

# ORIGINAL

## UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

In the matter of:

COMMONWEALTH EDISON COMPANY

(Byron Nuclear Power Station,  
Units 1 & 2)

Docket No. 50-454 OL  
50-455 OL

Location: Rockford, Illinois

Pages: 10,351-10,458

Date: Monday, August 20, 1984

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

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: In the matter of: :  
: COMMONWEALTH EDISON COMPANY : Docket Nos. 50-454 OL  
: (Byron Nuclear Power Station, : 50-455 OL  
: Units 1 and 2) :  
: :  
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U.S. District Courtroom  
Second Floor  
Federal Building  
211 South Court Street  
Rockford, Illinois

Monday, August 20, 1984

The hearing in the above-entitled matter was reconvened, pursuant to recess, at 2:00 p.m.

BEFORE:

IVAN W. SMITH, Chairman  
Atomic Safety & Licensing Board

A. DIXON CALLIHAN, Member  
Atomic Safety & Licensing Board

RICHARD F. COLE, Member  
Atomic Safety & Licensing Board

MM/mm

## 1 APPEARANCES:

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23 DOUGLASS CASSEL, JR., Esq.  
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RECESS:Page:

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Afternoon

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WITNESSES:

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None

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EXHIBITS:

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None

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LAY-INS:

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P R O C E E D I N G S

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2 JUDGE SMITH: On the record.

3 Good afternoon, ladies and gentlemen.

4 Before we move to the first item scheduled, is there  
5 any preliminary business?

6 MR. MILLER: I have a number of matters, Judge  
7 Smith. Two of them, I think, are relatively non-controversial.  
8 They do not involve, for example, our motion -- our  
9 memorandum in response to the motion to admit the testimony  
10 of Dr. Bleuel. Perhaps we could deal with them first.

11 Towards the end of the last evidentiary session  
12 the Board suggested that the parties consult with respect  
13 to the findings. And I undertook, on behalf of the  
14 Applicant, to prepare an index to the findings and circulate  
15 them to the Staff and Intervenors. I haven't done so and  
16 I think I need some proper guidance from the Board, if you  
17 are able to give it.

18 In the very first set of hearings, when we  
19 inquired about format for the findings, I believe we were  
20 directed to the Susquehanna Decision as an approach to follow  
21 in preparing proposed findings. That is, there would be  
22 an opinion and then the finding would -- if you will -- provide  
23 the basis for the factual analysis that took place in the  
24 opinion.

25 In the Quality Assurance findings that this Board

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1 filed on January 13th, 1984, as a part of its initial  
2 decision, a somewhat different format took place. That is,  
3 the findings themselves are sort of self-contained. There  
4 really is not a separate opinion section, at least not  
5 denominated as such in the initial decision. And the  
6 findings are discursive and they have sub-heads and they  
7 flow logically from a beginning point to an ending point,  
8 in the analysis.

9 We are prepared to submit proposed findings in  
10 whatever way will be most helpful to the Board. But before  
11 we really got fairly launched, in terms of an organization  
12 and so on, we needed to decide which way the Board wished  
13 to have the findings.

14 JUDGE SMITH: Yes. The Board did have occasion  
15 to discuss the form in which the findings would be filed.  
16 I regret that the impression was given that we were requesting  
17 submittals in the form of opinion and enumerated in proposed  
18 findings. I know that some of the Boards have tossed that  
19 decision out and other samples and have requested that approach.  
20 We did not intend to request that approach.

21 And then the findings, as they were received,  
22 demonstrated in my mind why I don't particularly care for  
23 that approach. In some instances, it doubled the length of  
24 the findings. In some instances, the summary was a verbatim  
25 repetition of the proposed findings. Where it was not, it

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1 was mischievous because it wandered where the opinion part  
2 differed from the factual findings part. I believe that was  
3 very inefficient.

4 As you know, the decision came out in the form  
5 of a summary which does not purport to be an opinion. It  
6 merely purports to provide for the reading of those who are  
7 only casually involved in proceeding an idea of what the  
8 decision is about. The proposed findings and conclusions  
9 of law were the decision. I'll have to check again with  
10 my colleagues on the Board. I think I'm pretty well stating  
11 the memory of our discussion.

12 We prefer the pre-Susquehanna type and disregard  
13 any need, in this instance, to provide a summary or even  
14 procedure or background, anything like that. As you note,  
15 even though you did comply with our request to agree upon  
16 procedural background findings, we dispensed even with that.

17 There was very little in there, by way of one we  
18 had hearings and all of the milestones of the proceeding. So  
19 I think you provide proposed findings of fact and conclusions  
20 of law. Forget the opinions. Of course, you're free to, if  
21 you wish, to suggest exactly how we should write it, if you  
22 feel that's the way we should write it. Fine. But we  
23 don't require that.

24 MR. MILLER: Judge Smith, in the findings, in the  
25 initial decision, there were citations to other NRC cases and

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1 so on. I believe that given the issues, at least as we think  
2 we understand them in this remanded hearing, there will be  
3 occasion to refer to decisions of other licensing boards and  
4 certainly to the initial decision of this Board, as well as  
5 the opinion of the Appeal Board in ALAB 770. I take it that  
6 you have no objection to our weaving in, if you will, in the  
7 findings whatever legal analysis we believe supports the  
8 factual conclusions which we hope the Board would draw.

9 JUDGE SMITH: That's right. Whatever way you  
10 can express your case. If legal conclusions have to be  
11 discussed at the time you discuss the proposed findings, if  
12 that's what you're saying, and that puts it in context, that's  
13 fine. We don't require a separate section of legal discussion  
14 and factual discussion.

15 I find it difficult to write that way. And I  
16 think it just really adds words if you have to restate or  
17 resummarize the factual context of which you're trying to  
18 imply law, it just makes it more inefficient.

19 So anyway that you believe that you present to us  
20 the facts and the law.

21 MR. MILLER: With that guidance, I think now  
22 we can fulfill the commitment I made to share with the  
23 other parties a proposed approach to findings. And we will  
24 try and do it during this week when we're all here in Rockford.

25 JUDGE SMITH: Right. Okay, that really is very



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1 helpful, just simply for organizational purposes. If I  
2 know that every point that is going to be made on a particular  
3 issue can be found exclusively in a particular place in the  
4 findings, particularly when you have large volumes of it,  
5 then it makes it much more efficient in being assured that  
6 you have looked at every point that each party wishes to make.

7 That's the point. We want to be sure that we have  
8 looked at and found every point that you wished to make, unless  
9 there is some type of organization it's very difficult for us  
10 to be satisfied when we've done that.

11 MR. LEWIS: Mr. Miller, if you're going to go on  
12 to a different subject, I wanted to also seek some clarifica-  
13 tion from the Board regarding findings. The Board had spoken  
14 in terms of being prepared to receive serial findings with  
15 the Applicant going first. The Board did not specify as to  
16 whether or not, after the Applicant filing, whether the Staff  
17 and Intervenor would follow simultaneously or you would  
18 propose for the Staff to go last.

19 JUDGE SMITH: Well, we didn't make any decision or  
20 any ruling on it. We proposed, for your own discussion, that  
21 possibility, which actually is anticipated by the rules, to  
22 a certain extent.

23 My preference is to see serial findings, where the  
24 party with the burden of proof, the Applicant, sets out the  
25 proposed finding and then the conclusion of law in the order.

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1 And where parties agree with those proposed findings, they  
2 don't have to rewrite it and we don't have to reread it. We  
3 don't have to compare to see where subtle differences might  
4 lie. So that, I think, is more efficient.

5           However, the tactical advantages and disadvantages  
6 are matters in which you'll have to address yourself.

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1 MR. MILLER: That's again, of course --

2 JUDGE SMITH: We will discuss that at the final  
3 session. But, for efficiency I believe that, were I the  
4 Intervenor, I would like to see your proposed findings, and  
5 only proposed findings where I disagreed with you and Staff.

6 MR. CASSEL: Were I the Intervenor, I would have  
7 the same view.

8 JUDGE SMITH: However, there are tactical  
9 considerations which we don't foreclose discussion on. But,  
10 that would be to me the most efficient from our point of view.  
11 Then we don't have to worry about whether there were  
12 differences perceived which were not intended.

13 MR. MILLER: I had one other matter which I  
14 think is largely noncontroversial.

15 When Mr. Kostal was here in, I believe it was the  
16 last day of the preceding evidentiary session, he provided  
17 the Board and the Parties with a status report with respect  
18 to a reinspection of the welds on System Control Corporation  
19 supplied cable pan hangers with Staff. The discussion was  
20 found on page 10,249 of the transcript.

21 And it refers to Mr. Kostal's prepared testimony  
22 at page 23.

23 At that point in time I believe Mr. Kostal said  
24 that the inspection for missing welds was approximately 80  
25 percent complete, and that no additional discrepancies had

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1     been found.

2             That reinspection effort was concluded and in  
3 fact, four discrepancies were discovered during that  
4 reinspection effort. Two of them involving missing welds.

5             As a result of these findings of these  
6 additional discrepancies, the reinspection effort expanded  
7 from a reinspection of the highly-stressed Systems Control  
8 connections to all accessible Systems Control welds. This  
9 is referred to, I believe, at page 17 of the Staff's  
10 testimony, which we will get to, I think, later today.

11             One of the two missing welds which was discovered  
12 after our last evidentiary session closed, was more discrepant  
13 in the sense of involving greater strength reductions than the  
14 earlier nonconforming condition that had been discovered,  
15 that had been discussed by Mr. Kostal.

16             As a result, this most recent discrepant weld  
17 was not bounded by the analysis that had been done by  
18 Sargent and Lundy and that was described in Mr. Kostal's  
19 testimony. The expanded reinspection effort, the one that  
20 looks at all accessible Systems Control welds, is expected  
21 to be concluded in the sense of the physical reinspection  
22 work by this Wednesday, and evaluation of what was found  
23 is expected to be available early next week. And we will  
24 keep the Board and the Parties advised what is discovered.

25             JUDGE SMITH: Is there anything further of a

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1 preliminary nature?

2 MR. CASSEL: The whole matter of the Intervenors'  
3 motion to admit the testimony of Dr. Bleuel and Edison's  
4 opposition.

5 JUDGE SMITH: We have anticipated that being  
6 the first item.

7 There is another matter that I wonder if it has  
8 been overlooked. There was the dispute about the production  
9 of Hatfield information that wasn't resolved a week ago Friday,  
10 and was up for resolution today sometime, was a means by  
11 which we reduced for the record the fact that a particular  
12 element sought in your discovery request had not been used  
13 and isolated from the records before.

14 Has that been worked out?

15 MR. CASSEL: Judge, that has been part of a  
16 discussion of a couple of related items between Ms. Judson  
17 of my office and Mr. Miller.

18 If it would not be inconvenient for the Board,  
19 what I would like to do is wait until the first break,  
20 have Mr. Miller and me get together on that so that we  
21 make sure that we are not operating on different impressions  
22 of the same conversation, and then give a report to the  
23 Board.

24 JUDGE SMITH: As of right now, however, you have  
25 no record basis upon which you can make any argumen or anything,

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1 as of now. If you remember, that was a non-transcribed  
2 telephone conference call in which we simply denied a  
3 discovery request and provided that there would be a record  
4 basis for any inference that you could draw from the  
5 discovery situation.

6 MR. MILLER: I'm happy to discuss with Mr. Cassel,  
7 at the break, with respect specifically to Hatfield, which  
8 was a request to answer supplemental interrogatory 11, I  
9 believe. We have answered that more or less along the lines  
10 that I described to the Board, I guess just to you, Judge  
11 Smith, in our telephone conference call. I have not heard  
12 back from Ms. Judson or anybody else that the response was  
13 unsatisfactory.

14 It does provide a record basis, I would think, as  
15 an admission of Commonwealth Edison Company with respect to  
16 the way in which Hatfield's records are maintained.

17 JUDGE SMITH: It may be a simple matter to go from  
18 there to the record, the evidentiary record, on which the  
19 proposed findings may be made. But as of now, there is  
20 zero, as in total void.

21 MR. CASSEL: There are a couple of other elements  
22 which I want to make sure Mike and I have an understanding,  
23 a mutual understanding, on before we present this whole  
24 package to you.

25 JUDGE SMITH: So if there's nothing further, of

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1 a preliminary nature, then we will proceed to --

2 MR. MILLER: There is one more, Judge Smith.  
3 Mr. Gallo would like to present it.

4 MR. GALLO: Judge Smith, members of the Board,  
5 I received a completed copy of Mr. Stokes' testimony on  
6 last Thursday. I'm referring to his prefile testimony.  
7 We took Mr. Stokes' deposition on Friday. On the basis of  
8 reviewing his prefile testimony and the deposition, I have  
9 prepared a motion to exclude certain portions of that  
10 testimony and I would leave the Board would like to serve  
11 the motion this morning, so that the parties and the Board  
12 have an opportunity to examine the nature of the objection and  
13 the basis for the objection.

14 It's rather complex, so I had it written out  
15 rather than make it orally at the time the testimony might  
16 be offered for admission into evidence.

17 If I could be given leave, I'd like to serve it  
18 now.

19 JUDGE SMITH: That would be very helpful.

20 (Document distributed to Board and parties.)

21 MR. GALLO: It's not nearly as imposing. I've  
22 attached the deposition as well as the motion itself.

23 That completes my preliminary matter, Your Honor.

24 JUDGE SMITH: Then we are ready to address the  
25 motion and the parties' position in respect to Dr. Bleuel's

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1 testimony. We have before us the motion and the Applicant's  
2 memorandum in opposition to the motion and nothing from  
3 you, Mr. Lewis.

4 MR. LEWIS: We did not file in writing. As I  
5 recall, the Board said we would have the option of addressing  
6 you orally, which we --

7 JUDGE SMITH: Yes, I raise the question to be sure  
8 that there was nothing in the mail.

9 MR. LEWIS: No, there's nothing in the mail.

10 JUDGE SMITH: All right. Then I propose that we  
11 hear from the Staff and then we will probably want to hear,  
12 if they have arguments to make, the Intervenors. I would  
13 like them to make it in response.

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1 MR. LEWIS: Mr. Chairman, we have reviewed the  
2 motion of the Intervenors and the enclosed testimony,  
3 proposed testimony, of Dr. Bleuel and the memorandum filed  
4 by Commonwealth Edison in opposition.

5 We find ourselves in substantial agreement with  
6 the Applicant's motion. At the time that Dr. Bleuel proposed  
7 at the time that the Intervenor, in the last session,  
8 identified the fact that Dr. Bleuel had come forward as  
9 a possible witness, it appeared to us that from the  
10 description of his background that he seemed to be offering  
11 testimony in the Human Factors area and perhaps also,  
12 to some extent, on statistical matters.

13 Upon the review of his testimony, that part of our  
14 initial concern is confirmed. We do believe that, as to  
15 certain points in the testimony, Dr. Bleuel does provide  
16 testimony which really is already addressed to this Board by  
17 Dr. Kochhar. That would be on the subject of whether or not  
18 the first three months is an appropriate period for sampling  
19 of inspector work.

20 With respect to certain portions of Dr. Bleuel's  
21 proposed testimony, that deal with Sargent & Lundy engineering  
22 evaluations of discrepancies, this is a matter that is  
23 primarily addressed in the testimony of Mr. Stokes, that is  
24 also before this Board. And in both those senses, we feel  
25 that we have a cumulative testimony proposed to be offered by

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1 Dr. Bleuel.

