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BEFORE
THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

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In re: R-79060865, etc. - Philadelphia Electric Company. Investigation into a requested $123 million annual rate increase. Evidentiary hearing.

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Harrisburg, Pennsylvania

November 15, 1979

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Pages 1840 to 1977

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BEFORE
THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

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In re: R-79060865, etc. - Philadelphia Electric Company. investigation into a requested $123 million annual rate increase.

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Stenographic report of hearing held in Hearing Room No. 1, North Office Building, Harrisburg, Pennsylvania,

Thursday,
November 15, 1979,
at 9:30 o'clock a.m.

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JOSEPH KLOVEKORN, ADMINISTRATIVE LAW JUDGE

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THE ADMINISTRATIVE LAW JUDGE: Are we ready to proceed?

MR. HALL: Yes, Your Honor.

MS. BUSH: Yes.

THE ADMINISTRATIVE LAW JUDGE: Mr. Hall?

MR. HALL: Your Honor, this morning we have Mr. Stephen Mallard from Public Service Electric and Gas. Mr. Mallard is Vice-President-System Planning of Public Service Electric and Gas and is intimately familiar with the construction of the Salem Nuclear Generating Station Unit No. 1.

Mr. Mallard, do you want to take the stand, please?

STEPHEN MALLARD, called as a witness, having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HALL:

Q Mr. Mallard, you can be seated. Would you please state your name, business affiliation and business address for the reporter, please?

A Stephen, S-t-e-p-h-e-n A. Mallard, M-a-l-l-a-r-d. I am the Vice-President-System Planning, Public Service Electric and Gas Company, Newark, New Jersey.

Q Mr. Mallard, do you have a document before you which is entitled Testimony of Stephen A. Mallard and

which is a document of some twelve pages and with several schedules attached?

A. I do.

Q. Is this document your prepared written testimony in this proceeding?

A. Yes, it is.

Q. Was it prepared under your direction and supervision?

A. It was.

Q. And if I were to ask you the questions contained in that document today, with your answers as set forth therein, would they be true and correct?

A. That is correct.

MR. HALL: Your Honor, I would ask that Mr. Mallard's prepared statement be identified as Philadelphia Electric Company Statement 11 for purposes of this proceeding.

THE ADMINISTRATIVE LAW JUDGE: Without objection, it will be so ordered.

MR. HERSHEY: There is objection, Your Honor. I move to strike sections of that testimony as follows: - -

THE ADMINISTRATIVE LAW JUDGE: I believe it has just been identified.

MR. HALL: I'm just asking for a number.

MR. HERSHEY: Very well. Would you entertain a motion to strike now on certain parts of that testimony?

THE ADMINISTRATIVE LAW JUDGE: I prefer to entertain it as I told Mr. Bock earlier in this proceeding, when counsel for the company moved for admission of all this.

MR. HERSHEY: Very well.

THE ADMINISTRATIVE LAW JUDGE: Without objection, it will be so identified.

(Philadelphia Electric Statement No. 11, Direct Testimony of Stephen A. Mallard, was produced and marked for identification.)

THE ADMINISTRATIVE LAW JUDGE: Mr. Sayre, do you have any questions of this witness?

MR. SAYRE: Not at this time, Your Honor.

THE ADMINISTRATIVE LAW JUDGE: Ms. Bush?

MS. BUSH: Yes, Your Honor. Good morning, Mr. Mallard. I am Martha Bush. I am with the Office of Consumer Advocate.

THE WITNESS: Good morning.

CROSS EXAMINATION

BY MS. BUSH:

Q I understand from your testimony and statement of qualifications that you are a registered engineer. Is that correct?

A That is correct.

Q And you have been involved in the construction and operation in your employment in the utility field over the past few decades in the construction and operation of

the electric distribution facilities and customer electric service entrance facilities and transmission systems, is that correct?

A. That's correct.

Q. During your period of employment in this area, have you had experience in the actual construction process as contrasted to generation planning of a production, electric production generation facility?

A. My experience has been in the planning of generation facilities.

Q. I take it - -

A. My direct experience. But I have been appointed as a spokesman for the company in our last rate case and in this rate case as the overall spokesman for the company on all aspects of electric and gas operations.

Q. So that although you haven't been involved in the actual construction process of generation facilities, you have assumed the role of being a witness in various proceedings with regard to this question?

A. That's correct. I am a member of the operating committee of the company.

Q. And is it - - do I understand correctly from your statement of qualifications that you have testified in is that six rate proceedings, both electric and gas in New Jersey?

A. In many. I have lost track. But it has been a great number.

Q So perhaps you might - - you have, in fact, testified in more cases than the ones you have listed in your statement of qualifications or is that an exhaustive list?

A. That's probably an exhaustive list. We attempted to make it exhaustive. And exhausting.

Q And in addition to your testimony in rate cases, you have testified, as I understand, in an eminent domain proceeding in New Jersey?

A. That's correct.

Q And you have testified on two occasions with regard to the energy crisis?

A. At least two occasions, that's right. I have also presented non-sworn testimony in Trenton at various times on various aspects of the company's business involving the on-going energy crisis.

Q Now, you have listed on the chart on page 5 of your testimony the excerpt from the audit report of the different area where there were financial impacts stated by the auditors, and I would like to - - I've made a calculation as to the midpoint in that column, the last column on the right, that's on page 5 of statement 11, Salem No. 1 project impact and I have just made a mathematical calculation and I wonder if you would accept those numbers subject to check

for purposes of cross examination today and those are for the first area, cost control project management, 3.6 million.

For the rework area, 9.375 million.

A. Well, I have a problem with that number because the Theodore Barry number is incorrect. And has been corrected. They have a figure of 19.5 million as the soft number for Salem No. 1 impact and that number should in fact be $15 million and that number was corrected in the Public Service rate case and Theodore Barry accepted that correction.

Q. So that it is 15 million as you list here on page 5?

A. My 15 million is correct and Theodore Barry's arithmetic was incorrect in that they took 75 percent of $20 million and came up with 19.5 million. They had a weak battery on their little electronic calculator, apparently.

Q. So that the midpoint between the numbers you have listed there on line 23 is 9.375?

A. The midpoint between what and what?

Q. 3.75 and 15.0.

A. If one were to add 15 and 3.75, one would reach 18.75 and then you took half of that, is that correct?

Q. Well, what I did actually was I subtracted 3.75 from 15.0 and divided that by 2 and came up with 3.75.

A. I think it would come out the same. What was your result, please?

Q 9.375.

A That would be my result by my different method.

Q And on the next area, work force utilization, the midpoint was 15.3; materials management, .9 and construction equipment, .3.

A Without making a detailed check of the arithmetic, what you have just described sounds about right.

Q Now, the total cost of both projects was $1.21 billion, is that correct?

A Yes. The project is not completed, however. We are - - we have not yet placed Salem No. 2 in commercial service and as a matter of fact, we are continuing to do work at Salem No. 2.

Q And it is continuing to accrue AFDC?

A Both construction costs and AFDC, yes. That's right.

Q Do you have available to you, there, the figure in terms of the total cost of Salem 1?

A I have the Public Service cost for Salem No. 1, which includes our AFDC. This is what we currently have Salem No. 1 on our books for. And it is - -

Q All right. Could I have them?

A It is $367,661,000.00.

Q 367 - -

A. 367,661,000.

Q And that's just PSE&G's portion of Salem 1?

A. That's our portion of the capital cost of Salem No. 1 including our AFDC.

Q So that, and your ownership portion is 42.59 percent?

A. It is the same as Philadelphia Electric's portion and that's in my testimony. It is some 42 percent. I don't recall the decimal places.

(Transcript continues on next page)

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As I recall our portion and Philadelphia Electric's portion are identical.

Q Yes, I think that is correct.

A I have it, it is 42.59 percent.

Q Yes. Now with regard to the area of project management which you discussed beginning on page 7 and into page 8, as I understand it, you have stated here that a search for the lowest cost schedule was formally conducted by PSE&G at the time the project was originally authorized, and you are presenting that in contradiction to the statement blocked out right prior to that excerpted from the Theodore Barry report atpage 174, which stated: Resource leveling was used to evaluate cost impacts of alternative stratagies for Salem schedule, although a search for the lowest cost schedule was not formallyconducted.

Now do you recollect during the course of the audit having some discussions with Mr. Love with regard to a definition of what is appropriate or in your professional opinion what is a definition of what is a search for the lowest cost schedule on a formal level?

A I recall having many discussions with Mr. Love and at times we were on the same wavelength and at times we were not.

Q Do you recall with regard to this particular question whether you had a difference of professional opinion

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as to what would be a formal search for the lowest cost?

A It was more than a difference of professional opinion. I attempted to educate Mr. Love and I was unsuccessful.

Q So not only did you differ, but in your opinion you were correct and he was incorrect and you tried to persuade him to your point of view?

A Of course.

Q If I could direct your attention to page 174 of the audit, and particularly the last paragraph there, the last full sentence in that paragraph, which states: TB&A is defining the search for the lowest cost schedule as an integrated process which requires the evaluation of alternative schedules, enough alternatives to permit interpolating an optimum using an analytic technique like PSE&G's PWAFRR to determine minimum cost.

Are you familiar with that particular statement in the audit?

A Yes, I am.

Q Does that sentence to you imply or does it express to you the difference, or a discussion of the difference that you had extensively with Mr. Love as to what would be a search for the lowest cost schedule?

A That sentence makes sense to me. I have no problem with the sentence. The problem was that Mr. Love did

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not recognize that we were doing what this sentence says.

Q I see, even though you told him repeatedly that you were doing it, he would not accept that you had done it or he would not accept that what you did reached the level that he thought was appropriate to be done?

A I guess I am a poor communicator. I tried my best, like a Christian missionary in Africa.

Q So Mr. Love was the uneducated heathen that you were trying to persuade of your views?

A Unwashed.

Q I am sure he will be interested to read that in the transcript, Mr. Mallard.

A I hope he does because I like Mr. Love. He is an affable gentleman. I spent a good deal of time with him and told him where the better restaurants were in Newark.

Q But apparently that did not persuade him of your point of view in other areas.

A Oh, no, it was an arm's length relationship which we had, / the sum of his arm and my arm.

Q And from the results of the audit, you were pretty far apart with both of you arms together?

A My testimony speaks for itself. If Theodore Barry submitted that report in Public Service, I would have thought about either discharging him or transferring him to some other department which was not as sensitive in the

operation of Public Service, such as street maintenance.

Q I can understand, given the results of the audit, that you had that opinion. Could you define for the record what PWAFRR is? What does those stand for?

A Present worth of all future revenue requirements.

Q Is that a computer model that PSE&G has?

A It is a Welsh word, Pwafrr.

Q Are you serious, Mr. Mallard.

A No, I am being facetious, and I won't waste your time with facetiousness. I apologize.

It is not a computer model. It is a well-known economic methodology, which simply takes a string of expenses that are made over a period of time, and using the appropriate discount rate, expresses them as one equivalent dollar figure.

For instance, if I have an expense of $10 a year for 10 years, if I added that up that would be $100, but on a present worth basis I could buy an annuity, for instance, perhaps for $70, so that the $70 then would be an economic surrogate for a series of expenses over a period of time and that is what that means.

Q During the course of the construction of Salem-1 when PSE&G realized that the plant was not on the original time schedule target, did PSE&G make extensive

attempts to get the construction schedule back on target and in line with the critical path originally scheduled?

A We did, after we assessed what our various needs were, in terms of the shopping list which I have indicated on page 8 of my testimony.

In other words, we did not direct ourselves exclusively to a come-hell-or-high-water attempt to keep the construction schedule on target no matter what; but we went back and assessed all of the factors we could think of, as shown on my page 8.

Q So you assessed the cost impact of these various factors listed here on page 8?

A On a regular routine and continuing basis, that is correct.

Q In coming to their conclusion in the final report of the audit, you had informed the auditors, you did not withhold information from the auditors that you had done this kind of analysis in your project management?

A Absolutely not. I can recall sitting down and practically grabbing Mr. Love by the lapels and saying to him: Jim, here is what we do. I told him, I did the best that I could.

Q The next area that you address in your testimony is rework. Do I understand correctly that your position is that not that PSE&G avoided all unnecessary rework,

but that they avoided what in your opinion could be reasonably expected of a construction manager to avoid?

A That is right. As a matter of fact, Theodore Barry in January of 1978 prepared a report for the Virginia State Corporation Commission involving a review of the Virginia Electric and Power Company's management of power station engineering and construction programs, and in this report

Q Is this relevant?

A Oh, it is, extremely.

Q To what --

A To your question.

MR. HALL: Your Honor, I would ask that the witness be given the opportunity to respond to the question in the manner he feels is appropriate.

MS. BUSH: Well, Your Honor, it appears to me the witness is going off into an extraneous matter. If Mr. Hall would like the witness to be able to say this in redirect, I have no problem with that.

I have asked a specific question and the witness has answered it. My concern is what he meant when he said by diligent effort rework expenditures were held to a normal and reasonable level, that is what I --

MR. HALL: Your Honor, Ms. Bush is quite simply trying to prevent the witness from giving an answer which she doesn't want to hear. I have not heard an answer

to the question. She merely does not want to hear it.

MS. BUSH: I don't mind hearing it, but I don't want to hear it on my cross-examination.

THE ADMINISTRATIVE LAW JUDGE: I have allowed a great deal of latitude on the part of witnesses in answering questions. The witness will be able to answer as fully as he wishes.

THE WITNESS: Thank you. In the report to which I have just referred, which is the Theodore Barry report dated January 1978 --

BY MS. BUSH:

Q Excuse me, could I have an opportunity to look at the report as you are testifying?

MS. BUSH: Do you have a copy, counselor?

MR. HALL: I don't have a copy, no.

THE WITNESS: I don't have an extra copy, but I would be happy to walk over to the table and sit down with you.

MR. HALL: Ms. Bush can walk over and look with the witness --

THE WITNESS: Either way.

MR. HERSHEY: Why don't we take a two-minute recess so that Ms. Bush can have an adequate opportunity to look at it?

THE ADMINISTRATIVE LAW JUDGE: If Ms. Bush

wishes, we will be glad to. Let's take a five-minute break.

(Short recess.)

STEPHEN A. MALLARD, resumed.

MS. BUSH: Your Honor, I would like to move to strike the answer that we have just received from the witness. I believe that he has had a full opportunity to incorporate whatever references he would like to to reports and give the other parties an opportunity to review the reports prior to cross-examination.

Rate cases are not like criminal trials or personal injury where the witness is allowed to bring up new matters on the stand.

Of course, if he did not have the report available to him when he was preparing his direct testimony, I would understand, but this is information that he has and he had the opportunity to put in his direct testimony.

MR. HALL: Your Honor, I have never heard of that principle at all. This is a matter which Mr. Mallard believes is relevant to the question, which Your Honor has not heard yet, and I think he should be permitted to state his answer, then perhaps Your Honor can evalute it and in light of the objection we can have argument on it.

THE ADMINISTRATIVE LAW JUDGE: I will defer any ruling on the motion to strike right now. If you wish

to renew your motion after the witness gives his answer, you may, Ms. Bush. Of course, aswe all know, this is all subject to -- I don't know exactly what I can call the status of the motion to strike now -- but -- but it will be governed by that motion, too.

So if the witness would like to answer --

THE WITNESS: Thank you, Your Honor. In response to Ms. Bush's question, I was responding to the question of rework in the Theodore Barry report and my response involves a standard which Theodore Barry has expressed for an appropriate amount of rework in a report dated January 1978 concerning the Virginia Electric Power Company, which they prepared for the Virginia State Corporation Commission.

In this report on page IV-22 Theodore Barry states that about 8½ percent of total manual labor as an amount of rework does not appear to be abnormal. In the case of Salem No. 1 the amount of rework was approximately 2 percent.

BY MS. BUSH:

Q Is that a direct quote from the report?

A I paraphrased it. The direct quote is as follows: Thus, about 8.5 percent of the total manual labor cost has been for rework. Although data for comparison with other similar projects is limited, this amount of rework does

not appear to be abnormal.

MS. BUSH: I would move to strike the response, Your Honor.

MR. HALL: If Your Honor will entertain argument on it, the matter becomes relevant because of the question. As a result of the question, Mr. Mallard offers this as his response to the question. I think that is a perfectly appropriate response in timing sequence.

MS. BUSH: However I don't know whether it is taken out of context, I don't know anything else about the plants, I don't know whether that is engineering or labor. It is a meaningless figure as far as I know.

To determine the value of it would take a review of the report and understanding of the entire audit of that plant, any distinctions from that plant to this plant, the timing of that plant and various other factors that I don't think we can go into in this proceeding.

MR. HERSHEY: If I might add, Your Honor, one of the very reasons for prefiled testimony in this kind of case is the technical nature of the testimony and the need to adequately prepare to cross-examine, and that is particularly important in a case where we have a seven-month suspension period, and the trial period is very limited.

Ms. Bush could have had the opportunity had she had this information in the prefiled testimony to consult

with either Mr. Wheaton or Mr. Love on that report. She has not had that opportunity and it would be very difficult for her now to raise those issues and that is why I think it should be stricken.

MR. HALL: Your Honor, I just note that Ms. Bush has plenty of opportunity through the remainder of this proceeding to consult with Mr. Love and employ whatever rebuttal she wishes to respond to this particular reference.

MR. HERSHEY: That is not the same as cross-examination.

THE ADMINISTRATIVE LAW JUDGE: I will deny the motion. However, I would like this report entered into the record.

MR. HALL: The Virginia Electric and Power Company report?

THE ADMINISTRATIVE LAW JUDGE: Yes.

MR. HALL: We will do that.

MS. BUSH: And I would like a copy of the report as soon as possible.

MR. HERSHEY: In fact, to all parties, please.

MR. HALL: Your Honor, I would note that this is not some unusual report that we have uncovered in arcane places. This is a report that was known at the time of the company's last case. I obtained a copy of this report by asking Barry what else they had done.

