS MUSELER) We have found one instance  
19 which I would characterize as an instance where a design  
20 requirement was not met. That instance involved one  
21 conduit for which the total cumulative bend radius  
22 exceeded 360 degrees. This was not picked up by  
23 construction; it was found by FQC in their final  
24 inspection.

25           We subsequently determined that that condition

1 was acceptable. However, it was not acceptable to have  
2 -- it was not acceptable without having engineering  
3 evaluate it. So it did represent a deviation from the  
4 criteria. That is what I would characterize as more  
5 than a minor discrepancy. No other instances of  
6 significant deviations from design criteria have been  
7 uncovered through the CONQUIP program.

8 JUDGE BRENNER: How are the redundant cables  
9 coded? You mentioned that as part of the labeling  
10 program.

11 WITNESS MUSELER: The three major safety  
12 divisions are coded with red, blue, and orange dots.  
13 And we have various subdivisions probably totaling about  
14 nine other divisions which do not constitute a large  
15 number of conduits, but they tend to be yellow-green,  
16 yellow-blue, yellow-red. But they are approximately 2 x  
17 2 stickers, white stickers, with a red, blue, or orange  
18 ball on them.

19 JUDGE BRENNER: Are they put right on the  
20 trays or on the installation themselves?

21 WITNESS MUSELER: Put right on the conduit and  
22 put right on the trays.

23 BY MR. ELLIS: (Resuming)

24 Q Mr. Museler, returning for a moment to the  
25 rework, the subject of rework on CONSAP and CONQUIP, can

1 you identify or describe whether these are part of the  
2 normal construction installation program? Maybe I  
3 haven't stated that very clearly.

4 MR. LANPHER: Could I have the question read  
5 back or repeated?

6 JUDGE BRENNER: He already said he thought  
7 these are special programs. Is that the same question  
8 you are asking? "Not normally provided in the industry"  
9 was his answer.

10 MR. ELLIS: I guess I was asking for more  
11 perspective on the programs.

12 JUDGE BRENNER: Okay. I am sorry. Go ahead.  
13 Do you want to restate it?

14 MR. LANPHER: I would like to get the question  
15 again so I know what the answer is too.

16 MR. ELLIS: I will restate it rather than have  
17 it read back.

18 BY MR. ELLIS: (Resuming)

19 Q Mr. Museler, the activities that you have  
20 described as rework, can you elaborate on what sorts of  
21 activities they involve in CONSAP and CONQUIP?

22 MR. LANPHER: I object to the question. I  
23 thought that was already answered.

24 JUDGE BRENNER: I thought so, too. I don't  
25 want to cut you off on something you want to do. I will

1 tell you after giving the County 5 weeks, I am certainly  
2 willing to give LILCO 2-1/2 days. If you want to spend  
3 time repeating a question, that's okay.

4 MR. ELLIS: I think Mr. Lanpher is correct. I  
5 didn't ask the question exactly right. Let me rephrase  
6 it.

7 JUDGE BRENNER: The way I heard it before we  
8 interrupted and messed you up, and I apologize, was you  
9 wanted to know if this was part of the normal  
10 construction planned programs. And I thought that was  
11 very similar to the other question about what is  
12 normally done in the industry. But perhaps they're not  
13 the same and you were maybe going someplace else.

14 MR. ELLIS: No, I think they are generally the  
15 same, Judge Brenner. I just wanted Mr. Museler to  
16 expand on his basis for saying that it was not the same  
17 as what was done in the industry.

18 JUDGE BRENNER: I guess that's the question  
19 then.

20 WITNESS MUSELER: I think I need to preface  
21 this because we have a significant semantic problem with  
22 the word "rework." What I am going to be speaking of  
23 now are the activities associated with rework as rework  
24 is listed on the Suffolk County exhibit on CONSAP and  
25 CONQUIP, not what I would call true rework, which was

1 the initial discussion we had relative to Judge Morris'  
2 and Mr. Lanpher's previous discussion.