2 More fundamentally, however, we believe that the  
3 testimony of Dr. Bleuel gets off on what we consider to be a  
4 misimpression regarding the Reinspection Program, which is  
5 before this Board. It appears to us, in proposing that a  
6 failure modes and effects analysis be conducted, that  
7 Dr. Bleuel is approaching the issue before this Board as if  
8 the entire safety of the construction and adequacy of the  
9 construction of this plant is the open issue here. And is  
10 not limiting his concerns or directing his comments to the  
11 question of what type of program is appropriate in a situation  
12 that where the issue is the qualifications of QC inspectors  
13 of particular site contractors.

14 Now in that sense, the point I am making really goes  
15 to more than just the weight that would be given to this  
16 testimony. I believe that the concept of a failure modes  
17 and effects analysis of perhaps suggesting a Probabilistic  
18 Risk Assessment of some type is a much broader and different  
19 approach than is raised by the issue before this Board.

20 So in that sense, we do not believe that it would  
21 be probative testimony on the question before this Board, which  
22 is the adequacy of the Reinspection Program to address the  
23 item of non-compliance in Inspection Report 82-05-19.

24 Additionally, we have concerns regarding the  
25 expertise of Dr. Bleuel. He does describe, in his testimony,

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1 that he has had familiarity with Quality Control in certain  
2 industries. And he also refers to experience in the field  
3 which I believe he describes as design assurance. And I  
4 believe also maintainability engineering.

5 I am speaking from memory, but that may be the term.

6 He does not indicate any specific knowledge in the  
7 area of Quality Control, as related to nuclear power plants,  
8 nor in the area of engineering evaluations of discrepancies  
9 at nuclear power plants. And yet, he does offer testimony on  
10 these subjects.

11 I believe that, as an independent and separate  
12 matter, we do not believe that Dr. Bleuel has the expertise  
13 to be offering expert testimony before this Board on this  
14 subject.

15 For these reasons, we agree with the memorandum of  
16 Commonwealth Edison Company and we do not believe that the  
17 testimony of Dr. Bleuel would be probative before this  
18 Board or that it addresses, through an appropriate expert,  
19 the issues that are pending before this Board.

20 JUDGE SMITH: Mr. Cassel?

21 MR. CASSEL: Thank you, Judge.

22 Judge and members of the panel, the testimony that  
23 we have proffered on behalf of Dr. Bill Bleuel is not only  
24 probative to the central issue, and the most important issue  
25 we are called upon to address in this rehearing, namely what

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1 inferences about the safety of the work at Byron can be  
2 drawn from the Reinspection Program. It is also not duplicative  
3 of the testimony of any other of the Intervenor's witnesses,  
4 and in fact goes beyond that other testimony, both in scope  
5 and in the substantive basis upon which it's offered because  
6 of the 25 years of experience Dr. Bleuel has had in a range  
7 of industries, as you know from reading the motion and the  
8 testimony which we have offered, in addition to his academic  
9 degrees in the fields of reliability and engineering  
10 statistics and electrical engineering.

11 We are offering Dr. Bleuel's testimony both as  
12 direct testimony, admittedly late for the reasons which I  
13 have previously described to the Board and therefore subject  
14 to the higher degree of showing that the Board required when  
15 we first brought this matter before you.

16 And also, as a rebuttal witness to Edison witnesses  
17 Laney, Hansel, Del George, and all Edison witnesses who  
18 purport to draw any inference about the safety of Byron from  
19 the Reinspection Program because that is the central point of  
20 Dr. Bleuel's testimony, is that the way that program was  
21 set up, not for the purpose of determining work quality but  
22 for the other purpose, which Mr. Lewis has just mentioned and  
23 with which we are all familiar, namely the qualifications of  
24 the inspectors.

25 Because the program was set up for that reason and

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1 not directly for the purpose of validating work quality, it  
2 was designed in a certain way. And based on Dr. Bleuel's  
3 experience in the field, in determining the safety,  
4 reliability, and operability of a wide range of equipment in  
5 a wide range of industries, he is coming in here and looking  
6 at this thing and saying if you want to determine whether  
7 Byron is safe to operate or not, this is not the way to  
8 set up and design a program.

9 Now Edison has virtually admitted that this is  
10 not the optimal way to design a program for that purpose.  
11 Their point seems to be that they designed it for another  
12 purpose and it can serve this secondary purpose as well, even  
13 though they might have designed it somewhat differently if  
14 their principal purpose had been to improve work quality.

15 Dr. Bleuel is coming in and saying this thing is  
16 so far off the mark of an appropriate design to validate  
17 work quality that the kinds of inferences which Mr. Del George  
18 and Mr. Laney and other Edison witnesses are attempting to make  
19 about the safety of the plant, based on a reinspection program  
20 that was never designed to prove the safety of the plant,  
21 simply don't hold water in the light of his experience and  
22 his expertise.

23 Both the Staff and Edison have made something of a  
24 point, which Dr. Bleuel stated quite clearly in his testimony,  
25 that he has no experience with nuclear power plants. You may

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1 recall, I believe it was the redirect examination of Edison's  
2 witness Mr. Hansel who, while he has recently had some  
3 experience this year with Diablo Canyon, I believe it was,  
4 and with Byron and has served on a committee or two before that,  
5 had had himself very little experience in the field of  
6 nuclear power plants. Instead came in with decades of  
7 experience in the field of Quality Assurance in the aerospace  
8 and other industries.

9 And he was asked, by Edison's counsel on redirect  
10 examination, as I recall, Mr. Hansel do you believe that it is  
11 important to have nuclear power plant experience in order to  
12 be able to present your testimony here today. I am not  
13 quoting. I don't have the transcript in front of me.

14 But he answered to the effect that his expertise,  
15 built up over decades in the field of Quality Assurance in  
16 other industries, particularly aerospace, was capable of being  
17 applied to this particular situation just as he would apply  
18 it to any industry, which he might happen to study.

19 The same is true of Dr. Bleuel's testimony. In  
20 fact, I think there is actually some advantage in having  
21 someone with his breadth of experience, and with no previous  
22 involvement in the nuclear industry, come in because he  
23 provides something of a fresh and -- I will argue in a moment --  
24 quite useful perspective on issues which others have become  
25 accustomed to addressing in certain ways and not the way which  
Dr. Bleuel would approach it, based on his experience.

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1           The first of Dr. Bleuel's three main points  
2 which you will recall from reading the papers is that had  
3 does not believe that one could draw an inference from the  
4 Reinspection Program that Byron is reasonably safe to  
5 operate without a failure modes and effects analysis having  
6 been conducted as a basis for and as a part of the program  
7 design of the Reinspection Program.

8           Now setting aside the professional jargon what  
9 that really comes down to, as I understand it from a lay  
10 perspective, is saying that the Reinspection Program did not  
11 focus on the most safety-critical components at the plant.  
12 It did not assign the most inspectors to spend the most time  
13 looking at the most highly-stressed welds on the most  
14 critical components.

15           It's understandable that it didn't because that  
16 was not its purpose. Its purpose was to try to provide a  
17 cross-section of inspectors and not of critical safety  
18 points. But the fact remains, it didn't do that, nor were  
19 the engineering evaluations concentrated most heavily on those  
20 components and systems at the plant which were identified as  
21 having the most critical safety significance. Nor was the  
22 managerial attention to the program given by Mr. Teutken  
23 and by other Edison executives and by the contractors  
24 focused on safety significance as the key criterion.

25           Instead, a great deal of resources were spread

1 somewhat evenly across every fifth inspector, beginning with  
2 the first and the fifth, looking into a great many  
3 inspections which might be important in terms of determining  
4 that inspector's qualifications, but which really had very  
5 little importance in many cases in terms of safety.

6 Many inspections of documentation -- again,  
7 documentation has its importance. But when Mr. Teutken, for  
8 example, was asked to rank all the inspections in terms of  
9 their degree of importance and he, himself, came up with  
10 four categories: first most important, second most  
11 important, third most important and least important,  
12 he placed documentation consistently in the least important  
13 category. And he was able to identify other categories  
14 that were least important, or only third most important.

15 Edison's resources in the Reinspection Program  
16 were not focused, as they might have been, on the first most  
17 important category, and even the subset of that, the most  
18 important aspects of the first category.

19 In addition, when Edison presented its statistical  
20 analysis of the program. Edison did not impose a higher  
21 reliability standard -- the statistical reliability standards that  
22 were testified to by Dr. Singh did not require a higher  
23 degree of reliability for the most safety significant  
24 components.

25 Edison did not use a higher confidence level for



1 the most safety significant components. Edison did not use  
2 a higher inspection level, which as I understand it, has to  
3 do with the size of the required sample for the most  
4 safety-critical components.

5 In contrast to Dr. Bleuel's experience in the  
6 space program where reliabilities up to five digits of nines  
7 were required for the most critical safety components, but  
8 lower reliabilities were accepted for other components, here  
9 Edison has come in with reliability calculations that group  
10 together whole, broad categories of elements without making  
11 distinctions according to their criticality to safety, in  
12 many instances.

13 And in no instance that I recall in the tables  
14 presented by Dr. Singh presenting four and five digits of  
15 nines for reliability figures. For example, 99.999 percent  
16 would be a five digit of nines reliability.

17 Now, Edison has, in its response to Dr. Bleuel's  
18 testimony, made a number of points specifically relating to  
19 a failure modes and effects analysis. One of their points  
20 is that to do a failure modes and effects analysis would  
21 require the Board and parties in this proceeding to go beyond  
22 the scope of the rehearing.

23 It is alleged in Edison's response and in the  
24 affidavit of Edison official, Mr. Kochhar, attached to it,  
25 that we would have to go beyond Hatfield, Hunter and PTL.

1 Dr. Bleuel's initial testimony, his prefiled  
2 testimony, does not suggest that or require it, and I have  
3 discussed and shown Edison's response to Dr. Bleuel and in  
4 his view, there is no need -- if the restrictions in this  
5 hearing are what they are -- for his purposes, to go beyond  
6 Hatfield, Hunter and PTL. Within the scope of this hearing,  
7 one can do an FMEA, failure modes and effects analysis, to  
8 identify what are the most significant safety inspections  
9 conducted by Hatfield, Hunter and PTL.

10 One does not have to go beyond the scope of that  
11 unless one chooses to do so.

12 Secondly, Edison suggests that it is difficult  
13 and perhaps nearly impossible to conduct a failure modes and  
14 effects analysis in this situation. They suggest that  
15 a probabilistic risk assessment would be required as a  
16 prerequisite or a necessary step as part of the failure modes  
17 and effects analysis.

18 Nowhere in Dr. Bleuel's prefiled testimony will  
19 you find any mention of any requirement for a probabilistic  
20 risk assessment. And I have shown this point in Edison's  
21 response to Dr. Bleuel as well, and he agrees that a  
22 probabilistic risk assessment is not required to do a failure  
23 modes and effects analysis.

24 It would be one way to do it and in many  
25 situations it would be the preferable way, but it is not the

1 only way; it is not the way he has in mind in his testimony,  
2 and it's not required here.

3 Quite simply, to conduct a failure modes and  
4 effects analysis one can simply take the two safety  
5 categories; the four categories of safety identified by the  
6 startup manager for Byron, Mr. Tuetken based on his  
7 engineering experience at Byron, plant-specific information,  
8 and use those as a basis for a failure modes and effects  
9 analysis. Items in Tuetken Category 1, I will call that, for  
10 the first category of safety identified by Mr. Tuetken and  
11 generally concurred in, by the way, by Mr. DelGeorge in his  
12 testimony -- in Category No. 1, those are the categories  
13 which under a failure modes and effects analysis of this  
14 sort required or proposed by Dr. Bleuel would have greater  
15 samples, greater inspection -- that is, more inspections, a  
16 larger sample, greater volume and sampling of engineering  
17 analysis, greater managerial attention, higher statistical  
18 reliability standards and inspection levels.

19 Those are the areas where one could focus. And  
20 as Dr. Bleuel's testimony mentioned, if you could break down  
21 even within Category 1, for example, visual weld inspections  
22 as one of the categories or one of the inspection procedures,  
23 you could break that down into the most safety critical inspec-  
24 tion procedures within Category 1.

25 It is doable. All one has to do is take the

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1 Reinspection Program data and reorient it according to  
2 Mr. Tuetkin's safety classifications and one will have a  
3 picture of more accurately what can be inferred from the  
4 Reinspection Program results about the safety of the plant and  
5 about the reliability of the most safety critical systems  
6 and components of the plant.

7           One does not need to run afoul of this NRC policy  
8 statement, ordered in Edison's brief, about a Probabilistic  
9 Risk Assessment. One does not need to calculate in industry-  
10 wide experience, as Mr. Klopp suggests, which he says therefore  
11 would invalidate a Probabilistic Risk Assessment because  
12 one doesn't have to do such a risk assessment.

13           One can do a usable failure modes and effects  
14 analysis that will provide valuable data without having to  
15 cross any of the hurdles which Edison has attempted to lay in  
16 its path.

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1           Mr. Klopp, in his affidavit, also makes an  
2 effort to distinguish the failure modes and effects analysis  
3 of the sort that Dr. Bleuel is familiar with in his  
4 experience, from the one he is proposing here. Mr. Klopp  
5 makes a suggestion that maybe a fault tree analysis, or a  
6 failure modes and effects analysis would be appropriate in  
7 an industry such as communications and satellites which  
8 obviously are examples taken from Dr. Bleuel's experience  
9 where Mr. Klopp suggests there is heavier interaction and  
10 less redundancy.

11           I have shown that portion of the Edison response  
12 to Dr. Bleuel as well, and his reaction is that there is a  
13 great deal of redundancy in satellites because if the  
14 satellite breaks out there in space you cannot send out a  
15 repairman. It has to work the first time. That means you  
16 need to have multiple backup systems and a lot of redundancy.

17           Likewise, the differences between nuclear power  
18 plants and satellites, in the degree of interactivity, are  
19 only of degree and not of kind.

20           Dr. Bleuel is not sufficiently familiar with  
21 nuclear plants to argue whether satellites are more or less  
22 redundant than nuclear plants, but he is certainly in a  
23 position to argue that they are quite heavily redundant.  
24 And the same, he would conclude, is true of communications  
25 systems.

sy51b2

1           Now what that points up, with addition to the  
2 substantive responses that Mr. Bleuel has to Edison's  
3 argument, is a procedural point that I think is of some  
4 importance here. Mr. Klopp and Dr. Bleuel, on many of their  
5 points, cannot both be right. One of them is right and the  
6 other one is wrong.

7           And this Board and the parties are entitled to have  
8 a presentation with an opportunity for cross-examination of  
9 each individual by the opposing parties, in order to meet that  
10 judgment as to which is right. If the result of that judgment  
11 has a bearing on whether Dr. Bleuel's testimony should be  
12 permitted.

13           We should not simply take an uncross-examined  
14 affidavit by Edison's Mr. Klopp, who on point after point  
15 Dr. Bleuel responds by saying either you are wrong on this  
16 Mr. Klopp or you are right, but you have missed the point for  
17 another reason.