It seems to me this is part of the opposing parties' professional obligations to obtain this material and be familiar with it.

MS. BUSH: I never saw a copy of the report. I don't recall you asking through me. I recall you asking information that is attached to Mr. Mallard's testimony. I have not been aware of the report and have not seen it before today.

MR. HALL: We will make a copy available.

BY MS. BUSH:

Q Mr. Mallard, do I understand correctly, then, your position to be that at times you agree with Theodore Barry and at times you don't in terms of what standards they set for construction management practices?

A Yes.

Q So that you respect their professional judgments in some areas and you do not respect their professional judgments in other areas, and which areas happen to be the areas you disagree with them?

A I am not enthusiastic about their professional judgment at all except that I am not going to call somebody wrong simply because I am on the other side from them; and in fact their entire report turns out to have been a ringing endorsement of Public Service's efficacious prosecution of this project in that in their hard figures they came up with

about a 98 percent endorsement of all our costs.

Q So you in fact think that they did judge you and they judged you to have performed well and you agree with that, but there are particular points on which you disagree with them?

A I think you could characterize my relation to them is that I don't quarrel with them when I don't agree with them, but I don't enthusiastically welcome their support because they did not do that good a job.

Q I see. Mr. Mallard, with regard to the data acquisition system that PSE&G has instituted in their Construction and Engineering Department, would you say it is accurate to say that a better data acquisition system has been set up and was used at Salem-2 than was used at Salem-1?

A Oh, absolutely. All of our management procedures have been evolutionary, and as time goes on we have improved.

Q Thank you. Do you recall the Theodore Barry auditors repeatedly asking personnel from PSE&G over the course of the audit for material and information and data with regard to labor and materials that were expended for rework?

A During the course of the audit our relationship with Theodore Barry was on a continuing basis and I recall that they made thousands of requests for data and we used many thousands of man-hours in complying and attempting to

comply with their requests. I have recollection of that in total.

As far as specifics go, these things occurred over a year ago and I may be a little fuzzy on some of the particulars.

Q So you do not recall specifically with regard to labor and materials for rework that quantification or data related to that, you do not recall the information requests or the discussions in that regard over the course of the audit?

A Of that subject I do remember, oh yes, I remember the subject, but I can't give you names, dates and so on.

I also recall that in our judgment many of the requests for data by Theodore Barry were trivial.

MS. BUSH: Your Honor, I would ask that that response be stricken as irrelevant and judgmental and argumentative and not responsive to or relevant to any issue in this proceeding.

MR. HALL: Your Honor, rate making is judgmental. Secondly, I would note that Mr. Mallard is testifying, not Ms. Bush. He is seeking to respond to her questions in what he believes to be an appropriate manner. That is the purpose of testimony. It is not to obtain whatever Ms. Bush wishes.

MS. BUSH: A characterization on the record of the auditors' requests for information as trivial I think

is totally irrelevant to the rate proceeding and does not rise to the level of something that should be on the record.

THE ADMINISTRATIVE LAW JUDGE: We will take it for what it is worth.

BY MS. BUSH:

Q So you do not recall, or do you recall, Mr. Mallard, several requests over the course of the audit by the auditors for data with regard to quantification of the labor and material that went into rework in the construction of Salem-1 and 2?

A I do recall that there were many requests, and that was among them, yes.

Q You don't seem to have understood my question, Mr. Mallard. Let me see if I can rephrase it.

A Well, perhaps it would help if you had a document. Is there a written request that you can refer me to?

Q No, there is not a written request which I can refer you to. My question simply is, if you recall one way or the other, what is your recollection as to whether the auditors inquired of PSE&G on several occasions during the course of the audit for information and data with regard to the labor and materials expended for rework.

A I do so recall.

Q I would like to clarify with you exactly what

you mean by a sentence you have on page 10 of Statement No. 11, lines 5 and 6.

A Forgive me while I locate that.

Q Certainly.

A You are talking about page 10, lines 5 and 6 of my direct testimony?

Q That is right. If I might quote a sentence: The information described in the paragraph above was in fact used for man-hour control by supervisors.

My question to you is: Do I correctly interpret that sentence to mean that you understand the audit to be and you are rebutting that understanding which is that the auditors' information from you and conclusion in their report was based on a view of what happened at the construction project that supervisory personnel did not at all use the data described to control work hours of individual craft workers?

A That appears to be the case.

Q Now with regard to that paragraph and the next paragraph in your testimony, in which you discuss the various activities that were undertaken by the supervisors and other personnel at the office, do I understand correctly by your testimony here that you are stating that the auditors were not aware of these activities that you describe here, or that they were aware of them and you do not think they properly

took them into account?

A It is difficult for me to answer that question, but I will attempt if you will permit me.

Q Certainly. I would appreciate a response to the question.

A I read English as well as I can and I read the conclusions of the Theodore Barry team in this particular area, and it baffles me.

I did not spend time with them 100 percent. I spent a good deal of time with them during this period, however, and I was present at many of the interviews that Theodore Barry had with the relevant Public Service construction people, and I visited the Salem project with them and saw through their eyes, as well as I could, how our systems were progressing and what our methods were; but I was not with them 100 percent so therefore I cannot vouch for everything that they heard and perceived and I cannot go through their mental process.

But I shared with them the investigation to a great extent. Since I work for Public Service I probably had more opportunity to speak with some of these people at other times when Theodore Barry was not present, because I work with them in the normal course of activities.

But my conclusion, and this is my sworn testimony, is based on my personal knowledge and investigation

and discussion with our construction people, and I reached a conclusion which is opposite to Theodore Barry's. That is why it baffles me.

Q Do I understand correctly your response that with regard to these activities that you list on page 10, lines 5 through 21, you don't have a specific recollection of whether the PSE&G people conveyed these activities to the auditors?

A No, except I can answer in a general way, if I may be permitted.

Q Yes.

A And that is that the attitude of Public Service Electric and Gas during this audit was one of absolute candor and being forthcoming with Theodore Barry. We spent thousands of man-hours. We allowed them to go through our records, to parade through our offices, to go through our project plant to their heart's content.

On the other hand, we were not writing their report for them and we could not go through their thinking processes.

So we did our best at communicating and if this is what they came up with, as I say, I am baffled.

Q You know that PSE&G people gave the Theodore Barry people as much information as they had and were very open and opened their records, but you do not specifically

recollect one way or the other whether they gave them this information on lines 5 through 21, or could you say that you reasonably assume that they gave them this information?

A Well, they had every opportunity to have seen this information among thousands of other documents. Now whether they did or not, I cannot say, and whether they identified this material appropriately I cannot say.

We were not spoon feeding them. We were responding to them. Even though we were being candid, there was still an arm's length relationship to them. There is not that arm's length relationship when I ask people things. So their could be some problem in communication there.

If they had a problem in phrasing a question in a certain way, I did not say to them, well, gee, Jim, you should have asked it this way. I would answer him to the extent that he had asked the question, and if he had a problem with understanding, well, that was unfortunate.

Q So your answer is you don't know?

A I have forgotten what the question was.

Q The question is and has been: do you know if this specific information regarding the description of the various activities listed on lines 5 through 21 on page 10, if that information was -- you don't have a specific knowledge of whether that information was conveyed to the auditors although you have described at great length the audit process?

A I can't be sure that is correct.

Q Now the next area you discuss is materials management and I am also trying to understand the English language, Mr. Mallard, and the entire context of your sworn testimony here, and you have a statement: However, no evidence --

A Excuse me, would you give me the reference?

Q Yes, page 11.

A What line?

Q Lines 2, 3 and 4. However, no evidence is presented to show that the project managers could have foreseen that such reductions were possible without delaying the construction. And you go on to say: A materials inventory somewhat above the calculated theoretically desired level can be a good investment if it protects against the much greater penalties of construction delays.

Now, do I understand from this sentence as well as how you have approached the other areas that with regard to any particular descriptions of various materials management practices, and whether or not they were adopted by PSE&G, and to what extent, that were listed rather extensively at the audit, the chapter having to do with materials management, you do not have a factual disagreement with those descriptions in that chapter as you have with the other chapters in which you specifically noted a difference of

opinion or factual difference, but you are rather saying the standard that you think, of reasonably could have foreseen it, was met by the management constructors?

A I would like to respond to that in terms of information which Theodore Barry provided to me, if I may be permitted.

Q Yes.

A And that is, I was curious when I read this Theodore Barry report, which had the wrong date on the cover, which disturbed me, because when Public Service publishes reports we try to get the correct date. This report was dated May 1977 although they began their audit in January 1978.

But aside from that, I asked Theodore Barry for their work sheets, how they came to the conclusions on page 20 of their report, which are serious conclusions, accusing Public Service of having been imprudent, and they provided me with a work sheet which I thought was embarrassing. It was one and a half pages of very skimpy notes that I would characterize as a back-of-an-envelope study which could have been done before they wrote this report.

It simply said, I take 1 percent of this number and I add 2 percent of that number, I take a pinch of salt and a pat of butter, and I produce this thing.

In that context they talk about materials

management, which was your question, and they say that -- and I am quoting Theodore Barry now -- that the soft figure was arrived at simply by taking a reduction of 20 percent of stock items inventory of $8 million or $1.6 million per year, resulting in a reduction of carrying costs of 20 percent or $320,000 per year or $2.24 million for seven years less estimated implementation costs of $540,000 for a net reduction of $1.7 million.

And then they say about 75 percent of this is attributable to Salem Unit No. 1.

Well, that is pitiable, and that is the context of my evaluation of Theodore Barry's numbers. They are absolutely groundless, unquantified, and it is the sort of thing that is just not acceptable in a company like Public Service Electric and Gas Company.

MS. BUSH: Your Honor, I would request that you direct the witness to answer my question. I would be happy to have my question reread.

THE ADMINISTRATIVE LAW JUDGE: The question will please be reread.

(The following was read by the reporter:

Question: Now the next area you discuss is materials management and I am also trying to understand the English language, Mr. Mallard, and the entire context of your

sworn testimony here, and you have a statement: However, no evidence --

Answer: Excuse me, would you give me the reference?

Question: Yes, page 11.

Answer: What line?

Question: Lines 2, 3 and 4. However, no evidence is presented to show that the project managers could have foreseen that such recutions were possible without delaying the construction. And you go on to say: A materials inventory somewhat above the calculated theoretically desired level can be a good investment if it protects against the much greater penalties of construction delays.

Now, do I understand from this sentence as well as how you have approached the other areas that with regard to any particular descriptions of various materials management practices, and whether or not they were adopted by PSE&G, and to what extent, that were listed rather extensively at the audit, the chapter having to do with materials management, you do not have a factual disagreement with those descriptions in that chapter as you have with the other chapters in which you specifically noted a difference of opinion or factual difference, but you are rather saying the standard that you think, of reasonably could have foreseen it, was met by the management constructors?)

MR. HALL: Your Honor, the question seems rather long and involved. As I understand it, it merely requests the basis of Mr. Mallard's statement on page 11 and I think the answer fully responds to that. I have no problem with him giving a further answer.

MS. BUSH: If the witness would like to answer it, would you mind letting him answer it?

MR. HALL: That would be fine, if you can frame the question.

BY MS. BUSH:

Q Do you understand my question to be something different than what you responded to?

A I would stand on my answer to the extent that no evidence was in fact presented by Theodore Barry, but that in the area of materials management I do not have a basic disagreement with the need for materials management, and in fact Public Service does practice materials management.

Q Let me take you through the chapter with specific areas that were discussed by the auditors and see if you agree with the factual statements here.

A Would you give me a page reference, please?

Q I certainly will. I was about to do that. Page 51. The area discussed in the last paragraph on that page, to correct the problem during the completion of Unit 2, PSE&G has requested that UE&C establish a material coordinator,

to coordinate the scheduling and expediting of critical materials to support the construction schedule.

Is that a true statement of fact, yes or no?

A Yes.

Q On page 55, is it true or not, to your knowledge, that as a result of the Theodore Barry review at the site they found lack of identification of bin location on the commodity cards in the conventional piping warehouses, do you factually contest that?

A I have no basis for factually contesting it.

Q With regard to the electrical storeroom, do you factually contest that the auditors found lack of commodity cards/or other system to designate locations in the warehouse?

A I want to agree with you but I don't know whether to answer yes or no, depending upon how your question is phrased, but I agree with you.

Q You don't have any information that would lead you to factually disagree with what the auditors found?

A That is correct.

Q If I went through any other statement in this chapter, which I take it you have reviewed --

A Indeed I have.

Q You would not factually disagree with their descriptions of what they found?

A That is correct.

Q Rather you are disagreeing with the standard that they established as to whether that could have foreseen installing such techniques to reduce materials without delaying the construction?

A Yes, my problem is that they gave a laundry list of motherhood and apple pie items and somehow or other on page 20 arrived at a soft figure of $1.6 and there is no basis for that. If you can show me in this report a basis for that I would be happy to discuss that with you.

Q I am directing the cross-examination, Mr. Mallard, and I have another area in which I am cross-examining you. If you would like with your attorney to explore those other areas further than you have in your direct testimony on redirect, you are welcome to do that.

But the way the rate proceeding goes is that I do cross-examination and I determine what areas I would like to cross-examine you on.

A And I am the most cooperative person trying to help you do that.

Q Thank you. I appreciate your cooperation. If I could direct your attention to page 34 of the audit, the middle paragraph there states that PSE&G will implement a formal maintenance management system for the Hope Creek Park project. PSE&G was unable to provide the cost benefits which

it expects to receive from implementation of such a system.

Can I assume from the PSE&G's decision to implement this formal maintenance management system at the Hope Creek project that the company made some cost benefit analysis and determined that the savings that would be accrued as a result of implementing this formal procedure outweighed the cost of implementing the procedure?

A The company assesses all its decisions in terms of cost effectiveness. It does not always make a formal study on every little aspect of its operations.

Q So you did do some kind of cost benefit analysis before you decided to institute this procedure?

A We made a management assessment and made a decision which we believed to be cost effective, yes.

Q Was that one of the formal or one of the informal cost benefit analyses?

A Informal.

Q Do you have a quantification for me of what the cost benefit analysis was?

A I do not.

Q Does the company have that information available?

A We may have.

MS. BUSH: I would like to have that provided, please.

MR. HALL: Could you state what the information is, again, so that we are clear as to what your request is?

MS. BUSH: You can have the last question re-read.

(The following was read by the reporter:
Question: Do you have a quantification for me of what the cost benefit analysis was?)

MR. HALL: Of what?

MS. BUSH: Of the implementation of the formal maintenance management system for the Hope Creek project as referenced on page 34 of the audit.

MR. HALL: Your Honor, I would object to that question. I don't see its relevance whatsoever. This is another generating station that we are now talking about of Public Service Electric and Gas as to which Philadelphia Electric has no relationship whatsoever.

I don't see the relevance of this particular calculation or judgment of the Public Service management to this proceeding or to the construction of Salem.

MS. BUSH: If we could sequester the witness I would be glad to respond to that.

THE ADMINISTRATIVE LAW JUDGE: Would you like a cup of coffee?

THE WITNESS: I missed what Ms. Bush said.

MS. BUSH: I would be glad to argue the relevance of this point but with you out of the room.

THE WITNESS: Oh, I see. That is unusual, but I would be very happy.

THE ADMINISTRATIVE LAW JUDGE: Off the record.

(Discussion off the record.)

THE ADMINISTRATIVE LAW JUDGE: I am going to sustain Mr. Hall's objection. Let's take a ten-minute recess.

(Short recess.)

(Transcript continues on Page 1878.)

THE ADMINISTRATIVE LAW JUDGE: Let's go back on the record. Ms. Bush?

MS. BUSH: Your Honor, I don't know whether my specific data request was on the record, but I would like to state for the record in the eventuality that it was not, that I have requested a description or a copy of any informal cost benefit analysis done by PSE&G in making its determination as to whether it would implement the formal maintenance management systems that it eventually used or will use at the Hope Creek project.

I wonder if I could have your ruling on Mr. - -

THE ADMINISTRATIVE LAW JUDGE: Let's first have Mr. Hall's objection.

MR. HALL: Your Honor, I objected on several grounds, the first of which is that a prospective determination as such as the Hope Creek determination is much different than the retrospective audit and therefore, has no relevance to an analysis or retrospective audit.

I secondly objected on the grounds that this particular determination involved a generating station of Public Service Electric and Gas which is used only in its own operations to serve New Jersey customers, and as to which Philadelphia Electric Company has no relationship whatsoever.

For those reasons, it is the company's position

that the request is irrelevant.

MR. HERSHEY: It should also be noted on the record that I joined in the data request.

MS. BUSH: And I will state for the record my reasons for considering that a relevant data request and that being that one of the major thrusts of PSE&G's testimony that they have presented here for the Commission to consider in making their determination is that the level of - - the basis of the quantification done by the auditors was insufficient and it is my opinion that this informal analysis done by PSE&G and a provision of that for the parties to inspect would have some probative and relevant value with regard to PSE&G's own construction management practices in terms of what level of analysis and quantification they, themselves, do in making decisions as to the costs and the benefits of implementing various management practices.

THE ADMINISTRATIVE LAW JUDGE: I will sustain Mr. Hall's objection.

I have just received word that the Commission has ruled on the petition of CEPA for the admission of Mr. Scobbo and the Commission has allowed for Mr. Scobbo's participation in cross examination.

MS. BUSH: Might I have for the record the reasons for your ruling?

THE ADMINISTRATIVE LAW JUDGE: I will file a

written decision on it. You will have to wait in line.

MS. BUSH: Thank you.

MR. HERSHEY: I would ask, Your Honor, that if possible, that this matter be given some expeditious treatment because if we are to be allowed to effectively deal with Mr. Mallard's testimony, this may be an issue which we will want to move for certification and time is running short.

THE ADMINISTRATIVE LAW JUDGE: The Administrative Law Judge is well aware of the time limitations in this case.

MR. HERSHEY: Thank you, Your Honor.

