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APPEARANCES (Continued):

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C O N T E N T S

<u>WITNESSES</u>	<u>DIRECT</u>	<u>CROSS</u>	<u>REDIRECT</u>	<u>RECROSS</u>
James J. Clarey				
By Mr. Hall	1082 1143		1140	
By Ms. Chestnut		1102		1142
By Mr. Wersan		1145		
David R. Helwig				
By Mr. Hall	1087		1139	--
By Ms. Chestnut		1092		
By Mr. Wersan		1126		
Edward F. Sproat, III				
By Mr. Hall	1089		--	--
By Ms. Chestnut		1100		
John S. Kemper				
By Mr. Hall	1152		1177	--
By Ms. Ferkin		1154		
By Ms. Chestnut		1158		
By Mr. Wersan		1173		
Charles K. Soppet				
By Mr. Hall	1180		1186	
By Ms. Chestnut		1181		1189
By Mr. Wersan		1184		

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E X H I B I T S

	<u>NUMBER</u>	<u>FOR IDENTIFICATION IN EVIDENCE</u>	
3	<u>PECo Statements</u>		
4	✓ No. 4 (Clarey)	1091	1145
5	✓ No. 5 (Helwig)	1091	1091
6	✓ No. 6 (Sproat)	1091	1091
7	✓ No. 2 (Kemper)	1154	1154
8	✓ No. 7 (Soppet)	1181	1181
9	<u>PECo Exhibits</u>		
10	✓ No. 2 (Limerick 1 and Common Plant, Explanation of Reasons for Cost and Schedule Growth, Including Data on the Effect of New and Revised Regulatory Requirements)	1091	1091
11			
12			
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15	<u>OCA Exhibits</u>		
16	✓ No. 61 (IR-OCA-4-22)	1146	1152
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P R O C E E D I N G S

1
2 ADMINISTRATIVE LAW JUDGE JOSEPH MATUSCHAK: This
3 is the time and place set for further hearing in the
4 matter of Pennsylvania Public Utility Commission versus
5 Philadelphia Electric Company at Docket No. R-850152.

6 Mr. Hall, are you ready to proceed?

7 MR. HALL: Yes, Your Honor, I am, although I believe
8 Mr. Delaney has a comment.

9 MR. DELANEY: Just as a preliminary statement, Your
10 Honor, I thought we would put on the record the prospect of
11 having the oral argument on Staff's motion in limine on
12 Friday.

13 JUDGE MATUSCHAK: Yes. We had previously discussed
14 having the oral argument on the motion of Staff in limine
15 on Thursday, but the company and Staff has agreed that that
16 argument be held on Friday morning at 9:30.

17 MR. HALL: That's correct.

18 MR. DELANEY: That's correct, Your Honor.

19 JUDGE MATUSCHAK: Very well. Let the record so show,
20 and counsel are so advised.

21 MR. DELANEY: Thank you, Your Honor.

22 MR. WERSAN: Your Honor, may I inquire, will other
23 parties be allowed to make a statement at that time also?

24 JUDGE MATUSCHAK: Well, in our opinion, even though
25 the other parties may not be petitioners on that petition,

1 we expect that all parties in this proceeding can express
2 their opinion in this case.

3 If the Commission's decision in 341 and the resulting
4 investigation are involved, then the question becomes then
5 not only the prudence or imprudence of the 1976 and the 1978
6 delays, but we have to proceed and should also discuss the
7 prudence of the original investment, the 1974 delay.

8 We don't see how we can find one with resolving the
9 matter as to the other.

10 MS. FERKIN: Excuse me, Your Honor. I have another
11 preliminary matter unrelated to the motion in limine.
12 Several days ago in the hearing, GEC offered an Exhibit No.
13 3 and it was admitted on the condition that a full copy of
14 the document be provided.

15 A full copy of the document has been provided to the
16 reporter and to the company, and will be provided to the
17 other parties.

18 JUDGE MATUSCHAK: Very well.

19 MS. FERKIN: Thank you, Your Honor.

20 MR. HALL: Your Honor, this morning the company has
21 available for cross-examination its witnesses Mr. Sproat,
22 Mr. Helwig and Mr. Clarey.

23 As discussed yesterday afternoon with the parties and
24 Your Honor, the company proposes to present these witnesses
25 as a panel to respond to questions with regard to PECO

1 Exhibit No. 2.

2 JUDGE MATUSCHAK: Who do you have, Mr. Sproat,
3 Mr. Clarey and who?

4 MR. HALL: Mr. Helwig. Those are PECO Statements
5 4, 5 and 6.

6 JUDGE MATUSCHAK: Very well.

7 MR. HALL: Your Honor, I believe a word of intro-
8 duction might be useful from me as to specifically what
9 areas of PECO Exhibit No. 2 these witnesses direct them-
10 selves to.

11 PECO Exhibit No. 2 is a document, as stated in the
12 document, which was prepared in two separate parts, a
13 Section II and a Section III.

14 The Section II was prepared principally by Theodore
15 Barrie and Associates with assistance from Mr. Helwig. The
16 Section III was prepared by the gentlemen sitting here on
17 the panel, Mr. Clarey, Mr. Helwig and Mr. Sproat.

18 We will be presenting separately Theodore Barrie and
19 Associates and Mr. Helwig will be available at that time to
20 answer questions as to Section II.

21 We will be presenting Mr. Clarey separately later
22 today to address other areas of his direct testimony which
23 go beyond PECO Exhibit 2. This is as we discussed yesterday
24 with the parties.

25 Your Honor, at this time, I would ask Mr. Helwig,

1 Mr. Clarey and Mr. Sproat to individually identify
2 themselves and to state their name and position for the
3 record.

4 MR. CLAREY: I am James J. Clarey. I am superinten-
5 dent of the Limerick Section of the Construction Division
6 for Philadelphia Electric Company.

7 MR. HELWIG: My name is David R. Helwig. I am
8 supervisor of the Nuclear Services Branch in the Engineering
9 and Research Department of Philadelphia Electric Company.

10 MR. SPROAT: My name is Edward L. Sproat. I am the
11 supervising engineer of the Nuclear Generation Branch of the
12 Electrical Engineering Division, Philadelphia Electric
13 Company.

14 Whereupon,

15
16 JAMES J. CLAREY
17 DAVID R. HELWIG
18 EDWARD L. SPROAT

19 having been duly sworn, testified as follows:

20 DIRECT EXAMINATION
21 OF JAMES J. CLAREY

22 BY MR. HALL:

23 Q Mr. Clarey, do you have before you a document
24 entitled PECO Statement No. 4, direct testimony of James J.
25 Clarey?

A Yes, I do.

Q Mr. Clarey, is there a specific section of that

1 testimony which deals with a document known as PECO
2 Exhibit No. 2, that section being pages 28 through 31 of
3 your prepared direct testimony?

4 A. Yes.

5 Q. Mr. Clarey, do you also have before you a
6 document entitled, "PECO Exhibit No. 2, Limerick 1 and
7 Common Plant Explanation of Reasons for Cost and Schedule
8 Growth, Including Data on the Effect of New and Revised
9 Regulatory Requirements"?

10 A. Yes, I do.

11 Q. Mr. Clarey, were these two documents, your
12 prepared statement, PECO Statement No. 4 and also portions
13 of PECO Exhibit No. 2 prepared along with other company
14 witnesses under your direction and supervision?

15 A. Yes, they were.

16 Q. Could you state for me, Mr. Clarey, which
17 section of PECO Exhibit No. 2 is discussed in your
18 testimony and as to which you are prepared to answer
19 questions today?

20 A. The two areas of Section III of Exhibit No. 2
21 which I have prepared or were prepared by my staff, or they
22 worked jointly with other company personnel were the
23 Schedule 2, a bar chart of activities headed, "Schedule
24 Effect of Regulatory Changes."

25 For this document, we developed certain scheduling

1 information and joined this information with information from
2 Messrs. Helwig and Sproat to prepare this two-page document.

3 And further in the body of Section III, I contributed
4 or members of my staff joined with me in preparing state-
5 ments as to the impact on construction of the various
6 changes which are described throughout Section III.

7 Q. Mr. Clarey, do you have any changes to make at
8 this time to PECO Exhibit No. 2?

9 A. Yes, I do. I have three changes on page 20.
10 I would describe them as, at line 23, after the -- the first
11 two words of that line are "necessary for."

12 I would add the words, "continuation and completion
13 of," so that that sentence would read, "Time periods
14 required for engineering are illustrated on Section 2 by
15 line 'A', while the durations necessary for continuation
16 and completion of procurement and construction are
17 designated as line 'B.'"

18 My next correction, addition would be to immediately
19 add the sentence at the end of the sentence I just read
20 on line 23, I would add the sentence, "Note that procurement
21 and construction activities were started during line 'A' as
22 engineering design information became available." That is
23 the end of that addition.

24 MR. WERSAN: Could you please repeat that sentence,
25 Mr. Clarey?

1 THE WITNESS: "Note that procurement and construction
2 activities were started during line 'A' as engineering
3 design information became available."

4 And at line 27, the first three words of that line
5 are "environment on the." I would add at that point two
6 words, "continuation and."

7 So that that sentence would read, "The analysis
8 demonstrates the impact of the volatile regulatory
9 environment on the continuation and completion of project
10 construction and startup activities."

11 I have no further changes.

12 BY MR. HALL:

13 Q Mr. Clarey, referring you to pages 28 to 31 of
14 your prepared statement, PECO Statement No. 4, do you have
15 any changes to make to that document at this time?

16 A On page 29 -- no, I'm sorry, that has been taken
17 care of. I believe these items have been taken care of.

18 MR. HALL: Your Honor, I would note that I believe
19 these changes of Mr. Clarey's have been previously supplied
20 to the parties. We are simply trying to put them into the
21 record.

22 THE WITNESS: At line 10, after the words "Section III
23 of PECO Exhibit 2," we would delete the following: "contains
24 two separate analyses. The first, which is set forth in
25 subsections A and B of Section III," end of corrections.

1 At line 20, the sentence beginning--and I will read
2 the entire sentence which is to be deleted. "The second
3 analysis is set forth in subsection C and provides additional
4 detail as to increases in project commodities and manhours
5 (i.e. both craft and engineering) required as a result of
6 new or revised regulatory requirements." End of that
7 correction.

8 At line 25, delete the words "subsections A and B of."
9 End of correction.

10 On page 30, at line 12, delete the sentence, "I
11 prepared subsection C and am prepared to answer all
12 questions with regard to its contents." End of correction.

13 Pages 32 and 33, line 27 on page 32, delete ", and
14 as shown in Schedule 6," and at line 1 at the top of page
15 33, delete "of PECO Exhibit 2,". End of correction.

16 BY MR. HALL:

17 Q Mr. Clarey, with the corrections that you have
18 provided, is the information contained in your prepared
19 direct testimony, PECO Statement No. 4, pages 28 through 31,
20 and in PECO Exhibit No. 2 in those portions of the exhibit
21 which you have defined as being prepared by you or under
22 your direction and supervision, true and correct to the
23 best of your knowledge and belief?

24 A Yes, they are.
25

DIRECT EXAMINATION
OF DAVID R. HELWIG

1
2 BY MR. HALL:

3 Q Mr. Helwig, do you have before you a document
4 entitled, "PECo Statement No. 5, Direct Testimony of David
5 R. Helwig"?

6 A Yes, I do.

7 Q Do you also have before you a document entitled,
8 "PECo Exhibit No. 2, Limerick 1 and Common Plant Explanation
9 of Reasons for Cost and Schedule Growth"?

10 A Yes, I do.

11 Q Were these documents prepared by you or under
12 your direction and supervision in the case of PECo Exhibit
13 No. 2 in conjunction with other company officials?

14 A Yes, they were.

15 Q Do you have any corrections to make to these
16 documents at this time?

17 A I have one correction. PECo Exhibit No. 2, at
18 page 40, line 34. That line begins "Response Analysis,
19 which,". The remainder of that sentence should be
20 stricken and replaced with the words, "set forth more
21 detailed seismic design criteria."
22

23 So that the entire sentence reads, "In December,
24 1974, the NRC issued Regulatory Guide 1.92, "Combining
25 Modal Responses and Spatial Components in Seismic Response

1 Analysis," which set forth more detailed seismic design
2 criteria."

3 Q Mr. Helwig, could you briefly describe for the
4 record your role in the preparation of PECO Exhibit 2,
5 Section III, and what areas you are most directly respon-
6 sible for?

7 A As described by Mr. Clarey, I assisted in the
8 preparation of PECO Exhibit 2, Schedule 2, primarily in the
9 regulatory identification phase and the engineering
10 identification phase.

11 In addition to that, the text following that table
12 on the following subjects was prepared either by me or
13 under my supervision.

14 Those aspects of that testimony under the headings
15 of Three Mile Island, including Emergency Response Facili-
16 ties and Post-Accident Sampling; the heading entitled Fire
17 Protection, including Sprinkler Additions, Structural Steel
18 Coating, Penetration Sealing Program; the heading entitled,
19 "ATWS, Anticipated Transients Without Scram;" the heading,
20 Seismicity; the heading, High Energy Line Break/Moderate
21 Energy Line Break; the section entitled, As-Built Piping
22 Reconciliation; the section entitled, "NRC I&E Bulletin
23 No. 80-11, Masonry Walls; and the section entitled, ASME
24 Section III Requirements."

25 Q Mr. Helwig, is the data which you have provided

1 for inclusion in PECO Exhibit No. 2 in the areas which you
2 have designed and is your prepared statement, PECO Statement
3 No. 5, true and correct to the best of your knowledge and
4 belief?

5 A. Yes, it is.

6 DIRECT EXAMINATION
7 OF EDWARD F. SPROAT

8 BY MR. HALL:

9 Q. Mr. Sproat, do you have before you a document
10 entitled, "PECO Statement No. 6, Direct Testimony of
11 Edward F. Sproat?"

12 A. Yes, I do.

13 Q. And do you have before you a document entitled,
14 "PECO Exhibit No. 2, Limerick 1 and Common Plant Explanation
15 of Reasons for Cost and Schedule Growth"?

16 A. Yes, I do.

17 Q. Am I correct, Mr. Sproat, that these documents
18 have been prepared under your direction and supervision or
19 by you with the exception of PECO Exhibit No. 2, which was
20 prepared in conjunction of other company officials?

21 A. That is correct.

22 Q. Mr. Sproat, am I correct that you have no
23 corrections to make to these documents at this time?

24 A. I have no corrections to make.

25 Q. Mr. Sproat, would you briefly state for the

1 record the areas in which you have been most responsible
2 in PECO Exhibit No. 2?

3 A. In PECO Exhibit No. 2, I worked with Mr. Clarey
4 and Mr. Helwig in Schedule 2, and also those items in
5 Section III which are of an electrical nature, specifically
6 the electrical portions of ATWS; the control room panel
7 modifications; the equipment qualification section; the
8 TMI-2 additions of an electrical nature, specifically the
9 emergency response facilities; the safety primary display
10 system; the radiological and meteorological monitoring
11 system; the steam relief valve position indication system;
12 the electrical aspects of fire protection; and the security
13 system.