18           And likewise, having Mr. Klopp say similar things  
19 about Dr. Bleuel's testimony. We have a fairly clearcut  
20 disagreement between experts here and it is one which  
21 procedurally, it is simply not appropriate to be dealt with on  
22 the basis of a motion to exclude with an uncross-examined  
23 affidavit when the very expert whose testimony is proposed to  
24 be offered indicates that he disagreed repeatedly and  
25 systematically with the assessment in the affidavit.

sy51b3

1           Dr. Bleuel's second major point, as you know -- and  
2 by the way, both the Staff and Edison have argued that  
3 Dr. Bleuel's testimony is only cumulative and repetitive  
4 of other witnesses. Obviously, up to this point, everything  
5 I have said is not cumulative or redundant of any other witness.  
6 That is unique testimony.

7           You may decide, for whatever reason you don't  
8 want to hear it, or you don't think it's relevant, but it  
9 is certainly not repetitive or cumulative.

10           That point, about repetitive or cumulative,  
11 is made by both the Staff and Edison with respect to Dr.  
12 Bleuel's other two points. The first of those two points is  
13 his argument that there is a need for an independent engineering  
14 evaluation of the safety significance of the discrepancies  
15 found in the Reinspection Program.

16           Now we are offered in argument, by the Staff and  
17 Edison, that that is done by Mr. Stokes' testimony. It is  
18 not redundant of Mr. Stokes' testimony because it reaches  
19 the same conclusion by a very different road than Dr. Stokes  
20 follows -- Mr. Stokes, excuse me.

21           Mr. Stokes reaches the conclusion, his conclusion,  
22 on the need for an independent engineering evaluation by his  
23 actual review of these engineering calculations and the  
24 questions that he sees based on his review.

25

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1 Dr. Bleuel, on the other hand, did not do any  
2 review of the engineering calculations, and is not  
3 competent to do so. Rather, he is basing his recommendation  
4 for independent engineering evaluation on a completely  
5 different set of reasons; namely his 25 years of experience  
6 in the industry in attempting to design and maintain  
7 reliable equipment, and his view and his experience that  
8 one does not assign the rabbit to guard the cabbage patch,  
9 I think is his phrase, if one is attempting to obtain a  
10 reliable assessment of the safety significance of any  
11 defects.

12 That is based entirely on his experience and his  
13 expertise. It has whatever value ultimately this Board  
14 deems it to have. But, it comes from an entirely different  
15 place than the recommendation that Mr. Stokes makes.

16 Likewise, on Dr. Bleuel's point about the first  
17 three months, using the first three months for each  
18 inspector being a nonconservative, or adding a nonconservative  
19 bias to the program, it is once again true that Dr. Bleuel  
20 reaches the same conclusion as Dr. Kochhar reaches. But  
21 again they get there by following very different roads.

22 Dr. Kochhar is an academic expert. He has  
23 spent his time in the universities; he is testifying on the  
24 basis of laboratory experiments and the academic literature.  
25 He has no extensive business experience.



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1 Dr. Bleuel, while he has a number of degrees, as  
2 you know, is primarily basing his testimony on his  
3 actual experience in the field, not based on whatever lab  
4 results or test results or literature reviews that  
5 Dr. Kochhar may be referring to, but directly on Dr. Bleuel's  
6 own experience which was totally independent of -- and he  
7 reached that conclusion without any knowledge that Dr. Kochhar  
8 happened to have reached the same conclusion.

9 Now that is an example not of repetitive or  
10 duplicative testimony, but of testimony that for different  
11 reasons and from different experiences reaches the same  
12 point. That adds, not subtracts, from its probative value.

13 The testimony is complimentary, not cumulative.

14 Now on the merits of the independence points,  
15 Edison simply suggests that Dr. Bleuel's suggestion that one  
16 ought not to have Sargent and Lundy placed in charge of the  
17 engineering evaluations here is nothing more than an  
18 intuitive remark with no value in expertise whatever.

19 It is not merely an intuitive remark. It is an  
20 experiential remark which Dr. Bleuel believes quite strongly  
21 based on his many years of experience in many industries.  
22 It has whatever weight this Board deems to to have following  
23 cross examination, and Edison is certainly entitled to probe  
24 the weight of Dr. Bleuel's expertise and his experience to  
25 suggest that it is merely intuitive is to ignore the principal

1 reason why Dr. Bleuel ought to be called, because of the  
2 very expertise he has which does not duplicate the academic  
3 expertise of Dr. Kochhar or the academic expertise of  
4 Dr. Ericson, our statistician, or the engineering expertise  
5 of Mr. Stokes.

6 Edison also erroneously suggests that Dr. Bleuel  
7 has engaged in baseless speculation about bias by Sargent  
8 and Lundy. Dr. Bleuel has done no such thing. He specifically  
9 pointed out in his testimony that his point requires no  
10 suggestion or accusation of bad faith by anyone, and he has  
11 not made any such accusation toward Sargent & Lundy, so he  
12 has not engaged in that baseless speculation because he  
13 hasn't made that suggestion at all. He has simply indicated  
14 that even assuming the best of intentions and good faith,  
15 one simply does not appropriately design a reliability  
16 program to have an engineering firm in charge of a project to  
17 which it is so intimately involved and so deeply interested  
18 as the Byron Project.

19 Finally, on this point, Edison responds that  
20 Dr. Bleuel's attachment of the Palladino letter and his  
21 incorporation of the independent standards in that letter  
22 in his testimony is somehow an effort by Intervenors to  
23 circumvent this Board's earlier ruling that based on the  
24 showing made at that time, the Board would not admit the  
25 letter in evidence.

1                   That's not circumvention; it's simply providing  
2 a showing which was lacking at the time the Board made its  
3 earlier ruling; lacking, in the view of the Board.

4                   Dr. Bleuel has indicated that the criteria  
5 set forth in the Palladino letter are right up the alley  
6 in terms of what he is recommending, and he is suggesting  
7 and his testimony, of course, is supported on this point  
8 by Mr. Stokes, that the key issue raised by the Board earlier  
9 when we attempted to offer the Palladino letter at that time;  
10 namely, the degree of judgment required in an evaluation, is  
11 present both in a design review as it was at Diablo Canyon,  
12 and also, in an engineering assessment of the discrepancies  
13 found in the Byron Reinspection Program.

14                   One would think that it would not require a  
15 great burden upon Intervenors to suggest that there is a lot  
16 of judgment involved in the Reinspection Program, after  
17 we have now heard witness after witness after witness from  
18 Edison say, I am basing my conclusion about the safety of the  
19 Hatfield work, or the Hunter work, not on the statistics  
20 offered by Dr. Singh, but rather, based on my engineering  
21 judgment.

22                   That's right. These are all exercises of  
23 judgment. We have heard testimony about those exercises of  
24 judgment repeatedly during this hearing. Dr. Bleuel offers  
25 one specific example just to illustrate the judgmental

1 issues involved in his testimony, but he has now laid a  
2 foundation to present the Palladino letter; a founding  
3 showing that we're talking about judgmental evaluation here  
4 which was not present when we first offered the letter into  
5 evidence. And this is no effort to circumvent any prior  
6 ruling by the Board.

7           Finally, on the point of the first three months,  
8 Dr. Bluele's experience on that is twofold. Number one, he  
9 has extensive experience supervising hardware repair  
10 technicians; and number two, he has experience as a quality  
11 control manager, as you know, for the ENDEVCO Corporation  
12 involved in the aerospace program on the basis of which,  
13 together with other information in his background and training,  
14 he derives the point that the likely behavior patterns of  
15 inspectors and repair technicians are likely to be quite  
16 similar.

17           Now both of these last two points, the independence  
18 and the first three months, are directly responsive to  
19 testimony offered by Edison through a number of witnesses.  
20 They are, for the reasons I have already explained, not  
21 duplicative or repetitive of other testimony. They are,  
22 therefore, entirely proper rebuttal testimony, I would  
23 submit, and Edison's only argument to the contrary that they  
24 have no value or that they are repetitive simply doesn't hold  
25 up for the reasons I have explained.

mm71b1

1           The need to present all three points, not just the  
2 two which are clearly rebuttal, but also the first point, the  
3 failure mode effects and analysis point, I think can already  
4 be seen from the response which Edison has provided to  
5 Dr. Bleuel's testimony.

6           The longer I get into this rehearing proceeding,  
7 it seems the less important I am told the Reinspection Program  
8 really is. When Edison first presented its motion, in the  
9 alternative to reopen the record in this case, on February  
10 13th, 1984, and Applica.:s motion in the alternative to  
11 reopen the record is stated, on page 1, "CECO's evidentiary  
12 presentation focuses on the validity of the Quality Control  
13 inspector reinspection program and what its results indicate  
14 about the qualifications of the contractor's QC inspectors  
15 and the quality of a contractor's work."

16           I certainly had the impression, back in February,  
17 that we, if we were going to have a rehearing, if that motion  
18 were to be granted, in effect, that we would be focusing on  
19 the Reinspection Program and on two issues relating to the  
20 Reinspection Program; whether the inspectors were qualified,  
21 number one, and number two, whether the quality of the work  
22 is good.

23           Since then, we have heard testimony which I think  
24 has culminated in the statement on page 5 of Edison's response  
25 to Dr. Bleuel which states "No witness testified that the

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1 results of the Reinspection Program, standing alone,  
2 constituted a basis for reaching a conclusion about the  
3 quality of the work of Hatfield, Hunter, and PTL. Each  
4 relied on the Quality Assurance program and the analyses,  
5 inspection and enforcement effort as the primary basis for  
6 a conclusion regarding quality of the work."

7           So now, not only is the focus not directly on the  
8 Reinspection Program, not only are we at the point in the  
9 first day or two of the testimony where Mr. Del George  
10 indicated he had three separate strands of a cable, I think was  
11 the analogy he used for reaching his inference about the  
12 safety of the work, one of which was the Reinspection Program  
13 enabling one to draw inferences about the quality of the work.

14           But now we are at the point, in Edison's response  
15 to Dr. Bleuel, where the Reinspection Program comes in  
16 trailing in third place, after the QA program and NRC  
17 inspection, as the basis for drawing any inferences about  
18 the quality of the work. And the reason for that, I suggest,  
19 in part, is the more we look at this Reinspection Program, the  
20 weaker are the inferences one can draw from it about the  
21 quality of the work at Byron, particularly as Dr. Bleuel's  
22 testimony makes more effectively than other testimony in this  
23 record about the most safety critical components and systems  
24 in that work.

25           So for that reason, I would suggest to you that

1 Dr. Bleuel's testimony has already proved its worth in the  
2 reaction it has elicited from Edison, whether it ultimately  
3 will have an impact on the findings of this Board, should  
4 depend, I think, very largely on how the Board weighs the  
5 factual dispute between Dr. Bleuel on the one hand and  
6 Mr. Klopp on the other hand. If Mr. Klopp were 100 percent  
7 right, as Edison's motion presumes he is, then I would  
8 agree that Dr. Bleuel's testimony should be excluded because  
9 it would have no value.

10 But Dr. Bleuel, the expert offered by Intervenors,  
11 is not agreeing with much of what is in Mr. Klopp's affidavit  
12 and it is that conflicting evidence which the Board will lead  
13 the way in order to determine ultimately what weight you're  
14 going to give to Dr. Bleuel's testimony.

15 Thank you for your patience.

16 JUDGE SMITH: Mr. Miller?

17 MR. MILLER: Thank you, Judge Smith.

18 I would like to start by just trying to put this  
19 in context. As I mentioned when Mr. Cassel first disclosed  
20 the existence of Dr. Bleuel some four weeks ago perhaps -- in  
21 any event since, I believe, the second day of our first  
22 evidentiary hearing, Commonwealth Edison Company was quite  
23 concerned about being able to bear its burden of proof in this  
24 proceeding.

25 And to that end, at the very first stage we could,

1 we asked the Intervenors to disclose their expert witnesses.  
2 Dr. Bleuel's name was not made known to us until these  
3 evidentiary hearings began. He is one of four expert  
4 witnesses proffered by the Intervenors. We believe that we  
5 are prepared to deal with the testimony of the other three  
6 witnesses.

7           However, Dr. Bleuel's testimony, as Mr. Cassel has  
8 described, really raises issues -- certainly the first of  
9 those issues -- that go far beyond the testimony of any other  
10 witness in this proceeding, and introduce a whole new  
11 dimension to the scope of the Board's inquiry.

12           We would have been able, I think, to deal quite  
13 effectively with this by way of motion for summary disposition,  
14 or otherwise, if we had known about it. But basic fairness  
15 to the parties here would seem to require that in order to  
16 bring in an expert witness, as Intervenors are attempting to  
17 do, at such a late stage in the proceeding, there would be  
18 some sort of -- to use, I believe, your words, Judge Smith --  
19 some extraordinary showing with respect to the pertinence  
20 of that witness's testimony.

21           When one looks at the motion in Dr. Bleuel's  
22 testimony and at Mr. Cassel's explanation of why this Board  
23 should hear the testimony, one wonders whether there is any  
24 understanding at all, on the part of the Intervenors, as to what  
25 this proceeding is about and what the evidence is directed to.



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1           Let me start with what is critical to Mr. Cassel's  
2 analysis and that is the statement that the Reinspection  
3 Program should have focused on the safety significant components  
4 and systems. As Mr. Klopp's affidavit makes clear, as our  
5 memorandum in response makes clear, if one looks at safety  
6 systems, one very quickly gets outside the scope of any one  
7 contractor's work and outside the scope of any one vendor's  
8 supply. That is, the safety systems in the plant emergency  
9 core cooling system, for example, is composed of pumps, pipes,  
10 electrical cables, electrical terminations, welded  
11 connections, and a variety of components that are purchased  
12 from a variety of vendors.

13           In order to determine, under Dr. Bleuel's approach,  
14 the most safety significant part of that system, one would look  
15 well beyond the scope of work of Hunter, Hatfield, Pittsburgh  
16 Testing Laboratory in order to determine that.

17           More basically, the assumption from which both  
18 Dr. Bleuel's testimony takes off and Mr. Cassel's argument  
19 proceeds, is simply a basic misunderstanding of the testimony  
20 of Mr. Teutken. At his deposition, Mr. Teutken was asked  
21 to rank not safety systems, not critical welds or critical  
22 cable plans, or anything like that. He was asked, with  
23 respect to Hatfield, to look at the inspection attributes that  
24 are listed and to tell Mr. Cassel which of those, in his  
25 opinion, was the most safety significant.

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1                   And I think that if I just read a little bit of  
2 that deposition, the Board will get a flavor for Mr. Teutken's  
3 response and it will demonstrate why Dr. Bleuel and the  
4 Intervenors have simply sailed off on a completely  
5 irrelevant course here.

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1                   Now, he was asked about inspection procedure 9A,  
2                   which Mr. Teutken classified for Hatfield as being one of the  
3                   most safety-significant inspection procedures. He was asked,  
4                   "Why did you place that in your first order of safety  
5                   significance? Answer: Because the hanger itself is what is  
6                   supporting the cable pan, and it's structural integrity is  
7                   necessary. Question: If it were to fail, would there be a  
8                   threat to safe operation of the plant?" There was an objection  
9                   on pages 12 and following of Mr. Teutken's deposition, and  
10                  the question was re-asked as follows:

11                  "With respect to the cable pan hangers, if a  
12                  single cable pan hanger were to fail, would that present a  
13                  threat to the safe operation of the plant? Answer: Not  
14                  necessarily. It's a function of what the component is and  
15                  where it's located and its purpose. And if a number of the  
16                  cable pan hangers were to fail, would that present a threat  
17                  to the safe operation of the plant? Answer: It could  
18                  potentially yield a condition of impairing safe operation of  
19                  the plant.