BY MS. BUSH:

Q Mr. Mallard, you testified earlier that you went to many of the meetings between the auditors and the PSE&G personnel. Do you have before you available today dates in terms of when you received the original draft or the revised draft chapters of the audit?

A No, I didn't keep such records. I do recall, however, that we went through a verification process whereby Theodore Barry gave us many of the chapters in a very rough draft form, and asked us to look at it, to ascertain correctness and we saw that material sometime before May of 1978. I don't have specific dates.

Q Did you then get back from the auditors a revised draft of the audit that was - - or of the chapters as

they were finalized in the bluebook?

A. I believe that we did, yes. My recollection is that they fed us those chapters on a piecemeal basis as they come out of the typewriter and there were still some typos at that point, but what was finally printed was essentially what we had seen on either the second or third go-round in the process.

Q. Do you have specifically the date that you received the summary chapter?

A. That we didn't see in the draft form. We saw the summary chapter only in the final version and that was sometime in May of 1978, as I recollect. I have some notes that go back to that period and some of my back-up material, if I may consult that.

Q. Please do.

A. The information I have here is that sometime in May, 1978, we received the summary chapter from Theodore Barry. On June 29, 1978, here in Pennsylvania, there were corrections made by Mr. Welk on the transcript at transcript pages 8663 and 8664 of certain of the additional mistakes that were found on the report. Particularly on page 20. These corrections were made in New Jersey on July 11, 1978 at the Board of Public Utility Hearing and then my testimony in the Public Service case, my rebuttal testimony was completed sometime before October, 1978 and filed with the New Jersey

BPU on October 30, 1978. These are the dates in my notes. I can't be any more precise than that.

Q That's very interesting, Mr. Mallard.

Do you have the specific date in May in which you received the final chapter?

A No, I don't. I am not even sure it was made. But I received it. It could have been early June. I'm going by the report which says May, 1977.

Q Did you receive the final chapter at the same time you received the bluebook or did you receive the final chapter before you received the bluebook?

A My recollection is that I received it in the final form, the printed form. That's the first time I saw the final chapter. It is my recollection, but I don't have any independent way to ascertain that. That's just my recollection of something that happened a year and a half ago. I don't remember reviewing for correctness or factuality, their summary chapter. I do remember their other chapters, though, as I mentioned before, seeing them in draft versions.

Q Who was the project manager of the Salem project?

A Dennis Yagt.

Q Who were the PSE&G personnel who were at the hearing in Philadelphia when the auditors examined? Mr. Kistner, Mr. Wheton and Mr. Love?

MR. HALL: Objection. I think we are going pretty far afield of the relevance of the substantive nature of this audit.

THE ADMINISTRATIVE LAW JUDGE: I will overrule the objection.

THE WITNESS: I wasn't aware that anybody from Public Service was at that hearing. There may have been somebody there. I'm not aware of who, if anyone. I won't say no one was there.

BY MS. BUSH:

Q So you don't recall if anybody was there or you don't remember or you didn't know at all that someone was there?

A I have no recollection.

Q One way or the other?

A I knew that there was a hearing and I had been discussing it with the Philadelphia Electric people back in June or so. I imagine it was June, because the hearing was June 29. But I have no independent recollection.

Q Is my understanding correct that you were not able to prepare your testimony in time for that proceeding?

A What happened was that in the Public Service case, the Theodore Barry report was part of the main case up until a certain point. Some time after their testimony was filed, I believe, or about the same time, there was a

stipulation made between the Public Advocate in New Jersey and Public Service and other parties that our case would be bifurcated into phases one and two and phase one was designated as the main case and we got a ruling on that in terms of what rate increase we would get, and phase two was designated as the continuing investigation of the Salem Construction Management, which was essentially the Theodore Barry Report.

Once the Theodore Barry report went into phase two of the Public Service case, it went on the back burner, my review of it, and working and so forth involved with it went on the back burner as far as I was concerned. Because I was concerned with addressing the other issues in rebuttal and preparation of briefs and so on, assisting our attorneys on phase one.

So as I indicated, I didn't get around to filing my rebuttal to Theodore Barry until October 30, 1978.

Q To your knowledge, did anyone from Philadelphia Electric Company request anyone from PSE&G to prepare testimony for the Philadelphia Electric rate proceeding?

A They talked to us, yes. And my recollection is that it was not possible for me to meet a date of June, 1978 to be properly prepared or to be prepared at all, as a matter of fact, because of the press of other work that I had with both the phase one part of the Public Service report as

well as my other duties.

Q. With regard to the substance of your response to the audit which you have formulated in Statement No. 11, were those positions that you had and developed over the course of the audit or were those positions that you developed sometime after you received the statement, the bluebook, the formalized copy of the audit?

A. You will have to help me with that. I don't understand what you mean by Statement No. 11.

Q. Your testimony that you filed today, here.

A. Oh, I see. May I ask the court reporter to read that question back, please?

(The question was read by the reporter)

THE WITNESS: I would characterize my testimony here as a commentary on the Theodore Barry report.

BY MS. BUSH:

Q. Any of the positions that you expressed in your commentary of the Theodore Barry report as formalized in your direct testimony, did you develop any of those positions over the course of the audit in the process in which you described you were involved?

A. That's really a difficult question and I apologize, because I am not trying to be difficult. But I'm having problems with that question just in terms of what your intent is. Perhaps you could give me some examples of what

you mean by positions. I really don't grasp it.

Q Well, what I'm trying to get at, quite frankly, Mr. Mallard, is aside from your other pressing duties in terms of representing your direct employer of PSE&G in their regulatory proceedings, were these positions in terms of the substance of the positions that you have expressed in your direct testimony, were they positions that you developed in the time frame over the course of the audit or were they positions that you developed after you had seen the audit and when you then sat down, I suppose, for example, to do the testimony for your employer?

A. Okay. I can only go on recollection, now, but my recollection is that I did not begin to do anything on the testimony which I submitted in the New Jersey case which was quite similar to what I have submitted here. I did not begin to do anything in way of preparation for that until sometime after the Theodore Barry report was available to me and I did not begin on it immediately, because of other duties to which I had to attend.

Q When did you begin to prepare your testimony that you filed on October 11?

A. I would have to guess.

Q Okay.

A. Ms. Bush, I can only give you a time frame. It was probably in the late summer or early fall of 1978.

Q August or September?

A Sometime in there. That's an absolute guess.

Q Any of the substantive criticisms that you have of the audit here in your testimony, were any of those opinions formulated, though perhaps not formalized, during the course of the audit?

A The only one that I could give you an affirmative answer on that would be this question that you discussed before of the lack of agreement between Jim Love and myself.

MS. BUSH: That's all the questions I have.

THE ADMINISTRATIVE LAW JUDGE: Mr. Hershey?

BY MR. HERSHEY:

Q Mr. Mallard, my name is Steven Hershey.

A As in Hershey, Pennsylvania?

Q Yes. And Steven with a V. I represent CEPA and other community organizations in Philadelphia.

A And what is the acronym CEPA?

Q Consumers Education and Protective Association.

A Thank you.

Q Isn't it true, Mr. Mallard, that you have been with PSE&G since 1951?

A That's correct.

Q And during that time, as your experience and abilities increased, your abilities were recognized, you were gradually promoted with the company, isn't that correct?

A. Yes, that is correct.

Q. During that period of time, have you worked for anyone else?

A. Yes.

Q. As a consultant?

A. No.

Q. You worked for someone - - you interrupted your service with PSE&G?

A. No.

Q. Would you explain that, please?

A. I taught an evening school at Stevens Institute of Technology.

Q. Were you employed anyplace else during that period?

A. No.

Q. And would it be fair to say that as a result of your experience, your judgment today is probably better than it was in 1951 when you graduated from school?

A. I guess that would be fair for any of us, as a general rule, unless we are declining with age.

Q. I see no evidence of that here today.

And isn't it true that that judgment becomes important in work such as yours because there are areas where one cannot reduce decision making to mere application of formulas?

A. Yes.

Q. Did you participate in the planning of the Salem project?

A. Yes.

Q. Would you describe your role, please?

A. It may be somewhat lengthy. I hope I don't disturb you, but I will attempt to summarize it.

Q. Please do.

A. My overall responsibility is for the expansion of the electric and gas system facilities, including an assessment of the proper level of reliability, with service to the customers, determining what the level should be and then examining projections of load forecasts to determine for future years on a simulated basis, taking into account variations in load growth, in weather, in performance of equipment, what reinforcements and expansion of the electric and gas systems might be required.

In the conduct of these duties, my department and I identified or regularly identify the need for additional electric generating capacity and transmission facilities. We do this work both within Public Service and in terms of PJM, Pennsylvania, New Jersey, Maryland interconnection and also working with other utilities such as Consolidated Edison, which is our neighbor and not a member of PJM.

Once the need is identified, we then address various ways of satisfying that need on an integrated basis, in terms of cost reliability and environmental impact. In doing this work, we identified, working with Philadelphia Electric, a need for new capacity, which we jointly recognized through our studies ought to be nuclear back in the mid 1960's,

This led to the evolution of the plan called the Lower Delaware Valley Project, which was pursued jointly by Public Service, Philadelphia Electric, Delmarva Power & Light and Atlantic City Electric Company, which involved four nominal 1100 megawatt nuclear units, which eventually were located at Salem and Peach Bottom. Plus the transmission, the 500,000 volt transmission that is associated with these power plants.

And my job, in Public Service, was to do the planning for this entire project.

Q And did that planning deal with the details of the actual construction project?

A No. Only to the extent that they were reflected in costs and in schedule, because it was necessary for us to identify the appropriate lead times and the costs in our planning studies, both our initial planning studies and our continuing planning studies as the project progressed.

Q Have you participated in the planning for other plants other than what eventually became the Salem plant?

A Yes. I have been doing that continuously for many years.

Q In New Jersey?

A In New Jersey and Pennsylvania and New York.

Q Mr. Mallard, I would ask you to turn to page 8 of your testimony. The last sentence - - do you have that, sir?

A On page 8, I'm looking at it, yes.

Q The last sentence on that page which continues on page 9, and I quote "The estimate of the maximum rework impact ($20 million) assumes that the extra material costs would be equal to the labor costs." End quotation.

Do you see that sentence?

A I do.

Q That sentence refers, does it not, to the TB&A table on page 20 of the TB&A report.

A In my understanding, it refers to that and to the one and a half page so-called work sheet that TB&A provided to me as I mentioned to Ms. Bush.

Q And is that contained in Schedule 2 attached to your testimony?

A That's correct.

Q And isn't it true, Mr. Mallard, that while the

maximum rework impact assumes material costs, the hard or minimum rework cost does not?

A. Would you restate that question for me, please, sir?

(The question was read by the reporter)

THE WITNESS: I think that's correct, yes.

BY MR. HERSHEY:

Q Mr. Mallard - -

A - - except that, if you will forgive me, to the extent that, are you identifying hard and soft, now, in terms of Theodore Barry's definitions? Is that your intent?

Q Yes.

A I'm not sure what their definitions are. My interpretation of their definitions were spelled out here where I felt their hard is soft and their soft is effervescent, as I indicated.

Q Yes. I understand that. But referring both to your own testimony on page 8 and 9 and to schedule 2, attached to your testimony, isn't it true that in the hard rework section, which could also be identified as minimum rework, there's no reference whatever to material costs?

A Theodore Barry makes some other assumptions in there, but I would agree with what you said.

Q Mr. Mallard, prior to the location of the

plant at Salem, was any work done at the Burlington site?

A. Yes.

Q. Would you describe the work that was done, please?

A. There was engineering, there was some site preparation and there was work done in connection with obtaining the Atomic Energy Commission license.

Q. And would you please describe for us the sequence of these events which you have just described? And if you can, attach some dates.

A. Well, the work was done, to some extent, on parallel tracks. The engineering, some of the engineering work preceded the other two activities, but then there was parallel activities and their work started, my recollection is that it began sometime in the mid 1960's.

Q. Which work are you referring to? Engineering work?

A. The engineering work and then the site preparation began shortly thereafter. In fact, I can tell you that I have one date here that construction at Salem began in January, 1968, which means that the site work began sometime before 1968 at Burlington. I don't have the precise date on that.

Q. So your testimony is that the engineering work at the Burlington site began in the 1960's. Sometime after that, the site preparation work began and also the attempt to license through the Atomic Energy Commission, is

that correct?

A. Yes.

Q And do you know the cost of the engineering work that was performed at the Burlington site?

A. I don't have that with me in the material which I brought here. But that is a matter of record on our books of account and could be readily provided.

Q Would you do so, please?

A. Surely.

Q Do you know the cost of the site preparation work that was done?

A. The answer is the same. It is a matter of record, but I don't have the information with me.

Q Could you also provide that?

A. We would be happy to, yes. As well as the licensing. There may be some problems in terms of the way the dollars are allocated, in other words, however they are allocated, we will provide the information to you. It may be in toto rather than the precise breakdown that you are requesting, but however we have it available, we will make it available to you.

Q If you can allocate them, I would appreciate that.

A. It may be/is an approximate allocation or engineering as opposed to accounting or regulatory allocation

Q If that is the best you can do, I will accept that.

A Surely.

Q How long did the attempt to obtain Atomic Energy Commission permission for the Burlington site take?

A I do have information here that would be helpful. We filed our original application on December 13, 1966 with the Atomic Energy Commission. On Docket No. 50-272. So we were in the process of having an application pending for a Burlington location until 1967. August 17, 1967, there was a letter from Mr. Harold Preis, who was the director of regulation of the Atomic Energy Commission, to the Commission concerning a meeting on Friday, August 11, between Public Service and the ACRS, which is the Advisory Committee on Reactor Safety, I believe, of the Atomic Energy Commission, where the question of the Burlington site was discussed.

And then the company wrote a letter to Mr. Harold Preis on August 14, 1967, indicating that we would amend our December 13, 1966 application for a change in site from Burlington, and in that letter, we did not indicate where the new site would be, but it eventually became what we call Artificial Island, which is the present location of Salem. So I hope those dates are helpful.

We are talking from December, '66 to August,

'77, where our application was pending for the Burlington site.

Q Do you know, Mr. Mallard, whether or not the costs incurred during that period are a part of rate base in this case?

A I do know that much of the preliminary plant design that was developed for Burlington was used at Salem and therefore, was capitalized in connection with Salem and I can give you -- we do have on our books of account precise information to that question which I don't have with me today.

Q And would that information include information about the engineering work and the site preparation work for the Burlington site?

A Oh, yes. The site preparation work for the Burlington site was not useful at Salem. But some of the engineering work, in fact much of the engineering work and much of the licensing activity was appropriately and properly transferable to Salem.

Q Could you provide that information, please?

A Yes, surely.

Q Now, isn't it true, Mr. Mallard, that there were frequent meetings between -- among representatives of the Joint owners of the Salem project during the construction period and in fact prior to the construction period?

A. Yes.

Q. And during those meetings, weren't the joint owners supplied with information by PSE&G concerning the construction?

A. Yes.

Q. And in fact, they were even supplied with information/writing between meetings?

A. They had access to any information that they wanted as co-owners.

Q. And would you say that each owner played approximately the same role in those meetings?

A. No. I would say Philadelphia Electric played a more dominant role than Atlantic City Electric and Delmarva. Fitting with their role or their experience as the builders of Peach Bottom.

Q. Now, Mr. Mallard, I'm referring you to page 7 of your testimony, beginning on line 24 of that page, where you indicate that, and I quote, "A search for the lowest cost schedule is formally conducted by PSE&G at the time that project was originally authorized and at various times throughout the construction phase of the project as schedule changes were required." End quotation marks.

Do you see that sentence?

A. Yes, I do.

Q. Now, I would also like to refer you to the

answer to interrogatory IR-3, number 157.

A. I'm looking at that, yes.

Q. Do you have that?

A. Yes.

Q. Now, the response to that interrogatory contains a section of a submission to the United States Atomic Energy Commission, does it not?

A. That's correct.

Q. Did you participate in the preparation of that document?

A. Yes.

Q. Was it prepared under your supervision?

A. No.

Q. Did you participate in the preparation of Section 4 of that document, that section 4 being the response to interrogatory 157?

A. Section 4 is alternates to Salem Nuclear Generating Station.

Q. That's correct.

A. And indeed, I did.

In fact, I was one of the principals in the preparation of that section.

Q. And can you tell us when that was prepared?

A. I have a photostatic copy of that section in front of me and I don't see a date on it. I do see some

footnotes, though, referencing 1971, so evidently, it was prepared after 1971. In 1971 or later.

And that is a matter of record and could be easily ascertained as to what date that was filed, but I don't know.

Q Would you please let us know when it was prepared?

A Surely.

Q Now, is this document, the formal search referred to in your testimony on page 7 and 8? That is the formal search for the lowest cost schedule?

A It is illustrative of it. There is much more.

Q What was the purpose for which this document was submitted to the Atomic Energy Commission?

A It was part of our application for a construction permit for nuclear power plant.

Q Which nuclear power plant?

A Depending on when it was submitted, it would have either been the original Burlington location or Salem.

Q Is it true that construction of Salem began in January of 1968?

A That's correct.

Q And we have identified that this is probably written sometime after 1971?

A. That was section 4 that we were discussing.

Q So what was the purpose for which this section 4 was submitted?

A. Section 4 was related to Salem. At least this particular version of section 4 that we are discussing.

Q Were there earlier versions?

A. There may have been.

Q Were there later versions?

A. There may have been, although I doubt that there were later versions. I think that this is probably the latest version. But a licensing procedure, as you can understand, is quite complex and it goes on for a long period of time and there are revisions as events unfold. Some of the revisions merely build on an original submission. I can't say with any certainty that section 4 hasn't been amended since. But I - - whatever it is, it is, in terms of NRC files.

Q Would it be fair to say that this was submitted as part of the National Environmental Protection Policies Act requirement related to construction of the Salem project?

A. I think that's the case. It is. The Calvert Cliffs decision.

Q And that's a decision of the Circuit Court of the District of Columbia in the early 1970's, is it not?

Or late '60's? Relating to construction of nuclear plants?