3           So in that context, these activities which are  
4 characterized as rework on the Suffolk County exhibit  
5 are part of the normal construction program for Shoreham  
6 the way we do business under these three programs. But  
7 in order to put that in perspective, I have to explain  
8 in a little detail how what we are doing at Shoreham I  
9 believe differs in various aspects from that done in the  
10 rest of the industry.

11           And I believe a good perspective can be gained  
12 by comparing what's done at Shoreham with what was done  
13 at a very similar plant initiated at the same time of  
14 Shoreham, almost a parallel design which shared in the  
15 initial stages the same basic design requirements as  
16 Shoreham.

17           That plant has about 300,000 feet of conduit  
18 installed in it. Shoreham for basically the same size  
19 unit has well over 400,000 feet of conduit.  
20 Approximately 20 designers were utilized for the entire  
21 raceway design effort in that plant. Shoreham had 125  
22 designers assigned to conduit alone with additional  
23 large numbers of designers assigned to cable tray and  
24 cable tray support activities.

25           In the field that plant consumed 330,000

1 man-hours for the entire electrical raceway installation  
2 effort, conduit, cable tray, conduit supports, cable  
3 tray supports. Shoreham at its completion will consume  
4 almost four times that number of man-hours in the field,  
5 over 1,200,000 man-hours, to install the conduit,  
6 conduit support, and cable tray and cable tray supports.

7           The hardware requirements are markedly  
8 different between that plant and the Shoreham plant. To  
9 give one example --

10           JUDGE BRENNER: I hope I don't knock you off  
11 your train of thought, but I want to make sure I  
12 understand the context. Are you saying that it's  
13 because of CONQUIP and CONSAP and CABTRAP that all this  
14 extra time and man-hours and so on is involved? You are  
15 ascribing all of it to these programs? I mean I don't  
16 know if they have a few good men and you had a lot of  
17 lousy men, for example. And I am being flip on purpose.

18           WITNESS MUSELER: They didn't do what we are  
19 doing.

20           JUDGE BRENNER: You can help give me the  
21 context in relation to these programs. You are giving  
22 the message, but I am not sure I am receiving it. I  
23 wanted to let you know that.

24           WITNESS MUSELER: The hardware differences,  
25 the hardware requirements are markedly different. To



1 give an example of how the cable tray is hung in that  
2 plant, it's hung off threaded rod with a single  
3 uni-strut bar to support the cable tray.

4 MR. LANPHER: Judge Brenner, I am going to  
5 object to this answer at this point. This goes far  
6 beyond anything that I got into on cross-examination or  
7 that Board questions raised. I don't see how this is  
8 relevant to the question of what these programs are here  
9 at Shoreham.

10 JUDGE BRENNER: No, I think it's relevant. I  
11 don't have the transcripts in front of me, and I admit I  
12 can't give you chapter and verse of what you got into,  
13 but the theme of your cross-examination, in part, was  
14 what was involved in these programs and what it was  
15 representing. Partly you were after what it showed, and  
16 they have already covered that. But I think part of  
17 your theme was that it's a repair program, a program to  
18 rectify things, and arguably I think it is within the  
19 scope of that for them to come back and say what they  
20 think the context of the program is.

21 MR. LANPHER: My objection goes to whatever is  
22 being done at this other plant. I think it is relevant  
23 to find out what's being done at Shoreham. I don't  
24 understand how that other plant is relevant, and that's  
25 where my objection goes to, Judge Brenner.

1 JUDGE BRENNER: I misunderstood your objection.

2 MR. LANPHER: I didn't state it probably that  
3 well. That's what I don't understand in terms of  
4 relevance.

5 JUDGE BRENNER: Well, I don't understand the  
6 materiality of the comparison to the other plant well at  
7 this point either, but it's not so far out of the field  
8 of relevance that I would stop them. I will let them  
9 finish, and I assume it's going to come to a finish  
10 soon. And then anybody who wants to follow up can  
11 follow up.

12 But I too indicated before your objection as  
13 to where I lost the gist of things on it. But I don't  
14 want my own subjective lack of connection to govern  
15 things. For all I know, Judge Morris and Judge  
16 Carpenter are following this very well, and I will find  
17 out from them after. And if we feel we want to follow  
18 up, we will follow up, and may be Mr. Ellis wants to  
19 follow up. It's certainly not the answer I expected,  
20 given the question.