20                  "Question: Could you give us an example of how  
21                  it might impair? Again, a conditional question -- might  
22                  impair safe operation of the plant? Answer: It would have  
23                  to have a complete series of hangers go into a failure mode,  
24                  which to themselves would then yield another failure mode in  
25                  the pan system, potentially yielding a concern with the cable

1 installation itself. Question: And how would that trigger  
2 a safety concern or a safety problem, from a layman's point  
3 of view? What would happen that would cause anything to  
4 be unsafe as a result of this? Answer: The cable -- the pan  
5 system it's supporting could perform an operability function  
6 which would make equipment inoperable. It would be necessary--  
7 Question: And some of that equipment would be necessary to  
8 the safe operation of the plant? Answer: Some of it could be,  
9 yes. The Reinspection Program, for better or for worse, was  
10 organized around inspection elements. That's what Commonwealth  
11 Edison Company has presented as its proof in this proceeding,  
12 and it goes to the question of the qualification of QC  
13 inspectors. It also provides information which is useful,  
14 perhaps not to statisticians, but to engineers in evaluating  
15 the condition of the plant.

16 The Reinspection Program was not organized around  
17 the most safety-critical element, and indeed, for the reasons  
18 that I have expressed and that are set forth in Mr. Klopp's  
19 affidavit, it couldn't be. It would be nonsensical because  
20 the most highly-stressed weld in the most highly-stressed  
21 connection of a cable pan hanger might be the cable pan hanger  
22 that was supporting the cable pan with a cable in it for  
23 routine plant operations not related at all to anything of  
24 safety significance.

25 So what Dr. Bleuel suggests as necessary to assuring

1 the resolution of what Mr. Cassel has called the most critical  
2 issue here: safety of the Byron plant, just won't do it,  
3 and the reason that Dr. Bleuel can suggest it will do it is  
4 because he doesn't have any background with respect to  
5 nuclear power plants or the manner in which they are analyzed.  
6 Not just in terms of this Reinspection Program, but in terms  
7 of the various safety analyses that are conducted by the  
8 Applicant with the help of its architect engineer and nuclear  
9 steam supply system vendor, reviewed by the NRC Staff and  
10 available for evaluation in a licensing proceeding such as  
11 this one.

12 In fact, challenges were made by the Intervenors  
13 to systems that were safety related, and overall to the  
14 effect of a so-called Class 9 accident, a severe accident,  
15 at the Byron Station. Those were litigated, there were  
16 references made to various kinds of probabilistic risk  
17 assessments, which everyone agrees is kind of the ultimate  
18 failure modes and effects analysis, and those issues have  
19 been decided.

20 The suggestion that this is simply another way of  
21 drawing inferences about the quality of Hatfield and Hunter's  
22 work really is just way wide of the mark. Because what we  
23 would be embarked on is an analysis not just of Hatfield and  
24 Hunter's work, but of the work related to safety-critical  
25 systems.

1           Now, I believe that Mr. Cassel suggested that  
2 there is something wrong with the statistics, if you will,  
3 that Commonwealth Edison has provided because all the  
4 reliability calculations are kind of lumped together. Those  
5 reliability calculations have a meaning, certainly, but I  
6 think we elevate numbers to a position that they should not  
7 have and probably do not have under the NRC regulatory  
8 scheme if we suggest that if you get it out to the fourth  
9 decimal point or the fifth decimal point a plant is safer  
10 than if you've only gone to three decimal points. That's not  
11 the basis for the reasonable assurance finding.

12           I believe other licensing boards have rejected  
13 the straight application of statistics as being meaningful  
14 in determining the safety of a plant. And I suggest that to  
15 get into a debate -- we may get into one later in the week  
16 with the statisticians -- but to get into a debate over the  
17 adequacy of a reliability calculation is essentially  
18 irrelevant to the basic issue before this Board, which is the  
19 adequacy of Hatfield and Hunter's work.

20           It is also worth observing that nowhere does  
21 Dr. Bleuel indicate how this failure modes and effects  
22 analysis would change the result. What we're told is that  
23 this is another way, in his opinion a better way, of doing  
24 an analysis, and that if we concentrated our efforts on the  
25 safety-significant systems, that somehow, we would get a

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1 better impression of the quality of Hatfield and Hunter's  
2 work. I'm not certain that that's true. And once again,  
3 as I said earlier, there is a basic misunderstanding of the  
4 safety categories identified by Mr. Teutken and the safety  
5 systems referred to by Dr. Bleuel.

6 In fact, if one looks at the results of the  
7 Reinspection Program by attribute that are found in  
8 Mr. Del George's testimony, one sees that what Dr. Bleuel  
9 suggested should have been done, was done. The emphasis was  
10 on cable pan hanger reinspection. The emphasis was on  
11 visual weld inspections, which was another category of  
12 inspection attributes --

13 JUDGE SMITH: Would you back up a moment and  
14 enter that thought again?

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1 MR. MILLER: If we're talking about inspection  
2 elements that are important to safety, then, in fact, if one  
3 looks at the results that are reported in Mr. Del George's  
4 prepared testimony, one finds that the emphasis was, in  
5 fact, on those inspection elements that Mr. Teutken  
6 categorized as most important to safety.

7 A good example is perhaps the documentation  
8 element in the Hunter. There were a number of reinspections  
9 done there, but they were given somewhat less weight than  
10 the more important hardware reinspections.

11 JUDGE SMITH: Are you referring to the Resinspection  
12 Program?

13 MR. MILLER: Yes, sir. Yes, sir. One looks at the  
14 number of visual weld reinspections that were done for  
15 Hatfield as compared, for example, to the installation of,  
16 I believe, cable pan covers. There were none of those  
17 captured, but they are less -- the inspection element --

18 JUDGE SMITH: You mean that's the way it turned  
19 out; not by design?

20 MR. MILLER: Well, I think that's probably right,  
21 because it was organized around inspectors.

22 One of the other things that comes out of  
23 Mr. Teutken's deposition is that despite this categorization,  
24 at one point in the examination by Mr. Cassel he says, now,  
25 look, you have to remember that all of these inspection



1 attributes are safety related and, in fact, that's true.  
2 The Resinspection Program did not involve itself with  
3 inspections that were not safety related.

4 What are we left with? We are left with an  
5 assertion that if we just got Mr. Klopp up there and  
6 Dr. Bleuel up there and had them in the crucible of cross  
7 examination, that the Board would be in a better position to  
8 know which expert was right.

9 I quarrel with the basic premise of this. I do  
10 not believe that there has been any showing that Dr. Bleuel  
11 is an expert in any area that is going to aid this Board in  
12 reaching a decision about the adequacy of Hatfield and  
13 Hunter's work. All he is going to do if his testimony is  
14 admitted is suggest, as he has, that there's another way  
15 of doing something. And we will then have, I think,  
16 probably quite an involved evidentiary presentation to  
17 demonstrate, first, why that approach to doing something is  
18 not a good one in this particular instance. And secondarily,  
19 to demonstrate that a failure modes and effects analysis  
20 for the entire plant, looking at systems that are critical  
21 to safety on an interactive basis, has been done.

22 So we really will not have advanced the ultimate  
23 issue before this Board at all. Because as Mr. Klopp made  
24 clear, and as Dr. Bleuel has no experience to contradict, a  
25 failure modes and effects analysis for systems cannot be used

1 to pinpoint construction inadequacies in any meaningful way.  
2 And that's where we're going to be at the very end if we go  
3 forward with this.

4 I would like to briefly address two other points,  
5 and those are the second and third points in Dr. Bleuel's  
6 evidentiary presentation.

7 Mr. Cassel suggests that it's not redundant that  
8 his observations about the need for an independent engineering  
9 evaluation are not redundant of Mr. Stokes' testimony, because  
10 Dr. Bleuel's testimony reaches its conclusion by a different  
11 route.

12 Mr. Stokes at least looked at or had available to  
13 him calculations, and was able, presumably, to evaluate them.  
14 Dr. Bleuel can't do that. He says he can't.

15 Well, another possibility is that Dr. Bleuel has  
16 some basis in his background to believe that Sargent & Lundy  
17 will not provide an honest and unbiased engineering evaluation  
18 because of its asserted economic interest in the completion  
19 of the Byron Station. But there is nothing in Dr. Bleuel's  
20 testimony that suggests he has some knowledge of that.

21 What we are told, therefore, is that we should  
22 accept Dr. Bleuel's testimony because somehow his ignorance  
23 of both the engineering calculations and his lack of informa-  
24 tion about Sargent & Lundy makes him an expert in I don't  
25 know what. I don't know whether it would be sociology or

1 psychology or economics. But it's not any subject matter, it  
2 seems to me, that ought to be the basis for findings before  
3 this Board unless there's either a showing by a competent  
4 engineer that the calculations are wrong, or some proof that  
5 Sargent & Lundy's interest in the Byron Station has biased  
6 their engineering evaluation. We don't have either  
7 predicate for Dr. Bleuel's testimony.

8 The last point that DR. Bleuel makes is with  
9 respect to the first 90 days of an inspector's tenure as  
10 being the appropriate sampling period for a reinspection.  
11 I would just like to observe two things.

12 First of all, Dr. Bleuel's observations are based  
13 not on any experience with inspectors, but rather with his  
14 experiences with repairmen. And once again, the Board is  
15 asked to accept somehow that Dr. Bleuel knows that inspectors  
16 are just like repairmen in terms of their attention span.

17 Secondly, we're told that it's the ENDEVCO  
18 experience that forms the basis for his expertise with  
19 respect to the first 90 days. Judge Smith, that was 20 years  
20 ago. That's when Dr. Bleuel left ENDEVCO, and to suggest  
21 that his position as a -- I forget the proper title here --  
22 assistant quality control manager for ENDEVCO, producing  
23 products that bear no relationship to the nuclear power  
24 industry in an era where at least the nuclear power industry  
25 had not even adopted any formalized quality assurance criteria

1 strains, frankly, credulity, that opinion based on that  
2 experience would be worthwhile for this Board to have.

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1 I believe that to the extent Intervenors have  
2 evidence, in the form of expert opinion, with respect to that  
3 point, Dr. Kochhar's testimony says it all. Dr. Bleuel's  
4 testimony adds nothing.

5 And that concludes my remarks. We ask that the  
6 motion be denied.

7 JUDGE SMITH: All right. The Board may have  
8 some questions of the parties, which we will propound after  
9 the break. I ask that you keep your final remarks brief.  
10 This has been argued extensively. Do you have additional  
11 arguments to make?

12 MR. CASSEL: Quite briefly, Judge, first of all  
13 there is no misunderstanding about the basis of Mr. Teutken's  
14 safety categories and I selected pages from the deposition  
15 to explain to you what Mr. Teutken was saying. I would have  
16 selected the very same pages and the very same questions and  
17 answers that Mr. Miller selected.

18 And Dr. Bleuel is familiar with the basis for  
19 Mr. Teutken's categorizations and that is the basis on which  
20 he recommends that the FMEA could be done on the basis of those  
21 safety classifications if there is any reason, such as scope  
22 of proceeding or otherwise, not to use an alternative approach.

23 Secondly, Dr. Bleuel's suggestions about the need  
24 for a failure modes and effects analysis are not merely, as  
25 Mr. Miller suggests, to suggest another way or of a way that

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1 might produce more sophisticated statistical results.  
2 Dr. Bleuel, while he has a degree in statistics, is making  
3 suggestions and is reacting to what he has read about this  
4 program not in a strict statistical sense and it is the  
5 engineering judgment, the judgment on the reliability of  
6 these systems, which is really the core issue he is addressing.

7 JUDGE SMITH: One of the questions that I will ask  
8 is what has he read? I mean, it does not appear in his  
9 testimony about this plant and about this litigation and about  
10 the reinspection program?

11 MR. CASSEL: I could pull it for you if you like,  
12 Judge. Somewhere in the papers it indicates that he has read  
13 the full Reinspection Program report and the supplement --

14 JUDGE SMITH: Yes, I understand that. He did  
15 read the February and supplemental reports.

16 MR. CASSEL: And the testimony of Edison witnesses  
17 Hansel and Laney -- and I would have to check the papers to  
18 see beyond that -- but I recall specifically that he was  
19 focusing on the testimony of Hansel and Laney and on the  
20 Reinspection Program report itself.

21 JUDGE SMITH: And Del George?

22 MR. CASSEL: He is responding to Del George and  
23 I believe he has read Del George. I'll have to check with  
24 him on that. But for example, I do not believe he has even  
25 read Dr. Singh's testimony and he is not zeroing in on the

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1 statistical point. Just to give you an example of the  
2 extent to which -- from a non-statistical standpoint -- from  
3 a question of engineering judgment or managerial judgment or  
4 reliability engineering, any of the traits which would apply  
5 to say let's assume we accept for the moment -- which  
6 intervenors do not -- but let's assume for the moment we  
7 accept Mr. Miller's argument that statistician's issues here  
8 are really angels dancing on a pinhead. We can put them aside  
9 and let's just take a look at the real results here.

10           And are we convinced, based on the Reinspection  
11 Program in part, that the plant is safe? The kind of question  
12 that Dr. Bleuel raises, just to give you the latest data that  
13 we have from Edison on two attributes -- and I will use  
14 numbers, but I'm not going to be making a statistical point --  
15 there were 26, according to Edison's latest responses, there  
16 were 26,572 inspections done by Hunter of fit up and tack  
17 weld for piping and whip restraints. And likewise, there were  
18 10,509 inspections done by Hunter for component inspections  
19 for piping and whip restraints.

20           Now those two items were respectively, I believe,  
21 in Teutken Safety Classifications 2 and 3. There were zero  
22 reinspections done in either of those classifications, none.  
23 Now you don't have to be a statistician to raise questions  
24 about what safety inferences can be drawn from a program where  
25 over 36,000 inspections of some safety significance were

1 totally missed and yet thousands reinspections were done of  
2 documentation.

3 Now, I'm not criticizing the program, in reviewing  
4 documentation for the purposes for which it was designed. But  
5 I am suggesting, and Dr. Bleuel is suggesting, it's a matter  
6 of engineering judgment and managerial judgment quite apart  
7 from statistics. One can raise questions about that kind  
8 of allocation of resources with respect to any inferences and  
9 about that level of evidence with respect to any inferences  
10 that can be drawn from the reinspection program about the  
11 safety of the plant.

12 Now that concludes my remarks. Thank you.

13 JUDGE SMITH: Anything further?

14 MR. LEWIS: Mr. Chairman, let me just make a few  
15 brief comments.

16 We don't want to be interpreted as in anyway  
17 wishing to cut off the Intervenor's right to make their case,  
18 as they see it, before this Board. And indeed, with respect  
19 to the testimony of the three witnesses who previously were  
20 identified by the Intervenors, Dr. Kochhar, Dr. Erickson,  
21 and Mr. Stokes, while there may be certain portions of those  
22 testimony -- of those items of testimony -- which we might  
23 find objectionable and may move to strike, nevertheless the  
24 subjects addressed there do appear to be addressing points  
25 previously raised before this Board, with respect to the



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1 Reinspection Program, the Quality Control Inspector  
2 Reinspection Program.

3           And our concern -- and perhaps it was stated in  
4 a somewhat different way by the Applicant -- but our concern  
5 is that the new point about the failure mode and effects  
6 analysis, while Mr. Cassel has sought to characterize it as  
7 another way to look at how meaningful data can be brought out  
8 of the Reinspection Program and how this Board can be aided  
9 in reaching the decision that it has to reach, I believe  
10 that Mr. Cassel is relying upon an overly broad understanding  
11 of what this Board has before it.