A Right. It is related to other than radiation issues. Environmental impact of nuclear plants. My recollection was that it was sometime around 1970. This is section 4 that you are talking about.

Q Yes. I wonder if you might supply us with the earlier and if any, later versions of this section 4?

A Well, that could - - yes, I will see what I - - I will endeavor to do that. There would be a problem of duplicating it for all parties, because these things are extremely voluminous.

Q I'm asking only for section 4.

MR. HALL: We will review that and how many parties are interested in it? I know you are. Is there any other party that has an interest in receiving that material?

MS. DUFOUR: I do.

MR. HALL: We will supply those two parties with copies.

THE ADMINISTRATIVE LAW JUDGE: I would assume that all the parties would like to have copies. Just a general output.

MR. HALL: Fine.

MR. HERSHEY: If I may take a moment, Your Honor.

(Pause)

MR. HERSHEY: I have no further questions.

THE ADMINISTRATIVE LAW JUDGE: Does any other party have questions for this witness?

(No response)

THE ADMINISTRATIVE LAW JUDGE: Mr. Hall?

MR. HALL: Your Honor, I don't know that I have any redirect at this time. Perhaps it would be appropriate to stop for lunch and if I do, we will go forward afterwards.

THE ADMINISTRATIVE LAW JUDGE: Will Mr. Waddington be available?

MR. HALL: Mr. Waddington will be available at 1:00 o'clock.

THE ADMINISTRATIVE LAW JUDGE: Let's take a recess until 1:00 o'clock.

(Whereupon at 11:47 a.m. the hearing recessed to reconvene at 1:00 o'clock the same day.)

(Transcript continues on next page)

--oOo--

AFTERNOON SESSION

--oOo--

(The hearing resumed at 1:10 o'clock p.m.)

MR. HERSHEY: Your Honor, a brief housekeeping matter which I neglected this morning. I would like to note for the record that some of the interrogatories directed to the Mallard testimony have not yet been answered and I would like the answers to those as soon as possible.

MR. HALL: I would have to have those interrogatories identified. It is my understanding that we have responded to all of the interrogatories that CEPA has asked with regard to Mr. Mallard's testimony.

MR. HERSHEY: Off the top of my head I believe that 151 and 153 at least have not been answered and I think there is one other.

MR. HALL: You and I will have to get together during the break and discuss that because I am not aware of that.

We have Mr. Waddington here to be further cross-examined.

HAROLD T. WADDINGTON, called as a witness on behalf of the Respondent, having been previously sworn according to law, was examined and testified further as follows:

MR. DASENT: Your Honor, while Mr. Waddington is setting up and pulling out his papers I should introduce to you our financial anaylst associated with National Consumer Law Center, who will be cross-examining Mr. Waddington pursuant to the Commission's decision on our motion this mrning.

MR. SCOBBO: I appreciate the opportunity to come before you in this case. Thank you.

THE ADMINISTRATIVE LAW JUDGE: A most impressive resume. Will Mr. Scobbo be doing all the cross-examination this afternoon?

MR. DASENT: Yes.

THE ADMINISTRATIVE LAW JUDGE: I take it, Mr. Hall, that you have no redirect of Mr. Mallard?

MR. HALL: I do not, Your Honor.

THE ADMINISTRATIVE LAW JUDGE: Mr. Waddington has been previously sworn. He is available for cross-examination.

CROSS-EXAMINATION

BY MR. SCOBBO:

Q Good afternoon, Mr. Waddington.

A Good afternoon.

Q Mr. Waddington, am I correct in stating that you consider yourself to be an expert valuation engineer?

A Yes.

Q Is that expertise in the field of public utilities only?

A Primarily. For the large part my experience has been in the public utility field.

Q If I could ask you to give me a ballpark percentage of what percentage of your time is devoted to this public utility work, could you venture a guess for us?

A Between 99 and 100 percent, but occasionally I do get involved in something that is non-utility.

Q Do you consider yourself an expert in public utility economics?

A To the extent that such economics relate to the fields of my practice, that is, valuation, depreciation, cost of service, cost allocation, the answer is yes. Broadly, however, I do not consider myself to be an economist.

Q Do you consider yourself to be expert in cost accounting?

A Yes, again to the extent that it relates to utility plant accounting and work that I do.

Q How about statistics?

A My answer would be similar. I work with statistical applications in life analyses and in the compilation of cost indexes and in other areas. Although I am not primarily a statistician, I feel I am an expert in those statistical areas that relate to my work.

I have had formal training in statistics as well as in cost accounting.

Q Would you consider yourself to be an expert in financial analysis?

A To the extent that such analyses relate to my field, yes. However, I am not inclined to say that I am that familiar with financial analysis. I could answer better if you would define that term for me.

Q Well, let me put it this way. Before beginning your trended original cost study did you look at the company in the broad sense in terms of earnings or performance or management or anything of those indicators?

A No.

Q I take it you are not a CPA?

A I am not.

Q You are not an attorney?

A No.

Q Could you describe for me what a valuation engineer is as opposed to a mechanical engineer?

A A mechanical engineer could be a valuation engineer. I am an industrial engineer practicing in valuation work. So it is difficult for me to distinguish between a valuation engineer and a mechanical engineer. They are not necessarily opposite things.

Q They are not necessarily similar things, either,

are they?

A A mechanical engineer may restrict his activities to design of mechanical systems and most mechanical engineers who have done so generally do not do valuation work.

However, even in the design and in cost estimation of the cost of what he has designed he will still get into areas that are very closely related to valuation work.

Q How about a valuation engineer as opposed to an electrical engineer?

A My answer would be similar.

Q A structural engineer?

A It would be similar.

Q A civil engineer?

A It would be similar. You see, electrical, mechanical, civil and industrial are branches of engineering. That is a categorization that valuation engineer is not one of those categories.

Anyone who is basically trained in those fields could also be a valuation engineer.

Q But a valuation engineer as you have described it would also have to be expert, at least in the utility field, in economics, cost accounting, statistics, possibly some financial analysis, but to a minor degree?

A Yes, indeed. For example, a young person

who wanted to enter the valuation field, I would recommend that perhaps an industrial engineer would be one of the better candidates because he has received formal training in those fields that you have just mentioned. However, that does not exclude other engineers.

Q And you have received formal training in Economics?

A Yes.

Q And in Cost Accounting?

A Yes.

Q In Financial Analysis?

A I have trouble with that term. I never had a course in college called Financial Analysis. I had courses and I performed work that I believe may be inclusive in your term financial analysis. I have difficulty answering that without a definition of term.

Q Have you ever testified on behalf of a consumer group or a non either private or public utility?

A Yes.

Q When was that testimony given, if I may ask?

A In the late 1960's, to the best of my recollection.

Q Can you define for me what you mean by reproduction costs?

A. Reproduction cost is the current cost of reproducing the exact facility that currently exists.

Q The what facility?

A. A facility that currently exists using basically the same materials to the extent possible, the identical facility, but using modern methods of construction if construction is required in that reproduction.

Q Can you define for me the term trended original cost?

A. Trended original cost, as a term, indicates the restatement of actually experienced original cost in terms of dollars at a different price level. Typically, a current price level. Trended original cost is used particularly in rate making, as a very frequent estimate of reproduction costs.

Q Do you use it in that term?

A. Yes, indeed.

Q So the term trended original cost and reproduction cost to you are the same?

A. No.

Q Did you not testify that trended original cost is in utility regulation, the same as reproduction cost?

A No. I testified that trended original cost is customarily used as an estimate of reproduction cost. It is not the same thing but it produces an equivalent result. It is a different technique of obtaining the same estimate.

Q Do you ascribe to that?

A Yes.

Q So that your trended original cost, as you would perform the study, could be viewed as, in context of Public Utility regulation, reproduction cost? Is that correct?

A It can be. It is not always. One who uses trended original cost must take care that there are not circumstances where as the result of the trended original cost work is something far afield from reproduction cost. There is no guarantee that trending original cost will give you a valid estimate of reproduction cost.

Most often, it does. It is very likely that it does. However, one who employs the trended original cost technique must take care that he knows what his intent is and if his intent is to estimate reproduction cost, then he should watch for those factors that sometimes enter into it and with the result that was not reproduction cost.

Q Is this distinction in the eye of the beholder?

A I am not sure what that means.

Q Well, in other words, you stated and if I can paraphrase, you stated that the trended original cost, depending on the person who performed the study and what he wanted to do, and what he wanted to obtain, could be production cost. Is that a fair summation?

A Yes.

Q If the individual performing a trended original cost study did not specify his intent or her intent, would the distinction then be in the eye of the beholder?

In other words, must you specify it in advance?

A I don't know that it must be specified in advance. If one sets out to estimate reproduction cost by using the trended technique, I think one should know that that's what he is doing. I don't know that - -

Q And should that be a statement? In other words - -

A A statement to whom?

Q To whomever is reading the study as an underlying principle of the study, if you will.

A It would probably be helpful if this were a statement. It would - - whether or not that statement is included in the report may depend upon the anticipated audience of the report.

Q Okay. You are coming around to my question.

If that statement is not there, let us suppose, can the reader of that report equate the trended original cost study to reproduction cost?

A Depending on the detail of the report and on the expertise of the reader, he may well recognize that this trended original cost study was, in fact, conducted in a manner that attempts to accomplish reproduction cost.

Q Did you attempt to accomplish reproduction cost through your study?

A Yes.

Q Is there any other methodology one could employ to show reproduction cost besides a trended original cost study? As you performed it?

A An alternate methodology would be to take a complete inventory of all of the facilities of the utility and then make detailed estimates of unit costs that would be involved in acquiring the materials required and in performing the work to place those materials into service.

Q In other words, if I could paraphrase that, as if you were building it today? Building a particular facility today?

A Yes. As if you were building that identical - -

Q Using the modern methods - -

A - - identical facilities today. That is far

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Q. In other words, if I could paraphrase that, as if you were building it today? Building a particular facility today?

A. Yes. As if you were building that identical - -

Q. Using the modern methods - -

A. - - identical facilities today. That is far

more costly and consumes far more time than the trended original cost approach. I know of no large utility that employs that alternative. It is most often used for smaller utilities and for just individual installations.

Q Is there any other alternative?

A There is no other alternative in prevalent use.

Q In prevalent use?

A One - - in specific instances, I can conceive of an informed valuation engineer devising some other method of estimating reproduction costs. However, the two that I just mentioned are by far, the most prevalent.

Q Earlier, you responded to a question that yes, indeed, you had testified on behalf of a consumer group in the late '60's, I believe you say. What was the name of that group or whatever, if you recall?

A I don't think you accurately characterized my response. However, I acknowledge that I had testified in behalf of a consumer group and the parties that I represented were the City of Atlantic City and the Hotel-Motel Association in Atlantic City.

Q Thank you. Earlier in the case, under prior cross examination, you testified that based on inspection of court decisions and Commission decisions, I believe, the term fair value is the most to build the plant today at less

cost than service value. Is that a fair characterization?

A No.

Q What is unfair about it?

A That is not what I said. It is not at all what I said. May I hear the question read back to me just to be certain that I answered properly?

(The question was read by the reporter as follows:

"Thank you. Earlier in the case, under prior cross examination, you testified that based on inspection of court decisions and Commission decisions, I believe, the term fair value is the cost to build the plant today at less cost than service value. Is that a fair characterization?")

THE WITNESS: My answer was correct.

BY MR. SCOBBO:

Q What was unfair about that characterization I think was the question I had outstanding.

A I think that what is unfair is that you are misquoting me. It is not what I said.

Q Did you, in performing your study, inspect court decisions?

A I'm sorry. I didn't hear the entire question. Could I have it read back?

(The question was read by the reporter)

THE WITNESS: Not quite in that context.

I have read decisions of this Commission and Appellate cases to this Court over the years and I base my knowledge as to the Court decisions in fair value as a long term review of those decisions as they occurred. I did not undertake a research project in connection with this specific study.

Q But having inspected certain decisions through the years - -

A Yes.

Q - - would I be correct in stating that your interpretation of those decisions is fair value is the cost to build the plant today less cost than service value?

A No.

Q Where am I incorrect in that statement?

A You are incorrect in that my understanding of court decisions is that the element that you have mentioned is only one element to be considered in finding fair value and the other primary element to be considered is the original cost of the plant less depreciation, and a weighting of those two measures of value was my understanding of the court's intent in finding fair value.

Q Would you agree with me that true fair value - - when I use the term true fair value, I mean irrespective of what may be the law of Pennsylvania or something of that sort - - true fair value is the result of the trended original cost study performed in this case.

A. Well, from an engineering point of view - -

Q. I didn't expect you to answer from any other.

A. - - the value of the plant under study in today's market is something rather close to the cost of reproducing that property less its depreciation. That is the service value that it has lost.

Q. Can I use the term true fair value to represent that as opposed to if I can coin a phrase, legal fair value?

A. Perhaps true fair value, when you put fair - - I find that when you use the word fair in there, parties immediately - - that is parties in the utility field - - immediately want to go to what you are calling legal fair value. So I would suggest why don't we contrast the two terms as legal fair value versus actual engineering value. That is how I would suggest that we term the two different concepts. That which you don't get into a quandry as to what does fair mean.

In other words, the courts have pretty much defined for us what fair means. So I would like to refrain from using that term fair with my definition of an engineering value. I believe I possibly, based on Mr. Sayre's cross examination on me earlier in this case, I believe I possibly may have misled some of the readers of my testimony as to what I meant inasmuch as I used the term fair value in a context aside from the value to be used for rate base.

Q So on one hand, we have this engineering value which is the result of your trended original cost study. On the other hand, we have this legal fair value, if I can term it that, which is based upon the engineering fair value but tempered by your interpretation of court and Commission decisions, is that correct?

A Yes. That tempering is bringing in the original cost less depreciation. That's the primary temporary.

Q And that brings into play the term fair? Does it not?

A I believe so. As I understand the term fair, it suggests a sharing of the effect of the price level changes, that is the effect that the dollar today does not have the same purchasing power as a dollar had when the plant was constructed.

Q You do not use the term fair value in the legal sense as we defined it as the difference between or some point between original cost and engineering fair value?

A I think it is a point between the original cost and current cost.

Q But the word fair doesn't refer to any sort of legal criterion, does it, or does it?

A I think the word fair refers to the concept that the courts have expressed in their decisions. I think the term fair conveys this idea of weighting the several

measures of value.

Q As based on some legal standard or legal criteria or legal interpretation? Legal in the sense of court decisions and Commission decisions? That's all I'm referring to.

A. I don't understand the question.

Q What don't you understand?

A I don't know what you mean by some legal criteria.

Q You testified earlier that you took your engineering fair value and perhaps tempered it or tempered may be an incorrect word, but you viewed it in the light of court and Commission - -

A I weighted it. I weighted it with the original cost.

Q May I finish my - -

A I apologize. I thought you were groping for a word. I apologize for interrupting you.

Q Thank you for your apology and may I move that the comment be stricken from the record, since he interrupted my thought?

THE ADMINISTRATIVE LAW JUDGE: We will take it in for what it is worth.

MR. SCOBBO: Pardon?

THE ADMINISTRATIVE LAW JUDGE: We will take it

in for what it is worth.

BY MR. SCOBBO:

Q Let me get back to what I was saying. Earlier, I believe you testified that you computed the engineering fair value based on a trended original cost study, and then recommended a fair value figure in light of your interpretation of court and Commission decisions. Is that correct?

A. It is correct but it is not complete.

Q Okay. Fill in the missing part, please. Thank you.

A. I determined an engineering value and I would prefer, as I explained, the term fair I determined a current value or a current engineering value and I also referred to the original cost and I found then a recommendation of fair value which is based on an approximate equal weighting of those two primary elements of value.

Q And that is through your interpretation of court and Commission decisions, is that a fair statement?

A. Well, if you look at Commission decisions, at least in recent years or the weighting has not been very equal, the weighting has been heavily biased toward original cost, several times those decisions have been appealed and my reaction to the court's rulings is that the court believes the Legislative intent was for a weighting.

The court doesn't say absolute equal weighting. Equal weighting is possibly my concept as well as the court's. The court indicates that the Commission should not give undue weight to either of the elements and in some decisions, has even found that the Commission had given undue weight to original cost. The court, however, I don't believe, said weight shall be absolutely equal. However, in this situation, in my concept of fairness, and my recommendation is based on an equal weighting, I see no reason to weight it with a bias either way.

Q So that in this particular case, your statement of fair value, you are -- not statement, the number you render for fair value is your decision of fair value, is that correct?

A Yes, indeed. That's what it is offered as.

Q It is not -- in fact, you may disagree with court opinions. In fact, I believe you just stated you have. That they were too heavily weighted towards original cost in the past. Is that correct?

A They were Commission decisions that I had in mind.

Q Commission decisions? What Commission decisions did you rely on, if you remember?

A I'm sorry. I would be hard pressed to name the decisions at this point, having not reviewed the specific

decisions in the recent past.

Q Did you rely on any interpretation of the last Philadelphia Electric case?

A As I testified earlier in my cross examination, I testified my conclusions as to fair value by starting with the fair value found in the last Philadelphia Electric rate case, and described my process and have since put in a response to the Judge's request showing what that was. So in that sense, I did consider the last decision.

(Transcript continues on next page)

6-1

Q And was that fair in your view? Because you did use it as the basis of your analysis in this case, did you not?

A I used it as a basis for the test in this case.

Q Well, was the fair value in the last case fair, in your view and in your definitation of fair?

A I really have not considered it in that context inasmuch as I was not the fair value witness nor the depreciation witness in that case. I was involved in the case, however, with the trended original cost.

Q So you have no opinion one way or another whether the fair value as determined by this Commission in the last case was in your view fair or not, is that right?

A I just have not considered that question and I would like to look into it. I can't answer you.

Q So you have no opinion at this time as to whether that was fair or not, is that right?

A That is correct.

Q Now from your general economic, accounting and to some limited extent maybe financial knowledge, would you agree that debt obligations in the form of long-term bonds are on a contractual basis between the bond holder and the borrower?