21 Mr. Ellis, is this where you were going with  
22 that question?

23 MR. ELLIS: In part. But I am bound to say  
24 that I think the information, I am happy with what I am  
25 hearing.

1           JUDGE BRENNER: Well, I don't understand  
2 everything I am hearing in terms of what conclusions  
3 stem from it, and that's what I indicated before. So we  
4 have all badgered Mr. Museler enough. You are going to  
5 have to give us some context for the answer. And maybe  
6 the best way to do it at this late an hour is to get  
7 some particular questions asked of him if you want to  
8 get it in.

9           MR. ELLIS: All right, sir. Well, can he  
10 finish this answer? I think what we are trying to show  
11 is that LILCO went beyond the industry practice some  
12 considerable way, and I think that's what his answer is  
13 directed towards.

14          JUDGE BRENNER: Are we going to get the name  
15 of this plant some day? I don't know what it means.  
16 The standard is not a readily ascertainable standard  
17 against which we are measuring. But with that --

18          MR. LANPHER: I would like to know the source  
19 of the data, too, if we are going to pursue this.

20          JUDGE BRENNER: Wait a minute. I didn't ask  
21 for the source of the data so much as saying, you know,  
22 comparisons of man-hours lead to all kinds of tricky  
23 things and so on and so forth. I think if we find that  
24 what the program is that is being done here and if you  
25 want to give us -- I take it this is pertinent to Mr.

1 Museler's idea of the unusual magnitude of what's being  
2 done here.

3           The problem is, by saying there's this one  
4 other plant that has this, that in and of itself doesn't  
5 tell you that this magnitude is unusual or good, for  
6 that matter, you know, hypothetically, and I emphasize  
7 hypothetically. You have a project that takes a lot  
8 more man-hours. It could be that is because there's a  
9 problem with the way things are being done, not that  
10 good things are being done.

11           Are you almost finished?

12           WITNESS MUSELER: I am not far from the end.

13           JUDGE BRENNER: Let's do this. It is late.  
14 We are a little tired. We will let you finish, and then  
15 Mr. Ellis, if he wants to pursue it, can come back and  
16 follow up with particular questions tomorrow morning.  
17 And then, of course, anybody else can pursue it also.  
18 But you are inviting a whole new thing on something that  
19 may not be worth the candle. But go ahead.

20           WITNESS MUSELER: I believe I explained that  
21 the plant I was speaking about had a certain method of  
22 installing one particular type of device, a cable tray  
23 support. Shoreham, through later criteria in changing  
24 earthquake requirements, now has massive safety-related  
25 and non-safety-related cable tray supports utilizing

1 large box beams and welding instead of bolted hardware.

2           The verification of the field installation --  
3 and I believe this does go to what your concern is --  
4 verification of the field installation for that plant  
5 consisted of field supervisors and engineers walking  
6 down the system and on a judgment basis deciding whether  
7 it was adequate or whether some modifications had to be  
8 made on the spot.

9           Shoreham does not utilize field walkdowns and  
10 judgment to ensure the adequacy of the raceway systems.  
11 In fact, the entire raceway system in that plant in the  
12 main was field run. And that's the way that most of  
13 this type of installation was performed and was adequate  
14 in the accepted industry standard.

15           Shoreham did not install that way. Shoreham  
16 installed to specific design drawings which is a more  
17 time-consuming way to install things if you don't give  
18 the craftsmen complete -- well, not complete -- but if  
19 you don't give him the same freedom of action he has  
20 when he is field installing the components.

21           Our specification requirements are compared  
22 against as-built conditions. Therefore, you have  
23 numbers to compare rigorously against the specification  
24 requirements as opposed to the field walkdown and  
25 judgmental approach that had previously been used.

1           If we had to deviate from a specification, a  
2 specific specification requirement, we would have to  
3 perform calculations to justify that or move or modify  
4 the supports in the field. And that consumes a lot more  
5 man-hours than the method if you essentially field run  
6 and approved by engineering judgment.