12           The fundamental decision on whether or not there is  
13 reasonable assurance that the Byron plant has been constructed  
14 so that it can be operated safely is clearly a decision that  
15 the Director of Nuclear Reactor Regulation will have to make  
16 under the regulations.

17           And to the extent that this Board believes that the  
18 Intervenors, through the proposed testimony of Dr. Bleuel, are  
19 raising issues that the Board feels it needs to hear in order  
20 to decide the Quality Control Inspector Reinspection Program  
21 issue before it -- and this Board has also been given a  
22 broader potential scope by a footnote to 770 -- ALAB 770.

23           If this Board believed, from reviewing the papers  
24 before it, that Dr. Bleuel could add something not previously  
25 discussed on the record in this proceeding, which would enable

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1 it to determine this issue, then this Board should decide to  
2 hear Dr. Bleuel.

3 But I believe that the testimony of Dr. Bleuel does  
4 depart considerably from the scope that is presently before  
5 this Board. And in a way that I do not find to be the case  
6 with respect to all the items in the other gentlemen's  
7 testimony.

8 It was argued, by Mr. Cassel, relying upon the  
9 Applicant's most recent -- the Applicant's response to the  
10 supplemental interrogatory 12, on Hunter Corporation, that  
11 there is some significance to be attached to the fact that  
12 for certain categories, where there were extensive numbers of  
13 initial inspections by Hunter personnel and yet no reinspections  
14 that there is a significance to that.

15 Well, there may be, from his perspective. I don't  
16 see how there is from the perspective of the Reinspection  
17 Program looking at selected inspectors. And I think once  
18 again, this refers back to his argument that the orientation  
19 of the Reinspection Program should have been different and  
20 should have focused more on categories of items based on  
21 safety significance.

22 Those are the only further comments the Staff has.  
23 JUDGE SMITH: All right. We will take a 15 minute  
24 break.

25 (Recess.)

end10

1 JUDGE SMITH: As we indicated, we had no  
2 expectation that we would be able to decide the motion on  
3 merits. We simply wanted to go over our notes and look  
4 at the filings and see if we had additional questions.

5 As it turns out, the temptation to begin  
6 debating the merits of the motion was almost irrisistible  
7 so we didn't use our time as efficiently as we might have.  
8 So our questions will not reflect the amount of time it  
9 took in preparing them.

10 There's one area that I believe the parties have  
11 not fully satisfied the requirements of NRC practice on,  
12 and that is, we have to assess, assuming that we find  
13 relevance, we have to assess the impact on the proceeding of  
14 late-filed and late-offered evidence, and there was no  
15 discussion, little discussion, of good cause for late  
16 offering of this. Maybe you have nothing more than just  
17 what you said; you didn't know about it and that's it.

18 There was no discussion of the extent that the  
19 proceeding will be extended, and I think that was a very  
20 good discussion of the problems associated with the proposed  
21 testimony with respect to the Applicant's point of view.  
22 However, there as no discussion, as such, as to how the  
23 proceeding would be broadened.

24 I guess that would be part and parcel of delay.  
25 So we do want to be informed on those points. And as we

1 are hearing from the parties on that, we will be preparing  
2 other questions that we have to ask, too.

3 MR. CASSEL: Do you have a preference for --

4 JUDGE SMITH: I believe that the better party  
5 to lead off that discussion would be Mr. Miller.

6 MR. MILLER: Judge Smith, it's a little difficult  
7 to be precise in responding with respect to any delay which  
8 would be caused in the conclusion of this proceeding, should  
9 Dr. Bleuel's testimony be admitted. Obviously, it would  
10 depend on the conditions, if you will, on which his Issue  
11 No. 1, the failure modes and effects analysis issue, were  
12 admitted.

13 JUDGE SMITH: That's the issue that particularly  
14 I thought might have a potential for delay. But we don't  
15 know that.

16 MR. MILLER: I think I would agree that that's the  
17 issue that certainly has the most potential for delay.  
18 We have only begun to evaluate what it would take to respond  
19 to Dr. Bleuel's testimony. I think it's certain that we would  
20 not be able to prepare and present rebuttal testimony to  
21 Dr. Bleuel this week. And I believe that we would require  
22 at least one week to determine the scope of what our response  
23 would be and to get testimony together.

24 That testimony I think would probably include  
25 testimony by Mr. Klopp and I believe would be designed to do

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1 two things. First of all, -- well, let me give one of two  
2 alternatives. If the Board were to admit Dr. Bleuel's  
3 testimony, it is conceivable that our evidentiary presentation  
4 would be limited to arguing, if you will, through contrary  
5 expert testimony that what he proposes makes no sense in  
6 the context of the licensing proceeding for nuclear power  
7 plants, and that the output of any such analysis would not  
8 provide useful information to this Board. And we might rest  
9 with that.

10 On the other hand, if the Board were to indicate  
11 that it were necessary to its decision that a failure modes  
12 and effects analysis of the type suggested by Dr. Bleuel were  
13 a relevant consideration in this proceeding, then I believe  
14 that we would require an extended period of time in which to  
15 prepare such an analysis.

16 I don't know as I sit here whether the existing  
17 Byron risk analysis or some other analyses that may exist in  
18 the Final Safety Analysis Report are adequate to address the  
19 substance of what Dr. Bleuel is suggesting. And if this  
20 Board were to determine that such an analysis should be done  
21 in order for it to resolve the issue of the adequacy of  
22 Hatfield and Hunter's work, then I believe we're looking at  
23 an extended period of time, probably three to four weeks  
24 before we would be in a position to present testimony.

25 But I'm really speaking in a very uneducated way.

1 JUDGE SMITH: I recognize the difficulty of  
2 being precise. It would depend a lot upon how we stated  
3 the need for any such testimony. And of course, you have  
4 to add to all of that the need -- assuming that the  
5 suggested testimony was necessary, then you'd have to add  
6 to all of that the additional proposed findings, the  
7 additional decisionmaking, all the way through to the  
8 conclusion. Good cause.

9 I suggest -- I asked the question, which was  
10 answered clearly in the testimony. I said, What does he  
11 know about this. And right there in the testimony, as he  
12 pointed out, he said yes, he told us what he knows. But  
13 that didn't come across quite the way I intended it.

14 What I meant to say, rather inartfully, was,  
15 what is there that they didn't know about this that caused  
16 him suddenly on July 23rd to come running into this hearing  
17 and say wait, wait a minute, you're doing it all wrong?  
18 How does this happen? This didn't all spring fullblown  
19 into his mind. How did it happen?

20 You're out shopping. Mr. Campbell is coming  
21 to the bench. Maybe he can help us.

22 MR. CASSEL: Judge, I'd like to consult with  
23 Mr. Campbell if I could on that question. I also have  
24 responses to the other questions you raised, but I didn't  
25 know whether Mr. Miller -- whether you wanted Mr. Miller to

1 address -- you enumerated what would be the impact on the  
2 proceeding, what good cause is there. I wasn't sure, when  
3 you said impact on the proceeding did you mean only delay  
4 or potentially on the outcome?

5 JUDGE SMITH: Oh, no, I was thinking of -- that's  
6 a very good point. That is something we'll have to address.  
7 This would have to be, in my view, -- I'm not really thinking  
8 out real clearly what legal elements would have to apply.  
9 I'm just suggesting those we would begin with, and that would  
10 be for a late witness raising issues of substance.

11 We would wish to look at the five elements for  
12 late-filed issues, and we would also want to look at the  
13 potential for affecting -- having a material effect on the  
14 proceeding.

15 MR. CASSEL: You raised a number of issues and  
16 I didn't know whether you wanted me to wait until Mr. Miller  
17 had addressed each of them before providing any response.  
18 I have responses to each of the questions you asked.

19 JUDGE SMITH: Well, Mr. Miller has answered  
20 virtually everything. The effect it might have on the  
21 proceeding, the impact upon the proceeding. The parties are  
22 free to argue that, as you have. I'm not asking for any  
23 further advice on that. I think if we accept your argument --  
24 I know what the impact on the proceeding would be. If we  
25 accept the Applicant's argument, we know there, too.

1                   However, you are free to argue. I mentioned the  
2 impact upon the proceeding.

3                   MR. CASSEL: In the sense of delay?

4                   JUDGE SMITH: No, in these sense of -- I thought  
5 you were asking me what are the elements we would have to  
6 apply, what legal tests would we have to apply, and one of  
7 them is the impact upon the proceeding. Others are the  
8 late issue elements.

9                   MR. CASSEL: I meant to suggest at the outset  
10 of my argument that I thought those five elements would apply  
11 to the extent you regard Dr. Bleuel's testimony or the  
12 profer of it as new direct testimony, and I think that's a  
13 fair characterization.

14                   JUDGE SMITH: Another element that we will have  
15 questions on will be to try to develop a little bit more  
16 finely exactly what you regard as rebuttal, and what is new  
17 direct testimony.

18                   Now, you've alluded to some of this as being  
19 clearly rebuttal. Well, it's not quite that clear, and we  
20 would want more precise advice.

21                   MR. CASSEL: There are three main issues he raises;  
22 the FMEA is responsive to Edison's testimony that one can --

23                   JUDGE SMITH: What are you addressing now?

24                   MR. CASSEL: The first issue, the first of the  
25 three main issues.



1 three main issues.

2 JUDGE SMITH: The issue put to you now is good  
3 cause. How did it happen on July 23, if he did --  
4 Dr. Bleuel -- come running into this proceeding saying, hey,  
5 wait a minute, you're doing it wrong? If I'm understanding  
6 correctly, how did this come about?

7 MR. CASSEL: Could I have a moment or two, Judge?

8 JUDGE SMITH: Yes.

9 (Counsel for Intervenors conferring.)

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1 MR. CASSEL: Judge, I'd like to supplement the  
2 information I have presented initially.

3 Dr. Bleuel came forward on -- to Intervenors on  
4 or about the first day of the resumed hearings, as I  
5 indicated previously, first by communication to Mr. Campbell  
6 who then referred him to counsel. And then he -- I guess  
7 Ms. Judson called him. I think Ms. Judson then called  
8 Dr. Bleuel after being alerted to his availability by Mr.  
9 Campbell.

10 The way Dr. Bleuel found out about it, to the  
11 best of Mr. Campbell's knowledge, is that sometime in late  
12 June or early July of this year Mr. Campbell, as part of the  
13 overall effort Intervenors were making to consult knowledgable  
14 people in the field, provided a copy of a Reinspection Program  
15 to an acquaintance of his who works in Quality Assurance for  
16 a corporation. Unless there's a need to identify the person  
17 in the Corporation, I would just as soon not, for the sake  
18 of their privacy.

19 That individual, in turn, knew Dr. Bleuel. Mr.  
20 Campbell did not know Dr. Bleuel, Intervenors did not know  
21 Dr. Bleuel. That individual took it upon himself to pass along  
22 the copy of the Reinspection Program report sometime in about  
23 the first week of July, or thereabouts, to Dr. Bleuel.

24 Following Dr. Bleuel's review of that report, he  
25 had the concerns which have culminated in this proffer of

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1 testimony. He telephoned first Mr. Campbell and then he  
2 had a discussion with Ms. Judson on the 23rd. I found out  
3 about it the evening of the 23rd of July, informed the Board,  
4 as I recall, on the morning of the 24th.

5 JUDGE SMITH: At that point, however, may we  
6 infer that Dr. Bleuel had the Reinspection Program report?

7 MR. CASSEL: Yes, you may.

8 JUDGE SMITH: And nothing else?

9 MR. CAMPBELL: I believe that is correct. I'd  
10 have to check with Dr. Bleuel, but I believe that is  
11 correct.

12 JUDGE SMITH: So whatever he knew about the  
13 purposes of the reinspection report was contained in the  
14 reinspection report and I assume that he did not know about the  
15 -- he did not, at that time, have familiarity with the FSAR  
16 or of the testimony on the Class 9 contention and that type  
17 of litigation we've had here?

18 MR. CASSEL: I believe that assumption is correct.  
19 He, of course, quickly upon communicating with Intervenors  
20 and their counsel, learned more about the case. But his  
21 initial -- the basis on which he first came to us, was the  
22 reading of the reinspection program report.

23 JUDGE SMITH: And he was later provided the direct  
24 testimony of the witnesses?

25 MR. CASSEL: That's correct, Judge.

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1 I have not put in the papers -- I don't believe  
2 we have put in the full listing of every paper he has reviewed.  
3 We put in the ones that we felt were principally relevant.  
4 Other than that, on good cause, Judge, this whole proceeding  
5 understandably and for good reason, has been expedited but  
6 within fairly short period of time following the definition  
7 by this Board on about May 31st of the scope of the issues.  
8 And as part of an extensive effort by the Intervenors to find  
9 expert witnesses within a relatively short period -- less than  
10 two months -- Dr. Bleuel did come forward. We immediately  
11 notified the Board of his existence, as soon as we knew, even  
12 made --

13 JUDGE SMITH: Knew of his availability.

14 MR. CASSEL: Of his availability, and his existence,  
15 for that matter, although I suppose the availability is the  
16 most relevant part here.

17 In addition -- and we did so, even though, as I  
18 hope I indicated the first time around, I did not at that point  
19 in time know enough about him, I hadn't even spoken to him  
20 myself, to be really comfortable about making a very precise  
21 and fair representation as to what his testimony might be.

22 It was for that reason that we ultimately wanted  
23 to give you the testimony so you could see for yourself.  
24 As our motion indicated, we made him available to both the  
25 Staff and to Edison for deposition, beginning last Monday.

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1           No one has asked to take his deposition, even  
2 though we have made him available. He continues to be  
3 available for deposition. We'll make him available tonight,  
4 tomorrow night, or any other time before he testifies. I  
5 have asked him to be available if the Board desires to testify  
6 this Wednesday. He will be available then.

7           His testimony, the scope of his testimony, as far  
8 as Intervenors are concerned, is set forth in that document.  
9 As we have indicated, he is prepared to recommend that a  
10 youthful analysis could be done on the basis of the Teutken  
11 safety classification. As far as Intervenors are concerned, we  
12 do not see a need to greatly broaden the scopes of the issues  
13 or prolong the proceeding.

14           JUDGE SMITH: No, so long as you just take his  
15 opinion and accept it.

16           MR. CASSEL: And even if the scope of the response  
17 is the kind of response which Mr. Klopp has provided. I,  
18 of course, understand that it is not up to us. It is up to  
19 Edison and the Staff to decide what kind of response they  
20 want to make to it. And I certainly, if the Board admits  
21 Dr. Bleuel's testimony -- as I hope you will -- I think  
22 Edison should have every opportunity to respond to it that they  
23 might wish.

24           I understand I'm offering them something that has  
25 a bitter side involving the timing. All I'm saying is we are

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1 not trying to prolong the proceeding. As soon as we learned  
2 of Dr. Bleuel, and ever since then, we tried to expedite  
3 this whole thing in every way we could.

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4 You asked me to what extent his testimony is  
5 direct, as opposed to rebuttal. And again, dealing with the  
6 three main issues that he's raised; issue number 1, FMEA,  
7 we are principally offering that issue as direct testimony.  
8 However, it is also rebuttal testimony in the sense of  
9 responding to the inferences which Mr. Laney and Mr. Del George  
10 among others -- but those are the two primary witnesses on  
11 this point, from Edison -- have made, that from the  
12 Reinspection Program results, as well as other evidence that  
13 they rely on, one can infer that the Byron plant is reasonably  
14 safe to operate.