A Yes.

6-2

Q Would you further agree that that contractual obligation, which I believe is called an indenture, would not vary over time for that one particular bond? Is that correct?

A I believe that is correct.

Q Now from your generalized background in accounting, economics and finance in the utility industry, would you say that the same is true of equity securities?

A No.

Q So that equity securities, or the equivalent, if you will, the dividends in equity securities, can vary over time? There is no contractual relationship between the equity holder and the company, is that correct?

A Yes.

Q Can you turn to page 1 of Exhibit HTW-3, please, Volume One. Do you have that page in front of you?

A Yes.

Q In the middle of the page there is a heading which states Eddystone No. 4 and 50 percent of common facilities and Additional AFUDC. Can you define for me what AFUDC means?

A It means the accumulated funds while the facility was under construction.

Q Do you know what the letters AFUDC stand for?

A I know, but I don't remember just at the moment. It is what I old fashioned-wise call interest during construction.

6-a

MR. HALL: It was at one time IDC, interest during construction, but it has changed.

THE WITNESS: I haven't learned the new terminology and I will acknowledge it is not very new.

BY MR. SCOBBO:

Q What is the meaning of the phrase for that group of accounts and additional AFUDC? I don't quite follow why that is there. Can you explain that to me, please?

A That is not my term and it is not my decision to add additional AFUDC, and it would have to be referred to whomever the witness is that sponsors the original cost. In other words, it has no bearing on --

Q It is not your term. What do you mean by it is not your term?

A I just don't recall what that means. I did not write the caption for it. As far as I am concerned it is Eddystone Unit No. 4.

MR. HALL: Mr. Scobbo, if I could call your attention to one thing, Mr. Waddington's work picks up from the original cost study which is put together by the company's witness Scott. If you will check company witness Scott's exhibit, page C5, you will see the caption which you are referring to. The terminology comes from Mr. Scott.

Now if you wish an explanation of what those terms mean I can provide that to you. It is a result of certain

6-b

Pennsylvania regulatory principles and their application to the construction of the two-unit generating station.

MR. SCOBBO: I thank you for that explanation but I was curious as to whether the witness understood from where he was starting and he might have explained that to me.

BY MR. SCOBBO:

Q Do you know, to your knowledge, what are the components or what makes up interest during construction which we have equated to AFUDC for terminology's sake?

A The AFUDC represents the time value of the funds used during construction being tied up in the construction during that period of construction.

Q That would be both debt and equity, right, I would be correct in stating that?

A I don't know.

Q You don't know whether it would include both?

A I don't think that whether it is debt or equity enters into the concept of interest during construction. The concept does not consider how the utility is funded.

Q The concept of interest during construction does not consider how the utility is funded, is that your testimony?

A That is correct, it considers the fact that the utility has investment tied up in a construction project and is unable to earn a return on that investment while it is

6-5

tied up, and the cost of tying those funds up is added to the cost of the facility. It is not a matter of funding those dollars.

Q Don't misunderstand me, I did not say that it was funding. I just wanted to get on the record your understanding of what that is. Would I be correct in typifying it as the cost of money associated with the company building a particular project or something of that sort?

MR. HALL: Objection, Your Honor. This is well beyond the scope of Mr. Waddington's testimony. Mr. Waddington has presented a trended original cost study which is what is under examination. A trended original cost study begins from the original cost.

Now Mr. Scobbo is asking questions as to what went into that original cost. That is not Mr. Waddington's area in the company's case and he is not being presented as an expert with knowledge in that area.

MR. SCOBBO: I am not questioning what goes into the AFUDC or whatever. I wanted to know whether Mr. Waddington, having taken a number from the company, knew what the number was.

He described it as interest during construction and I believe he said -- and I wanted to make it clear on the record -- that it was the cost of the money of the company tied up in the construction and that was my last question on

6-6

the line anyway.

THE ADMINISTRATIVE LAW JUDGE: I will overrule the objection.

THE WITNESS: My understanding is that it is the measure of the time value of that money, it is not necessarily the cost of the money, although that time value is a proper cost to be added to the facility.

It is not the cost of the money. I don't know whether the utility borrows that money through an indenture or whether it is equity money and I don't think that is relevant.

The fact is that in the value of the facility there must be an element to recognize the fact that it took a long period of time to construct, and that in fact is a cost of that facility. That is all I am trying to convey.

BY MR. SCOBEC:

Q Thank you. I appreciate that. On page 9 of your direct testimony you stated that in beginning your trended original cost study you first determined what the trendable components of plant construction costs are, is that correct?

A Yes.

Q And I believe you analyzed the plant components of each account listed on pages 9 through 20 of your Exhibit HTW-1, is that correct?

A It is generally correct. I looked into the components of each account. Some of the minor accounts probably would not have been what we would call a formal analysis.

Some of the accounts were actually divided into components, other accounts were trended with a composite index, but even when a composite index was used I looked into components of construction in order to build a composite index.

Q But, nonetheless, these are the accounts that you viewed and these are the accounts that you determined to be trendable, is that a fair statement?

A Yes.

Q Account 314, Turbo Generator Units, do you know whether that includes gas and oil-fired units?

A If there are any gas-fired units they are minor. I can recall no gas-fired units.

Q You can recall no gas-fired units appearing in Account 314, Turbo Generator Units, is that your testimony?

A That is correct. I am fairly certain there are none. I can recall none. My index has no gas-fired units in it.

Q To the right of Account 314, Turbo Generator Units, appears index reference 3-2 and that index 3-2 appears on page 44 of Exhibit HTW-1, is that correct?

A Yes.

Q Just focusing on Index 3-2, you developed component portions of the parts that went into whatever appeared in Account 314, is that correct?

A I did not analyze the entire account. I did make some analyses to determine these component portions that I used for Account 314.

Q Did you study one particular plant?

A Yes.

Q What plant was that?

A It was the Eddystone plant, all four units.

Q All four units of the Eddystone plant?

A Yes.

Q The Eddystone plant, if I am not mistaken, is an oil-fired unit?

A Both oil fired and coal fired.

Q And there four units to the Eddystone plant?

A Yes, in Account 314 there are four units.

Q Am I correct in stating that those units were placed in commercial operation beginning in 1960?

A Yes. Not all four. The first one was.

Q There is an Eddystone gas turbine. That does not appear in there?

A That is not in Account 314.

Q So you studied the construction components of the Eddystone units from 1960 through 1976, is that right?

MR. SCOBBO: Your Honor, is it possible to have that the record reflect/Mr. Waddington is conferring with I think one of his associates in order to respond to the question?

THE ADMINISTRATIVE LAW JUDGE: I'm perfectly happy to have the reporter make note of that.

MR. HALL: The associate is often employed by Mr. Waddington in assisting to prepare the data which underlies these studies.

THE ADMINISTRATIVE LAW JUDGE: I'm perfectly happy to have the record reflect that, too.

THE WITNESS: May I have the question repeated?

BY MR. SCOBBO:

Q I believe my question was so in arriving at your components for account 314, index reference three two, you studied the Eddystone plant units 1 through 4 from 1960 to 1976. That, I believe, was the question.

A Well, the four units went into service 1960 through 1976. My analysis, however, with respect to the newer units, was made prior to the final 1976 costs, so it really employs estimated costs before the final unitization of that unit. Just to be precise, that's - -

Q It employs the cost of the 1960 unit?

A It employs both the cost of both 1960 units which are units number one and two and it employs the costs of units three and four which went into service in 1974 and

1976.

But to not mislead you, at the time of the analysis, the final unitized costs were not yet available for units three and four and I worked with the estimated costs.

Q Is it - -

A - - what I did was valid. I just don't want to mislead you, that's all. I didn't work with the costs as recorded in 1976. I worked with the costs that were estimated prior to the final recording of the costs.

Q Would I be correct that you performed this analysis in 1975?

A Subject to check, I will say yes.

Q So you studied four units in computing the index, composite index for index three two. Two of those units were built in 1960 and two of those units were completed by 1976. Is that a fair summation?

A Yes.

Q Did you study the work orders for the 1960 construction? Is that what you did?

A Well, not the work order as such. We studied the final statement of completed costs from the contractor.

Q Now, that's a fifteen year span from 1960 to, subject to check, 1975 when you performed the study. Did you weight any of the component parts? In other words, did the component of labor change from 1960 to 1975?

A. Well, that's -- does your second question supersede your first question?

Q Yes.

A. For the 1960 plant, the labor component was 18 percent. In 1972 dollars -- I'm not sure what you're asking me. If I may withdraw the answer, I don't think I'm answering the question that you want.

MR. SCOBBO: Could I have the question reread, Your Honor, please?

THE ADMINISTRATIVE LAW JUDGE: Yes.

(The question was read by the reporter)

THE WITNESS: Are you asking me is the component of labor for the 1960 units different from the components of labor for the two newer units? If that's what you're asking me, I can answer that.

MR. SCOBBO: Yes. I suppose that's what I'm asking.

THE WITNESS: The answer is that it was different. But the labor that was spent in 1960 didn't change.

MR. SCOBBO: I understand that.

THE WITNESS: That is still the 1960 labor.

BY MR. SCOBBO:

Q I understand that. But you studied the cost of that labor in 1960 and the relative cost of that labor

in 1960 to the total loss of the unit was different than the relative cost in the 1975 study to the total cost of labor in 1975 study to the total cost of the units three and four? Is that right?

A Yes.

Q And what were the relative costs of labor in 1960 compared to the relative cost of labor in 1975?

MR.HALL: You mean as a percentage of the unit?

MR. SCOBBO: That's the way he performed his study.

THE WITNESS: Well, it isn't. I never weighted at 1975. The work was performed at 1975. The weights were as of 1972 and I can give you the weights at the 1972 price level if that's what you want.

BY MR. SCOBBO:

Q Let me see if I understand this. Then you took a 1960 cost for labor for units numbers one and two, indexed those to 1972, is that right?

A That's right. Labor and all other costs.

Q I'm just concentrating on labor as an example.

A Yes.

Q Now, for the 1975 cost, did you weight that down into 1972?

A Yes.

Q Were the relative weightings of labor cost from the '60 unit to the 1975 units?

A For the two units constructed in 1960, labor was 18 percent of the total cost. For the two units constructed in 1974 and 1976, the labor component was 25 percent of the total costs. For all four units weighted together, the labor is 21 percent of the cost. Now, all of those percentages that I have given you are at the constant 1972 price level. I'm not comparing 1972 dollars with 1975 dollars.

Q Right. You have equalized the dollars, isn't that right?

A Yes.

Q So that this index three two and the composite index would represent a weighting of the various components of the 1960 units and the 1975 units based on 1972 dollars, is that right?

A By 1975, you're using that as of '74 and the '76?

Q Right. For ease of conversation.

A That's correct. It is a weighted average of all four units at the Eddystone Station.

Q And would that be true of index three one, three two, three three and three four?

A Yes.

Q Which of those units are oil fired and which of them are coal fired?

A Units three and four constructed in - - or placed in service in 1974 and 1976 are oil fired. The earlier units are coal fired.

Q I take it, then, that you employed your judgment in weighting the various component parts of those four indices from 1960 through 1975 based on 1972 dollars, is that correct?

A Yes. At the time of this analysis and the Eddystone station was the most recently constructed and most modern station of the Philadelphia Electric Company for which cost information was available. That is the 1960 coal fired units are modern type generating units and the units three and four are modern type oil fired units. I felt that the analysis of that station was a good representative analysis to have made to represent the company's total generating plant.

Q From 1960 through 1975, right?

A Well, for its entire plant for all units predating 1960 and coming up through - -

Q You misunderstand my point. But that's based on an analysis of plant from 1960 through 1975?

A It is an analysis of four units. Two units constructed in 1960. One unit constructed in 1974 and one

unit constructed in 1976. I beg your pardon. Not constructed in, but placed in service in those years.

Q And the study was performed in 1975, is that correct?

A. That's correct.

Q And that judgment that you used, did that involve accounting judgments and economic judgments or is it just - - I don't quite follow.

A. The best I can - - it involved a valuation engineer's judgment and the valuation engineer has the expertise and considerations that were discussed at the beginning of your questioning.

MR. HALL: Your Honor, I wonder if this would be an appropriate time for a break. It has been over an hour.

THE ADMINISTRATIVE LAW JUDGE: Yes. Let's take a short recess.

(A brief recess was taken.)

(Transcript continues on next page)

8-1

HAROLD T. WADDINGTON, resumed.

BY MR. SCOBBO:

Q In developing your composite indices such as the ones we just went through -- let's take labor, for example -- did you study man-hours or did you study the actual costs?

A It is costs, dollars. The analysis was of the labor costs.

Q Did you check the reasonableness of these composites to any industry composite for the type of plant that we were referring to in Indices 3-1 through 3-4?

A Yes.

Q What did you check?

A Well, first off I checked one against the other. At that time I had recently completed similar analyses for West Penn Power Company and I checked against that.

Q When you say one against the other I don't quite follow what you mean.

A Units 1 and 2 against Units 3 and 4. I checked one against the other to see if they were within the same reasonable range of each other and they were. I used the composite of all four and I also checked against an analysis of an entirely different utility that I had just recently completed, and again it was reasonable.

Q And you found that the composite indices

8-2

for Philadelphia Electric were reasonably comparable to the composite indices for West Penn Power for Indicies 3-1 through 3-4?

A Well, looking at the one we have been discussing, 3-2, for example, labor for Units 1 and 2 was 18 percent, for Units 3 and 4, 25 percent. They weighted out to an average of 21 percent. West Penn Power was 23 percent.

In other words, roughly one-fifth of the station construction is labor.

Q Have you had opportunity to perform a trended original cost study on any other utilities in 1975?

A On any other utility?

Q Yes.

A Yes.

Q Did that utility have indices similar to Indices 3-1 through 3-4?

A Other than West Penn Power which I mentioned, I have performed a trended original cost for West Penn Power prior to this study, and subsequent to this study, the only other electric utility is UGI and I do not have with me what those components are.

Q Have you had an opportunity since 1975 to check the reasonableness of the composite indices for Indices 3-1 through 3-4 since 1975?

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A I have made no further check than the one I described. I see no need to. Undoubtedly, if I analyzed another major unit I would check it against this, but I have not done that since the completion of this work.

Q Would you turn to page 4 of your Exhibit HTW-1, please.

A I have it.

Q Once you developed the composite indices you used the Lespayres procedure, which if I understand it, would hold constant the historical bundle of service, that is the weightings of the composite index, and then you would trend up the components of that index, is that correct?

A The Lespayres procedure is the procedure of constant weighting that I used to make the composite indexes.

Q Would that procedure be such that you held the weightings constant when you applied the various indices to the components of the composite index in weighting the total?

A Yes. For example, returning to the 21 percent labor in Account 314, that is 21 percent labor at 1972 price level. Whatever quantity of labor that represents is held constant for the entire composite index series.

Q So that that figure 21 percent is held constant throughout the composite --

A No, sir, the quantity is held constant. The percentage would vary because all the components do not trend

by the same pattern.

Q When you say the quantity is held constant, can you explain to me what you mean by that?

A For example, if in a given time frame the cost of labor doubled and the cost of material remained constant, if at the original level labor is 21 percent, after that change of the labor doubling while the material remained constant, the percentage of labor would be in excess of 21 percent.

So it is not the 21 percent that I hold constant, it is the amount of work represented by that 21 percent in 1972 that remains constant.

Q How did you value that work?

A I valued it in 1972 dollars.

Q So did you hold constant the 1972 dollars representing 21 percent labor?

A Yes, that is correct.

Q The same would be true of all the other components, if I would ask you those questions, isn't that correct?

A Yes, sir.

Q Is there any other method that can be employed, given a composite index, to trend the components of the composite index rather than the Lespayres method?

A I hesitate when you ask is there any other

method. There is no other proper method. Sure, you can do it other ways, but it would be wrong.

Q In your opinion, wrong?

A Yes.

Q What other methods are there?

A I don't know of any recognized methods. I have seen work done that was incorrect. Now I don't know the name of the method but I have seen people misuse indexes. This is the appropriate way. What I have done with the Lespayres procedure, if you are going to make a composite index, which I have done for roughly half of these accounts, the Lespayres procedure is the procedure.

Now the other classic procedure in the literature is Paasche's procedure. Paasche's procedure amounts to where I have done what I have called component trending, so I have used both of the classic recognized methods of weighting index numbers, one with a constant weighted index, and that is Lespayres procedure, and alternately, in those accounts where I have identified it, I have done component weighting and that is Paasche's procedure.

Q Can you explain the Paasche procedure for the record, please?

A To try to keep it as simplified as possible, Paasche's procedure is where I historically identified the components and trended each component separately, and then

summed up the result. That is Paasche's procedure.

Q Could you point to an example in your HTW-1 of that methodology?

A On page 14, Account 364. For all of the plant installed since 1940 we determined the components in each and every year, the components of wood poles, cross arms, guys, hardware and installation and trended each of these components individually, and then summed up the total at trended original cost. That is what Paasche's procedure amounts to.

Q Would you turn to page 21 of your Exhibit HTW-1? Before I get to that, going back to Indices 3-1 through 3-4, to the extent that they are based on weighted average components for 1975, four years later, today, those components, if you studied a similar type plant, could change, is that correct?

A They could. I don't think it would be likely, but they could.

Q They could change either up or down? They could vary somewhat?

A Obviously I am sure you could build identical plant in two successive years and the components would likely change a little bit, but I would not expect any basic change, for example, that roughly one-fifth of it is labor and four-fifths of it is other things.

Q Based on your judgment -- I may have asked you

this question before so I am sure I will hear an objection -- your valuation engineering judgment and accounting and economics and what other disciplines you may have brought into play, you decided that a rough weighting of 21 percent in the examples we have been talking about is proper for labor, is that correct?

A That is correct, that was based on the company's most modern station including coal-fired and oil-fired units, and it is my best judgment.