14 Q. Mr. Sproat, is the material which you have
15 provided for inclusion in PECO Exhibit No. 2 and is your
16 prepared direct testimony, PECO Statement No. 6, true and
17 correct to the best of your knowledge and belief?

18 A. Yes, it is.

19 MR. HALL: Your Honor, I would ask that there be
20 identified for inclusion in the record as PECO Statement No.
21 4 the direct testimony of Mr. Clarey; as PECO Statement No.
22 5, the direct testimony of Mr. Helwig; as PECO Statement No.
23 6, the direct testimony of Mr. Sproat.

24 JUDGE MATUSCHAK: They will be so marked.
25

1 (Whereupon, the documents
2 were marked PECO Statements
3 Nos. 4, 5 and 6 for
4 identification.)

5 MR. HALL: I would also ask that there be identified
6 for inclusion in the record as PECO Exhibit No. 2 the
7 document entitled, "Limerick 1 and Common Plant Explanation
8 of Reasons for Cost and Schedule Growth, Including Data on
9 the Effect of New and Revised Regulatory Requirements."

10 JUDGE MATUSCHAK: As authenticated by these three
11 witnesses?

12 MR. HALL: Yes.

13 JUDGE MATUSCHAK Very well.

14 (Whereupon, the document was
15 marked PECO Exhibit No. 2 for
16 identification.)

17 MR. HALL: Finally, Your Honor, I would ask that
18 each of these documents should be moved into the record. I
19 would note that I will separately authenticate and move
20 those portions of PECO Statement No. 4 other than those
21 which deal with PECO Exhibit No. 2. I will do that later
22 this afternoon.

23 JUDGE MATUSCHAK: Subject to any motions to strike
24 or any other objections that may be made in a timely fashion,
25 the motion is granted.

(Whereupon, the documents
marked PECO Statements Nos. 5
and 6 and PECO Exhibit No. 2
were received in evidence.)

1 MR. HALL: Your Honor, these three witnesses are
2 available for cross-examination.

3 MS. CHESTNUT: Your Honor, I would simply like to
4 note first that Staff has no problem with having these
5 witnesses testify jointly since the exhibit was prepared
6 by each of them.

7 However, I would request that only one witness be
8 allowed to answer each question. I had discussed this with
9 counsel for the company, and he has indicated his agreement.

10 And second, Your Honor, I would request that any
11 questions that I have that are directed to the specific
12 testimony of a particular witness rather than to Exhibit
13 No. 2 be answered only by that witness.

14 MR. HALL: Your Honor, the company has no objection
15 to that, although as I have discussed with Ms. Chestnut, it
16 may be necessary for the witnesses to confer before
17 answering.

18 JUDGE MATUSCHAK: We will take up any special
19 circumstances individually if they should arise.

20 CROSS-EXAMINATION
21 OF DAVID R. HELWIG

22 BY MS. CHESTNUT:

23 Q Good morning, gentlemen. My name is Marcie
24 Chestnut. I am an assistant counsel with Commission Trial
25 Staff. First, Mr. Helwig, I have a few questions for you
in connection with your Statement No. 5.

1 Mr. Helwig, at pages 7 and 8 of your prepared
2 direct testimony, you discuss the capital authorizations
3 in the various accounts, is that correct?

4 A. I do, and I am willing to answer questions on
5 those areas, but I believe Mr. Hall has indicated that that
6 portion of my testimony will be covered later.

7 MR. HALL: We can do that now or later as you choose.

8 MS. CHESTNUT: I thought you said Helwig and Sproat
9 will be done now, and Clarey later.

10 MR. HALL: No, no, Sproat, only -- well --

11 MS. CHESTNUT: Only Sproat now?

12 MR. HALL: You can do Helwig now if you wish, or you
13 can do him when TBA is here on Section II of PECO Exhibit 2.
14 I'm sorry that was not clear.

15 MS. CHESTNUT: I only have one question for him.

16 THE WITNESS: I'll be happy to answer it.

17 MR. HALL: Let's go ahead then.

18 BY MS. CHESTNUT:

19 Q Mr. Helwig, how do you define distributable costs?
20 What sort of items would they be?

21 A. There are two aspects of distributable costs as
22 treated in the first section, Section II of PECO Exhibit 2
23 which this portion of my testimony is describing. There
24 are of course classical distributable costs, construction
25 items such as tools and overhead type support activities.

1 In the context of my work with Theodore Barry
2 Associates, in attributing the various increases in
3 project costs in the different categories that have been
4 identified, we also found that it was necessary to include
5 in the category of costs to be distributed, as opposed to,
6 in capitals, Distributable Costs, those increases in the
7 various accounts -- Engineering, Field 9 Manual, Manual,
8 whatever -- that were not specifically attributable to
9 cause in the project documentation, they were deemed to be
10 reflective of the general, overall level of project activity
11 at the time and as such were felt to be appropriate for
12 distribution over all of those activities.

13 Q Would this type of cost include items such as
14 office supplies?

15 A Yes, it would.

16 Q How about copying machines?

17 A I imagine it would.

18 Q How about cleaning supplies?

19 A I would have no specific knowledge of charges
20 coming from those categories, but they are the sort of
21 things that one would expect to clear to the distributable
22 account in the classical sense.

23 Q Mr. Helwig, how are these costs different from
24 indirect costs?

25 A Indirect costs?

1 Q Yes.

2 A In many ways, these are indirect costs. They
3 may have been -- excuse me, let me segregate the issues, if
4 I might.

5 First of all, let's set aside the classical
6 construction distributables -- tools, your office supplies,
7 cleaning supplies, that sort of thing -- and concentrate
8 on the section of the costs that I have indicated were
9 included as distributables because the project documentation
10 did not specifically identify them to one of the cause
11 factors that had been identified.

12 In a sense, they could be termed indirect costs.
13 These were costs that, it was found that there were
14 additional numbers of manhours or additional costs that
15 needed to be incurred in these various categories, and the
16 project documentation could not and did not specifically
17 identify them to the particular regulatory or externally
18 imposed change that we identified elsewhere in the
19 reconciliation.

20 These costs here then would be both direct and
21 indirect costs, but the characterization that I have given
22 to them is the only one that I can. Whether they were
23 indirect impacts of certain regulations or changes or
24 whether they were directly impacted or caused by these
25 regulations and changes, the project documentation did not

1 specifically assign their cause.

2 Q Mr. Helwig, do you have with you the company's
3 response to DR-Staff-LIM-16?

4 A I do, I believe. DR-Staff-LIM what?

5 Q Sixteen.

6 A I do.

7 Q Were you responsible for the preparation of this
8 response?

9 A This response was prepared under my direction.

10 Q Mr. Helwig, this data request requested
11 provision of information contained in claims associated with
12 payments to GE, is that correct?

13 A In the direct testimony that the question was
14 referring to, where it says, "Refer to II-A-3," was a
15 portion of Exhibit 18 that was in response to a question --
16 I am not sure if "exhibit" is the proper terminology; it was
17 identified as 18 from the testimony.

18 MR. HALL: I believe it's PECO Exhibit No. 1, Item
19 No. 18.

20 THE WITNESS: Item No. 18.

21 That portion of the testimony was in response to a
22 question regarding potential claims of whatever nature.

23 BY MS. CHESTNUT:

24 Q Well, the data contained on the response is
25 concerned solely with GE's cost, is that correct?

1 A. Yes. The II-A-3 section was about potential
2 claims of whatever cause. The data request asked
3 specifically for information regarding General Electric
4 Company's total participation in the Limerick 1 project.

5 Q. Mr. Helwig, do you know when the contract for
6 the NSS system was signed between PECO and GE?

7 A. Without referring to my staff and my more
8 detailed backup, I would not be able to cite that date.

9 Q. Do you know if PECO has made periodic payments
10 to GE based upon the terms of that contract?

11 A. Yes, ma'am, they have.

12 Q. Do you know if PECO has booked AFUDC associated
13 with those payments?

14 A. As described in my response to this interrogatory
15 and a number of others, our corporate cost accounting
16 practices do not allow for itemization of AFUDC associated
17 with any particular cost, but rather on a periodic basis
18 compute AFUDC against the project for the entire cash flow
19 of the project.

20 Q. So, the total claim is not broken down into
21 direct and AFUDC, or it can't be broken down?

22 A. The total claim, could you clarify what you mean
23 by the total claim?

24 Q. Total cost associated with these items.

25 A. That is correct. As I have stated, it is not

1 broken down in our cost accounting records in a manner
2 that would associate AFUDC with any particular payment or
3 account.

4 Q. Is the cost accounting system different for GE
5 and for Bechtel?

6 A. My response to that would depend on the level of
7 detail that you are interested in. Could you clarify your
8 question?

9 A. The point that I am trying to make, Mr. Helwig,
10 is that we were provided with information from the company
11 that did break down the AFUDC associated with Bechtel costs,
12 and we were told in your response that it is not possible
13 to do that for GE costs, and we were simply wondering why
14 that difference is.

15 A. I can respond to that question, yes. Let's see.
16 The contracts with General Electric and with Bechtel are
17 certainly different and separate contracts that have
18 different provisions for timing of payment, method of pay-
19 ment and accounting.

20 The records that were kept on those contracts are
21 different. The General Electric contract, the records kept
22 by General Electric did not include AFUDC. They could not,
23 as that AFUDC was imputed by us.

24 If there was a record of AFUDC kept by Bechtel in
25 their various project cost documentation, it was kept on the

1 basis of information provided to them by our staff, who in
2 that case also imputed the AFUDC periodically as described
3 in my responses to other interrogatories.

4 Any AFUDC that was provided to you for Bechtel cost
5 on a periodic basis would be an estimate, because AFUDC in
6 our cost accounting records, as I stated, was not
7 specifically accounted for to any particular contract or
8 charge.

9 So, if you can refer me to that -- I know that in a
10 number of requests for AFUDC, we responded in the same
11 manner, that while we could provide it, it was estimated
12 based on our cash flow records.

13 In this case, there are multiple contracts involved
14 with General Electric. And to accurately compute or even
15 estimate the AFUDC that one would infer from those payments
16 would require a significant level of effort to come up with
17 cash flows for each of these different purchase orders.

18 It is not just the NSSS contract that you requested
19 information for. You will note that that is one line of
20 my five-line response.

21 Q. Mr. Helwig, you stated that AFUDC is imputed by
22 PECO?

23 A. That's correct.

24 Q. And that the reason it is not supplied for GE is
25 because it would be burdensome and time-consuming to do that,

1 is that the substance of your answer?

2 A. To reconstruct.

3 Q. Yes.

4 A. That's correct.

5 Q. How difficult would it be to go back and
6 provide the AFUDC for the five items contained on DR-Staff-
7 LIM-16?

8 A. It could be done. It would require a time
9 period that was not conducive to responding to the
10 interrogatory within the time limit. It could be done
11 with -- it would probably take over a man-month of effort,
12 and again it would be an estimate.

13 MS. CHESTNUT: Thank you, Mr. Helwig, that's all I
14 have for you at this point.

15 CROSS-EXAMINATION
16 OF EDWARD F. SPROAT

17 BY MS. CHESTNUT:

18 Q. Mr. Sproat, is it correct that you were not
19 stationed at the Limerick site from September of 1978
20 through August of 1980?

21 A. That is correct. However, I have never been
22 stationed at the Limerick site fulltime. I have been at
23 the office in Philadelphia.

24 Q. Well, during that period, you were not in the
25 main office in Philadelphia, either?

A. That is correct.

1 Q In fact, you were working directly for PECO
2 at all during that period?

3 A That is correct.

4 Q Mr. Sproat, does the NRC ever incorporate IEEE
5 standards into their requirements?

6 A Yes, they do, through the regulatory guide
7 process. They will review an IEEE standard when it is
8 issued and issue a regulatory guide on it, taking a
9 position usually more stringent than the IEEE standard
10 itself.

11 Q And you personally have been active in writing
12 certain IEEE standards, is that correct?

13 A That is correct.

14 Q And it is correct also that engineers from other
15 electric companies have been active in writing IEEE
16 standards?

17 A Yes. The usual makeup of a working group for
18 IEEE standards includes utilities, architect-engineers, and
19 members of the NRC itself.

20 Q Can you give us some idea of the relative
21 proportion between utility personnel and NRC people in the
22 makeup of these committees?

23 A The IEEE has a requirement that the representa-
24 tion on these standard writing committees be evenly balanced
25 between utilities, private companies and -- I won't say

1 evenly balanced with the NRC, because usually there is only
2 one regulator on a working group or on a committee, as
3 opposed to several utilities and several manufacturers.

4 Q And is it correct, Mr. Sproat, that you as
5 chairman of the group have a certain amount of control
6 over establishing priorities of the issues reviewed?

7 A Not really. My job as chairman of a working
8 group that's writing a standard is primarily to focus the
9 work of the working group and try to reach a consensus on
10 issues.

11 When you have a number of divergent views coming
12 together, it is very difficult to reach a consensus, and
13 that is the idea of the standard process, to reach a
14 consensus of the industry, and that's what the chairman's
15 job actually is.

16 MS. CHESTNUT: Thank you, Mr. Sproat.

17 CROSS-EXAMINATION
18 OF JAMES J. CLAREY

19 BY MS. CHESTNUT:

20 Q Good morning, Mr. Clarey.

21 A Good morning.

22 Q My questions to you are framed in terms of your
23 prepared direct testimony, rather than specifically to
24 Exhibit 2, so if you would like to defer answering some
25 of these questions until later on, that will be fine,

1 whatever you feel comfortable with.

2 MR. HALL: We have no objection to answering the
3 questions at this time, unless Mr. Clarey needs some
4 preparation.

5 THE WITNESS: Whatever you want.

6 BY MS. CHESTNUT:

7 Q Mr. Clarey, in your testimony, you show the
8 site management organization used at Limerick. You state
9 that this structure was used for prior construction projects
10 such as Peach Bottom, is that correct?

11 A Yes, it is. At Peach Bottom we developed that
12 kind of organization, and carried it forth to Limerick in
13 an expanded fashion.

14 Q And you found that it worked well at Peach
15 Bottom, and that's why you decided to use it as the basis
16 at Limerick?

17 A We found that structure was appropriate, yes,
18 and it worked well.

19 Q Can you describe the major differences between
20 the Limerick site organization and the Peach Bottom?

21 A The major differences in my organization?

22 Q Yes.

23 A I'd say principally, although the functions
24 were somewhat similar, we had expanded roles in the areas
25 of quality, for one, where at Limerick in response to our

1 management's interest in constructing a more reliable or
2 very reliable plant we had an inspection program which
3 was developed in concert with our engineering department
4 whereby we in the field inspected the installation of
5 quite a large bit of work to insure its correctness and
6 thus later have a more reliable operating plant.

7 And that same group was also given the responsibility
8 to fulfill the inspection requirements of the one of the
9 NRC regulatory requirements, which was applied to Limerick
10 which had not existed at the time of Peach Bottom, and
11 that's the Regulatory Guide 1.29 for seismic, which required
12 the seismic design and resulting construction of various
13 plant components.