15 The FMEA point, by really focusing in on the safety  
16 significance of the findings of the Reinspection Program,  
17 is a rebuttal point in response to that.

18 JUDGE SMITH: I want to see if I understand the  
19 logic here, and I really haven't studied his testimony. Before  
20 I feel I have absorbed it, in the context of this case, but  
21 his logic here on the FMEA is that the reinspection program  
22 was done one way. The way that he would have done it, as I  
23 understand it, is to have FMEA identify critical points and  
24 concentrate the inspection program resources on those critical  
25 points. That's the way he would have done it.

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1 MR. CASSEL: That's correct, as far as it goes.  
2 But if I could just add a couple of points to it. One is that  
3 he would not only concentrate inspection resources, he would  
4 also concentrate engineering and managerial resources.  
5 Concentration of resources is one point. The other point is  
6 stricter standards for the safety critical elements. Not  
7 stricter standards in the sense of the hardware standards.  
8 Those have already been set. But stricter standards under  
9 the Reinspection Program, a higher confidence level, higher  
10 reliability, a standard larger sample size, making sure that  
11 you don't have less important categories more heavily  
12 reinspected than other categories of greater importance,  
13 et cetera.

14 The other way in which I would amplify your  
15 summation of his points is he is not necessarily saying that  
16 if his purpose had been what Edison's purpose was -- namely  
17 to validate the qualifications of inspectors -- and that's  
18 really a shorthand paraphrase for an inspector qualification  
19 issue, which you know people argue exactly how you'd word that.  
20 If that had been his purpose, he might well have designed  
21 it as they did, with the exception of the first three months  
22 point.

23 But if the purpose is what Edison, after the  
24 fact, attempted to make it become, validating work quality,  
25 if that's your purpose that should be a different design.

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1 JUDGE SMITH: I understand that and this is  
2 where I have trouble following the stepping stones of this  
3 logic. He said your Reinspection Program might be all right  
4 to validate an inspector's qualifications, but it does not  
5 support the inference that the quality of the work is  
6 good. To do that you have to have an FMEA and the way I  
7 would have done it, according to Dr. Bleuel, would be to have  
8 an FMEA and then use the results of that as you described.  
9 Then where do you come out?

10 Let's say he's exactly right. Where do we come out?  
11 Let's say we would have had a better result following his  
12 method, as far as evidence that the quality of the work is  
13 satisfactory. What do we do with that result, that conclusion?

14 MR. CASSEL: If that were the only outcome of  
15 following his recommendation, then you should exclude his  
16 testimony because it wouldn't affect the results, in this  
17 case, at all. It would simply say I've got a more convincing  
18 way to make the same showing, that Edison has purported to make.

19 But there's another potential outcome of doing an  
20 FMEA and structuring the Reinspection Program on the basis of  
21 it. And that is you really focus your resources and apply  
22 strict standards in the more safety significant areas, even  
23 using the shorthand type of classification that Mr. Teutken has  
24 put together for us. If you did that, you might well find  
25 safety problems and areas where the reliabilities are not very



1 strong, that would require further reinspection efforts and  
2 might raise hardware problems that went undetected in this  
3 program.

4 JUDGE SMITH: Is that the only way that could be  
5 done or is that this way?

6 MR. CASSEL: I'm not sure what you mean by that  
7 "that." He is suggesting that without focusing resources  
8 and applying stricter standards to the Reinspection Program  
9 one cannot reliably draw an inference, from that program, that  
10 the plant is reasonably safe. And he is recommending that  
11 the appropriate way to focus resources is through an FMEA.  
12 He is not saying the Teutken safety classification is the only  
13 way to do an FMEA.

14 I'm not sure if I answered your question.

15 JUDGE SMITH: All right. Let's say, then, that we  
16 do find that an FMEA would improve -- would increase and  
17 would be of greater assurance of the quality of the work. Is  
18 that what you are saying? You concede he's not tackling  
19 the usefulness of the Reinspection Program as an indication  
20 of the quality of the inspection.

21 MR. CASSEL: Not only the FMEA point. His first  
22 three months point lead directly to that and the independence  
23 goes a little bit -- no, the independence really goes to the  
24 quality of the work because you could decide the issue of  
25 inspector qualifications without regard to the safety

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1 significance that he found in the engineering evaluation.

2 So his first two points go to the work quality.

3 His third point --

4 JUDGE SMITH: I'm just talking about the FMEA.  
5 That's the big deal here.

6 MR. CASSEL: That does not go to the issue of  
7 inspector qualifications.

8 JUDGE SMITH: That does not?

9 MR. CASSEL: Not as I understand his testimony.  
10 It goes to quality of work and the inference concerning whether  
11 Byron -- whether Byron is reasonably safe to operate.

12 JUDGE SMITH: You would offer it here, this  
13 panel of witnesses, Mr. Del George said the purpose of it was  
14 to validate inspector qualifications and incidental purpose  
15 or an incidental result is to permit an inference that the  
16 quality of work was good. So now you're saying whoops, wrong  
17 inference. You can't do that.

18 The better way to do it is with an FMEA.

19 MR. CASSEL: His testimony is stronger than that.  
20 He's saying without doing an FMEA one cannot infer --

21 JUDGE SMITH: It cannot be done?

22 MR. CASSEL: -- work quality from the Reinspection  
23 Program to the point of having reasonable assurance. One can  
24 make some inference, but it doesn't -- in his judgment --  
25 rise to a significant level unless you have concentrated your

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1 resources and your standards on the safety significant part.

2 JUDGE SMITH: Why can't he simply come to this  
3 hearing and argue without -- if he could say the only way  
4 to do this is an FMEA because, and then attack directly, the  
5 inference drawn from the Reinspection Program because of its  
6 design.

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1 MR. CASSEL: I'm sorry, Judge, I didn't follow.

2 JUDGE SMITH: Let's say an analogy. Let's say  
3 I'm trying to bake a cake but I don't have any cake flour.  
4 I'm using the ingredients on hand which are sand and other  
5 ingredients. You can run in here and say hey, the only way  
6 you can bake a cake with milk, flour and sugar and eggs,  
7 and let me show you. Here's how you do it. Here's some  
8 flour, here's some eggs, here's all this stuff. We'll bake  
9 a nice cake. Fine.

10 Why don't you analyze why the inference? Why  
11 don't you use him to analyze why the inference that the  
12 quality of the work is faulty, rather than going down the  
13 aisle of what they should have done? I mean an FMEA from  
14 this person who does not have FMEA testimony, from this  
15 person who does not have nuclear experience, it leaves a lot  
16 to be desired.

17 But perhaps to hear what he says directly about  
18 the inference to be drawn about the quality of the work may  
19 be another matter. I don't see why you have to have the way  
20 it should have been done in the record before you demonstrate  
21 the way that it was done is inadequate -- before the  
22 inference being drawn.

23 MR. CASSEL: His basic point is the way it was  
24 done is inadequate, but one of the reasons it was inadequate  
25 was because it failed to focus resources and standards on the

1 most safety significant parts.

2 JUDGE SMITH: What is his basis for the  
3 assumption that there are a finite amount of resources?

4 MR. CASSEL: He didn't assume there was a finite  
5 amount of resources.

6 JUDGE SMITH: You're talking about focusing  
7 resources and not wasting them on insignificant matters.  
8 Don't you assume that you have finite resources?

9 MR. CASSEL: I think what he's talking about is  
10 the fact that Edison devoted a certain amount of resources  
11 to the plant. They didn't reinspect every inspector; they  
12 didn't reinspect all the work of every inspector; they  
13 didn't reinspect all the contractors; they made choices.  
14 And what he's saying is there may have been good reasons for  
15 the choices they made in light of their purpose at the time.

16 JUDGE SMITH: But the same amount of resources  
17 could have done a better job?

18 MR. CASSEL: Could have done a better job on the  
19 other purpose for which the Reinspection Program is now  
20 being offered; namely, validating work quality. If they  
21 wanted to spend all those resources on that program to prove  
22 inspector qualification and then devote other resources to  
23 an appropriately designed program to show the work quality,  
24 I'm sure he wouldn't have any objection to that.

25 He simply indicated that the way they spread their

1 resources around, it was by design, random, by inspector,  
2 which results in not having the focus on safety issues that  
3 managers ought to want, that engineering evaluators ought to  
4 want, and that this regulatory body ultimately, he suggests,  
5 would want in order to make a decision about reasonable  
6 assurance.

7 MR. LEWIS: Mr. Chairman, may I be heard on one  
8 of those points? It's at this point that Dr. Bleuel's  
9 lack of knowledge of all of the other documentation in this  
10 case become particularly important.

11 As the Chairman was suggesting, perhaps if  
12 Dr. Bleuel were actually seeking to join issue with the  
13 matter before this Board; namely, whether or not one can  
14 draw some inference as to the quality of construction from  
15 the Reinspection Program, that would be one matter. But to  
16 come in and suggest that a wholly different type of approach  
17 is necessary to reach a reasonable assurance finding or  
18 however he would put that finding as to the quality of  
19 construction -- without having any awareness of any other  
20 efforts done with respect to this plant and this docket, is  
21 not going to be a useful and, I believe, probative piece of  
22 testimony for this Board.

23 Maybe I'm simply trying to restate my understanding  
24 of the Board's indication, but it seems to me, as Mr. Cassel  
25 is now approaching it, it does show that when one gets into

1 an alternative approach from a person who has no foundation  
2 of knowledge to offer that alternative approach, except  
3 having looked at the particular program now before the Board,  
4 the testimony is not addressing a point presently before  
5 this Board.

6 JUDGE SMITH: That's the scope of the reopened  
7 hearing. It's somewhat a different matter, and I agree  
8 that that is something we'll have to get into.

9 All right. I'm still having difficulty with the  
10 logical steps of how this would fit into this case; that  
11 he does not like -- he is not, himself, quarreling with the  
12 inspector qualification inference to be drawn from the  
13 Reinspection Program or its design for that, with respect  
14 to his first issue.

15 He and his counsel, you, are saying inasmuch as  
16 the Applicants' expert witness has used it for a second  
17 inference -- and that is the inference of the work quality,  
18 the second inference -- that inference cannot be sustained  
19 based upon the Reinspection Program because it was not  
20 employing an FMEA --

21 MR. CASSEL: Or alternatively stated, because it  
22 did not supply sufficient data of sufficient reliability  
23 on the most critical safety components.

24 JUDGE SMITH: Then he goes on to say, then, as  
25 I read someplace in his testimony, absent that, the finding

1 cannot be made that the relevant work has a quality which  
2 will provide reasonable assurance. He doesn't say that  
3 anywhere.

4 MR. CASSEL: He doesn't say that. He says --  
5 I guess he does say that. He says in his Answer 11, "In my  
6 opinion, without performing a Failure Modes and Effects  
7 Analysis, one cannot have reasonable assurance that adequate  
8 reliability of the plant and its associated safety requirements  
9 can be achieved."

10 But what he's really focusing on here is what he  
11 knows about; the inference that can be drawn from the  
12 Reinspection Program.

13 Now, if this Board were to find that if there had  
14 been no Reinspection Program and no inferences concerning  
15 plant quality could be drawn from it, if this Board were to  
16 find that based on other information one could find reasonable  
17 assurance, I'm not sure he could or would quarrel with that  
18 because he's not familiar with the other information.

19 But insofar as inference is drawn from the  
20 Reinspection Program, he does not believe it can be  
21 appropriately reached.

22 JUDGE SMITH: What if FMEAs had never been  
23 invented? What would he bring to this hearing?

24 MR. CASSEL: Apart from his second and third  
25 points, what he would bring to this hearing would be based



1 on his experience as I have indicated.

2 The whole purpose of his business experience for  
3 the past quarter of a century has been to try to make sure  
4 that things work, and especially that the most important  
5 things work. And even if he didn't use the term "FMEA" or  
6 some other term with which I, for example, was not familiar  
7 until he brought it to my attention, he could still state  
8 and would still state that from his experience, when you  
9 try to design things to make sure that they work and that  
10 the most important things work most reliably, any manager  
11 using managerial judgment, any engineer using engineering  
12 judgment is going to focus on the most important things and  
13 subject them to stricter scrutiny. And that's what he would  
14 say.

15 It so happens that FMEA analysis does exist, has  
16 existed for sometime, is a standard part of the practice of  
17 reliability engineering with which he's quite familiar, and  
18 so he expresses it in that particular way.

19 JUDGE SMITH: Okay. Moving on to your second  
20 point -- everybody will have a chance to come back to this --  
21 he tells us that there's an alternative, and that is either  
22 there should have been criteria in advance; the criteria to  
23 assess the design significance of the discrepancies should  
24 not be considered as reliable because they were not previously  
25 stated at the outset. That's the one point.

1           The other point is failing that, then the only  
2 other alternative apparently is independent evaluation.  
3 Now I have two questions. One is, what is the basis for  
4 his statement, if you know. It's not apparent here. That  
5 Sargent & Lundy used after-the-fact criteria for their  
6 analysis? And I'm referring here -- they didn't make up  
7 these codes after the fact. They didn't invent, you know,  
8 engineering judgment after the fact.

9           These codes against which they applied their  
10 analyses existed before the Reinspection Program. What is  
11 the basis -- what after-the-fact criteria are you alluding  
12 to there?

13           MR. CASSEL: There were certainly many before-the-  
14 fact criteria. The codes existed, the FSAR, et cetera, but  
15 even within the context of all those criteria that exist,  
16 in the course of doing the engineering evaluations there  
17 were many choices available to the engineer which required  
18 the exercise of judgment in selecting what criteria and what  
19 calculation methods to use in order to assess safety  
20 significance.

21           One example that he singles out in his testimony  
22 at page -- well, first of all, he points out that many of  
23 the evaluations were expressly based on judgment. But the  
24 one example that he singles this out -- I think this is  
25 illustrative of the kinds of things we have heard and is

1 replete in the testimony, but just to give one concrete  
2 example, he refers to the testimony on page 14 of his  
3 testimony in Answer 16. The first full paragraph headed  
4 there, "Recent testimony discusses the use of somewhat  
5 contrasting methods with respect to the extent to which one  
6 examines the load redistribution effects. One method used  
7 in the Reinspection Program and testified to by  
8 Mr. McLaughlin; another method used for purposes of  
9 Mr. Kostal's testimony." And he emphasized he only did it  
10 for his testimony with respect to systems control.

11 Now, that -- it could have been done either way.  
12 There was no code that required Mr. McLaughlin to do it one  
13 way or that required Mr. Kostal to do it the other way. That  
14 was a choice that they were free to make within the context  
15 of existing codes and within the context of the FSAR.

16 And the whole set of engineering evaluations which  
17 Sargent & Lundy has made -- and this was a point made also  
18 by Mr. Stokes based on his actual examination of the  
19 evaluation, but it's consistent with the testimony we have  
20 heard repeatedly from Sargent & Lundy and from the Staff --  
21 is that there were judgments to be made here. You can't  
22 send someone with the code and the weld and automatically  
23 reach a particular result. There have to be judgments made.