Q Suppose -- this is a hypothetical -- you studied Philadelphia Electric and you found that the relative weight of the labor was 50 percent for a particular index, and compared to West Penn Power that like index was 21 percent: would that indicate a problem to you?

A Yes, it would. I would have to find out why, because I can't imagine that it could be 50 percent. I would certainly look deeply into that situation.

Q Do you place any parameters on your judgments at all, such as whether 21 percent is reasonable or not?

A I look at it to see if it is reasonable, and I looked at the two individual analyses with the analysis. I believe this is a statistical technique where you look at two different samples, you compare one sample against the other to see how valid it is. It is a comparable kind of judgment. And I looked at one against the other and I also

looked at what I got against what I got for another major utility, and based on that I found that what I derived was reasonable.

As you suggest, if I found one where it came out 50 percent I would have a problem in that I would have to reconcile why it is so far removed from what is typical.

Q Now on page 21, Index 1-6, is that a composite index?

A Yes.

Q Was that composite index based on the Eddystone plant?

A Yes. You understand I have to look these details up?

Q That is perfectly reasonable. And was it the same, it was based on Eddystone Units 1, 2, 3 and 4?

A Yes.

Q Again weighted? When I say weighted, let me explain to you what I mean --

A The total labor force for the construction of all four of those plants and equated to the same price level of dollars.

Q The same would be true of Indices 1-11 and 1-12, is that correct?

A 1-11, the answer is yes. Just let me check 1-12. The answer is yes for 1-12 also.

Q Can I turn your attention to page 12 of your Exhibit HTW-1. Specifically accounts 342 - - well, at this point, account 342, fuel holders, producers and accessories. Does that refer to coal, oil and gas or oil alone or oil and gas or what precisely does that refer to?

A All right. This other production plant is primarily the combustion turbine units and fuel holders would be the oil tanks.

Q And for account 342, the proper index is 3-8, is that correct?

A Yes.

Q Now, the composites shown there, which plants did you study? Or for 3-8?

A I studied two plants. Namely the Richmond plant and the Plymouth Meeting plant and both of which are plants containing significant combustion turbine installations that were built in the recent past.

Q Plymouth is a gas turbine? Is that correct?

A My recollection is that it was oil. But just give me a moment and I will - -

Q I can refer your attention to the annual report of Philadelphia Electric Company to the Federal Energy Regulatory Commission, commonly known as the FERC form one, page 432A-5 and I believe it states that Plymouth is a gas turbine plant. Is that correct?

A. This page says gas turbine. Now, my recollection is that they are oil fired and I would like to check against my field notes. I note at the bottom of this page, there are several columns and for the kind of fuel and the only caption is oil indicating that they are oil. I think my recollection is correct that it is oil fueled and not gas fueled. Perhaps the unit can burn both, but I know that there are oil facilities there and my understanding is that the common fuel, at least at the time I was there, was oil fired. They may have the capability of burning gas. I don't know.

Q. And the time you performed that study was 1971. Is that correct?

A. I will have to look it up. I don't think it was '71. In fact, I know it was not 1971. It was approximately the same time as these other analyses which would have been during 1975 and 1976.

Q. The other plant you viewed to develop your composite in index 3-8 is the Richmond plant, is that correct?

A. Yes.

Q. Is that an oil fired unit or a gas fired unit?

A. My recollection is that it is oil fired. My work papers indicate that it has oil facilities there. Again, it may be capable of burning gas.

Q. Okay. Turning to index 3-9, gas turbine units

installed, which plant did you study for that composite index?

A. That was an analysis of the Richmond plant.

Q. Was that the same Richmond plant that you studied for fuel holders, producers and accessories?

A. Yes.

Q. Which you said was an oil fired plant when you studied it?

A. Yes.

Q. All right. And when did you perform the analysis for gas turbine generators in index 3-9?

A. The same time, 1975 and 1976.

Q. If you could turn your attention to again, FERC Form 1, page 432A-5 and in particular, at column D, which is headed Croydon, C-r-o-y-d-o-n, which states gas turbine and in service date or strike that, year last unit was installed, 1974. Is this a fair representation of what appears on that page?

A. Yes.

Q. Now, am I correct in stating that the Richmond plant you studied was put into commercial operation in 1971? Or was it '73?

A. It was the year originally constructed was 1970. The year last unit was installed was 1973.

Q. And which unit of the Richmond plant, which

unit did you study for your analysis in index 3-8? Was it the 1970 unit or the 1973 unit?

A. They were units which are coded as unit number 73 and unit number 74, which was a 1971 installation

Q. Richmond unit was installed in 1971, according to your data? Is that your testimony?

A. The analysis that I made was according to the notes in 1971 installation.

Q. And the FERC form 1 as we just went over it shows 1970?

A. Through 1973.

Q. For the first unit. 1973 for the final unit?

A. These are two of the units that were put in in that period. They were put in in 1971 which I believe is between 1970 and 1973.

Q. But in any event, you did not study the Croydon unit which was put into commercial operation in 1974, is that correct?

A. That's correct. The final costs were not available for the Croydon units at the time of this work.

Q. Were the final costs available for indices 3-1, 3-2, 3-3, 3-4 when you studied it?

A. They were available for the 1960 installation. They were not as yet available for the 1974 and 1976 installations. There was available, however, a very detailed cost estimate.

Q Did you analyze - -

A That enabled - -

Q Did you analyze or could you estimate - -

MR. HALL: Objection, Your Honor. Could he finish his answer, please?

THE ADMINISTRATIVE LAW JUDGE: Did you finish your answer?

THE WITNESS: I was going to say the detailed analysis that did enable, that is the detailed cost estimate that did enable the analysis. I did not have that for Croydon.

BY MR. SCOBBO:

Q But you estimated cost figures for indices 3-1 through 3-4?

A No, sir. I did not. This was a detailed cost estimate prepared in connection with the construction of that major facility. It was something that did enable analysis, a meaningful analysis.

Q But in any event, for the gas turbine generator units installed in index 3-9, for the year that you studied it, 1975, your testimony is that Croydon cost estimates were not available and therefore, you didn't use them, is that correct?

A That's correct.

Q Did you inquire as to estimates? Did you

inquire of the company whether they had estimates?

A. My recollection is yes.

Q And the company - -

A. My recollection - - in other words, as we set out to do this, we wanted to analyze most recently available cost data for units that were constructed. Now, Croydon is the newest station. It is a big station, but at that time, the best we could do is Richmond. It takes years to unitize these costs and have final costs on construction of that nature.

Q Did you update your study for this particular case? In other words, did you go back and did you study any estimated or more particular estimated data that the company may have for gas turbine generator units installed, index 3-9?

A. No. Generally for the current study, I used the indexes that were constructed in 1975 and 1976.

Q Did you inquire of the company whether they had completed cost data for the Croydon unit when you performed this study?

A. I don't recall inquiring. I wasn't interested. I did not set out to update the cost indexes. I suspect that they do.

Q But you didn't think it significant enough to ask the company?

A. That's correct. It was not necessary for this study.

Q Turning your attention to account 353, page 13, that's station equipment, is that correct?

A. Yes.

Q And the index you used to trend that account was index 3-11, is that - - wait a minute. Strike that. Index 3-10. Is that correct?

A. Yes. That information was set forth on page 13 of Exhibit HTW-1.

Q And you used index 3-10 which is a composite index as shown on page 46, is that correct?

A. Yes. It is shown on page 46.

Q What period of time did you study to ascertain the composite index service as shown? In other words, what period of time did you study for transformers to be 30 percent, switch gear 15 and so on.

A. We looked at all of the construction that was closed in account 101, plant in service, during the period 1968 through 1975. However, very little was closed during the years 1973 through 1975. Therefore, the percentages that are shown on page 1946 are based on construction during the period 1968 through 1972.

Q And that is you say plant closed to account 101, is that correct?

A. Yes.

Q Did you check the company records to find out whether they had any additional significant additions to that particular account for 1975 on?

A. The work was done in 1975. You mean since that - -

Q Yes.

A. No. I used the same indexes that were developed for the study that was presented at RID 438. Those indexes remained valid. There's not that much time that has passed since they were developed.

Q In a period of time studied for indices 3-11, 3-12, 3-13, 3-14, 3-15 and 3-17, would I be correct in stating that that period of time was 1968 through approximately 1972 to 1974, in that neighborhood? For each and every one of those indices?

A. Yes. It varies, but generally, that is the period of time.

Q Thank you. Now, can I turn your attention to page 52 of Exhibit HTW-1, please. Would I be correct in stating that the composite figures shown or shown for indices 3-30 to 3-31 is for the Peach Bottom plant, is that correct?

A. They were based on an analysis of the final costs of the Peach Bottom power plant.

Q. Would I be correct in stating that Peach Bottom plant was completed in 1974? I can refer your attention to FERC Form 1, page 432A-4.

A. It is in the exhibit. Just give me a moment and I will find it.

(Pause)

A. (Continuing) That's correct. Yes. It was 1974.

Q. Thank you. Did you make any study of the component of weightings for indices 3-30 and 3-31 comparing the costs of Peach Bottom to the costs for Salem?

A. No. The costs for Salem are not at all complete, yet. As of today, these costs are not complete.

Q. They are not complete yet?

A. It takes years to unitize a nuclear plant.

(Transcript continues on next page)

10-1

Q Did you inquire of the company whether they had any comparable component cost data for the Salem plant?

A I don't know that I inquired. Yes, that is the source of my knowledge of knowing that there is nothing available on Salem. I did inquire of the company.

Q If a study such as that was available, would you have used a study based on Salem-1 for the weighted composite indices shown in Index 3-30 and 3-31?

A I anticipate that someday down the road doing the studies I will bring Salem into the analysis. If it were available today I probably would not have, for the same reason that I did not go back and update the indexes for the other accounts. That is, it is not necessary for a composite index series to re-weight it every couple of years or so.

An index that is developed is valid for a period of time before you need to go back and re-weight it.

Q If I can turn your attention to page 14, Account 362 is Station Equipment, isn't that correct?

A That is correct.

Q The index used to trend that particular account was Index 3-17?

A Yes.

Q The breakdown of which appears on page 48?

A Yes.

Q Now if I could turn your attention to Exhibit

10-2

HTW-3, Volume Two, page 292.

A I have it.

Q On that page is a representation of the original cost remaining vintage plant in that particular account for the years 1961 through March of 1979, is that correct?

A Yes.

Q Is it your testimony that because of the Lespayres method the weightings appearing on page 48 of HTW-1, Index 3-17, represent the average components of the original cost appearing on page 292 for Account 362?

A It is my opinion but it has nothing to do with Lespayres. It is not because of the Lespayres weightings.

Q I will accept that correction. Now in the first column on page 292, do those numbers include allowance for funds used during construction?

A I don't recall. They may or may not.

Q Is there any way of you checking right now with all the data you have with you?

A It would not be in my work papers. I would have to confer with a company official who knows.

Q Is it your testimony that you have no idea or is it your testimony that you are not sure?

A The allowance for funds generally is applicable to the type plant that takes a period of time to construct.

10-3

Account 362 represents substations. Some substations take a considerable length of time to construct. These are distribution substations.

I would suspect that there is allowance for funds in here in some situations. However, if it is a situation where a transformer replaced an existing transformer there would not be an allowance for funds used during construction. That is why I hesitate. For this particular account I don't recall whether this typically would have allowance for funds or not.

In fact, my recollection is the practice varies from company to company.

Q What practice?

A Of whether to record allowance for funds used during construction according to the class of property.

Q If I were to look at the books of account of Philadelphia Electric for Account 362 for given years, would I see the same dollar figures you show on your original cost column for each year?

A These were compiled from the books of account by the company and I would expect that you would find the same dollars there.

Q Does Column 1, Original Cost, in this particular account, take into account those items booked to Account 106, Completed Construction Not Classified?

A Yes. It is my understanding that it does.

Q For example, would the amounts recorded in Completed Construction Not Classified for 1975 correspond to the amount shown on page 292, original cost for 1975, that is, that amount related to Account 362?

A The amount shown for 1975 is a summation of the dollars that have been closed into Account 101, Plant in Service, and the dollars that are still in Account 106, plant that is being classified. What is shown in this exhibit is the summation of those two.

As I understand it, the dollars shown here are the total dollars of plant in service.

Q Which would include an amount recorded in Account 106, is that correct?

A Yes.

Q Would the amounts recorded in Account 106 be shown in the given year that they were booked to Account 106 or what? How would the company account for that, if you know?

A They are shown according to when the plant was placed in service, that is the installation date that it will carry.

Q How does that relate to Account 106, if you know?

A I don't understand what you are asking me.

A When a plant is placed in commercial operation,

is it placed in Account 106, to your knowledge?

A Yes.

Q So your testimony is that every plant that is placed in commercial operation, whether it be in Account 106 or specifically placed in Account 362 in this example, that plant related to Account 362 would be shown in the first column of page 292?

A That is right, of the plant that is in 106, that part that will eventually be -- it is in 106 and it goes to 101. When it goes to 101 it is further classified into one of the 300 series of accounts.

So that plant that is anticipated to eventually end up in Account 362 is coded as 362 for the purpose of this rate filing.

Q In the particular vintage year?

A It is coded according to its installation date.

Q Hypothetically, do you think it is possible for the company to have booked an amount in Account 106 coded for 1975 and then in 1977 change that coding to some other account, thereby transferring that dollar amount from Account 362 out into another account?

A Hypothetically that is possible. That is why it is 106. It is in 106 awaiting unitization and classification.

Normally -- and I have to be general in my answer -- it depends on the class of property and it depends on the work order -- normally when it is closed into 106 one can get a fairly good idea as to where it is going to end up ultimately.

But then in putting this rate case together it is carried in the plant account that it is anticipated to be eventually. And, of course, it is possible it might be somewhere else.

Q We are dealing with a lot of historical numbers here, are we not, in your testimony and exhibits?

A A lot of historical numbers?

Q Yes. In other words, the amount shown for that amount of plant booked into Account 362 for 1975 of some $11 million was not booked into Account 362 in 1978, was it?

A Some of itmay have been.

Q It is possible, then, that some of the amounts shown in the various accounts under Account 362 for a given year may have been booked into that account in a subsequent year?

A Let me give you a hypothetical.

Q Sure.

A If a plant is completed in 1975 and it is recorded into Account 106 in 1975, and then in 1977 the unitization is complete and it is then recorded into 101 and

Account 362 in 1977, it carries the year 1975.

Q To the extent you performed your analysis in 1975 -- and we are now utilizing numbers in 1976, 1977 and 1978 -- did you go back and check whether the company made that adjustment in their past accounts?

A Made what adjustment? I don't understand what adjustment you mean.

Q Did you perform the basis for this study in 1975?

A The work was performed in 1975 and 1976 and at that time we analyzed plant -- you are talking to me about the basis for Index 3-17? Are we back to that?

Q Yes, we are dealing with Account 362.

A For Index 3-17, at the time of conducting the study, it was initiated in 1975 and extended into 1976, at that time we analyzed the closing of plant into Account 101, because the manner in which that is closed, the components are readily available to us.

At the time of doing that, because of some plant still being in 106, the only significant closings that we had were 1978 through 1973.

In other words, it indicates approximately a two-year lag in getting Account 106 closed into Account 101.

Now whatever was closed into Account 101 is

fact and there were no adjustments to it, there was no need to go back and look to see if they made -- I don't know what adjustments you are talking about -- there were no adjustments to go back and look for.

If you are asking me did I update the analysis, the answer is no, for the same reason I have explained, it is not necessary to update the analysis. That is a good valid analysis performed -- well, currently it is still less than 10 years old -- that is a good analysis.

Q Let me take just one more stab at this. I am having a difficult time following your explanation.

In 1975 was the amount booked to Account 362, $11,760,000?

A When I looked at it in 1975?

Q Yes.

A No, not at all. It wasn't anywhere near that.

Q It was something less?

A Yes, because 1975 had just happened.

Q And the company would not have recorded the full amount of plant in Account 362 which could have been still in Account 106, is that correct?

A That is right, it was probably earmarked Account 362 but it was in 106 and I did not make any analysis of what might be in 106. I waited until the final analysis work was done and I worked with those work papers, and from

that I could readily ascertain what the components were. If I had done 1975 I in effect would have been doing the company's analyst's work for that.

Q Let's take the year 1978. The amount shown is $1,806,000 net that was closed to Account 362 for 1978. Does that represent the total amount or is there some amount that is still in Account 106 that has not been booked to Account 362 and as it would have been had you done the same analysis I just went over for the year 1975?

A For 1978 that amount of one million eight, I suspect that most of that is still in Account 106 because there is a lag of time before it gets into 101. In other words, even if currently I had gone back to make a new analysis, I still would not have been able to pick up 1978 and 1979.

It is true I would have probably then got a significant amount for 1974 and 1975, maybe 1976.

In other words, the accounting lag that exists still exists. If I went to update what I did three years ago I would only get three more years worth of data and I would still have the same lag.

(Transcript continues on Page 1962.)

Q Okay. Let me ask you one final question along these lines. The amounts shown on column 1 of page 292 for account 362, are those amounts that were currently given to you by the company?

In other words, you did not stop with your data in 1975 and the company gave you three more years data? They gave you a whole new set of data?

A Oh, yes. This is a whole new set of data. This reflects not only the additions of plant, but also any retirements that took place in the interim period.

Q From 1975, let's say through today?

A Yes. This is their balance in that particular account.

Q Thank you. Turning back to or turning your attention to page 146 of volume 1 of Exhibit HTW-3, please.

A Yes.

Q Do you have that in front of you?

A Yes.

Q That represents account 322, which is reactor plant equipment.

A Yes, it does.

Q Of Peach Bottom. Is that right?

A Yes.

Q Now, on page 52, you show - - of Exhibit HTW-1, you show composite index, index series 1974 equals 100.

A. Yes.

Q. Transferring your attention back to page 146 of HTW-3 for the year 1974 under index, I don't see one hundred. Why not?

A. Let me look that up.

Q. Again, can the record reflect that Mr. Waddington is conferring with one of his associates who, as previously stated has done a lot of work on this study?