14 So, I had an organization that performed those
15 inspections. That is the area of quality. Well, one area
16 of quality, I would say a further expansion of our function
17 was to assume responsibility or at least oversight responsi-
18 bility for the Bechtel quality control program, which again
19 at Limerick was considerably larger in scope than it had
20 been at Peach Bottom.

21 At Peach Bottom, Bechtel had as I recall a rather
22 small QC organization, perhaps 20-plus people, but at
23 Limerick, a similar organization for Bechtel numbered about
24 200. And along with that, there was considerable additional
25 inspection documentation and planning required.

1 And the engineers in my group had oversight of that
2 and in fact reviewed and approved certain Bechtel documents
3 used for inspection.

4 I would say generally in the area of quality -- and
5 of course, we had, I think we had more interface with the
6 NRC at Limerick than we had at Peach Bottom, because some
7 of those organizations didn't exist at the time, for example
8 the NRC construction assessment team inspections.

9 And beyond that, reminds me of course of the
10 industry group INPO and others. So, we had more
11 involvement in informing, answering questions, providing
12 information, providing to some degree plant inspection
13 access and things like that.

14 Generally in the area of quality, they were some of
15 the differences. In the areas of project controls, we and
16 Bechtel both increased and enhanced the programs that we
17 used, and so we were quite closely involved with the
18 scheduling process and the cost forecasting process at
19 Limerick compared to Peach Bottom.

20 In the areas of general construction, I'd say we
21 had a somewhat larger group, following the construction
22 process itself, as compared to Peach Bottom.

23 Q Does that complete your answer, Mr. Clarey?

24 A I think they are the general items that would
25 come to my mind to answer that question.

1 Q. So, if I can summarize, the differences mainly
2 are in quality assurance and control areas, inspection,
3 interface with NRC, oversight with Bechtel, and the
4 magnitude of the work force; is that a fair summary of
5 your response?

6 A. I haven't named all of the activities I can
7 think of. In addition, we assumed larger -- if I may, you
8 have helped me to focus my thinking a little better -- we
9 established more rigorous controls in the procurement area
10 at Limerick, both in the subcontracting of work generally by
11 Bechtel and also in procurement, so that we were an in-line
12 organization in the purchasing or contract awarding process,
13 contract administration process including review and
14 approval of the changes and additions to subcontracts or
15 purchase orders.

16 Q. Mr. Clarey, back in the beginning of your answer,
17 you used the phrase, concern with making Limerick more
18 reliable. You did not mean to imply by that that Peach
19 Bottom is not a reliable unit?

20 A. Obviously not.

21 Q. And if I can narrow in on one of the areas
22 which you discussed, which is the interface with the NRC,
23 items that you mentioned were providing information to the
24 NRC, answering questions propounded by the NRC and providing
25 access for NRC inspections.

1 A. Yes.

2 Q. Did you have any section that was specifically
3 charged with the responsibility of monitoring on a
4 continuing basis the changing regulatory requirements
5 issued by the NRC?

6 A. I would say we didn't have such an assignment
7 per se, but I think, knowing the organization chart that I
8 provided, I have one category there of technical analysis.

9 And so generally I would make assignments to one of
10 the engineers in one of those groups. I guess an example I
11 can think of would be the NRC I&E Bulletin 79-02, which
12 established requirements, formal, very rigorous requirements
13 for the installation of concrete expansion anchors and
14 supports used for various plant components.

15 In that case, we had to assure that the NRC
16 requirements of that bulletin were adequately addressed. Of
17 course, that would principally be by Bechtel, and so our
18 role was to assure that both Bechtel Construction and
19 Bechtel Quality Control would properly carry out the
20 requirements that were developed to respond to that bulletin.

21 Those requirements would principally be established
22 by the engineering departments of each company, and so our
23 role would be to pick up in the construction area to assure
24 a proper and continuing response to those requirements.

25 So, I assigned these activities on a case by case

1 basis.

2 Q So, as each requirement or change was issued by
3 the NRC, you would then assign it to an engineer, probably
4 the technical analysis section, to monitor compliance with
5 that requirement, is that correct?

6 A Yes, generally so, yes.

7 MR. HALL: Ms. Chestnut, if you will permit me, your
8 question appears to suggest a greater role for Mr. Clarey
9 than I think he has testified to.

10 Mr. Clarey is the construction individual. The
11 direct interface between the NRC I believe, if you look at
12 Mr. Kemper's testimony, comes through the engineering
13 division. Is that correct, Mr. Clarey?

14 THE WITNESS: The interfaces with the NRC would come
15 from various organizations within our company. The things
16 that I was thinking of as I answered that question were,
17 for example, should the resident NRC inspector at Limerick
18 have a particular question about some portion of the work,
19 it developed over time that he might choose to contact me or
20 someone in my group directly and ask us for information or
21 ask us to show him the particular item. That was what I was
22 thinking of.

23 At the job site, their principal contact at the job
24 site would be our quality assurance organization.
25

1 Q So, they would contact you to insure that there
2 was compliance of construction activities with the NRC
3 requirements?

4 A I guess I can't answer yes to that. It wouldn't
5 be, contact me to see if there were compliance. It would
6 be more for information and discussion about some activity
7 they had an interest in.

8 And yes, it could be an activity where there might
9 have been or there might be a concern or a problem, yes.

10 Q So, I guess I am still a little unclear, Mr.
11 Clarey. Was there any specified section or individual who
12 had an ongoing responsibility to insure that construction
13 activities were done in compliance with NRC requirements, or
14 was that done on an item by item basis as the need arose?

15 A I'm sorry, I guess I misunderstood. That seems
16 to be a different question than I thought you asked
17 originally.

18 In terms of assuring that construction was carried
19 out in compliance with NRC requirements, we had what I would
20 call an informal responsibility, just in general terms of
21 good construction practice, which was always the construc-
22 tion division's responsibility.

23 In the nuclear plant construction, of course, the
24 formal responsibility lies with the company's quality
25 assurance organization, because of the way the laws read.

1 But yes, in general terms, we would to the best of
2 our ability be looking for the compliance of construction
3 with the specifications and drawings which would reflect
4 the NRC requirements in the ultimate.

5 Q. Mr. Clarey, if the NRC were to issue some new
6 change, how would it be transmitted to you? What would be
7 the process by which you would become aware of that?

8 A. I think the first indication we would have of a
9 change would be through project information, for example.
10 Discussions might occur at the monthly project review
11 meeting where new items might be discussed.

12 The engineering people would perhaps bring up an
13 issue. There are many ways that these things would come
14 about. Bulletins would be issued. I mentioned the I&E
15 Bulletin, 79-02. Another one was 79-14.

16 These things are issued by the NRC and are
17 distributed throughout the project. So, we would become
18 aware of these things in various ways.

19 Say an NRC requirement required a scope change to
20 the project, had to add some computers and things like that.
21 I would become aware of it through sources of information
22 from the project, but the actual issue of that information
23 to us would be through additions or revisions to the project
24 specifications and drawings.

25 And it is at that point that construction reacts to

a scope change or increase.

1
2 Q You just used the phrase, Mr. Clarey, sources
3 of information on the project. What did you mean by that,
4 or I should say, who did you mean?

5 A I would mean by that letters which were
6 distributed throughout the project by our project manager.
7 If there would be communication between the company and the
8 NRC or with Bechtel on a topic that pretty much in any way
9 related to construction, I would receive a copy of that
10 document and would be aware of something that might be
11 about to happen.
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1 Q. So the company would be informed of these NRC
2 changes, and the information would be transmitted to you
3 by sources in the company?

4 A. Yes.

5 Q. Now, Mr. Clarey, you say that "Unit rate com-
6 parisons were the principal tool used to monitor labor
7 effectiveness."

8 A. I'm sorry; what was that again?

9 Q. You made the statement in your testimony that
10 "Unit rate comparisons were the principal tool used to
11 monitor labor effectiveness."

12 A. Yes.

13 Q. If I can simplify, is it correct that what you
14 mean there is that actual installation rates were compared
15 to the forecasted rates?

16 A. Again, just to be consistent, we have to use
17 the word "unit rates." Unit rates are different from
18 installation rates in the way we use them.

19 A unit rate is the manhours required to install a
20 unit of a commodity, manhours per cubic yard of concrete,
21 for example; whereas, installation rate, as we use it,
22 means the quantity of a commodity which should be or has
23 been installed over a period of time, for example, so many
24 feet of small pipe per month.

25 Your original question had to do with unit rates,

1 which is manhours per unit of a commodity to install.

2 Q On page 19, line 1, of your testimony you use
3 the term "unit rate comparisons."

4 A Yes.

5 Q And what you are doing is measuring productivity
6 there; is that correct?

7 A Yes.

8 Q It is correct, Mr. Clarey, is it not, that the
9 validity of this comparison depends on the accuracy of the
10 forecast that was made?

11 A The comparison will be valid if it is accurately
12 done. We make an estimate; we think it is going to take so
13 many hours to do something. In general terms, that's the
14 goal, although that is an average. I could get into a
15 discussion of how the average is a long-term item and
16 actual unit rates vary based on completion percentage of a
17 particular item.

18 But that is the general use of the item. We esti-
19 mate it will take so much to do it, and then we watch how
20 much it really does take us to do it. That's the purpose.

21 Q If your estimate is off, it doesn't really make
22 a difference how different the actual is compared to it,
23 does it?

24 A If your estimate is off, it doesn't make any
25 difference how much the actual is?

1 Q. Compared to it. The comparison would be invalid
2 if your estimate is off.

3 A. I guess I'm not -- the estimate is the base.
4 We use it to establish a performance, really; the estimate
5 is the base, and the actual is compared to the base.

6 Q. And I am saying that if one component of this
7 comparison is incorrect, then the whole comparison is
8 incorrect.

9 A. I guess I don't follow your logic. An estimate
10 or a forecast is the best effort of the knowledgeable
11 parties to determine what they feel can be done.

12 If that turns out to be high or low, it will
13 probably be recognized and be adjusted after a reasonable
14 period of time has elapsed. It is not sensible to continue
15 with an unrealistic target, for example.

16 Q. I think I'm still a little unclear. Did you
17 agree with my general principle that if the estimate is
18 off, the comparison between the estimate and the actual
19 will also be skewed?

20 A. I guess, no, I have to say I don't agree with
21 that posture as I understand it.

22 Q. Why would that be incorrect?

23 A. Because, as I would interpret it, it is merely
24 -- and since you're referring to my testimony, "Unit rate
25 comparisons were the principal tool used to monitor labor

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1 effectiveness," it is just what I'm saying. A best esti-
2 mate is made of what it will take to install a cubic yard
3 of concrete, again. That is the estimate. And given that
4 estimate, and modifying it for some other circumstances,
5 which, again, I said I wouldn't get into right off the bat,
6 but we watch that activity to see whether or not the work
7 is being carried out so that the budgeted rate is being
8 achieved.

9 If it is not -- and the intention of the whole
10 process is to have a way to know how we are progressing.
11 If we are progressing better than budget, as we did in the
12 concrete construction at Limerick -- we did a fine job -- in
13 that case, we would perhaps change the budget if it were
14 significantly lower than originally estimated to set a new
15 goal. After all, if we can see we're going to do something
16 for fewer manhours, we would make an adjustment which would
17 result in a reduction in the estimated cost of that work
18 and be reflected in the total project.

19 Similarly, if an item is progressing at a unit rate
20 above budget, we would look for the reason for that. That
21 is the purpose of the "monitoring labor effectiveness,"
22 which, by the way, encompasses myriad items and not the
23 worker himself; he is only a part of the process. Labor
24 effectiveness is sometimes looked at in too narrow a view.

25 Q. Mr. Clarey, I think we are getting a little far

1 afield from my question, which I am trying to keep as
2 simple as possible.

3 The point I am trying to make is that PECO looked
4 not only at the actual unit rates, they compared the actual
5 rates to the forecasted unit rates to see how the perform-
6 ance measured to that estimated; is that correct?

7 A. Yes; that is absolutely correct.

8 Q. And this comparison, not the level of actual,
9 but this comparison, since you're comparing one rate to an
10 estimated rate, depends on the accuracy of the estimate
11 that was made.

12 A. I'm sorry; I hope I'm not totally misunderstand-
13 ing you, but I don't agree. It is a comparison. And you
14 thought it was too long an answer, but I have just ex-
15 plained to you how I interpret that.

16 Q. We understand, Mr. Clarey, that it is a compari-
17 son. I think we can move on unless Mr. Hall wants to say
18 anything here.

19 MR. HALL: No; no. I am satisfied.

20 BY MS. CHESTNUT:

21 Q. Let me try it another way. Mr. Clarey, if the
22 company makes an estimate in its budget for installation of
23 concrete, for example, and that estimate is too high, it
24 is projected that it will take too much time or cost too
25 much money than another more accurate estimate would make --

j6

1 are you with me so far?

2 A. Yes; I'm listening to your scenario.

3 Q. So that when the actual data from installation
4 of that concrete is available, when it is compared to this
5 inflated estimate, the differential will not be as great
6 as if the estimate had a lower level in it.

7 A. What did you mean by "inflated estimate"?

8 Q. I'm saying as a hypothetical, just assume that
9 the estimate is off and it is too high.

10 A. "Inflated" has a different connotation to me.
11 "Inflated" means that one intentionally made an estimate
12 higher than he thought it really should be.

13 Q. No; I'm not assuming that at all, Mr. Clarey.

14 A. Okay.

15 Q. Sometimes estimates are not exactly on point.
16 Sometimes they are too high; sometimes they're too low.

17 A. Estimates are never correct.

18 Q. Sure. We understand that. I guess that is the
19 point I'm trying to make here. An estimate is an estimate.

20 A. Right.

21 Q. It is the best guess --

22 A. Yes.

23 Q. -- based on information available at that time.

24 A. I agree.

25 Q. And it may be different from what the actual

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1 experience turns out to be.

2 A. Yes.

3 Q. Was there any comparison made, Mr. Clarey, be-
4 tween Limerick's actual installation rates and those of
5 other nuclear units?

6 A. I guess there were.

7 Q. I'm sorry; did you say yes?

8 A. Yes.

9 Q. What units were compared to Limerick?

10 A. I can only answer that we, on a continuing
11 basis, would compare ourselves with other projects, and
12 usually those projects would be some of our neighboring
13 utilities through our communications with them.

14 Q. Would one be PP&L, the Susquehanna Unit?

15 A. Yes.

16 Q. Was this done as any kind of a formal process?

17 A. Principally, it was through communications, more
18 informal communications. However, we did have more formal
19 reports of information from other projects.

20 Q. How would you get that information on a formal
21 basis? Would you ask a neighboring utility to supply in-
22 formation on a particular item so you can examine your
23 experience compared to that utility's?

24 A. Yes, we do that; yes.

25 MS. CHESTNUT: Your Honor, I would like to make an

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1 on-the-record data request at this point. I would like
2 the company to supply copies of any documentation relating
3 to ongoing comparisons with Susquehanna during the con-
4 struction of Limerick 1.