24 JUDGE SMITH: Isn't his point then that yes,  
25 there were pre-existing criteria in the codes, and

1 pre-existing criteria in the materials that had the same  
2 properties before the fact as after the fact, and their  
3 pre-existing criteria; that the mathematics remain the  
4 same? He's saying that in his judgment, there was too much  
5 judgment; after the fact judgment. In his professional  
6 opinion, there was too much after the fact judgment. Isn't  
7 that what he's saying, when it all boils down?

8 He can't come here and convince us that, as you  
9 concede, there were no pre-designated acceptance criteria,  
10 because all of the codes existed and all the methodologies  
11 existed and all the mathematics existed and all the material  
12 properties existed. Those all existed.

13 He's simply saying, as I understand his  
14 testimony, that that isn't the way he would have done it.  
15 Is he telling us there's an absolute industry standard that  
16 he has described here that you either have to remove  
17 engineering judgment, have specific acceptance criteria,  
18 or you have a single alternative and that is an independent  
19 evaluation? Is that what he's telling us? That that is an  
20 established industry criteria? Or is he saying that that's  
21 the way he would have done it?

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1 MR. CASSEL: I think since the question in  
2 precisely that form was not put to him in his prefiled  
3 testimony, I would be hesitant to answer --

4 JUDGE SMITH: The problem is it doesn't shine  
5 through in the testimony, to me at least.

6 MR. CASSEL: Having made that qualification, as  
7 I understand it he's saying in his experience in the  
8 industry you almost never have a situation where there are  
9 no criteria in advance at all. But you can have a situation  
10 where all the criteria that are necessary in order to make  
11 the evaluation are identified and spelled out in advance,  
12 including what factors will and will not be considered and  
13 what methods will and will not be used, which was not done  
14 here in part because Sargent & Lundy wasn't asked to do the  
15 evaluation until after the program was already underway.

16 As I understand what he's saying based on his  
17 experience as an expert in the practical field of reliability  
18 engineering and maintainability engineering as well as  
19 quality assurance, he would say that to do it reliably you  
20 have only two ways; you spell out all the criteria necessary  
21 to reach a judgment ahead of time, or if you don't do that  
22 or can't do it -- and sometimes you can't -- then you have  
23 an independent review.

24 That's what I understand his testimony to be. It  
25 is not just a question of "I would have preferred that it be

1 done this way, or a better practice would have been to do  
2 it that way." He's quite strong in his opinion on this  
3 issue.

4 (Board conferring.)

5 JUDGE SMITH: Dr. Callihan thinks it would be a  
6 good opportunity, and I agree, for the parties at this time  
7 to address how Dr. Bleuel's testimony -- and I think  
8 particularly the Failure Modes and Effects Analysis -- fits  
9 within the scope of this reopened hearing, aside from the  
10 narrow thread which I think is a very, very narrow thread  
11 you have here where you're going to the secondary inference.  
12 If it weren't for the secondary inference drawn by the  
13 Applicant witnesses on the Reinspection Program, would his  
14 testimony be squarely within the scope of the reopened  
15 hearing?

16 MR. MILLER: Judge Smith, before we get to that,  
17 might I just respond briefly to some of the earlier points?  
18 Then I would really like to address Dr. Callihan's question.

19 But I believe that you heard from Mr. Cassel, and  
20 the way the discussion really began was on the issue of  
21 is this rebuttal testimony or is it direct testimony.

22 First addressing that specific question, it's  
23 apparent from what Mr. Cassel said, that point one is clearly  
24 direct testimony because he talks quite graciously of giving  
25 Commonwealth Edison Company an opportunity to respond to the

1 testimony of Dr. Bleuel, clearly indicating to me that this  
2 is not something in anyone's judgment that could rest on the  
3 record as it stands right now -- and there be any expectation  
4 that the Applicant had borne its burden of proof with respect  
5 to that issue.

6           Since it is clearly a part of the case-in-chief  
7 of the Intervenor, I believe that the first issue really  
8 should be regarded as, if you will, raising matters outside  
9 the scope of this hearing, because it does not directly  
10 address the issues before the Board. And the test that  
11 we have been discussing should be applied.

12           The reason that I say -- and this in part responds  
13 to Dr. Callihan's question -- the very answer that Mr. Cassel  
14 read from indicates to me that what Dr. Bleuel is talking  
15 about is something that goes well beyond the issues in  
16 this proceeding.

17           Dr. Bleuel is quite correct when he's talking  
18 about what a Failure Modes and Effects Analysis can do for  
19 us. It may help in reaching conclusions about the  
20 adequate reliability of the plant, but that's not the  
21 issue that we are here to address. In this operating  
22 license proceeding we dealt with a number of specific issues,  
23 some of which went more or less to that broad, rural issue,  
24 and have been litigated.

25           What we are here to address is the Reinspection

1 Program insofar as it tells us something about the  
2 qualifications of the inspectors and the adequacy of the  
3 work of Hatfield, Hunter and PTL. And that's just --  
4 Dr. Bleuel's proposed testimony never really focuses in  
5 on that.

6 That's precisely the reason that I was so  
7 uncertain in responding to your earlier question about what  
8 it would take for Commonwealth Edison Company to present  
9 testimony that would respond to this.

10 We have in mind that the issue is limited to the  
11 adequacy of the work of those three contractors. It's  
12 possible, although as Mr. Klopp's affidavit makes clear,  
13 not very useful, to get down to determining whether a  
14 particular weld is in a safety-critical system and then we  
15 could go and see whether that particular weld had been  
16 captured by the Reinspection Program.

17 But without doing the analysis of the whole  
18 system, the emergency core cooling system, the auxiliary  
19 feedwater system, we would never get to that point. And what  
20 we approve through the use of a Failure Modes and Effects  
21 Analysis is that there is probably a component somewhere  
22 that if it fails, given the redundancy of safety systems and  
23 the fact that you have duplicate trains of control and so on,  
24 that there is a tank somewhere or a pump somewhere that the  
25 Failure Modes and Effects Analysis will show us is the one



1 that is really very critical. And the way I think this  
2 would work is that you would find that well, if we analyze  
3 this system and say there are five welds in highly-stressed  
4 locations that we ought to go look at, we could then do  
5 another Failure Modes and Effects Analysis which would  
6 suggest that having looked at those five welds, the next  
7 possible failure sequence would involve looking at 20 more  
8 welds, and then we would -- it would be like peeling an  
9 onion. We would peel off successive layers in this Failure  
10 Modes and Effects Analysis of components or equipment to  
11 look at, and at the end of this iterative process I don't  
12 believe we would be any further along in determining the  
13 overall adequacy of Hatfield and Hunter's work than we are  
14 at this point.

15 Furthermore, since, as Mr. Klopp points out, you  
16 have to assume some level of quality in construction in  
17 doing a probabilistic risk assessment, it is kind of -- what  
18 came first, the chicken or the egg.

19 JUDGE SMITH: Is that his position, though?  
20 I think he envisioned an FMEA which doesn't assume anything;  
21 it just points out where you look.

22 MR. MILLER: But in order to do that, Judge Smith,  
23 one has to assume a certain level of quality. And in the  
24 analysis with which Mr. Klopp is most familiar, you assume  
25 a level of quality based on industry experience. And that's

1 the only -- that's really the only sensible way to do this.  
2 Because what we're talking about is a power plant that's  
3 going to meet the statutory standards of reasonable  
4 assurance, and that's defined by the whole body of experience  
5 for the industry.

6 So we assume this level of construction quality,  
7 do the analysis and it identifies something.

8 JUDGE SMITH: This is one of the things that I  
9 want to re-read his testimony for; to see if I can get a  
10 better feel. What is the problem he perceives he's going  
11 to solve by an FMEA? That's what I'm trying to figure out.  
12 The nexus that you depend on is attacking their inference,  
13 but that doesn't do it for me. I want to know what he would  
14 be trying to accomplish with an FMEA.

15 MR. CASSEL: The problem that he sees is the  
16 likelihood that significant hardware deficiencies on safety-  
17 critical components have not been depicted with the  
18 requisite degree of assurance, because the Reinspection  
19 Program --

20 JUDGE SMITH: Is that the end of your sentence?  
21 How does he know that?

22 MR. CASSEL: Because the Reinspection Program was  
23 not designed to find them if they were there.

24 JUDGE SMITH: Okay. That's exactly the point.

25 MR. MILLER: But Judge Smith, you know the important

1 thing is here is a man who has -- he's got tunnel vision,  
2 and the reason he has tunnel vision is he's been dealing  
3 with this extremely complex subject for six weeks now,  
4 maximum. He has read the Reinspection Program Report and  
5 he's read some direct testimony here, and he can't know  
6 because nobody has told him or showed him what else there  
7 has been in terms of inspections and audits and conclusions  
8 drawn by knowledgeable individuals with both the NRC Staff  
9 and Commonwealth Edison Company with respect to the  
10 quality of the work.

11 The reason that this Reinspection Program was done  
12 on a sample basis, as Mr. Keppler reminded us all when he  
13 was here, is because in the CAT team inspection, which was  
14 an extremely detailed and thorough inspection by the NRC,  
15 they did not find significant hardware problems, and they  
16 were looking for the reasons that he expressed, because of  
17 concerns of quality at other plants.

18 Dr. Bleuel doesn't know about that. Nobody has  
19 bothered to tell him about the CAT team inspection. No one  
20 has bothered to tell him about Appendix B. No one has  
21 bothered to tell him about the extent of the normal quality  
22 assurance effort, nobody has bothered to tell him about the  
23 safety analyses of the safety-significant systems that take  
24 place as a matter of routine in the licensing process.

25 So we have somebody who's got a little bit of

1 knowledge about one aspect of a process that has taken  
2 eight years, and he is presuming to come in here and present  
3 testimony with respect to what is needed for this licensing  
4 board to reach a reasonable assurance issue, which he  
5 characterizes as being on the overall safety of the plant.  
6 It both mischaracterizes the issue, and he doesn't have a  
7 sufficient background to enable him to opine on that issue.

8 MR. CASSEL: Judge, he hasn't mischaracterized  
9 the issue and all the things that Mr. Miller just mentioned  
10 and that one will hear from every Edison witness practically  
11 who addresses this point are set forth right in the Reinspec-  
12 tion Program Report. There is a discussion of the Edison  
13 QA/QC program, of the fact that Edison was relying on other  
14 matters -- that's in the Reinspection Program Report itself.

15 We're not talking about a case of tunnel vision  
16 here, we're talking about breadth of experience and  
17 knowledge, coming in and looking at a particular application.

18 As far as defining the issue, he is addressing  
19 first and most narrowly and most clearly within anyone's  
20 definition in the scope of this proceeding, the quality of  
21 the work of Hunter, Hatfield and PTL. He is also responding  
22 not by raising an issue himself, but responding to the  
23 inference which Mr. Del George, Mr. Laney and others have  
24 drawn.

25 Now, I'm not sure Mr. Laney drew it beyond those

1 three contractors; I'd better qualify that. I think  
2 Mr. Laney drew it only with respect to Hatfield, Hunter  
3 and PTL. But Mr. Del George and other witnesses for Edison  
4 have drawn an inference, and the Staff has as well, about  
5 the broader quality of the plant, relying in part on the  
6 Reinspection Program as the basis for it.

7 But there are at least two levels there, and  
8 neither one of those issues was defined by Dr. Eleuel.  
9 He's responding to the issue as it was presented to him.  
10 Hunter, Hatfield and PTL at one level, and the quality of  
11 their work; that's one issue which he says is not addressed  
12 adequately by the program. And the other and broader issue  
13 is drawing an inference from this program to the safety of  
14 the plant as a whole.

15 MR. MILLER: Excuse me. I think it would be very  
16 important, Judge Smith, if Mr. Cassel could direct your  
17 attention to where any witness's testimony from Commonwealth  
18 Edison has purported to draw overall conclusions of the  
19 nature -- the second order nature -- that he describes.  
20 It is my belief that Mr. Del George, Mr. Laney, Mr. Hansel,  
21 all limited themselves, as this Board has ordered us to do,  
22 to addressing the adequacy of the work of Hatfield, Hunter  
23 and PTL.

24 JUDGE SMITH: I think he clarified. You concede  
25 that you're addressing now -- that we should construe

1 Bleuel's testimony to be limited to Hatfield, Hunter and PTL?

2 MR. CASSEL: With one exception, and that is to  
3 the extent it responds to the inference -- and I'll have to  
4 go back and parse the transcript on this, but I thought when  
5 Mr. Del George gave us his very colorful metaphor for  
6 describing his reasons for inferring work quality, he used  
7 a three-strand cable in response to Mr. Learner's suggestion  
8 that there were links in the chain. He was trying to make  
9 the point that there were independent bases for his  
10 determination of work quality, one of which was the  
11 Reinspection Program findings as they relate directly to  
12 work quality.

13 I had the impression at the time -- and perhaps  
14 I misremember -- that he was making an inference about the  
15 quality of the plant itself. And I believe on Mr. Learner's  
16 cross examination where he was asked did you make inferences about  
17 other contractors who were not reinspected, that he  
18 answered yes, he did.

19 So I think Mr. Del George has gone beyond those  
20 three.

21 JUDGE SMITH: We had a great deal of difficulty  
22 with the scope of Mr. Learner's questions. I think we  
23 finally resolved that he was talking about the three  
24 contractors. Nevertheless, we know what the scope of the  
25 hearing is.

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Has there been any witness for either the Staff or the utility who has stated expressly or by implication that the Reinspection Program standing alone with nothing more would be adequate assurance that the plant is constructed safely?

MR. CASSEL: Not that I recall, no.

end 14

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1           But there have been a number of witnesses who have  
2 relied on it in part.

3           JUDGE SMITH: Or who have said that that is an  
4 inference that can be drawn, that the quality of the work is  
5 good, the Reinspection Program is an inference that can be  
6 drawn.

7           MR. CASSEL: Yes. And bear in mind, if we use  
8 again Mr. Del George's three strands of the cable, Intervenors  
9 have an argument on each of those strands. So to say well,  
10 one of them by itself wouldn't be enough. Therefore, it's  
11 not particularly dispositive if one of the strands happens  
12 to be very weak. Well, there are issues that we have raised  
13 and that we intend to propose in the proposed findings on the  
14 other two strands as well.

15           You know, this is directly --

16           JUDGE SMITH: I'm asking now solely to see what  
17 possible relevance Bleuel -- what light Dr. Bleuel can shed  
18 upon it. Mr. Lewis?

19           MR. LEWIS: Mr. Chairman, unfortunately, I think  
20 that because there has been a span of time between the close  
21 of the previous proceedings in the Byron case, and the present  
22 remand proceeding, there is a tendency to act as though this  
23 proceeding is not built upon the factual record that preceded  
24 it, which of course it is.

25           And it would seem to me that it is the obligation of

new bu



1 every party to this proceeding to put forward witnesses who  
2 are knowledgeable of all of the relevant facts, which this  
3 Board has to take into account.

4           And in the case of a witness of Dr. Bleuel -- and  
5 I'm not in the least critical of intervenors on this, I  
6 think it's a considerable burden particularly for new counsel  
7 who weren't working on the earlier stage of the proceeding --  
8 but there has to be some effort to put before any proposed  
9 witness a full array of the relevant considerations. And for  
10 a person who is proposing to come before this Board and  
11 advocate a Failure Modes and Effects Analysis, it would seem  
12 like there are a number of relevant past portions of testimony  
13 that, to my knowledge, Dr. Bleuel has never been shown.