THE ADMINISTRATIVE LAW JUDGE: The record will so reflect.

MR. SCOBBO: Thank you.

THE WITNESS: Well, the reason is that it is an index series, but with indexes that are used in the third column.

BY MR. SCOBBO:

Q. Under index?

A. Index G-330. There's an index series in my work papers and I have a base of 1971 equals one hundred.

Q. Your work papers show 1971 equals one hundred?

A. That's correct.

Now, the reason I am hesitating and pondering it and consulting with my assistant is I'm trying to recollect why this is shown as 1974 equals one hundred in the report.

Q. So at this time, you don't have an explanation as to why the report shows, HTW-1 shows a series index base

of 1974 and also why there is no figure of one hundred or one thousand appearing under index G-33 on page 146 of Exhibit HTW-3, Volume 1?

A. I acknowledge that the two documents are inconsistent with each other. What I'm trying to determine is which document is the correct one.

Q. Okay. The numbers appearing under original cost on page 146, do those numbers include AFUDC?

A. Yes.

Q. Turning your attention back to page 52 of Exhibit HTW-1, your composite index is AFUDC reflected in the composite index series?

A. No. It would not be - - you mean as a separate component?

Q. Yes. Is it reflected in - -

A. No. It is not there and it shouldn't be there. That's not a separate construction component.

Q. Now, throughout your study, you chose various trend factors to reflect the trend in plant additions, is that correct?

A. That shows various indexes. From those indexes calculated trend factors.

Q. Now, just to give one example and to follow along on what you did precisely, on page 48 of Exhibit HTW-1, for index 3-17, there appears transformers, a component of

a composite index forty-six percent. Is that correct?

A. Installation is 46 percent.

Q. That's the installation of Trans - - 46 percent?

A. Not transformers. Did you say transformer?

Q. Yes.

A. I'm sorry. I must not have the same reference. Index 3-17.

Q. Yes.

A. Transformers are 46 percent. Yes. There's the 46 percent that appears further up the page and my eye fell on that. I see where youare.

Q. I understand. And the index you use to trend that component is 2-14, is that correct?

A. Yes.

Q. And 2-14 appears on page 30 of HTW-1, is that correct?

A. Yes.

Q. Now, the trending that you used, the trend data that you used, you started off with data prior to 1939 from one source, you used data from 1939 to 1950 from another source, data from '51 to '74 from a third source and 1975 to date data from a fourth source. Is that correct?

A. Well, not really. The source from 1939 to date is Bureau of Labor Statistics. It just happens to be

different codes within the Bureau of Labor Statistics.

Q But nonetheless, because they were different, if I can use the word indices, I don't know if that's a proper characterization. First let me ask you that. May I properly characterize these as indices?

A Yes.

Q Because they were different indices, you have had to splice the various indices, is that correct?

A Yes, sir.

Q And would I be correct in stating that your splicing technique was one where you had an overlapping period and in this example, let us take the first one, 1939 to 1940, that is the Gannett Flemming 1939 data overlap with the Bureau of Labor Statistics Wholesale Price Index Code 117 for that period. You took that overlap and took a ratio between those two points, is that correct?

A Yes.

Q And once you determined that ratio, you went back and am I correct in stating multiplied that ratio times each data point up to 1939?

A That's correct.

Q And the same thing would be true for the period overlapping 1951 to 1955 except we would be using different indices, isn't that correct?

A That's correct.

It is the technique of the equating one index series to another. If one index series happens to be based in terms of in magnitude or two times the other index series, the ratio would be 50 percent and I simply convert one index series to the other using that ratio.

Q Would, if you were to draw an eyeball line, if you will, from the beginning of the data series prior to 1939 up through date, given that index 2-14, would your splicing technique change the slope of that line?

A. It would not change the relative slope. It just changes the magnitude. It is to put the two indexes on the same basis. That's all. It doesn't.

Q Would that splicing - -

A. It doesn't change any percentage price changes from one year to the other. So therefore, the relative slope is still the same. I haven't tampered with that, at all.

Q Would the splicing technique change the Y intercept of that line?

A. I don't think there would be a Y intercept. That would mean the commodity costs zero. It would be free.

Q Well, if we defined the X axis as time and the Y axis as the relative data that you have, whether it is in terms of dollars or whatever, at least the consistent

terminology, would that splicing change the point at which that line would cross the Y axis?

A. What's the Y axis again?

Q. Y axis is however you defined your data, in other words, whether it was in dollars or - -

A. All right. Say dollars. That's the ordinate. And the abscissa or the X axis is time?

Q. Time. Each year. In other words, you would have a point corresponding to 1939 and whatever dollar amount that was, 1940, whatever dollar amount that was, et cetera.

A. I understand that.

Q. Would your splicing technique change the Y intercept of your line?

A. What do you mean by the Y intercept?

Q. The line that crosses the Y axis. The point at which the line crosses the Y axis, excuse me.

A. It would cross the Y axis at the beginning of time.

Q. Let me go back over it.

MR. HALL: You mean assuming the line was extended for however long is necessary to reach the Y axis. Is that what you mean?

MR. SCOBBO: That's right.

MR. HALL: It is a hypothetical. It is not

going to happen.

MR. SCOBBO: We don't know if it is going to happen or not. That's something he will testify to or not testify to.

THE WITNESS: If the reason you use the Y axis or the X axis, if the X axis is time - -

BY MR. SCOBBO:

Q Starting when you started with your data series to prior to 1939. Suppose you started in 1920.

A All right.

Q That would be the first point, would it not, on the X axis?

A You're talking about would this change where the index crosses 1920 and the answer is yes. That's the whole intent of it. To change it.

Q Not where it crosses 1920, but where it crosses the Y intercept.

A I need you to define the Y axis for me.

Q Y axis is money. By your own data.

A That's right.

But to cross that axis, as I understand, that would cross that axis at a point in time.

Q Let me give you an example. In 1920, if your data for 1920 shows $10.00.

A Yes, sir.

Q And your data for 1921 showed $12.00.

A Yes.

Q Across the Y axis, you go up, put it this way. Start at 1920 and you would go up to ten on the Y axis.

A Yes.

Q Okay?

A Yes.

Q Is that the Y intercept? If you were to draw a line between 1920 and 1921, the two data points represented by $10.00 and $12.00, whatever I used as an example? Would you have a line that crossed the Y intercept?

A Yes.

Q Is that Y intercept line that line across the Y intercept is that going to cross at a point in time or is that going to cross at a dollar amount?

A You have defined it. It is going to cross in 1920, now.

Q And a dollar amount? Is that correct?

A At $10.00. It is going to cross 1920 at $10.00 in your hypothetical example and splicing will change that. That's the whole object.

Q Splicing will keep the slope of the line the same but will change the Y intercept, isn't that correct?

A It will keep the relative slope the same.

Q But it will change the Y intercept, isn't that correct?

A Absolutely. That's the whole object of the exercise. Otherwise, the trend factor would be wrong.

Q Now, have you ever employed the technique of least squares?

A Yes. I take it you mean least squares technique of fitting a curve to - -

Q Line to a data point.

A To point. Yes. I have.

Q Could you have used least squares instead of splicing throughout your study?

A I don't know how. Splicing is not a substitute for least squares. Splicing is not a technique of fitting a curve to a point.

Q I understand that.

A So I, my answer is no, but perhaps if you, in your question suggest it can be used, I don't understand your question.

Q Okay. Let me give you an example. To the extent that you had two or three, maybe four years that had an overlap in data points, for example, let's take 1951 to 1955, that's an overlap in data points, is that correct?

A Yes.

Q Could you not plot those data points on a graph?

A Yes.

Q Could you also fit a trend line or a least squares line through those data points which would show the distance of those points from the line?

A Yes.

Q Could you use that technique as a substitute for the splicing, given your four data points overlap?

A I don't know how.

Q In the manner in which I just described?

A It may - -

Q Could you do it in the manner I just described?

A We have five points on each index. Am I going to fit all ten points to a line or am I going to put five points of the one index and fit the other five points - -

Q You are going to take the ten points that overlap which represents five years worth of data?

A Yes.

Q For two indices and you are going to take those ten points and draw a trend line between those ten points. Is that possible?

A It is possible, but it would be meaningless. It might be meaningful to fit the five points from one index or the five points from the other index, but what you would do

with those, I don't know. But to mix them all up, that's the problem. I have two different indexes and the points of the one I don't expect to be following the same trend line as the other. That's why I splice.

MR. SCOBBO: Could I take maybe a two or three minute recess to look over my notes and determine whether I have any further cross or not?

THE ADMINISTRATIVE LAW JUDGE: Certainly.

MR. SCOBBO: Thank you.

(Whereupon a brief recess was taken.)

(Transcript continues on next page)

HAROLD T. WADDINGTON, resumed.

BY MR. SCOBBO:

Q Mr. Waddington, just a few more questions. Do you believe that the fair value figure that you gave is accurate?

A Yes. I think the record will show that I believe that it is accurate. Not necessarily precise, but accurate.

Q Do you believe that your trended original cost study is accurate?

A Yes.

Q Do you believe it is precise?

A No. No one really knows what the reproduction cost is. But I think this is an accurate representation of the magnitude of what the reproduction cost would be. But it is not precise.

Q Define accurate for me, please.

A By accurate I mean that it is correct, that is, we might measure the length of this room in feet and we would have an accurate statement of however many feet it is, but it would not be precise in that we do not go to decimal portions of feet or to fractions of inches.

By accurate I mean it is the correct magnitude but not down to the last dollar.

Q Can you assign any kind of confidence level

to the magnitude of accuracy?

A I did not.

MR. SCOBBO: I have no further questions. Thank you.

MR. SAYRE: I just have two or three questions based on the cross by CEPA, Your Honor, and I promise not to take more than three minutes.

BY MR. SAYRE:

Q Mr. Waddington, is it correct that much of your testimony in this case with respect to trended original cost is based on the TOC study you did in RID 438?

A The indexes that I am using, particularly the weights for the composite index were based for the study I used in the last case and I retained those same weightings.

Q So is it fair to say that it took less of your time to do this study as opposed to the last study?

A Oh, yes, that is one of the objects. There is no need to update it. Seriously, why expend funds to update a study in a period of only two or three years when the weights that I developed are still modern weights, they are still valid for use.

Q So it is further correct that you were paid less for this study than you were for the RID 438 study?

A For trended cost, yes. My scope of work has expanded to include depreciation.

Q I mean to confine my question to trended cost studies.

A I am sure that the dollars paid to us for trended cost work were substantially less than in 1975 and 1976.

Q What were the two respective amounts?

A I don't know the amounts but I know it is less.

Q Can you furnish those to us?

A I think there was an objection to furnishing that information previously but I will furnish it.

MR. SAYRE: That is all, Your Honor.

THE ADMINISTRATIVE LAW JUDGE: Any redirect, Mr. Hall?

MR. HALL: Yes, Your Honor, I just have two questions.

REDIRECT EXAMINATION

BY MR. HALL:

Q Mr. Waddington, I believe it has been called to your attention in the cross-examination that the index series shown on page 146 of your Volume 1 of Exhibit HTW-3, which is used in trending your Account 322, does not indicate 100 in the year 1974, though in fact your Exhibit HTW-1 at page 52 would indicate that that should occur. I take it you

acknowledge that there is an error on page 146 in that regard?

A There is. I previously acknowledged that there was an inconsistency. I during our brief recess ascertained that the error is on page 146 of Exhibit HTW-3.

BY MR. SCOBBO:

Q 146 did you say?

A Page 146 of HTW-3 and the index number for 1974 should be 100.

BY MR. HALL:

Q Mr. Waddington, I would request that you supply for the record -- and since I am your counsel I assume that will be done -- a corrected page 146. Finally, Mr. Waddington, a question arose during your cross-examination as to whether or not certain plant of the company identified as gas turbines on pages 432-A-5 and A-6, and I believe also A-7 and A-8 was fired by oil or gas. Could you explain that at this time?

A All of the combustion turbine units burn oil. Some of them are capable of burning gas but gas is not available, and for all practical purposes they may as well be oil-fired units.

The components are correct in that I have included oil storage facilities for them, and the fact that I treated them as oil-fired units is correct because that is what they are currently being used as, oil-fired units.

MR. HALL: Your Honor, that is all that I have.

THE ADMINISTRATIVE LAW JUDGE: Thank you. Anything further, Mr. Scobbo?

MR. SCOBBO: Yes, one question.

RECROSS-EXAMINATION

BY MR. SCOBBO:

Q To the extent that page 146 is incorrect, the index figure that should correspond to 1974 and the trending factor that would correspond to 1974 would change the trended original cost figures, isn't that correct?

A Yes.

MR. SCOBBO: No further questions. Thank you.

THE ADMINISTRATIVE LAW JUDGE: Is there anything further today?

MR. HALL: I don't believe so.

THE ADMINISTRATIVE LAW JUDGE: If not, the proceeding is adjourned until Saturday at 10:00 o'clock in Media. The next evidentiary hearing will be here in Harrisburg at 10:00 o'clock on Tuesday.

- - - - -

(The hearing was adjourned at 4:22 o'clock p.m.)

---oOo---

I hereby certify that the proceedings and evidence are contained fully and accurately in the notes taken by me during the hearing of the within cause, and that this is a true and correct transcript of the same.

DOHRBACH & MARSHAL, INC.

By Eugene W. Holbert
Eugene W. Holbert, RPR, CP

By James P. O'Hara
James P. O'Hara

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TESTIMONY OF

STEPHEN A. MALLARD

DOCKETED
NOV 16 1979

Q. Please state your name and business address.

A. My name is Stephen A. Mallard and my business address is 80 Park Place, Newark, New Jersey.

Q. By whom are you employed and in what position?

A. I am employed by Public Service Electric and Gas Company as Vice President-System Planning.

Q. What is the purpose of your testimony?

A. The purpose of this testimony is to comment on the report "Construction Management Audit of Salem Nuclear Generation Station Unit No. 1" prepared by Theodore Barry & Associates (TB&A). This report was prepared for the State of New Jersey Department of Public Advocate and the Commonwealth of Pennsylvania Office of Consumer Advocate. This report was submitted as Consumer Advocate Exhibit No. 5 in the Pennsylvania Public Utility Commission Docket No. R.I.D. 438, et al. (Philadelphia Electric rate case).

Q. Please describe your qualifications as a witness.

A. Schedule 1 describes my qualifications as a witness in these proceedings.

Q. Please give a brief history of Salem Nuclear Generator Station, Unit No. 1.

A. Salem No. 1 is part of a two unit station located on Artificial Island in Lower Alloways Creek Township, Salem County, New Jersey. These units were originally planned for location at Burlington, New Jersey for service in 1971 and 1973. In 1967, it was necessary to relocate the units to Salem because the Atomic Energy Commission indicated an unwillingness

to issue a license for construction at the Burlington site. Construction began at Salem in January 1968. The relocation and escalation of regulatory requirements caused delays in the Salem project.

Salem No. 1 was successfully completed and placed in commercial service on June 30, 1977. The unit, a pressurized water reactor (PWR) with a summer capacity rating of 1079 MW, was designed by Public Service Electric and Gas (PSE&G) Company personnel and constructed by United Engineers & Constructors Inc. of Philadelphia, Pennsylvania. PSE&G personnel operate the unit.

Salem No. 1 is jointly owned by the following utilities:

Joint Owners	% Ownership
Public Service Electric & Gas Co.	42.59
Philadelphia Electric Co.	42.59
Delmarva Power & Light Co.	7.41
Atlantic Electric Co.	7.41

Under the joint ownership agreement executed on November 24, 1971, and amended by a supplemental agreement dated January 26, 1977, joint owners are entitled to shares of the installed capacity, available capacity, operating capacity and hourly energy generation of the unit in proportion to their ownership. The joint owners share in the cost of site preparation, land, cost of engineering, design, construction, operation and maintenance in proportion to their ownership.

Under the conditions of the joint ownership agreement, PSE&G was responsible for the detailed engineering, design and

construction of a complete and operable station. As members of the Engineering Task Force of the Joint Generation Project and the Owners Committee, the joint owners were kept appraised of and were able to contribute to significant project developments. In addition, monthly progress reports were submitted to the joint owners and their representatives attended project management meetings. These programs enabled the joint owners to knowledgeably participate in the design and construction efforts.

PSE&G was also responsible for the accounting and billing of all project costs. Under the agreement PSE&G provided monthly reports summarizing the construction costs and provided annual estimates of the monthly construction expenditures.

In summary, through the joint owners agreement, PSE&G had the responsibility to design and construct Salem in the most prudent and efficient method possible on behalf of and in cooperation with the joint owners.

Q. Please provide a background on construction management audits.

A. Construction of Salem No. 1 was successfully completed despite the many problems inherent in a complex construction project of this magnitude. In the case of Salem these were compounded by additional external pressures, namely the relocation to a second-choice site, continual changes in regulations by the Nuclear Regulatory Commission, labor practices unique to New Jersey, and double digit inflation during much of the construction period.

A general critique of the TB&A or any other retrospective

analysis of such a complex, long duration project of this type has two primary points.

The first point is that the determination of alleged hypothetical savings during a postmortem review by its very nature has to be based on assumptions, generalizations, speculations and conjecture. There is no way of determining what techniques PSE&G could have implemented, at what time and at what cost. Nor is there any way of determining which techniques could have saved a specific amount of money.

The second point is that postmortem review of a ten-year project cannot serve as a substitute or a replacement for judgments which are based on and tempered by practical, timely and on-the spot decision-making conducted in a fluid and changing environment. During the construction period, problems were recognized and new and innovative procedures were adopted to resolve them. Examples are cited in the TB&A report. With hindsight, we can now recognize that if certain procedures had been found to be cost effective and had been implemented earlier, then improved performance might have been achieved.

As also pointed out in the TB&A report, improved procedures developed during construction of Salem No. 1 were used in the construction of Salem No. 2. Some of these are state of the-art methods which were applied as they were developed by the industry. We feel that construction performance for Salem No. 2 was better than it was for Salem No. 1.