5 MR. HALL: We will review that, Your Honor, and
6 let Ms. Chestnut know our ability to do that.

7 JUDGE MATUSCHAK: Very well.

8 BY MS. CHESTNUT:

9 Q Mr. Clarey, you, in your testimony, discuss the
10 work sampling program.

11 A Yes, ma'am.

12 Q You say that the program used statistical
13 sampling to identify non-productive time. Is that a
14 correct summary of the purpose of this program?

15 A Could you help me with the page where you are --

16 Q Sure. That is page 19, lines 20 through 22.

17 A Yes; "to identify non-productive time, that is,
18 time not yielding direct or indirect work." Yes.

19 Q Did this program indicate that certain areas of
20 the plant or certain construction activities experienced
21 more non-productive time than others on a consistent basis?

22 A It would show areas where direct work, which was
23 the real measuring point -- just like unit rates -- but the
24 direct work would appear to be lower than it might be; yes.

25 Q Were there any problem areas discovered?

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A. Using that information, which is very general information, our next step would be to work with our contractors to seek reasons for those areas of low direct work.

Examples of those kinds of things, or when we found items which appeared to be reasons for it, we would take steps to correct them.

Q. Can you give us a specific example of how this program worked?

A. For example, one of the several categories that the surveyors would note would be whether or not they saw workers walking, traveling it was called, and whether they were traveling with something in their -- with tools or materials in their hands or possession or not. That kind of finding would lead us to look at it.

In a particular area, for example, we were able to see that a toilet facility was not as readily available as it might be, or some materials, often-used materials, could be better located so that the traveling time by the worker could be reduced.

So we would react to that in that way, by providing those facilities.

Q. Was this a hypothetical example, or did this actually occur?

A. Actual, yes; an actual example. Documented?

j10

1 No, I don't think so; but an actual example.

2 Q Do you know of some other areas where non-
3 productive time was reduced by using this program?

4 A Yes. The other typical one is that on very
5 large projects a very large work force is more of a
6 challenge to manage than a small one, obviously, and indi-
7 viduals are prone to be tardy or to try to leave work
8 earlier than the working hours; so those kinds of things
9 are continually monitored and steps taken to control them.

10 There were other categories in the work sampling:
11 late start/early quit, at the beginning and end of the
12 shift or at lunchtime.

13 Q When you refer to this as a special program,
14 the term "special," does this mean that this was a new pro-
15 gram that you developed or that it is used only in partic-
16 ular projects? Can you give us some idea of what you mean
17 there?

18 A I would say for one thing, to the best of my
19 knowledge, nothing like this had ever been done on any
20 other construction project in the Philadelphia area, for
21 example; to the best of my knowledge, I am fairly certain
22 of that. So in that sense it certainly was special, and it
23 required special treatment and communications with craft
24 labor unions to explain to them what our goals were.

25 Other companies had used it. It is very old. I

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1 think it was probably -- the concept was developed as early
2 as the 1930s by some -- I forget who it was. Anyway, it is
3 an old concept, but newly applied to large construction
4 projects, although we were not the first to do it.

5 Q. Was it PECO's or Bechtel's decision to use it
6 at Limerick?

7 A. It was PECO's decision.

8 Q. PECO's idea?

9 A. Yes.

10 Q. Going on, Mr. Clarey, you talk about production
11 engineering, and you use the phrase, "where normal control
12 procedures did not readily produce desired production
13 rates." That is at page 20, lines 7 through 9.

14 Can you explain what you mean by "normal control
15 procedures"?

16 A. Normal control procedures would be the super-
17 vision of the work by the foreman and general foreman and
18 the superintendents, and the oversight by any other manage-
19 ment personnel. They would be the normal control
20 procedures.

21 Q. Was this generally a problem?

22 A. Generally a problem? Not generally a problem,
23 but a rather significant one and principally in work
24 activities which became more complex because of the rigor-
25 ous requirements, installation requirements, close

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1 tolerances, rigorous inspections, those kinds of things,
2 things that the workers weren't normally familiar with to
3 the level that they are exercised at a plant like Limerick.

4 In other words, we made every attempt to -- because
5 the work was and is more complex than the workers might
6 normally be used to, we took steps to help them, through
7 training programs, packaging of the work and materials and
8 everything that they needed to do the work, to help them to
9 carry out the installation.

10 Q. Schedule 2 attached to your testimony, Mr.
11 Clarey, is your analysis of the comparative schedules and
12 costs of Limerick and 11 other nuclear plants; is that
13 correct?

14 A. Yes.

15 Q. And I think you state in your testimony that
16 the total direct costs shown are exclusive of AFUDC, gen-
17 eral overheads and realty taxes; is that correct?

18 A. It excludes AFUDC for sure. The other --

19 Q. That is at page 37, line 14, if you would like
20 to check.

21 (Witness conferring with PECO personnel.)

22 A. Yes.

23 Q. The amount of AFUDC that would be associated
24 with each of these plants is generally a function of two
25 items, one being the cost of money, and the other being the

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1 length of time; is that correct? Would you agree as a
2 general principle?

3 A. Well, you missed -- a third very important one
4 is the actual cost itself. It is the cost of --

5 Q. You're right. I was taking that as an assump-
6 tion, but certainly that is the starting point.

7 A. Sure; time and cost of money. Yes, that's
8 true.

9 Q. So generally, the longer it takes to complete
10 a plant, the more AFUDC will be accrued in relation to it.

11 A. Absolutely; without CWIP.

12 Q. On your schedule, I would like to clarify that
13 "A" next to a date means "actual" and "S" means "scheduled."

14 A. Yes.

15 Q. So am I correct that five of the 11 plants to
16 which you compare Limerick have not yet reached fuel load?

17 A. Yes, that's correct. I don't know whether I
18 can -- one other plant has since this was prepared, but,
19 yes, as it stands there, that is correct.

20 Q. And eight of these 11 plants have not yet
21 achieved commercial operation.

22 A. I guess I had nine. Let's see.

23 Q. I was excluding Limerick.

24 A. Okay; right.

25 Q. And I think you recognize in your testimony on

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1 page 43 that the commodity quantity and unit rate data
2 that you show on Schedules 3 and 4 is not all actual as a
3 number of these plants are not yet complete; is that correct?

4 A. That's right.

5 Q. Finally, Mr. Clarey, in connection with the
6 issue of the impact of changing regulatory requirements,
7 did you do any type of analysis to determine what the im-
8 pact of the changes would have been had the plant been
9 completed at an earlier date?

10 A. No, I have not.

11 MS. CHESTNUT: Thank you.

12 Your Honor, that's all the questions I have for
13 these witnesses.

14 MR. HALL: Your Honor, we have been going for an
15 hour-and-a-half. Could we take a short recess?

16 JUDGE MATUSCHAK: Yes.

17 (Recess.)

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1 JUDGE MATUSCHAK: When you are ready.

2 Consumer Advocate?

3 MR. WERSAN: Good morning, gentlemen. My name is
4 David Wersan. I am with the Office of Consumer Advocate.
5 My questions initially are to Mr. Helwig regarding develop-
6 ment of cost information on Limerick 1 and common and
7 Limerick 2 over the time period of construction.

8 MR. HALL: Mr. Wersan, before you begin, if I could
9 just point one thing out. Mr. Sproat has to leave here
10 about 12:40, I believe, to catch a train. He is our one
11 limiting factor.--

12 MR. WERSAN: I don't have anything for Mr. Sproat.

13 MR. HALL: I simply wanted to mention that in case
14 there were other attorneys behind you who had questions
15 for Mr. Sproat.

16 MS. FERKIN: I have nothing for Mr. Sproat.

17 MR. WERSAN: I have no questions for Mr. Sproat
18 unless they are referred to him by Mr. Helwig.

19 CROSS-EXAMINATION
20 OF DAVID R. HELWIG

21 BY MR. WERSAN:

22 Q It is my understanding that when the Limerick
23 project was first initiated, all cost accounting was done
24 on a station basis; is that correct?

25 A That is correct.

Q And that continued for a number of years?

1 A Yes, sir.

2 Q What year did you start breaking out Limerick 1
3 common and Limerick 2?

4 A To my knowledge, the first attempts to divide
5 the project cost occurred at Forecast 6, and that is a
6 reference I do not have with me.

7 If I could refer to my briefcase, I can give you the
8 exact date of that.

9 Q Sure.

10 (Pause.)

11 A Forecast 6 is dated December, 1982.

12 Q When the plans first started, why did you
13 account for costs on a station basis instead of by individual
14 units?

15 A I cannot answer that. I could answer it only
16 speculatively. I could only answer that based on my
17 discussions with the people involved at the time. I cannot
18 answer that based on firsthand involvement at the time.

19 Q Do you have a general knowledge of why you think
20 it was done that way?

21 A Yes.

22 Q Can you state that?

23 A Yes. Limerick was always a two-unit plant. As
24 we've described in testimony and in responses to a number
25

1 of interrogatories, there was a substantial amount of
2 common plant. In the early days especially, the time
3 difference between the first and second units was very
4 small and there was no perceived need to unitize it until
5 we reached approximately this stage, 1982 stage, where it
6 became apparent that there was going to be a stretch-out
7 between the two projects.

8 Q When you say "very small," are you referring to
9 the two-year difference between Units 1 and 2 through the
10 late '70s?

11 A Yes. Compared to where we are now, that is a
12 very small difference, yes.

13 Q To your knowledge, what prompted the breakout
14 in Forecast 6?

15 A To the best of my knowledge, it was just the
16 factor that I described. It was the stretch-out and the
17 attempt to account for them separately in order to support
18 ratemaking and things like that.

19 Q When you refer to the stretch-out, are you
20 referring to the stretch-out that was occasioned by the
21 Commission's order in the first Limerick investigation?

22 A I won't speculate as to the cause but refer you
23 to Mr. Boyer's testimony, as gone over yesterday, that
24 described the various delays and their causes.

25 I am referring specifically to the delays listed at

1 the back of Mr. Boyer's testimony, Table 2.

2 Q The last page of his testimony?

3 A Table 2, yes.

4 Q I don't have that. Can I take a look?

5 (Document handed to Counsel Wersan.)

6 Q But that is just for Unit 1, the table you
7 showed me, isn't it?

8 A That's correct. At these announced dates, there
9 were construction target dates -- there were commercial
10 operation dates announced for Unit 2 as well.

11 Q Let me ask you this: does Forecast 6 coincide
12 with the time period when, to your knowledge, construction
13 work on Limerick Unit 2 was suspended or anticipated to
14 be suspended pending resolution of the appeals?

15 A Generally, yes. We were not doing much, if any,
16 work in Unit 2. That work that was being done in Unit 2
17 was that required to support Unit 1 only.

18 Q And you're saying as of Forecast 6?

19 A Yes.

20 Q From the time period when construction work
21 began with the construction permit, for example, in 1974
22 through Forecast 6, accounts were on a station basis.

23 Can you explain to me how the company has gone back
24 and divided costs between Limerick 1, 2 and common to
25 present a cost figure for this case?

1 A. There were a number of studies or reviews of that
2 subject made by both Bechtel and our engineering and
3 construction staffs in the Forecast 6 time frame between
4 Forecast 6 and Forecast 7. So from '82 to '84, there were
5 a number of reviews of that made.

6 I would have to review my notes to refresh my
7 memory as to the exact method used in the final splits. But
8 it was generally reviewed on a -- in general, the process
9 was that the charges were divided on a facility basis.

10 If you look at the various accounts, Non-Manual,
11 Piping Installation, Large Pipe, Small Pipe, records are
12 kept by facility, by building. There is an account sub-
13 division for the Unit 1 reactor building as opposed to the
14 Unit 2 reactor building. Similarly, there is an account
15 for those facilities that are common like the control
16 structure or the spray pond pump house.

17 So the cost charged to those various structures, so
18 to speak, was the basis for division of project costs.

19 Q. Were there costs that you could not break out
20 as designated for a specific facility or to common?

21 A. I did not break those costs myself. I did not
22 distribute those costs myself, if your question was: did I?
23

24 Q. I guess I meant that generically for PECO.
25 Were there costs that in the development of the breakout

1 could not be identified as this pipe was in Unit 1, for
2 example?

3 A. In the area of field cost, it is my understanding
4 that that was not generally a problem; that the accounting
5 is fairly clear by structure or area in the three categories
6 of Unit 1, Unit 2 or common.

7 In the area of engineering, one certainly needed to
8 make some estimates, because we did not have an accounting
9 from Day One of how much of each and every engineer's time
10 had been spent on Unit 1, common, or Unit 2.

11 Q. So then, for example, on engineering, there had
12 to be some kind of an estimate made by the company in
13 coordination with, I guess, Bechtel?

14 A. With Bechtel, yes.

15 Q. Do you know how large a portion of the costs for
16 Unit 1, a rough estimate, are for engineering?

17 A. It is on the order of 60 percent/40 percent --
18 I'm sorry; that's the wrong question.

19 Would you repeat your question?

20 Q. You cited engineering as an example of something
21 that you had to estimate the cost between units. Are we
22 talking about \$2 million, \$20 million, any ballpark figure
23 there?

24 A. I could not give you that information off the
25 top of my head without reference to a couple of books.

1 Q Do you know if the company has provided that
2 information with its cost data in this case; not in
3 interrogatories, but in the record?

4 MR. HALL: We can get you that data. I think that's
5 the best way we can respond to it. I don't know that we've
6 actually quantified it elsewhere.

7 WITNESS HELWIG: The information is contained in
8 the forecasts that have been made available.

9 BY MR. WERSAN:

10 Q Forecast 1 through Forecast 7, do you mean?

11 A That is correct.

12 Q You referred to the forecasts. Were those
13 forecasts the basis for a lot of your cost analysis in this
14 case for Limerick 1?

15 A Yes, they were. As described in Theodore Barry &
16 Associates' testimony and in my own, we relied on the forecast,
17 the Bechtel forecast, as well as our own accounting records,
18 primarily the capital authorizations and the substantiating
19 information.

20 Q You indicated engineering as one example of a
21 cost you have had to estimate. I recall in cross-examination
22 by Ms. Chestnut, you talked about distributable cost and
23 indirect cost. Do you remember those two terms?

24 A Yes, sir.

25 Q You defined, as I remember, distributable cost as

1 things like tools and supplies. Is that accurate?

2 A. It depends on the context in which you are using
3 the term "distributable." For the purposes of our cost
4 analysis as described in PECO Exhibit 2, our term "distribut-
5 able costs" were costs that were distributed as opposed to
6 distributable costs and included the direct and indirect
7 costs that were not specifically identified by cause.

8 Q. But there is in the accounting initially costs
9 that are called "distributables"?

10 A. Yes, sir.

11 Q. Tell us what those are.

12 A. They are the things that I characterized as
13 classical construction distributables. They are tools,
14 warehouse support, that sort of thing.

15 Q. How are those costs divided between the two
16 units and common?

17 A. I could not answer that without further review
18 of the records.

19 Q. Can you give me at least the general nature of
20 how you think the process was done?

21 A. I would expect that upon review, I would confirm
22 that those were treated as common.

23 Q. Then there is the term "indirects" or "indirect
24 costs." Are you familiar with that?

25 A. That is a term that is defined differently by

1 many different people.