7           I don't mean to imply that that wasn't a  
8 satisfactory method. I believe that plant and all the  
9 plants that utilize that method had raceway systems that  
10 will not fall down during an earthquake or any  
11 postulated event. But they don't have the documentation  
12 backup or the rigorous adherence to the design standards  
13 that Shoreham has. It is these kinds of modifications  
14 that I believe I am referring to when I talk about the  
15 rework in Suffolk County Exhibit -- I am sorry, I don't  
16 remember the number.

17           JUDGE BRENNER: 74.

18           WITNESS MUSELER: It's not rework in the sense  
19 that we discussed earlier. It's not rework that's  
20 required because we didn't put it in accordance with the  
21 design documents. We did put it in in accordance with  
22 the design documents. Sometimes we put in two or three  
23 times in accordance with the design documents. The  
24 rework associated with inspections with the final FQC  
25 inspections at this point is truly minimal. So that is



1 the perspective I am trying to provide that Judge  
2 Morris' question regarding backfit is a good analogy to  
3 utilize in terms of what this work entails.

4 All of it on the Suffolk County exhibit is  
5 either the completion of base construction that hadn't  
6 been completed yet or backfit work because of changing  
7 requirements or because of the more rigorous  
8 requirements we imposed on ourselves. I can't separate  
9 out those two areas because they go on together in a  
10 real-time basis. But it includes both of them. It does  
11 not include rework associated with final FQC inspection.

12 JUDGE BRENNER: I guess I need to know  
13 something about what you are comparing this plant to.  
14 So maybe the simplest way is to ask for the name of the  
15 plant.

16 WITNESS MUSELER: Fitzpatrick plant, upstate  
17 New York.

18 JUDGE BRENNER: Which is a one-unit BWR?

19 WITNESS MUSELER: One-unit BWR, same rating,  
20 designed by the same architect-engineer.

21 MR. ELLIS: Judge Brenner, we can, I can go  
22 on. I think that to some extent Mr. Museler answered  
23 the direction in which I am heading, but I have a few  
24 more questions.

25 JUDGE BRENNER: On just these extra programs?

1 MR. ELLIS: Yes, sir. Yes, just a few more, I  
2 think. I would estimate maybe 10 or 15 minutes.

3 MR. LANPHER: Judge Brenner, I normally  
4 wouldn't mind going on, but I have a meeting at 6:00  
5 o'clock that I am supposed to get to.

6 JUDGE BRENNER: You wouldn't be able to get to  
7 it if we ran longer?

8 MR. LANPHER: I wouldn't be able to get to it.

9 JUDGE BRENNER: All right, we will break. Do  
10 we need to do anything else on the record today?

11 MR. BORDENICK: I have one additional item,  
12 but it need not be done on the record.

13 JUDGE BRENNER: Okay. Let's adjourn for the  
14 day. We will start at 9:00 o'clock tomorrow morning.

15 MR. ELLIS: We have to hand out in response to  
16 the Board's request information concerning the advisers  
17 to LILCO Management Review of Operations Committee and  
18 Nuclear Review Board professional qualifications of Mr.  
19 Kubinak and professional qualifications of Mr. McCaffrey.

20 JUDGE BRENNER: Thank you.

21 All right, let's adjourn for the day.  
22 (Thereupon, at 5:01 p.m., the hearing in the  
23 above-entitled matter was adjourned, to reconvene at  
24 9:00 a.m. on Thursday, November 11, 1982.)

25

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the  
ATOMIC SAFETY AND LICENSING BOARD

the matter of: LONG ISLAND LIGHTING COMPANY (Shoreham Nuclear Power Station)

Date of Proceeding: November 10, 1982

Docket Number: 50-322-OL

Place of Proceeding: Bethesda, Maryland

were held as herein appears, and that this is the original transcript thereof for the file of the Commission.

Susan A. Harris

Official Reporter (Typed)

Susan A. Harris

(SIGNATURE OF REPORTER)