PSE&G management of the Salem project has been diligent

and responsible. All of the costs associated with this project were reasonable and proper expenditures and should be included in rate base.

Q. Please describe the specific rate base impact on the TB&A report.

A. TB&A identifies projected savings if certain "preferred management practices" had been practiced throughout the construction of Salem Unit No. 1. These savings were categorized by TB&A as "hard" or minimum cost savings and "soft" or maximum cost savings which could have been attained. This classification of the projected savings serves as nothing more than an arbitrary range which proves to have no underlying support. In short, the so called "hard" savings are themselves very soft and the "soft" savings are effervescent.

Page 20, TB&A text as corrected by TB&A at the Docket No. R.I.D. 438, et al. hearing on June 29, 1978 on transcript Page 8664:

Potential Rate Base Impact Table
(000,000)

Area of Improvement	Salem Project Impact Hard	Salem Project Impact Soft	% Attributable to Salem No. 1	Salem No. 1 Project Impact Hard	Salem No. 1 Project Impact Soft
Cost Control (Project Management)	--	$12.0	60%	--	$ 7.2
Rework	$ 5.0	20.0	75%	$ 3.75	15.0
Work Force Utilization	16.0	35.0	60%	9.6	21.0
Material Management	0.8	1.7	75%	0.6	1.2
Construction Equipment	--	1.6	50%	--	0.8
Totals	$21.8	$70.3		$13.95	$45.2

Since the basis for calculating these savings is not explained in the report, TB&A was requested to provide the workpapers behind all of the figures in the table above as well as workpapers setting forth the costs of implementation. In response to this request TB&A provided an explanation which is provided in Schedule 2.

This explanation failed to show specifically how the amounts were calculated other than to state some general assumptions based on judgement alone, often expressed as assumed, rounded, undocumented percentages. There was no task-by-task analysis of how the proposed improvements would produce specific savings. There is no evidence in the TB&A report (Consumer Advocate Exhibit No. 5), in Schedule 2 or in any of the cross examination of TB&A June 29, 1978 in Docket No. R.I.D. 438, et al. that develops concrete, specific relationships between the tables of data throughout the TB&A report and the Rate Base Impact table on page 20 of the TB&A report. Also, TB&A did not estimate the timing of the savings based on these data. Furthermore, TB&A did not provide any documentation on the cost of implementing the proposed management practices in response to a request for such data.

In the following sections I will examine each of the five "Areas of Improvement" shown on the previous table and show that the alleged savings have not been substantiated.

Q. Please describe the Cost Control (Project Management) area of improvement.

A. TB&A makes favorable and correct comments about a number of project management techniques used by PSE&G for the Salem Project.

Page 169, TB&A text:

> "PSE&G Uses an Unusual and Effective Grid Approach To Identifying and Locating Activities On Its Planning And Scheduling Sheets."

Page 172, TB&A text:

> "A Computerized Critical Path Method (CPM) Planning And Scheduling Technique Was Used Beginning Early In The Salem Project and Enhancements Were Made to Suit Salem Requirements."

Page 175, TB&A text:

> "The Mating of Construction and Engineering/Design Schedules Into A Single Master Schedule For Salem Activities Is Innovative and Effective.

Another statement concerning project management techniques includes an incorrect conclusion.

Page 174, TB&A text:

> "Resource Levelling Was Used to Evaluate Cost Impacts Of Alternative Strategies For Salem Schedule, Although A Search For the Lowest Cost Schedule Was Not Formally Conducted."

A search for the lowest cost schedule was formally conducted by PSE&G at the time the project was originally authorized, and at various times throughout the construction phase of the

project as schedule changes were required.

To establish the lowest cost schedule, PSE&G evaluated and optimized, in addition to resource leveling, the following factors:

- Alternative forms of generation and siting.
- PJM reserve requirements
- System reliability requirements.
- System load projections and projection uncertainty.
- State Board of Public Utilities requirements.
- Economic conditions affecting service area.
- Cost and availability of construction capital.
- Labor availability for alternative construction schedules.
- Production cost of replacement energy.
- Co-owner requirements.

Analytical and subjective techniques utilized by PSE&G, considering the above factors, resulted in an optimized minimum cost schedule for both Salem units.

The statements above indicate that PSE&G has followed sound project management practices.

Q. Please describe the rework area of improvement.

A. The second item in the Table on page 5 of this testimony (page 20, TB&A text) indicates that the amount of rework could have been reduced with a claimed savings of $5 million minimum to $20 million maximum. Neither of these amounts have been justified by the data presented in the report.

The estimate of the maximum rework impact ($20 million)

assumes that the extra material costs would be equal to the labor costs. This assumption is unreasonable. In many cases, rework involved only limited procurement of new material since basic system equipment was reusable.

Rework cannot be completely avoided on a project of this magnitude. By diligent efforts, rework expenditures were held within normal reasonable levels. There is no evidence that the rework could have been reduced by any of the amounts shown as Rework in the Rate Base Impact Table on page 5 (page 20, TB&A text).

Q. Please describe work force utilization.

A. The third item in the Table on page 5 of this testimony (page 20, TB&A text) indicates project savings of $16 million to $35 million from improved work force utilization. This estimate appears to be at least partially based on the following conclusions from the TB&A report.

Pages 137, 139, TB&A text:

> "Work Force Management Functions Were Performed Well At the Project Level. However, Opportunities Existed To Improve The Performance Of Work Force Management Evaluation and Control Functions At The Supervisory Level."
>
> "Exhibit VII-2 is an appraisal of how the aforementioned work force management practices were performed at Salem. Information systems existed throughout the project to measure unit costs and identify causes of project delay. This information was primarily used for reestimating costs

> and rescheduling tasks, that is, project level management tasks. Our review indicated that supervisory personnel could have used the data to a greater extent to control work hours of individual craft workers."

The information described in the paragraph above was in fact used for manhour control by supervisors. Weekly Look Ahead schedules which detailed activities, their duration, quantities to be installed and manpower requirements were used by each supervisor to plan work activities. These were used to control work hours of individual craft workers and detailed work tasks on a daily basis. Supervisors also received Bi-weekly Manhour Unit Cost Reports and Performance Curves which compare actual manhours per unit with the targets.

Meetings were held at least weekly between PSE&G and the Project Superintendent to analyze problem areas revealed by reports and the corrective actions to be implemented. Also on a weekly basis, planning and scheduling meetings were held by the Project Superintendent with his supervisors to pinpoint the problems and determine necessary adjustments to personnel and work methods. Supervisors met daily with foremen to deploy manpower and arrange the daily tasks.

The work management techniques used in the Salem project were comparable to those used in other nuclear power plant construction projects.

Q. Please describe material management.

A. In Schedule 2 TB&A claims that certain materials manage-

ment procedures could have reduced the inventory between 10% (hard) and 20% (soft). However, no evidence is presented to show that the project managers could have foreseen that such reductions were possible without delaying the construction. A materials inventory somewhat above the calculated theoretically desired level can be a good investment if it protects against the much greater penalties of construction delays.

Q. Please describe construction equipment.

A. In Schedule 2 TB&A estimates that operation and maintenance expenses for construction equipment should have been 15% less than they were. The findings and conclusions on pages 26-41 or anywhere else in the TB&A report do not include any statements about how operating and maintenance costs for construction equipment could have been reduced. We do not feel that there has been any demonstration of savings or the need to adjust rate base for construction equipment.

Q. What are your conclusions of the TB&A report?

A. PSE&G candidly acknowledges, as would any prudent management, that if improved management techniques which were developed and implemented during a project had been used from the project's inception, then total costs for the project might have been different. We readily acknowledge that we did initiate what we consider to be (and TB&A has found to be) improved management techniques during the course of the Salem construction. We would also expect that five or ten years from now additional progress would also be made in terms of improved management

techniques. When we, as a company and a management, think that perfection has been obtained and there is no room or need for improvement, then that is the time that regulators should become concerned with our performance. The TB&A report demonstrates that we are leaders in the utility industry in many very important respects. We have and will continue to strive to maintain that status. We believe that in its totality the TB&A report is testimony supporting the position that PSE&G managed the Salem Project in a reasonable and prudent manner, consistent with its tradition of high quality and progressive and conscientious service.

I conclude that there is no basis for the $45.2 million cited as a potential rate base impact for Salem No. 1.

Q. Please describe the findings of the New Jersey Board of Public Utilities concerning the TB&A report.

A. In Docket Nos. 7711-1107 and 776-492, the New Jersey Board of Public Utilities (NJ BPU) examined the issue of what cost of the Salem project should be included in PSE&G's rate base. Based on the evidence submitted in the proceedings the NJBPU rejected the rate base reductions proposed by TB&A.

In its Order, dated March 28, 1979, the NJBPU concluded:

> ...."that PSE&G managed the construction of the Salem Nuclear generating station in a reasonable and prudent manner and that PSE&G exercised due diligence in implementing sophisticated management techniques in an effort to reduce costs and improve performance."

S. A. MALLARD

VICE PRESIDENT - SYSTEM PLANNING

PUBLIC SERVICE ELECTRIC & GAS COMPANY

QUALIFICATIONS

I received the degree of Mechanical Engineer from Stevens Institute of Technology in June of 1948. I received the degree of Master of Science, majoring in electrical engineering, from Stevens Institute of Technology, in June of 1951. I served in the U.S. Navy as an electronics technician between 1944 and 1946. I was an instructor in the Electrical Engineering Department of Stevens Institute of Technology between 1948 and 1951.

I was employed by PSE&G in June of 1951. Between 1951 and 1953, I was assigned to the Company's General Office in Newark, working on various engineering projects involving electric substation installations and electic system planning. From 1953 until 1960, I was assigned to Essex Division where I worked on various engineering projects involving the construction and operation of electric distribution facilities, and the installation of customer electric service entrance facilities.

In June 1960, I was transferred to the System Planning and Development Department located in the General Office in Newark. I was responsible for making both short-range and long-range plans for additions to the bulk power electric

system. I became Transmission Planning Engineer in January 1964, responsible for preparing plans for expanding and reinforcing the PSE&G electric transmission system. I became Assistant System Planning and Development Engineer, the assistant department head of the System Planning and Development Department in January 1968. I became Manager of System Planning, responsible for all electric system planning, in January 1971. I was appointed General Manager - Planning and Research for electric and gas in July 1974 and Vice-President-System Planning in July 1977.

Currently, I represent PSE&G on the System Planning Committee of the Edison Electric Institute (EEI); I serve on the Executive Group of the EEI System Planning Committee and am Chairman of its R&D Task Force; I also serve on its Load Management Task Force.

I am an industry advisor to the Electric Power Research Institute (EPRI) Electric Utility Rate Design Study.

I have served as the PSE&G's representative on the Planning and Engineering Committee of the Pennsylvania-New Jersey-Maryland (PJM) Interconnection, and on the Area Coordination Committee of the Mid-Atlantic Area Council (MAAC).

I am a member of CIGRE (Conference Internationale des Grands Reseaux Electriques - International Conference on Large High Voltage Electric Systems). I am a Senior Member of the Institute of Electrical and Electronics Engineers

(IEEE), and have served as Chairman of the North Jersey Section. I am a member of the National and New Jersey Society of Professional Engineers, the Montclair Society of Engineers, Tau Beta Pi, and Eta Kappa Nu. In addition, I serve on the Awards Organization Committee of Eta Kappa Nu.

I have been a Licensed Professional Engineer in New Jersey since 1953.

I have testified before the New Jersey Board of Public Utility Commissioners on behalf of PSE&G as the Electric Planning witness in connection with a petition filed for eminent domain for the New Jersey portion of the Branchburg-Holland and the Branchburg-Ramapo 500-kV transmission circuits.

I also testified on behalf of PSE&G before the N. J. BPU in connection with the Company's petitions for increases in electric and gas rates in Docket Nos. 703-105, 726-562/ 7211-964, 744-355, 761-8 and 7711-1107.

I testified before the N. J. BPU on the energy crisis hearing held in 1973 (Docket No. 733-177). In addition, I testified in 1973 before the New Jersey Senate's Immediate Energy Needs Subcommittee on the energy crisis.

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PARIS 8, FRANCE
TELEPHONE 359 20-67

June 13, 1978

Martha Bush, Esquire
Office of the Consumer Advocate
100 Chestnut Street
Suite 102
Harrisburg, Pa. 17101

Re: Pennsylvania Public Utility Commission
v.
Philadelphia Electric Company

Dear Martha:

Confirming our telephone conversation of Monday, please have your consultant, Theodore Barry & Associates, provide me with the following information with regard to their report on the construction of the Salem nuclear generating station:

- At page 19 of their Summary report, TB&A identifies projected savings if certain "preferred management practices" had been practiced throughout the construction of Salem Unit No. 1. Please provide the work papers behind all of the figures shown on the table on page 20.

- Again at page 19 of their Summary report, TB&A states that the savings are net of implementation costs. Please provide the work papers setting forth the development of the implementation costs.

- Again at page 19 of their Summary report, TB&A states that an "arbitrary allocation" of the savings has been made to Salem Unit No. 1. Provide the basis of this allocation, if any.

- State the names, job titles and hours worked of TB&A personnel who assisted in the preparation of the report. Also state separately the number of equivalent work days (i.e. 8 hour days) and/or hours spent visiting the Salem plant site, interviewing Public Service and United Engineers personnel, reviewing Public Service and United Engineers documentation, preparing the PECO project monitoring chapter and other.

Sincerely yours,

Walter R. Hall, II

pam
cc: All Parties of Record

Theodore Barry & Associates · Management Consultants

TB&A

Telephone 212·986-5995
245 Park Avenue
New York, New York 10017

June 13, 1978

Walter R. Hall, Esq.
Morgan, Lewis & Bockius
123 South Broad Street
Philadelphia, Pennsylvania 91909

Dear Mr. Hall:

Enclosed are workpapers (typed) of calculations used in developing figures and costs included in our report. I believe this responds appropriately to Mr. Codey's request of June 1, 1978.

Sincerely,

Perry L. Wheaton

Perry L. Wheaton
Principal

PLW:br
Enclosure

cc: Ms. Martha Bush
Office of Consumer Advocate
Commonwealth of Pennsylvania

With enclosure.

SALEM PROJECT REPORT

Basis For Calculations

Cost Control - Soft: Net savings of 1 per cent of total project costs of $1.2 billion due to use of improved project management techniques.

About 60 per cent of projected savings attributable to Salem Unit No. 1.

Rework - Hard: 1.2 million craft hours at $10 per manhour equals $12 million of labor costs due to rework. Assume that 50 per cent or $6 million was correctable less implementation costs of $1 million for a net reduction of $5 million.

About 75 per cent attributable to Salem Unit No. 1.

Rework - Soft: Assume all $12 million of labor costs were correctable, add engineering labor costs of $1.2 million for total of $13.2 million. Double labor costs to reflect material costs for a total of $26.4 million of labor and materials. Assume estimated implementation costs of $6.4 million for a net reduction of $20 million.

About 75 per cent attributable to Salem Unit No. 1.

Work Force Utilization - Hard: Reduction of 5 per cent of 43.5 million labor hours at $10 per hour or $21.8 million less estimated implementation costs of $5.8 million for a net reduction of $16 million.

About 60 per cent attributable to Salem Unit No. 1.

Work Force Utilization - Soft: Reduction of 10 per cent of 43.5 million labor hours at $10 per hour or $43.5 million less estimated implementation costs of $8.5 million for a net reduction of $35 million.

About 60 per cent attributable to Salem Unit No. 1.

Materials Management - Hard: Reduction of 10 per cent of stock items inventory of $8 million or $800,000 per year, resulting in reduction of carrying costs of 20 per cent or $160,000 per year. Seven years savings at $160,000 per year equals $1.12 million less estimated implementation costs of $320,000 for net reduction of $0.8 million.

About 75 per cent attributable to Salem Unit No. 1.

Materials Management - Soft: Reduction of 20 per cent of stock items inventory of $8 million or $1.6 million per year, resulting in reduction of carrying costs of 20 per cent or $320,000 per year or $2.24 million for seven years less estimated implementation costs of $540,000 for net reduction of $1.7 million.

About 75 per cent attributable to Salem Unit No. 1.

Construction Equipment - Soft: 15 per cent reduction in operations and maintenance expenses of $14.3 million or $2.1 million less estimated implementation costs of $500,000 for a net reduction of $1.6 million.

About 50 per cent attributable to Salem Unit No. 1.

Theodore Barry & Associates · Management Consultants

TB&A

Telephone 212-986-5995
245 Park Avenue
New York, New York 10017

June 19, 1978

Mr. Walter R. Hall
Morgan, Lewis & Bockius
123 South Broad Street
Philadelphia, Pennsylvania 91909

Dear Mr. Hall:

At Ms. Martha Bush's request, I am enclosing certain data which you have requested with regard to our testimony on Salem Nuclear Generating Station Unit No. 1.

Sincerely,

Perry L. Wheaton

PLW:lch

Attachment
cc: Ms. Martha Bush

BASIS OF ALLOCATION TO SALEM UNIT NO. 1

Costs for the Salem project were not accumulated in a manner that facilitates allocation of costs to the respective units in the manner outlined on Page 20 of TB&A's testimony. More complete cost data will be available when unitization of the project is completed sometime after Salem Unit No. 2 is placed in commercial operation. TB&A's allocation of the projected impact of net savings was therefore based on its understanding of the time period over which costs were incurred, approximate dollars expended on Salem Unit No. 1, where known, and the timing of the implementation of improved management practices during the course of the project. The allocations were developed as the result of the review of available documentation and interviews which were conducted through the conduct of the construction management audit.

TB&A Staffing

Name	Title	Equivalent Man Days
P. Wheaton	Principal	34
J. Love	Managing Associate	44
Others	Various	72
		150

Allocation of TB&A Staff Time

Activity	
Salem Site Visits	10
PECO Monitoring Review	15-20
Other	120-125
	150