2 Q Could you give me your definition of it as it
3 was used for developing the costs for Limerick -- or the
4 company's definition, I should say.

5 A I liked it better the first way, my definition.
6 For the purposes of our cost analysis, everything that was
7 not directly attributable to cause in the project records
8 was put in the category of distributables, and we did not,
9 therefore, need to distinguish into separate subcategories
10 which of those were classical construction distributables,
11 which of those were direct, unassignable, or indirect costs.
12 They were merely all unassignable costs.

13 Q So you are referring to your development of
14 the cost growth reconciliation in Exhibit 2 then when you
15 just gave me that answer?

16 A That is correct.

17 Q In developing for presentation to the Commission
18 the costs of Limerick 1 and common, the company did not
19 add up costs this way; they had some books of accounting on
20 how they spent dollars?

21 A That is correct.

22 Q Do you know how indirects are split up on those
23 books for purposes of costing out Limerick 1, common, and
24 Limerick 2?

25 A What do you mean by indirects?

1 Q That is why I was trying to start out with a
2 definition of what indirects were, because I thought I heard
3 that mentioned.

4 A There would be a number of indirect costs.

5 Q Can you give me some examples?

6 A Well --

7 Q I assumed that indirects is a term of art in
8 construction in terms of accounting for cost.

9 A The line of questioning does not pertain to
10 our cost reconciliation as described in Section II of
11 PECO Exhibit 2.

12 MR. HALL: I guess the difficulty, Mr. Wersan, is
13 you are asking: how did the company in its accounting
14 exhibit develop --

15 JUDGE MATUSCHAK: Could you speak louder, Mr. Hall?

16 MR. HALL: I'm sorry, Your Honor.

17 Mr. Wersan, as I understand the nature of your
18 questions, they are: how did the company develop the cost
19 of Limerick which it has included in the accounting exhibit
20 and Mr. Hill's exhibits. That was not done by Mr. Helwig,
21 although I believe the processes may have been similar. I
22 think we need to get you some better source of information
23 than what we have here.

24 These gentlemen worked on the cost reconciliation,
25 and I can't be sure that the processes were exactly the same.

1 BY MR. WERSAN:

2 Q Let me ask it this way, Mr. Helwig: it is my
3 recollection -- and correct me if I am wrong -- that in
4 the Bechtel forecast for the projects, there were items
5 noted as indirects. I assume in your development then of
6 the cost reconciliation, you had to place those indirect
7 costs somewhere; is that correct?

8 A Before responding, I would like to take a moment
9 to look at one of these forecasts. I do not offhand recall
10 a top level summary category called "indirects."

11 (Witness Helwig perusing documents and conferring
12 with PECO personnel.)

13 Q Could I ask, since I see that Mr. Clarey is
14 assisting you, maybe Mr. Clarey could define indirects and
15 whether or not those are a line item in the forecast and
16 what they represent.

17 A Let me first respond that based on a review of
18 the summary section of Forecast 6, there was not a Bechtel
19 accounting or specific identification of any category of
20 costs entitled "indirects."

21 Q How about for Philadelphia Electric Company?

22 A No.

23 MR. WERSAN: If I may then ask Mr. Clarey: is there
24 a cost item in the project that you term "indirect"?

25 WITNESS CLAREY: I, too, would have to look back at

1 some of the cost details, but it is not a category of cost
2 reconciliation that we normally address. We address manual
3 labor, non-manual labor, materials, et cetera.

4 In the manual labor category, for example, there
5 would be direct labor accounts. In my terms, indirect and
6 distributable are almost the same. Where a manual function
7 cannot be attributed to a specific activity like driving
8 a nail, then it is called a distributable or indirect manual
9 labor cost, but it is still summed in the manual labor
10 category.

11 MR. WERSAN: Your Honor, that's all the questions I
12 have for Mr. Helwig, and I'm sure that goes for Mr. Sproat
13 as well. I had initially come prepared to ask some questions
14 on other parts of Exhibit 2, but I will defer those until
15 tomorrow when Mr. Helwig will be here along with the Theodore
16 Barry & Associates' witnesses.

17 JUDGE MATUSCHAK: Very well.

18 (Pause.)

19 MR. WERSAN: I indicated earlier to Mr. Hall that I
20 had some cross for Mr. Clarey. I might as well do it now
21 if there is no problem, but maybe I should let the other
22 people go ahead of me on Mr. Helwig and Mr. Sproat.

23 MR. HALL: I would prefer that.

24 JUDGE MATUSCHAK: Very well.

25 MS. FERKIN: Your Honor, I have no questions for

1 any of these witnesses.

2 MR. MORRIS: None.

3 JUDGE MATUSCHAK: We are back to you, Mr. Wersan.

4 MR. WERSAN: Would it be prudent to let Mr. Helwig
5 and Mr. Sproat leave if they are in a time rush?

6 MR. HALL: Yes. I take it that these questions are
7 not on PECo Exhibit 2; they are on the other parts of
8 Mr. Clarey's testimony?

9 MR. WERSAN: Yes.

10 MR. HALL: If Your Honor would permit, I would ask
11 that Mr. Helwig and Mr. Sproat be permitted to step down.

12 JUDGE MATUSCHAK: Very well.

13 MR. HALL: If Your Honor would also permit, I would
14 reserve the right to call these witnesses back for redirect
15 once Mr. Wersan has finished with Mr. Clarey.

16 MR. WERSAN: You can do it now if you like.

17 MR. HALL: I have no redirect of Mr. Sproat, so he
18 can leave. Mr. Helwig will be here.

19 MR. WERSAN: I would rather resolve everything with
20 Mr. Helwig now.

21 MR. HALL: Okay; then why don't we do it now.

22 JUDGE MATUSCHAK: I would suggest that you have your
23 redirect now and be through with it. If there is nothing
24 further of Mr. Sproat, he is excused.

25 (Witness Sproat excused.)

1 MR. HALL: If Your Honor please, may we have a five-
2 minute break?

3 JUDGE MATUSCHAK: Yes.

4 (Recess.)

5 JUDGE MATUSCHAK: When you are ready.

6 MR. HALL: Thank you, Your Honor.

7 Your Honor, I have three questions on redirect, two
8 of which are for Mr. Clarey and one of which is for
9 Mr. Helwig.

10 REDIRECT EXAMINATION
11 OF DAVID R. HELWIG

12 BY MR. HALL:

13 Q Mr. Helwig, you were asked by Mr. Wersan where
14 distributable costs were located as between Units 1, 2 and
15 common, and I believe you answered that those costs were
16 generally located in common plant.

17 Would you care to revise or expand upon that answer
18 at this time?

19 A Yes, sir. I understood the question slightly
20 differently when it was asked earlier. If the question
21 generally is, "Where are distributable costs accounted for
22 on the project," they were assigned to the various areas of
23 Unit 1, Unit 2 and common.

REDIRECT EXAMINATION
OF JAMES J. CLAREY

1
2 BY MR. HALL:

3 Q Mr. Clarey, you were asked a series of questions
4 by Ms. Chestnut on behalf of the Staff with regard to the
5 activities of your site construction management organization
6 in tracking regulatory change and the effects of regulatory
7 change upon construction activities.

8 Do you recall those questions?

9 A Yes, I do.

10 Q Mr. Clarey, was your organization the only
11 organization in the company that tracked NRC regulatory
12 change requirements?

13 A No, certainly not.

14 Q Could you briefly state for me what other
15 organization there was in the company that did that and how
16 that organization provided you with information to be used
17 in your function?

18 A I would say that the principle organization
19 having that responsibility would be the Licensing Branch
20 of the Engineering Department. Then I would also say that
21 in concert with them, the specific organizations within the
22 Electrical Engineering and Mechancial Engineering Divisions
23 would then be further responsible for tracking and carrying
24 out NRC mandated changes.

25 Q Would those organizations provide information to

1 you as the result of the discharge of their responsibilities
2 for your use in the construction management process?

3 A. Again, where deemed appropriate, the project
4 system would have information of that nature distributed
5 to any of the parties who would have a need or benefit from
6 it. So it would be distributed to our group as well.

7 Q. Mr. Clarey, you were also asked a series of
8 questions by Ms. Chestnut with regard to your Schedule 2.
9 In those questions, Ms. Chestnut pointed out the fact that
10 five of the eleven plants listed on that schedule had not
11 yet reached fuel load and that I believe eight of those
12 eleven had not yet reached commercial operation.

13 Would you state for me, Mr. Clarey, your view of
14 what, if any, significance those particular facts have as
15 respects the comparison between Limerick and these other
16 plants which you depict on that schedule?

17 A. Certainly. Basically, it would cause Limerick
18 to become more favorable in the cost comparisons. As we
19 pointed out in the testimony, the fact that some number of
20 other plants in the comparison had not achieved fuel load
21 or had not achieved commercial operation, we forecasted that
22 that would probably result in increased costs for them, both
23 probably in actual cost to do the work and also schedule
24 extensions, and that, in fact, has occurred in several cases.

25 We can provide an updated exhibit to give the formal

1 update information that we have, and that information is
2 that some of the plants have extended schedules and also
3 have published cost increases.

4 Q Mr. Clarey, is it your intent to provide that
5 information for the record before the close of the proceeding?

6 A Yes, it is.

7 MR. HALL: Your Honor, that is all of the questions
8 that I have.

9 MS. CHESTNUT: Your Honor, if I may?

10 JUDGE MATUSCHAK: Yes.

11 RE-CROSS-EXAMINATION
12 OF JAMES J. CLAREY

13 BY MS. CHESTNUT:

14 Q Mr. Clarey, Mr. Hall just discussed with you
15 the comparison on Schedule 2, and you stated that because
16 a certain number of those plants were not yet complete that
17 the Limerick costs are therefore more favorable; is that
18 correct?

19 A Yes, lower than the others.

20 Q Lower than the others because Limerick is
21 complete and the others are not?

22 A Yes.

23 Q Would Limerick's position be even more favorable
24 compared to those other plants had it been completed at an
25 earlier time?

1 Q Mr. Clarey, do you have any corrections to make
2 to that document recognizing that you have already provided
3 us your corrections at pages 28 to 31? Do you have any
4 additional corrections to make to that document as to other
5 sections of the document at this time?

6 A Other than providing the updated information
7 that we just discussed, no.

8 Q And you will be providing that updated informa-
9 tion at a later time, as I understand it?

10 A Yes.

11 Q Mr. Clarey, with the corrections that have been
12 previously discussed to the statement, is the information
13 and data contained therein, and recognizing that you will
14 be supplementing Schedule 2, is that information and data
15 true and correct to the best of your knowledge and informa-
16 tion at this time?

17 A Yes, it is.

18 MR. HALL: Your Honor, I would ask that Mr. Clarey's
19 direct testimony, which has previously been identified as
20 PECO Statement No. 4, be admitted into the record.

21 JUDGE MATUSCHAK: Subject to any motions to strike
22 or any objections made in a timely fashion, the motion is
23 granted.

24

25

(Whereupon, the document marked as PECO Statement No. 4 was received in evidence.)

1
2 MR. HALL: Mr. Clarey is available for continued
3 cross-examination.
4

5 CROSS-EXAMINATION
6 OF JAMES J. CLAREY

7 BY MR. WERSAN:

8 Q. Mr. Clarey, earlier when I asked Mr. Helwig
9 about accounting for costs at Units 1, 2 and common, I
10 brought up the subject of the suspension of construction
11 at Unit 2. I assume you're familiar with the suspension
12 of construction since you were on the site during that
13 period?

14 A. Unfortunately so, yes.

15 Q. Can you tell me when the company suspended
16 or substantially reduced construction on Unit 2?

17 A. I'm sorry; I don't have that date in my mind.
18 When the order was issued, we suspended construction other
19 than for maintenance of equipment and so forth.

20 I'm sorry; I can't remember that date.

21 MR. HALL: Mr. Wersan, we can seek to provide you
22 a specific date if you wish.

23 MR. WERSAN: I don't need a specific date. I think
24 the general time frame -- I just wanted to understand whether
25 or not suspension of construction did proceed after the
order, and I think that can be indicated.

1 WITNESS CLAREY: Absolutely. In fact, very little
2 had been done in Unit 2 around that time anyway.

3 BY MR. WERSAN:

4 Q Now, I would like to ask you a few questions
5 about Limerick.

6 Am I correct that the Limerick station is designed
7 and has been built as a two-unit plant with each reactor
8 1,055 megawatts?

9 A Yes.

10 Q The design of both units is that they are
11 General Electric nuclear steam supply systems based upon
12 a boiling water reactor design with a Mark II reactor
13 containment design; is that correct?

14 A Yes, it is.

15 Q And the Limerick station has two cooling towers
16 and it is in what you call the northeast?

17 A Yes.

18 Q In fact, it is in Pennsylvania, as we all know,
19 and Bechtel was the architect/engineer; is that correct?

20 A Yes, it is.

21 Q Now, if I could refer you again to Schedule 2
22 of your testimony and the cost comparison you show there.
23 This is a cost comparison of boiling water reactors with
24 commercial operation dates of 1982 to 1989 including AFUDC
25 and a few other points Ms. Chestnut brought out before?

1 A. That is true.

2 Q. In the far left-hand column, you have "Plant"
3 as a heading and then you give just capital letters except
4 for Limerick; is that correct?

5 A. That is correct.

6 MR. WERSAN: Your Honor, at this time I would like
7 to mark for identification OCA Exhibit 61, which is the
8 company's response to IR-OCA-4-22 in which the list of
9 letters are identified with reactors by name.

10 I would note that Mr. Clarey indicated in his
11 testimony that he provided the letters to provide some
12 protection. This list was developed by the OCA and we
13 requested that the company confirm it.

14 JUDGE MATUSCHAK: Very well; so marked.

15 (Whereupon, the document was
16 marked as OCA Exhibit No. 61
for identification.)

17 BY MR. WERSAN:

18 Q. This is the list you provided, Mr. Clarey; is
19 that correct?

20 A. Yes, it is.

21 Q. Now, you have stated in your testimony at
22 page 37 with reference to the plants you have in Schedule 2
23 at line 24, "The comparison group was so limited to include
24 only those plants with construction costs that were affected
25 by the same factors present at Limerick, i.e. principally

1 plant design and regulatory environment." And you go on
2 to say, "Only BWRs were included because differences in
3 design have increased their costs relative to plants having
4 a pressurized water reactor ("PWR") design. For example,
5 the BWR containment design has resulted in greater congestion
6 within the primary containment and in more equipment being
7 exposed to radioactive materials."

8 A. Yes.

9 Q. Now, in addition to providing a comparison of
10 Limerick to your entire list, A through L, of plants, you
11 have also compared Limerick to what you call "Northeast
12 BWRs" in your testimony and in your schedule; is that
13 correct?

14 A. Yes.

15 Q. Am I correct that the five northeast BWRs that
16 you are referring to in your comparison are Susquehanna,
17 Limerick, Hope Creek, Shoreham and Nine Mile Point 2?