14           JUDGE SMITH: That's an interesting point. Not  
15 only that, but relevant portions of the entire licensing  
16 process, which did not come into sharp focus as an issue in  
17 the proceeding, as we have stated several times throughout  
18 the proceeding, that the primary responsibility for  
19 establishing the assurance of the safety of the plant rests  
20 with the Director of NRR. And we have responsibilities  
21 over the issues which are brought into the hearing and  
22 we discussed that in our initial decision.

23           MR. CASSEL: He's not raising FMEA as divorced from  
24 the reinspection program. He's discussing what inferences about the  
25 quality of work of Hatfield and Hunter and PTL can be drawn

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1 from the Reinspection Program. He has not reviewed the  
2 entire record of this case, and that's obviously not practical.  
3 It wouldn't have been practical for any expert in the two  
4 months since the decision. Other witnesses have come in here,  
5 quite appropriately --

6 JUDGE SMITH: We're not faulting him. We're trying  
7 to evaluate the benefit he would bring to the hearing. It's  
8 not a question of criticism at all. We wouldn't expect him  
9 to be able to do that.

10 MR. CASSEL: Surely, obviously, the point does go  
11 to the weight of any witness's testimony, that he's testifying  
12 only on certain issues based on a review of only certain  
13 information. But that's been true of Mr. Laney, true of  
14 Mr. Hansel. It's been true -- I don't know that there were  
15 any outside experts in this proceeding. We can't charge  
16 outside experts who are coming in to offer the benefit of  
17 their expertise on a particular issue with the breadth of  
18 review that Mr. Lewis suggested.

19 Of course it goes to the weight that one can assign  
20 to any of these witnesses.

21 MR. LEWIS: I think, Your Honor, it goes to more than  
22 the weight in this case. It might only go to the weight if this  
23 were testimony that was filed in accordance with the schedule  
24 for identification of witnesses and filing of testimony. But  
25 as you have pointed out, Your Honor, the considerations of a

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1 late filed issue come into play. And I believe you have  
2 also suggested that perhaps some of the tests for reopening  
3 might also become applicable in the Board's consideration  
4 whether or not this is literally a reopening type of situation  
5 or not.

6 But in the context of a late filed contention,  
7 the assistance that can be lent to the record by a proposed  
8 witness's testimony becomes relevant in considering its  
9 admission. So it is not simply a matter of admitting the  
10 testimony and then giving it whatever weight you may choose.

11 JUDGE CALLIHAN: Mr. Miller, refresh my  
12 recollection please. 15 months ago, or thereabouts, there  
13 was under discussion here -- and I have it on the shelf at  
14 home -- a document some four or four and a half inches  
15 thick which was or is a risk study, correct?

16 MR. MILLER: Yes, sir.

17 JUDGE CALLIHAN: Is that in the record officially?

18 MR. MILLER: No, sir. It was tendered on the  
19 record to the Intervenors, through their counsel, acknowledged  
20 receipt of it, and I believe put it aside and never dealt with  
21 it again. We did not introduce it.

22 Mr. Gallo reminds me that it is Appendix G to  
23 Mr. Hitchler's prepared testimony. He was one of the  
24 Westinghouse witnesses who addressed the issue of steam  
25 generator tube generation. I believe that's in the record --

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1 I'm sorry, it was just Appendix G to the risk study. It was  
2 a part of Mr. Hitchler's testimony. The balance of it was  
3 not introduced by any party.

4 JUDGE CALLIHAN: It is a document, however, related  
5 to the subject here in discussion today?

6 MR. MILLER: The risk study is a Probabilistic  
7 Risk Assessment which purports to identify the risk to public  
8 and to the plant from a variety of failure -- postulated  
9 failures, which are analyzed on a fault tree basis, as was  
10 suggested by Dr. Bleuel.

11 In addition, in the testimony on groundwater effects  
12 dealing with the dispersion of radioactive materials following  
13 a postulated core melt, breach of containment, it was  
14 classified as an environmental issue because it dealt with  
15 a calculation in the Final Environmental Statement.

16 Mr. Klopp testified, and part of the basis for  
17 his testimony with respect to the correctness of his calculation  
18 that was found in the FES and in the Applicant's testimony,  
19 referred to the Byron risk study as indicating the extreme  
20 low probability of there every being a failure of systems  
21 which would lead to degradation of the core and melt through  
22 the concrete base mantle.

23 But there was never -- the document itself was  
24 never put into the record as such.

25 JUDGE CALLIHAN: Thank you.

1           Mr. Cassel, with apologies, but with knowledge of  
2 your relative short tenure here, are you familiar with this  
3 document, to which Mr. Miller was just alluding?

4           MR. CASSEL: Only by general description of it,  
5 Judge. And the point that I infer, from the general description  
6 -- I'd have to stand ready to be corrected if I am wrong --  
7 is that it does not involve a physical reinspection of  
8 hardware that Probabilistic Risk Assessment was done on other  
9 bases than a physical reinspection of the hardware whose  
10 risks were being assessed, number one. And number two,  
11 Dr. Bleuel's opinion that it is not necessary. It would  
12 certainly be an option, but it is not necessary, particularly  
13 if one is focusing only on Hunter, Hatfield, and PTL, to  
14 resort to that document to do a Failure Modes and Effects  
15 Analysis or to resort to any Probabilistic Risk Assessment,  
16 but rather one could do it with the Teutken categories.

17           MR. MILLER: Excuse me, his testimony is just to  
18 the opposite. He said they provide a starting point, but  
19 only a starting point. And Dr. Bleuel's testimony is further  
20 to the effect that there must be a fault tree analysis and  
21 that is nothing more or less than a Probabilistic Risk  
22 Assessment.

23           MR. CASSEL: His testimony is that it's a useful  
24 starting point. He adds a qualification that it is as not  
25 as complete as one might prefer. But for purposes of a

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1 proceeding, if the scope is going to be limited to Hatfield,  
2 Hunter, and PTL, as it has been, and if were thought that  
3 fault tree analysis and any larger form of analysis were beyond  
4 the scope of these proceedings, one could squarely within  
5 the scope of the Reinspecton Program of Hatfield, Hunter,  
6 and PTL, comply with Dr. Bleuel's testimony by doing a  
7 Failure Modes and Effects Analysis on the basis of the  
8 Teutken classification, which are attached as Appendix B  
9 to Dr. Bleuel's testimony.

10 And he's prepared to so testify, if you permit him.

11 JUDGE CALLIHAN: Certainly. Granted there is no  
12 direct parallel or direct connection between the hardware  
13 problem we're discussing today and the document to which I  
14 referred that Mr. Miller has dated, but there's some  
15 indication that the Applicant has done some risk analysis on  
16 Byron, although perhaps specifically to your policy.

17 MR. CASSEL: But again, the risk analysis that it  
18 has done, in my understanding -- and I am prepared to be  
19 corrected if I'm wrong on this -- but in my understanding is  
20 not based on specific reinspection of the hardware. And hence,  
21 is of no value in any inference that one might draw from the  
22 Reinspection Program.

23 JUDGE CALLIHAN: That was my disclaimer, so to speak.  
24 But nonetheless, there has been evidence of some capability,  
25 within the utility, to do that sort of thing. The fact that

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1 it hasn't been done here is perhaps another matter.

2 MR. CASSEL: And as far as any comments that I or  
3 Dr. Bleuel might have, my understanding is -- at this point --  
4 that really would be raising a new issue, which I don't think  
5 Dr. Bleuel's testimony does, since it focuses on the  
6 Reinspection Program and Hatfield, Hunter, and PTL.

7 And his testimony could be within those bounds.  
8 But certainly, if we were to get into that document, in my  
9 understanding, that would be a new issue in this proceeding  
10 and all those standards of lateness and so forth would have to  
11 be met.

12 And Dr. Bleuel hasn't reviewed that document. I'm  
13 not, at this time, proposing to offer that whole issue as  
14 a new matter in the case.

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1 MR. MILLER: I'd just like to make one further  
2 observation on this issue. The suggestion somehow has been  
3 made that you apply stricter standards to the most safety-  
4 significant elements, and Mr. Cassel and I are just in  
5 complete disagreement as to what the elements are.

6 I say they're inspection elements. He keeps  
7 talking about safety significant systems, and the two just  
8 never meet.

9 But even passing that point, again, there is just  
10 a question raised, as you pointed out, Judge Smith,  
11 Dr. Bleuel doesn't tell us what's wrong with the inferences  
12 that are drawn from the present Reinspection Program. He  
13 just says, I have a better idea. Let's do a Failure Modes  
14 and Effects Analysis, and then leaves it to the Applicant  
15 to bear its burden of proof one way or the other with respect  
16 to that issue.

17 Same thing with these standards. No suggestion --  
18 and Dr. Bleuel clearly is not qualified to suggest anything --  
19 as to what these standards might be. We heard some  
20 statistical measures proposed by Mr. Cassel earlier in the  
21 argument; then he kind of backed away from them and said  
22 it's really not a statistical matter at all.

23 Well, who's going to develop these standards?  
24 There's a qualitative standard that's in the statute that  
25 we're all dealing with, and to suggest some hierarchy of



1 standards that the various components of this Reinspection  
2 Program have to meet, there is just nothing in Dr. Bleuel's  
3 background that gives him any basis for suggesting that.  
4 Indeed, he gives us no guidance as to where we might go to  
5 do that.

6 MR. CASSEL: And indeed, he doesn't because  
7 he doesn't suggest that. When he speaks of applying stricter  
8 standards to the most safety-critical components, in that  
9 sentence he's referring -- and the only example he gives is  
10 higher standards of statistical reliability. Other standards  
11 would include the inspection level, for example, and  
12 Military Standard 105D, which he has used in his work.  
13 He's not talking about creating a weld standard that's higher  
14 than ASME, because you happen to find a critical weld.  
15 That's not what an output would be from a Failure Modes  
16 and Effects Analysis, unless the NRC or some regulatory body  
17 chose to make it a matter of regulatory law as opposed to  
18 a finding in a particular case.

19 MR. LEWIS: I think Mr. Cassel missed Mr. Miller's  
20 point. As I understand Mr. Miller's point it is that the  
21 regulations make a distinction between safety-related and  
22 non-safety related equipment. If it's safety-related  
23 equipment, it has to meet the requirements of the regulations  
24 which reference certain codes. There isn't a categorization  
25 of more or less.

1                   So I, with all due respect to Dr. Bleuel, am not  
2                   sure how familiar he is with the manner in which the Nuclear  
3                   Regulatory Commission's regulations impose safety criteria  
4                   on safety-related structures and components. And they  
5                   don't do it, as Mr. Miller points out, in terms of an  
6                   ordering within the category of safety-related of different  
7                   levels of statistical reliability.

8                   I'll just rest there.

9                   JUDGE CALLIHAN: Mr. Cassel, one last matter, as  
10                  far as I'm concerned, and perhaps you can't answer this at  
11                  the moment, and perhaps you would prefer to defer it.

12                  In the proposal or the suggestion that Dr. Bleuel  
13                  has put forth, do you believe one was to start an  
14                  inspection program all over, or does he believe that  
15                  there's something salvageable from what has been done?

16                  MR. CASSEL: I asked him that question this  
17                  morning, Judge. He said, all you have to do is re-orient the  
18                  data. You take the data that they already have, you re-orient  
19                  it in terms of Mr. Teutken's safety classifications for  
20                  inspection procedures -- and he's aware of that particular  
21                  nomenclature for attributes and elements -- and then you see  
22                  where your gaps are. Then that might require additional  
23                  reinspections where it turns out you have missed, you've done  
24                  no reinspections in a safety-significant area in a Category 1  
25                  or a Category 2. Or even a Category 3, if there are a lot

1 of them. But at least that gives you a much better picture  
2 of what the existing data tell you. It shows you where the  
3 weaknesses in the Reinspection Program are, and then you  
4 can shore up the program where those weaknesses are.

5 DR. CALLIHAN: Thank you.

6 MR. MILLER: Might I have just one second?

7 (Pause.)

8 MR. CASSEL: And I do want to add the general  
9 qualification, I think it's obvious that I'm trying as best  
10 I can to translate to you Dr. Bleuel's views. I may have,  
11 in some way, misstated what he would say if he were here.  
12 I try to do my best, though.

13 MR. MILLER: I would just like to observe that  
14 there are tables in Mr. Del George's testimony which indicate  
15 by attribute the coverage of the Reinspection Program.

16 For example, for Hatfield for visual weld  
17 inspections, there were 26,660 visual welds re-examined.  
18 That was a Teutken Safety Category 1 inspection attribute.

19 What Dr. Bleuel is suggesting, then, if it's  
20 limited to that, it's been done. And we can observe the  
21 results from Mr. Del George's testimony.

22 I believe if we do so, we will find that on the  
23 attributes that Mr. Teutken classified as most safety  
24 significant there is extensive reinspection.

25 Mr. Gallo reminds me that the supplement to the

1 Reinspection Program Report indicates where there was  
2 inadequate coverage further work was done.

3 MR. CASSEL: Yet we wind up with -- By the way,  
4 I'm not sure that the particular data that Mr. Miller just  
5 cited is affected by it, but I think Mr. Miller might agree  
6 during the break that we will be prepared to stipulate to  
7 a set of data. But it's only within the last week or two  
8 that we finally have an accurate set of data.

9 But even now -- and I gave you a couple of  
10 examples earlier -- there are categories where thousands  
11 of inspections were done originally, and according to the  
12 latest data that we have, zero reinspections were done.

13 JUDGE SMITH: Anything further?

14 (No response.)

15 We believe it's better to break this evening  
16 instead of going until 6:00 as we usually do, because the  
17 arguments presented and the issue are going to require quite  
18 a bit of our attention. We won't take any witnesses. We  
19 will begin tomorrow, then, at 9:00 a.m.

20 MR. CASSEL: I wonder, Judge, if I could raise  
21 just one scheduling point. I indicated to you --

22 JUDGE SMITH: If this is purely scheduling, can  
23 we adjourn?

24 MR. CASSEL: Surely.

25 JUDGE SMITH: We will adjourn for this evening

1 and resume tomorrow at 9:00 a.m.

2 (Whereupon, at 5:15 p.m. the hearing in the above-  
3 entitled matter was recessed, to reconvene at 9:00 a.m. the  
4 following day, Tuesday, August 21, 1984.)

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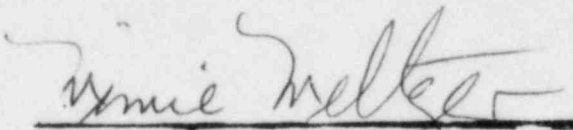
CERTIFICATE OF PROCEEDINGS

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3 This is to certify that the attached proceedings before the  
4 NRC COMMISSION

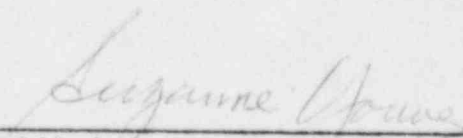
5 In the matter of: COMMONWEALTH EDISON COMPANY  
6 Date of Proceeding: (Byron Station, Units 1 & 2)  
7 Place of Proceeding: Monday, 20 August 1984  
8 Rockford, Illinois

9 were held as herein appears, and that this is the original  
10 transcript for the file of the Commission.

11 Mimie Meltzer  
12 Official Reporter - Typed

13   
14 Mimie Meltzer  
15 Official Reporter - Signature

16 Suzanne Young  
17 Official Reporter - Typed

18   
19 Suzanne Young  
20 Official Reporter - Signature