18 A. Right.

19 Q. And those would be letters B, D, I, K and L?

20 A. Yes.

21 Q. Am I correct that all five of these have GE BWR
22 designs?

23 A. They are BWRs, and -- I'm sorry -- I believe that
24 is so. I am not absolutely sure. They must be, but I really
25 have to say that Nine Mile 2, I'm not certain, but I'm

99 percent certain it is.

1 Q Of these five plants, which are in Pennsylvania?

2 A Limerick and Susquehanna.

3 Q Of those five, which of the plants are the
4 first units of a two-unit plant where the company construct-
5 ing it has or plans to finish both units?

6 A I would say that would be Susquehanna, Limerick.
7 Hope Creek is a single unit; Shoreham is a single unit; Nine
8 Mile is -- I guess that's a stand-alone. Really, Nine Mile
9 2 I think is a separate plant.

10 Q That is my understanding, too.

11 Of those five, which has Bechtel as its architect/
12 engineer?

13 A Susquehanna, Limerick, Hope Creek.

14 Q Of those five, which have cooling towers?

15 A I'm sorry; I can't answer as to the type of
16 cooling water facility at Nine Mile or Shoreham. Hope Creek
17 has a type of cooling -- I don't believe Hope Creek has the
18 Limerick-type tower, but I'm not certain.

19 Limerick and Susquehanna have the natural draft
20 towers.

21 Q Of those five, which plants are in commercial
22 operation today?

23 A Susquehanna is the only one; Limerick being
24 close to commercial operation. Of the five you're talking;
25

1 is that right?

2 Q Yes.

3 A Susquehanna; Limerick is very close; Hope Creek
4 has not loaded fuel; Shoreham has loaded fuel but is not in
5 commercial, at least our latest report; and Nine Mile has
6 not loaded fuel.

7 Q Of those five plants, which took less than 110
8 months to go from construction to fuel loading?

9 A The Susquehanna plant -- of the five again,
10 Mr. Wersan?

11 Q Yes; the five northeast is what I am referring
12 to.

13 A Susquehanna took less than 110 months. That is
14 the only one.

15 Q Again, of the five northeast plants, do you know
16 whether any cost caps have been agreed to or been imposed
17 upon the respective utilities by the Commissions in those
18 states? When I say "cost cap," I mean construction capital
19 cost.

20 A A capital cost ceiling of some type?

21 Q Yes.

22 A I know that Hope Creek has such an arrangement.

23 Q Are you aware whether Nine Mile 2 has one?

24 A I'm not certain, but I believe Nine Mile 2 does,
25 yes.

1 MR. HALL: That is correct.

2 BY MR. WERSAN:

3 Q Of those five, which plant has had a utility
4 commission rule that approximately \$1.4 billion of costs
5 were imprudently incurred?

6 A The plant that I know of that has had an adverse
7 ruling such as that was Shoreham.

8 Q Yes; that's right.

9 MR. WERSAN: That's all the cross I have. Thank you,
10 Mr. Clarey.

11 JUDGE MATUSCHAK: Ms. Chestnut, do you have any
12 cross?

13 MS. CHESTNUT: No, Your Honor.

14 JUDGE MATUSCHAK: Do you have any cross?

15 MS. FERKIN: Nothing, Your Honor.

16 MR. MORRIS: None.

17 JUDGE MATUSCHAK: Any redirect?

18 MR. HALL: Your Honor, if I could have a couple
19 minutes.

20 JUDGE MATUSCHAK: All right.

21 (Recess.)

22 JUDGE MATUSCHAK: Back on the record.

23 MR. HALL: Your Honor, I have no redirect for
24 Mr. Clarey.

25 JUDGE MATUSCHAK: Very well. The witness is

1 excused.

2 (Witness Clarey excused.)

3 MR. HALL: Your Honor, we have available today
4 Mr. Soppet and Mr. Kemper. We were going to put Mr. Soppet
5 on first. I don't know if Your Honor wants to do that
6 and then break or break now.

7 JUDGE MATUSCHAK: I have about 18 minutes after 12:00.

8 MR. HALL: How long do people think they will be?

9 Can we go off the record?

10 JUDGE MATUSCHAK: Yes.

11 (Discussion off the record.)

12 JUDGE MATUSCHAK: Back on the record.

13 MR. WERSAN: Your Honor, before we put Mr. Kemper
14 on, can I move in OCA Exhibit No. 61?

15 JUDGE MATUSCHAK: Yes.

16 MR. HALL: No objection.

17 JUDGE MATUSCHAK: Fine. OCA Exhibit 61 is admitted.

18 (Whereupon, the document marked
19 as OCA Exhibit No. 61 was
20 received in evidence.)

21 Whereupon,

22 JOHN S. KEMPER

23 having been duly sworn, testified as follows:

24 DIRECT EXAMINATION

25 BY MR. HALL:

Q Mr. Kemper, will you please state your full

1 name and business position with Philadelphia Electric
2 Company?

3 A. My name is John S. Kemper. I am Vice-President
4 of Engineering and Research for the Philadelphia Electric
5 Company.

6 Q. Mr. Kemper, do you have before you a document
7 entitled in the right-hand corner "PECo Statement No. 2,
8 Direct Testimony of John S. Kemper"?

9 A. I do.

10 Q. Is this document, in fact, your direct testimony
11 for use in this proceeding?

12 A. Yes, it is.

13 Q. Mr. Kemper, do you have any corrections to make
14 to this document at this time?

15 A. I have no corrections at this time.

16 Q. Mr. Kemper, if I were to ask you the questions
17 contained in this document, would your answers be as set
18 forth therein and would they be true and correct as of this
19 time?

20 A. Yes, they would.

21 MR. HALL: Your Honor, I would ask that Mr. Kemper's
22 direct testimony be identified as PECO Statement No. 2 for
23 use in this proceeding.

24 JUDGE MATUSCHAK: So identified.
25

1 (Whereupon, the document was
2 marked as PECO Statement
No. 2 for identification.)

3 MR. HALL: I would ask that it be admitted into the
4 record.

5 JUDGE MATUSCHAK: It will be admitted into the
6 record subject to any timely motions to strike or any
7 timely objections.

8 (Whereupon, the document marked
9 as PECO Statement No. 2 was
received in evidence.)

10 MR. HALL: Mr. Kemper is available for cross-
11 examination. I understand that we are going to limit the
12 cross to Ms. Ferkin prior to the break.

13 JUDGE MATUSCHAK: Yes.

14 MS. FERKIN: Thank you.

15 CROSS-EXAMINATION

16 BY MS. FERKIN:

17 Q. Good morning, Mr. Kemper.

18 A. Good morning.

19 Q. Mr. Kemper, I am going to ask you about a
20 response that you provided to an interrogatory. Do you have
21 your response to Interrogatory OCA-2-42?

22 A. Yes, I do.

23 Q. Was that response prepared by you or under your
24 direction?

25 A. Yes, it was.

1 Q As I understand it, that response provides
2 information with respect to expected capital improvements,
3 capital additions, to be made at Limerick 1 and common
4 facilities.

5 A After commercial operation, yes.

6 Q With respect to Item 2 in the response,
7 Mr. Kemper, Sub-Item A, condenser galvanic protection, would
8 I be correct that the cost listed there is to be expended
9 to deal with corrosion in the condenser?

10 A Yes. That is a one-time capital cost to correct
11 a problem that developed during our pre-operational test
12 program.

13 Q Would I be correct that you expect Items B
14 through E under Item 2 in that response to also be one-time
15 expenditures?

16 A Yes.

17 Q Now, Item 3 in IR-OCA-2-42 indicates that a
18 management forecast for capital additions has been prepared
19 for Limerick 1 and common; is that correct?

20 A That is correct.

21 Q When was that forecast prepared?

22 A At budget preparation time this year in June,
23 July, in that time period, we forecast the budgeted for
24 the capital expenditures for the next year in detail and then
25 look out in general and average out over the next ten years

1 what we believe our capital requirements will be for all of
2 our projects, and this is specifically for Limerick.

3 Q With respect to the forecast data, have you
4 prepared or do you have available a breakdown of the
5 capital expenditures on a year-by-year basis?

6 A No, I do not. Basically, we have looked at
7 the trend in the industry. We've looked at what we've had
8 to accomplish at Peach Bottom over a several-year period.
9 We look at Limerick and we say, in general, over the next
10 ten years on average we will be spending about \$12 million
11 a year for capital improvements on the entire Limerick
12 generating station, both Limerick 1 and 2.

13 Q With respect to the \$12 million per year figure,
14 Mr. Kemper, would it be fair to say that you've allocated
15 about half of that figure for wear and tear and about half
16 of it for, let's say, regulatory requirements?

17 A On average over the ten-year period, specific
18 year, year by year, I can't state. It depends on whether
19 you have a refueling outage that year or not, whether it's
20 just normal operation that year. So it will vary from year
21 to year. But on average, yes, it is a general review of
22 what is going on in the industry and the requirements as we
23 can see them best at this time.

24 MS. FERKIN: Thank you. I have no further questions.
25 Thank you, Mr. Hall. Thank you, Mr. Kemper.

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THE WITNESS: Thank you.

JUDGE MATUSCHAK: I think we will defer anything further until after the lunch recess. It is about 12:25. Let's recess until 1:30.

(Witness temporarily excused.)

(Whereupon, at 12:25 p.m., the hearing was adjourned, to be reconvened at 1:30 p.m., this same day.)

AFTERNOON SESSION

(1:30 p.m.)

JUDGE MATUSCHAK: When you are ready.

Whereupon,

JOHN S. KEMPER

having previously been duly sworn, testified further as follows:

CROSS-EXAMINATION

BY MS. CHESTNUT:

Q Good afternoon, Mr. Kemper.

A Good afternoon.

Q Mr. Kemper, are you familiar with the Susquehanna Nuclear Station?

A Yes, ma'am.

Q Do you know what period of time its construction took?

A Approximately, yes.

Q Could you give us that information?

A I believe they started around '74 and they finished around '82.

Q When you say "finished," do you mean began commercial operations or fuel load?

A I believe they had -- I don't know specifically. Sometime in '82 I believe they started to load fuel. When commercial operation came -- maybe six months later; I

1 don't know exactly.

2 Q Do you know how much the plant cost?

3 A Not -- I could look it up. I don't know offhand.

4 Q If you don't know, that's fine.

5 A No, I do not know specifically what it cost.

6 Q Do you have any reason to believe that Susquehanna
7 is not a safe, reliable and licensable plant?

8 A They have their license so the Nuclear Regulatory
9 Commission has given them their license, so that agency
10 has made that determination. I have not.

11 Q Do you have any reason to believe that Susquehanna
12 is not of equal quality to Limerick in terms of construc-
13 tion?

14 A In my judgment -- I have not looked at the
15 quality of Susquehanna specifically. All I can relate
16 to is the quality of Limerick, and my general overview
17 is, and in the reviews that have gone on by other author-
18 ities and by other people, Limerick is the highest quality
19 plant in the United States.

20 Q On page 5 you refer to Limerick's cost and say
21 that it "is no greater than the average plant constructed
22 today."

23 A Page 5 of my testimony?

24 Q Yes, at lines 15 and 16.

25 A Despite the problems, "Limerick's cost is no

1 greater than the average plant constructed today."

2 Q Were you making a general statement there, or
3 were you referring to a specific analysis?

4 A I was referring specifically there to the
5 comparison work that our fellows have done on the Utility
6 Users Group, looking at the work that Jim Clarey has done
7 in preparation for these proceedings, the data that is
8 there, to see where Limerick rests with respect to the
9 rest of the utilities, and specifically the Northeast
10 utilities; that's what the basis of that statement is.

11 Q But you did no analysis yourself?

12 A I did not.

13 Q Mr. Kemper, were there any bonus or penalty
14 provisions included in the Bechtel contract?

15 A I would have to go back to the very, very early
16 days, 1968-'69-'70, somewhere in that time frame. There
17 may have been at that time period, but I can't specifically
18 remember. I know that when the plant was continually
19 being delayed and we were having all of the changes, the
20 idea to have a bonus/penalty contract with an architect/
21 engineer constructor is meaningless.

22 Q So your answer is you don't know specifically?

23 A I do not know specifically from the beginning,
24 but I know from about -- from construction start on there
25 was no bonus/penalty.

1 Q Now, further on in your testimony on page 39
2 you briefly discuss the Mark II problem, which you say
3 first arose in 1975. Do you see that reference, Mr.
4 Kemper? That is the last paragraph of that page.

5 A Yes.

6 Q At that time the Limerick project schedule
7 called for a budget of \$1.2 billion and a fuel load in
8 1980; is that correct? Or would you accept that subject
9 to check?

10 A I'll accept that subject to check.

11 Q And you state in your prepared direct testimony
12 that the Mark II problem was not resolved until 1981 to
13 1982?

14 A That is correct.

15 Q Is it your position, Mr. Kemper, that the Mark
16 II problem was not a factor in the decision in 1976 to
17 delay the completion?

18 A There was a series of items, not one specifically.
19 Back to 1976 there were several items of concern. It was
20 the concern of cash, it was the concern of load growth,
21 and it was the concern of the resolution of the Mark II
22 problem. Back in 1976 I believe there was either a one
23 or two month delay just to review and evaluate and see
24 what would be the full impact of the Mark II problem; and
25 at that time in some of the reviews that were going on,

1 and the people that we had working on committees on the
2 Mark I problem as well as the Mark II problem, we realized
3 at that time that it was going to take several years to
4 resolve the Mark II problem.

5 Q So this was one of several factors that the company
6 considered in arriving at this decision in 1986?

7 A That is correct.

8 Q Mr. Kemper, do you know the dollar amount asso-
9 ciated with GE's design related to the Mark II problem?
10 Do you know the dollars associated with this problem, I
11 should say?

12 A I don't know the net result of what it cost us
13 to do in the field to make the corrections and the add-ons
14 and to get it all finished, but you have got to stop and
15 pause and review how much of that money had to be spent
16 to accomplish the task in order to meet the loading
17 criteria that came out of Mark II. If it was a criteria
18 to meet those loads, we would have had to spend the money
19 to meet that design, and those costs in increase over and
20 above what we believed it would have been initially are
21 described in Schedule 2, and what the fellows have gone
22 through to resurrect and point out the cost increase in
23 that area.

24 But the design was -- back in the beginning we
25 believed we had a firm design, a firm criteria.

1 Unfortunately it turned out, as a result of results
2 throughout the world, that that was not the proper criteria,
3 it was not the proper design. Until it was evolved and
4 iterated through many, many years of design and testing
5 and development, we finally found out what the loads were.
6 If we had known those loads back in 1975 we would have
7 probably incurred those costs to build the plant anyway
8 because that's what you had to do to build it.

9 Q So you are saying that there were no additional
10 dollars associated with the redesign, with GE's redesign?

11 A There were additional designs to meet the new
12 criteria, but if those criteria had been the initial
13 criteria that's what it would have cost.

14 Q Do you know what the dollars associated with
15 those new criteria were, broken out?

16 A Not specifically. I believe they are spelled
17 out in some detail in the Schedule 2 that has been supplied.

18 Q Do you know if litigation is being contemplated
19 against GE?

20 A I do not.

21 Q Would you know if litigation was being contem-
22 plated?

23 MS. HALL: Ms. Chestnut, one thing I should
24 mention is that Mr. Kemper is not the witness that we
25 presented with regard to Mark II. Mr. Boyer is the one

1 on that.

2 MS. CHESTNUT: I was asking in his position if
3 he would be aware of it.

4 THE WITNESS: I'm not aware of any litigation, but
5 if it as going to be proposed or suggested I assume that
6 our Legal Department would discuss it with us.

7 BY MS. CHESTNUT:

8 Q Mr. Kemper, you discuss in your testimony the
9 efforts by PECO to procure certain major pieces of equip-
10 ment on its own.

11 A Yes.

12 Q And I assume that the reason that the company
13 would do that would be to save money; is that correct?

14 A Two reasons. Costs are always a consideration,
15 but, more importantly, we have found down through the
16 years that if we make the contact, if we make the agreement
17 and if we make the relationship with the supplier of the
18 piece of equipment, we are the ones that have to live
19 with that piece of equipment for the next ten or 15 or
20 20 or 30 years. And if we establish that core, that
21 relationship, that specification with that company from
22 the very beginning, we have a much better understanding
23 of our problems and programs for the future, and it's much
24 better for you to do it than to have some outside agent,
25 cold and not concerned, following what is going to go on

1 in the future years.

2 So this has been our practice all the way through,
3 that on major pieces of equipment that are associated with
4 the reliability and the operation of a power plant we want
5 to make that purchase.

6 Q And it is not simply -- as you said, it is not
7 simply a short-term financial benefit, but a long-term
8 benefit in terms of establishing a good working relation-
9 ship?

10 A They go hand in hand.

11 Q Mr. Kemper, do you have with you DR-STAFF-RPB-1?

12 A Could you help me; what is that?

13 Q DR-STAFF-RPB-1.

14 A What is the subject?

15 Q Internal audit reports. You are not listed as
16 the responsible witness, but you do mention internal
17 audits in your testimony.

18 A I do mention the internal audits, yes. That
19 was a program that we had at the job site. We instituted
20 that at the job site to stay on top of them, and we had
21 four fellows in residence. As a result of the experience
22 at Peach Bottom we found it was extremely important to
23 have our internal auditors at the job site auditing and
24 monitoring what was going on.

25 Q Do you have that document, Mr. Kemper?

1 A No, I do not.

2 Q It is voluminous, so I did not make copies of
3 it. Your counsel should have a copy of it.

4 MR. HALL: We will find it.

5 (Document handed to witness.)

6 THE WITNESS: I have it.

7 BY MS. CHESTNUT:

8 Q Mr. Kemper, I would like to refer you to the
9 internal audit report dated January 29, 1985. The pages
10 aren't numbered, but it is approximately 17 pages from
11 the end.

12 A RPB-what?

13 Q RPB-1.

14 A How many pages from the back?

15 Q I have 17, but that could be wrong. I'm sorry;
16 it is 15 pages from the back.

17 Mr. Kemper, do you have before you the internal
18 audit dated January 29, 1985, which is a report of the
19 inventory audit of materials and supplies at the Limerick
20 Generating Station Storeroom Number 348?

21 A Yes.

22 Q I would like specifically to refer you to the
23 second page of that audit under the topic "Bechtel
24 Purchase Orders."

25 A Yes.

1 Q And could you read into the record the first
2 paragraph please?

3 A "Effective July 1, 1984 PE Company Purchasing
4 Department requests Bechtel Construction, Inc. to
5 temporarily assume the duties of procuring operational
6 spare parts and materials for Limerick Generating Station.
7 Purchasing stated that it was unable to meet the needs
8 of Limerick at the time, and the expected duration of the
9 Bechtel assistance was 12 to 18 months. According to the
10 terms of the agreement, Bechtel is to pay for the ordered
11 material and in turn PE Company will be billed at their
12 costs, plus the associated cost of labor, with a 28 percent
13 mark-up. 278 payments for \$212,102 were paid by Bechtel
14 during August, September and October. Associated labor
15 cost was \$18,438 or about \$66 per order. PE cost is
16 approximately \$70."

17 Q Thank you, Mr. Kemper.

18 Now what this internal audit is saying is that for
19 a 12 to 18 month period Bechtel did purchasing for PECO
20 for certain items; is that correct?

21 A That is correct. And the purchases -- my memory
22 in this area is what we are doing here now is they are
23 making these purchases for the Operating Department for
24 spare parts for equipment that are already listed and
25 ordered, and they are just going through the execution.

1 of carrying out that, and they could do it more efficiently,
2 and our manpower and our Purchasing Department was not
3 prepared or ready to take this peaking problem; so instead
4 of going out and hiring people we took the Bechtel people
5 who knew the job and were familiar with the equipment,
6 and they could more efficiently do it than we could find
7 anyone else to do it, and it was impossible for us to do
8 it ourselves.

9 Q What do you mean by "peaking problem"?

10 A Well, you would have to go out and hire these
11 --Philadelphia Electric has a stable labor force, a stable
12 clerical force and a stable engineering force; and what
13 we do, when we have a problem just when we have to go out
14 and handle an increase in work load is we just don't hire
15 people and then fire them. We hire a contractor to do
16 it for us. If then the contractor can do it more expedi-
17 ciously, more efficiently and more economically than
18 anyone we hire them to do it, and they are there for the
19 short-term period, 12 months to two years, and then they
20 are off the job. And that's what we did here.

21 Q So the decision was made by PECO that it would
22 be more efficient and economical to have Bechtel do this
23 procurement even at the 28 percent mark-up?

24 A Yes.

25 Q Finally, Mr. Kemper, in your testimony you

1 discuss PECO's continuous contact with the NRC, and that
2 was the subject of the questioning this morning.

3 A Yes.

4 Q And Mr. Clarey, I think on redirect, indicated
5 that it was the licensing branch of the Engineering
6 Department that would be the responsible section for
7 receiving NRC regulations; is that correct?

8 A Yes. but it is a difficult subject to gather
9 all of this. There are many focal points in Philadelphia
10 Electric for liaison and coordination with the Nuclear
11 Regulatory Commission. If it's for an operating plant
12 it's with our Electric Production Department. If it's
13 for a design for a new plant or an engineering considera-
14 tion or environmental consideration it comes through out
15 Engineering Department, through my department.

16 If it's a legal matter or concern or a license
17 that comes through, it's our Legal Department. But it
18 all focuses through a procedural and programmatic method
19 to the affected department, and there are procedures to
20 follow on how to handle each and every one of these
21 communications from the Nuclear Regulatory Commission.

22 It comes in, and one of the focal points in
23 Engineering or Research is the licensing branch of the
24 Mechanical Engineering Division.

25 So they have that program and that procedure to

1 follow that.

2 Q With respect to the NRC issuances specifically
3 related to Limerick, was there any one person or section
4 of PECO who had continuous and sole responsibility for
5 monitoring those requirements?

6 A I'd say the main focal point for that was the
7 licensing group in Mechanical Engineering.

8 Q And how did the licensing group be aware of these
9 regulations; did they have somebody stationed in Washington,
10 or would you get this through the mail from NRC, or what
11 is the procedure that is used?

12 A Several facets. One, the specific guides,
13 rules and regulations are available, and we have the data
14 base that is available to all of the rules and regulations
15 that are in existence. Any changes, any notice, any
16 bulletin comes either through our Legal Department, who
17 will then forward it to us, or will come directly to the
18 Limerick project if it is specifically for the Limerick
19 project.

20 If it's a generic, it will come to our Legal Depart-
21 ment and then forward to the Engineering Department or
22 to the Operating Department.

23 So that one focal point for that is we do have legal
24 counsel in Washington that are aware and totally cognizant
25 of what is going on with the Nuclear Regulatory Commission.

1 We have several consultants whose sole function is to keep
2 us alert and aware to all -- with the planned and proposed
3 Nuclear Regulatory Commission changes. So we are constantly
4 aware and alert to pending problems in that area.

5 In addition to that, we serve on many industry
6 committees. Our Engineering and Research Department and
7 our Electric Production Department and the engineers serve
8 on industry committees and on code committees, so all this
9 focuses and passes through to the NRC, and then it is
10 finally promulgated.

11 Q You mentioned that you have consultants that
12 will keep you apprised of any NRC changes?

13 A Yes.

14 Q Can you go into a little more detail on that
15 please?

16 A I can't off the top of my head. I do not know
17 the name of the specific company, but there are agencies
18 and there are groups of which we are members and to whom
19 we pay a fee, where they look daily at the procedures and
20 records that are being generated by the Nuclear Regulatory
21 Commission, to collate them into topics and the title and
22 the programs, and forward them on a daily basis or a
23 weekly basis, in monthly newsletters, annual newsletters;
24 and in addition to that they have a data base and a computer
25 program that we can dial up right from our own office and

1 get into that record and into that program, and if we wanted
2 to find out what was going on in a specific area that's
3 all readily available and we can call that up and read
4 it and follow it and see what is happening.

5 Q Would this be an engineering firm or more of an
6 information gathering and distribution type of set-up?

7 A Yes, both.

8 Q Both. They would --

9 A It's a combination of engineers and data informa-
10 tion gathering. The engineers get it together; the data
11 processing people get it out into readable English and
12 into a proper form and proper distribution.

13 Q Do they merely transmit this data to PECO, or
14 do they also provide some kind of analysis along with it?

15 A I'm not being cute, but yes. Sometimes they just
16 forward it, and sometimes if it is of major import they
17 provide an interpretation.

18 Q Would that be Limerick-specific, or would that
19 be something that would be supplied to all the utilities
20 that you mentioned who subscribe to this service?

21 A It would be to all.

22 Q Thank you, Mr. Kemper.

23 MS. CHESTNUT: That's all the questions we have,
24 Your Honor.

25 MR. WERSAN: I do have a few questions.

CROSS-EXAMINATION

1
2 BY MR. WERSAN:

3 Q Good afternoon, Mr. Kemper.

4 A Good afternoon.

5 Q If I could refer you to page 38 of your testimony,
6 in the answer at the top of the page am I correct that
7 you are discussing the effect of new regulatory standards
8 or a more strict interpretation of regulatory standards
9 on the Limerick project, itself; is that correct?

10 A The top of 38 is a follow-on from 37 where we
11 are talking specifically about anticipated transients
12 without Scram, and that was an evolution -- if I'm reading
13 the right page?

14 Q On the bottom of page 37 you have the question,
15 "How did changing regulatory requirements impact the
16 Limerick Project," and then at the top of 38 you start
17 your answer.

18 Have you found the right place?

19 A I'm sorry; I was in the wrong one.

20 Q Let me start over to get you to the right place.

21 A Thank you.

22 Q The question on the bottom of page 37 was, "How
23 did changing regulatory requirements impact the Limerick
24 Project?" And you then go on to answer that question;
25 is that correct?

1 A That is correct.

2 Q And on the top of page 38 you state, starting
3 around line 9, for example, "these new requirements were
4 imposed after substantial construction and design had
5 already been completed. This in turn resulted in
6 extensive retrofitting and greatly increased the complexity
7 of the Project and congestion in work areas, thus hindering
8 construction performance;" is that correct?

9 A That's what it says.

10 Q And then you go on and list an example of
11 regulatory requirements which had the impact that you
12 stated, and those would be on the succeeding pages: higher
13 seismic criteria -- in the middle of page 39.

14 A Yes.

15 Q Mark II load problems, on the bottom of 39?

16 A That's correct.

17 Q Fire protection requirements, on page 40?

18 A That's correct.

19 Q TMI impact and ATWS modifications on Anticipated
20 Transients without Scram?

21 A Yes.

22 Q And on the bottom of 41 in discussing these
23 items, "disruption of the proper sequencing of work
24 activities and a reduction in labor effectiveness were
25 indirect impacts of regulatory change that resulted in

1 additional costs and delay. A project which can plan its
2 work activities based upon a firm and stable scope of
3 work can complete its work in an economic and efficient
4 manner."

5 Am I to take from that testimony that if you had
6 known when you originally designed the Limerick Station
7 about a number of these later regulatory changes that
8 you might have been able to design and initially se-
9 quence the work more efficiently and, I assume, therefore,
10 decrease in some way the costs of the project?

11 A That's a somewhat theoretical question, because
12 in the real world that didn't occur, and it would be
13 difficult for me to go back and to go through that specifi-
14 cally and follow through on that.

15 All that I know in the real world and what we had
16 to go through, and with the requirements that we had on
17 us at Limerick to incorporate all of these requirements
18 prior to fuel load, which other folks did not have to do
19 -- at Limerick we had to incorporate all of these changes
20 and get them in and get them in in that time period. So
21 in the real world I know this problem; I know what we
22 had to go through, and I know what we had to incur, and
23 what it cost.

24 To go back and theoretically say from the very
25 beginning, I really can't answer that because it probably

1 would have been in the same time period I would have tried
2 to accomplish all of this work, and it is very difficult
3 to compare the real world with the theoretical world.

4 Q If I understood your testimony, you are describ-
5 ing some of the reasons for the cost and schedule growth
6 at Limerick to the regulatory requirements, and then you
7 have the discussion on 41 and the top of 42, that if a
8 project can plan its activities upon a firm and stable
9 scope it can complete it in an economic manner; and then
10 the next sentence is, "However, projects subjected to
11 continuous increases in the scope of work because of
12 regulatory change will find it impossible to complete
13 work within estimated cost and schedule."

14 I assume you are making a comparison between the
15 two situations and ascribing a cost increase to the
16 second of new requirements; is that correct?

17 A That is correct.

18 Q And on page 42 in the middle paragraph you state
19 at about line 23 that "Many of these design changes" --
20 and I assume these are the ones you refer to -- "were
21 located in areas that were already space limited such as
22 the Reactor and Control buildings, where the most critical
23 schedule activities during the completion of the Project
24 took place. These areas normally had high levels of
25 construction manpower in order to minimize the duration

1 of critical path activities. The design changes further
2 increased the manpower congestion in these areas which
3 resulted in lower than anticipated unit rates." Is that
4 correct?

5 A That's correct.

6 Q So I assume that in those sentences I read you
7 are ascribing some of the impacts of the changing regula-
8 tory climate that you gave examples of on the preceding
9 page?

10 A That is correct.

11 MR. WERSAN: That's all the questions I have, Your
12 Honor. Thank you.

13 Thank you, Mr. Kemper.

14 JUDGE MATUSCHAK: Redirect?

15 MR. HALL: Your Honor, if I could have a few minutes
16 please?

17 JUDGE MATUSCHAK: Yes.

18 (Discussion off the record.)

19 JUDGE MATUSCHAK: Back on the record.

20 MR. HALL: Your Honor, I have one series of questions
21 for Mr. Kemper on redirect.

22 JUDGE MATUSCHAK: Very well.

23 REDIRECT EXAMINATION

24 BY MR. HALL:

25 Q Mr. Kemper, I believe, as was indicated during

1 your cross-examination, you are not the company's witness
2 who has reviewed for purposes of reporting in this proceed-
3 ing the substantive aspects of Mark II, the nature of the
4 corrections made, the timing, the basis of the decisions
5 and so forth; is that correct?

6 A That is correct.

7 Q And in addition, Mr. Kemper, is it not also correct
8 that you were not the company witness in this proceeding
9 who has reviewed and reported to the Commission in this
10 proceeding on the reasons for the company's decisions
11 respecting the 1976 and 1978 completion deferral announce-
12 ments respecting Limerick?

13 A That is correct.

14 Q Mr. Kemper, you were asked several questions
15 by Ms. Chestnut, one of which you answered that a factor
16 in the 1976 deferral announcement respecting Limerick,
17 a completion deferral announcement, that a factor in the
18 making of that announcement was concern with regard to
19 the ability to complete the Mark II program; is that correct?

20 A That is correct.

21 Q Have you had the opportunity to review that
22 answer and to consult with others at the company -- and
23 principally Mr. Boyer -- and do you wish to revise that
24 answer at this time?

25 A After my discussion with Mr. Boyer, he pointed

1 out that my concern at that time was in the late '75 and
2 early '76 time period. We had a hold on the pouring of
3 the walls of the concrete of the containment until we had
4 a better definition of some of the problems associated
5 with Mark II. That's what I was referring to at that
6 specific time period, not the overall effect of the impact
7 of what Mark II would have on the total completion schedule
8 of the Unit 1 and common.

9 Q And am I correct in understanding your answer,
10 Mr. Kemper, to be that you have no knowledge as to whether
11 or not Mark II would have had an effect on the company's
12 decision to announce a completion deferral on the plant
13 in 1976 and don't mean to so testify here today?

14 A That is correct.

15 MR. HALL: That's all the questions I have, Your
16 Honor.

17 JUDGE MATUSCHAK: Is there anything further of this
18 witness?

19 MR. WERSAN: Nothing from the OCA.

20 JUDGE MATUSCHAK: If not, the witness is excused.

21 MR. HALL: Thank you, Your Honor.

22 (Witness excused.)

23 MR. HALL: Your Honor, we now have Mr. Charles
24 Soppet who is available for presentation of his testimony.
25

1 Whereupon,

2 CHARLES K. SOPPET

3 having been duly sworn, testified as follows:

4 DIRECT EXAMINATION

5 BY MR. HALL:

6 Q Mr. Soppet, would you state your full name for
7 the record and your position with your employer, and who
8 that employer may be?

9 A My name is Charles K. Soppet. I'm Project
10 Manager for the Limerick Generating Station. I work for
11 Bechtel Power Corporation in San Francisco.

12 Q Mr. Soppet, do you have before you a document
13 entitled PECO Statement Number 7, Direct Testimony of
14 Charles K. Soppet?

15 A Yes, I do.

16 Q Mr. Soppet, do you have any corrections to make
17 to that document at this time?

18 A No, I do not.

19 Q Mr. Soppet, if I were to ask you the questions
20 contained in the document would your answers be as set
21 forth therein today, and would they be true and correct?

22 A Yes, they would.

23 MR. HALL: Your Honor, I would ask that Mr. Soppet's
24 testimony be identified for use in this record as PECO
25 Statement Number 7.

1 JUDGE MATUSCHAK: It may be so identified.

2 (Whereupon, the document was marked
3 as PECO Statement No. 7 for
4 identification.)

5 MR. HALL: And I would ask that it be admitted into
6 the record.

7 JUDGE MATUSCHAK: It will be admitted into the
8 record subject to timely motions to strike or any objections
9 that counsel may have.

10 (Whereupon, the document marked
11 as PECO Statement No. 7 was
12 received in evidence.)

13 MR. HALL: Mr. Soppet is available for cross-
14 examination.

15 JUDGE MATUSCHAK: Staff?

16 MS. CHESTNUT: Thank you, Your Honor.

17 CROSS-EXAMINATION

18 BY MS. CHESTNUT:

19 Q Good afternoon, Mr. Soppet.

20 A Good afternoon, Ms. Chestnut.

21 Q Now, Mr. Soppet, at page 8 of your prepared
22 direct testimony you state that cost estimates were "based
23 upon Limerick experience to date and Bechtel's experience
24 with similar projects." Is that correct?

25 A That is true.

Q Would you tell us what some of those similar
projects were?

1 A At the particular time this was an ongoing thing,
2 and the statement is intended to cover the complete life
3 of Limerick Generating Stations.

4 That would begin with the Peach Bottom series, which
5 were the predecessors of Limerick. And as time went by
6 Susquehanna, Hope Creek, essentially all of the BWRs that
7 Bechtel was dealing with, and any information that may
8 have come to hand regarding other stations and their
9 problems.

10 Q And would I be correct that one of the reasons
11 that Bechtel was selected as the contactor was its
12 experience in building similar plants, and that this back-
13 ground of experience would be useful in the Limerick
14 construction?

15 A So I am told.

16 Q Mr. Soppet, did you testify in the Limerick 2
17 investigation?

18 A Yes, I did.

19 Q You don't have with you the transcript of your
20 cross-examination, do you?

21 A No, I don't. I probably remember some of it.

22 (Document shown to Counsel Hall by Counsel Chestnut.)

23 BY MS. CHESTNUT:

24 Q Mr. Soppet, I am going to show you an excerpt
25 from your testimony in that proceeding and I would like

1 you to read the bracketed material into the record please.

2 A Bracked in the yellow marker?

3 Q Yes.

4 A "In that first question and answer on that page
5 you refer to another plant closest to Limerick Unit No.
6 2 in terms of design, quantities and material, regulatory
7 climate and labor market; is that correct?"

8 "A That's correct."

9 "Q Would I be correct that the plant that
10 you are referring to there is Susquehanna Unit 2?"

11 "Yes, it is."

12 Q Thank you, Mr. Soppet.

13 Is that still your position today, Mr. Soppet?

14 A I would have to go back over the total. Susque-
15 nanna would not be limited to Unit 1 or to Unit 2; it
16 would be both units. That may have been a question which
17 applies to Unit 2. Information relative to Limerick Unit
18 No. 1 would be more appropriately Susquehanna Unit 1 than
19 Unit 2. With that explanation, I have no reason why that
20 wouldn't be correct.

21 Q Thank you, Mr. Soppet.

22 MS. CHESTNUT: That's all the questions I have,
23 Your Honor.

24 JUDGE MATUSCHAK: The Consumer Advocate?

25 MR. WERSAN: Thank you, Your Honor.

CROSS-EXAMINATION

1
2 BY MR. WERSAN:

3 Q Good afternoon, Mr. Soppet.

4 A Good afternoon, Mr. Wersan. I haven't seen you
5 for a while.

6 Q If I could refer you to page 7 of your testimony,
7 on that page of your testimony you are discussing the fore-
8 casts that were developed during the course of the construc-
9 tion of the Limerick Station; is that correct?

10 A That's correct.

11 Q Were you responsible for the development of the
12 Limerick forecast?

13 A For the forecast for this project, that is correct.

14 Q I would like to show you, Mr. Soppet, an excerpt
15 from the Commission's Order in the Limerick 2 investigation,
16 which has a table showing the history fo the forecast for
17 the Limerick Project.

18 MR. WERSAN: I'm not going to make this an exhibit,
19 Your Honor, since it is already in the public record, but
20 it would seem like the most convenient way to present the
21 information to the parties for review.

22 BY MR. WERSAN:

23 Q Are you familiar with the forecasts and the
24 costs shown on page 66 of the Commission's Order at
25 Docket I-840381, Mr. Soppet?

1 A Yes, generally so.

2 Q Do those look accurate from your recollection
3 of the forecast?

4 A (Witness perusing document.)

5 To the best of my recollection, yes.

6 Q And you were a witness for Philadelphia Electric
7 Company in the first Limerick investigation at I-80100341;
8 is that correct?

9 A If that's the 1980 proceedings, that is correct.

10 Q And in that case you presented the Forecast 5
11 that was the relevant current forecast at that date; is
12 that correct?

13 A That is correct.

14 Q Would I be correct that that would be the forecast
15 dated 12-80 which showed a total cost for the project of
16 \$4,216,000,000?

17 A Subject to check. I'm not certain of the date,
18 but that is about the right time. But we have 9-80 and
19 12-80; there are a number of dates here which are fairly
20 close together and I don't know which one would be
21 specifically Forecast 5. I would have to check that. But
22 it is in that time frame.

23 Q Does the figure of \$4.2 billion sound familiar
24 for your testimony in that proceeding?

25 A Over the last year I've had so many numbers through

1 my head. The number \$4.2 billion is a familiar number,
2 but which one of them it would apply to I'm not certain.
3 I'd have to check that.

4 Q When we are looking at the total cost column
5 for this forecast that's for Unit 1, Unit 2 and common
6 plant on the station basis; is that correct?

7 A The way this is broken apart you have 1 and 100
8 percent common, you have common plant, and you have Unit
9 2. You are speaking directly to what is on the piece of
10 paper?

11 Q Yes.

12 A That's the way the table is broken down.

13 MR. WERSAN: That's all I have, Your Honor.

14 Thank you, Mr. Soppet.

15 MR. HALL: If Your Honor please, could I have a
16 minute?

17 JUDGE MATUSCHAK: Yes.

18 (Discussion off the record.)

19 JUDGE MATUSCHAK: Back on the record.

20 MR. HALL: If Your Honor please, I do have a brief
21 series of questions for Mr. Soppet.

22 JUDGE MATUSCHAK: Very well.

23 REDIRECT EXAMINATION

24 BY MR. HALL:

25 Q Mr. Soppet, you were asked a question by

1 Prosecutory Staff with respect to the comparability of
2 Limerick and Susquehanna, and I believe a quotation from
3 a prior testimony of yours was read into the record. Do
4 you recall that question?

5 A Yes, it had to do with the comparability of
6 Susquehanna Unit 2 and Limerick.

7 Q Recognizing, Mr. Soppet, that there is a compar-
8 ability, are there also major differences between those
9 two plants, in your judgment, which can affect their cost
10 and schedule duration?

11 A Yes, there are many. There are certain major
12 areas that one can relate to. One of the first is the
13 seismic differences between the two plants, which has
14 both an impact on the analytical load that one has to bear,
15 as well the design to withstand a higher seismic ground
16 acceleration.

17 Limerick's is about .15; Susquahanna's is about
18 .10. That has a large impact not only on the mechanical
19 structures, but on civil structures.

20 Another has to do with the population density
21 immediately surrounding the plant environs. Susquehanna
22 has a very low population density by comparison. Limerick
23 has a rather high population density, one of the highest
24 in the country; and as a consequence, there may be plant-
25 specific systems which have to be designed to accommodate

1 the effect of that larger plant population in accident
2 analysis and in preventing any releases to the environment.

3 A fallout of that is, of course, a more in-depth
4 regulatory review of all of the things that we do, and
5 also a tightening of the requirements that are imposed
6 upon us as opposed to a low population density site such
7 as Susquehanna.

8 Also the time of implementation; for Limerick many
9 of the things that were required were required before
10 fuel load or five percent power, and certainly before full
11 power operation, whereas many other sites, Susquehanna
12 included, had delays accepted in meeting some of those
13 standards. Some plants are still, for example, meeting
14 equipment qualification requirements, where we were
15 required to have ours all complete before we could fuel
16 load.

17 Another instance I think which is quite important
18 is the difference in the quantities. Limerick has many
19 more quantities installed in certain areas than does
20 Susquehanna, mechanical equipment and piping facilities.
21 This is a specific example of where we have a lot more
22 piping and hangers, caused by the seismic requirements,
23 among others, than does Susquehanna.

24 Q Mr. Soppet, in referring to your answer to my
25 question, do you intend that answer or do you believe that

1 answer to be all-inclusive, or is that simply the items
2 which you can recall at this time?

3 A That's basically what I can think about now.
4 You would have to have an exhaustive study to determine
5 all of the specific differences. Normally we look at
6 those kinds of things in unit rates as comparisons between
7 plants, and I haven't done that for this particular case.

8 Q Thank you.

9 MR. HALL: Your Honor, that's all we have.

10 MS. CHESTNUT: Your Honor, I have a few questions
11 based on that.

12 RE-CROSS-EXAMINATION

13 BY MS. CHESTNUT:

14 Q Mr. Soppet, with respect to your comments with
15 respect to the population density of the two plants we
16 were discussing, was PECO aware when it made the decision
17 to site Limerick where it did that there was substantial
18 population there?

19 A I don't know specifically whether they were.
20 I believe that they were, but I think that would be more
21 appropriately asked of the company.

22 Q And you also referred to the quantities, that
23 Limerick 2 has more installed quantities than Susquehanna;
24 is that correct?

25 A That's correct in some areas.

1 Q Do you know what the comparable quantities for
2 Limerick would have been had it been completed at the same
3 time as Susquehanna?

4 A Well, I think the basis for it not being com-
5 pleted at the same time as Susquehanna was the quantities,
6 not the other way around. Quantities are what takes time
7 to install, and that's what usually determines the schedule.

8 Q There were no changes in regulations or require-
9 ments that were applicable to Limerick as a result of its
10 later completion date, if you know?

11 A I'd have to specifically look and see if there
12 were any things that were imposed upon us from the time
13 frame of about 1983, which is when Unit 1 went commercial,
14 to when we completed our fuel load in 1984. If there were
15 I can't remember any major ones. I think they all
16 occurred in the time frame of 1974-75 out to about 1982.

17 Q Thank you.

18 MS. CHESTNUT: That's all the questions I have.

19 JUDGE MATUSCHAK: Is there anything further?

20 MR. WERSAN: No.

21 MR. HALL: I have nothing further, Your Honor.

22 JUDGE MATUSCHAK: Very well. The witness is
23 excused.

24 (Witness excused.)

25 MR. HALL: Your Honor, that is all the witnesses

1 that we have to present today. We will tomorrow have the
2 Theodore Barry witnesses. I would propose to present them
3 in the following order. First we will present Mr. Madden
4 and Mr. Konenetz as a panel. Secondly we will present
5 Mr. Osborne and Mr. Konenetz as a panel. We will also
6 have available Mr. Helwig to provide additional informa-
7 tion should it be required with regard to the preparation
8 of PECO Exhibit 2.

9 JUDGE MATUSCHAK: Who is the second one?

10 MR. HALL: Osborne, and Mr. Konenetz will be part
11 of --

12 JUDGE MATUSCHAK: Who is that?

13 MR. HALL: Konenetz, K-o-n-e-n-e-t-z. He will sit
14 with each of the two gentlemen. He assisted in the
15 preparation of their material.

16 JUDGE MATUSCHAK: Very well. If there is nothing
17 further we will adjourn until 10:00 tomorrow morning.

18 (Whereupon, at 2:25 p.m. the hearing was adjourned,
19 to be reconvened at 10:00 a.m. on Thursday, December 19,
20 1985 in Harrisburg, Pennsylvania.)
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C E R T I F I C A T E

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I hereby certify, as the stenographic reporter, that the foregoing proceedings were taken stenographically by me, and thereafter reduced to typewriting by me or under my direction; and that this transcript is a true and accurate record to the best of my ability.

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