ORIGINAL

OFFICIAL TRANSCRIPT OF PROCEEDINGS

Agency: Nuclear Regulatory Commission

Title: Alabama Power Company (Joseph M. Farley Nuclear Plant, Units 1 and 2)

Docket No. 50-348-CivP, 50-364-CivP
ASLBP No. 91-626-02-Civ1

LOCATION: Bethesda, Maryland

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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In the Matter of: : Docket No. 50-348-CivP

ALABAMA POWER COMPANY : 50-364-CivP

[Joseph M. Farley Nuclear Plant, : ASLBP No. 91-626-02-Civl

Units 1 and 2] :

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Nuclear Regulatory Commission

5th Floor Hearing Room

East-West Towers

4350 East West Highway

Bethesda, Maryland

Friday, February 21, 1992

The above-entitled matter came on for hearing, pursuant to notice, at 9:31 o'clock a.m.

BEFORE: THE HONORABLE G. PAUL BOLLWERK III, Chairman of Atomic Safety and Licensing Board

THE HONORABLE DR. JAMES H. CARPENTER, Member of Atomic Safety and Licensing Board

THE HONORABLE DR. PETER A. MORRIS, Member of the Atomic Safety and Licensing Board

APPEARANCES:

On behalf of the Alabama Power Company:

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1710 North Sixth Avenue
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WINSTON & STRAWN
by: DAVID A. REPKA, ESQUIRE
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NUCLEAR REGULATORY COMMISSION, OFFICE OF THE EXECUTIVE LEGAL DIRECTOR
by: RICHARD G. BACHMANN, ESQUIRE
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Nuclear Regulatory Commission
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[continued next page]

On behalf of Bechtel Corporation:

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I N D E X

Witnesses	Direct	Cross	Redirect	Recross	Board
JAMES E. SUNDERGILL,			1210		1214
JESSE E. LOVE,			1210		1214
DAVID H. JONES,			1210		1214
Vincent Noonan	1224	1230	1276	1282	1282
Phillip Dibenedetto	1224	1230	1276	1281	1282
Jackie D. Woodard	1298				1300

E X H I B I T S

Exhibit Nos.	Description	Identified	Received
Board Ex. 1			1206
APCo 110	Board 1/revised by J.E. Love, 2/21/92	1212	1223
APCo 111	One-page mark up of Figure 2, Phase 2 Environmental Temerature Profile	1214	1223
Staff 61	Federal Register	1232	1298
APCo 78	10-31-1989, letter to Mr. W.G. Hairston from Caudle Julian transmitting NRC Inspection Report No. 50-348/89-23 and 50-364/89-23.	1297	1297

Exhibit Nos.	Description	Identified	Received
APCo 79	is the resume of Mr. Philip A. DiBenedetto.	1297	1297
APCo 80	NRC order dated 3/30 1990. It's a EQ civil penalty, H.B. Robinson.	1297	1297
APCo 81	"Clarification of Information Related to the Environmental Qualification of Limitorque Motorized Valve Operators,"	1297	1297
APCo 82	is Vincent S. Noonan's CV.	1297	1297

P R O C E E D I N G S

[9:31 a.m.]

JUDGE BOLLWERK: Good morning everyone. Why don't we be seated?

Before we swear in the next panel, let's take care of a couple of procedural things that I have come across. First of all, with regard to Board Exhibit No. 1, if neither of the parties have an objection, we are going to go ahead and receive that into evidence.

MR. REPKA: Judge Bollwerk, we have no objection.

MR. HOLLER: The staff has no objection, sir.

JUDGE BOLLWERK: All right. Then Board Exhibit No. 1 will be received in evidence.

[Board Exhibit No. 1 is received into evidence.]

JUDGE BOLLWERK: Also, I think yesterday, we have identified APCo Exhibit 60 and Staff 39 as the same -- essentially the same documents. We have previously marked APCo 60 as identified in the record. And if they are, in fact, the same, would you want them marked APCo 60 is now withdrawn, like we did with No. 70?

MR. REPKA: If they're the same, we have not been withdrawing others that are the same?

JUDGE BOLLWERK: You did yesterday. There was one that was withdrawn that was the same that we have marked for

identification previously.

MR. REPKA: Seventy was withdrawn because I think neither party was going to introduce it.

JUDGE BOLLWERK: Oh, all right. We can just leave it as identified then, if that's the case.

MR. REPKA: That would be my preference.

JUDGE BOLLWERK: Okay.

MR. REPKA: Also, yesterday, I have been provided, and I couldn't locate it again today, a document called staff exhibits, which I think cross-listed -- was a cross-listing of the different exhibit numbers. Was that prepared by the staff or by APCo.

MR. HOLLER: By the staff, sir.

JUDGE BOLLWERK: Have you all had a chance to look at that? Do you have a problem with that document?

MR. REPKA: I do not believe we have looked at it in detail. We have our own cross-listing going. And what I think would probably be the best thing to do is, at the conclusion of today we make sure we compare and perhaps we could file a joint cross-listing at a later date, once we have both verified.

JUDGE BOLLWERK: All right. The concern I have is I think we have tried to be careful in terms of referring to documents, if they have two numbers by giving both numbers. The only thing -- I think we're going to run into a problem,

at least for someone reading the transcript in the future is that, I guess, your testimony lists the exhibits by the APCO exhibits by their old numbers and not the new numbers. I am a little concerned that someone may get confused. But I would like to provide a list at some point that can be referred to.

MR. REPKA: I agree. I think it is crucial that we do have a definitive cross-listing. And my only concern is to make sure that it is indeed definitive.

JUDGE BOLLWERK: All right. Why don't the parties make a comparison and let's try to take care of that fairly promptly so we can get it into the record at some point?

I don't have any other procedural matters at this point. Is there anything that either of the parties have?

MR. REPKA: Yes, Judge Bollwerk.

The first thing this morning, I would ask the permission of the Board to recall briefly the Love, Sundergill, Jones panel. Yesterday Judge Carpenter asked some questions to Mr. Love regarding some figures in the November 24th, 1987 JCO on Terminal Blocks.

Quite frankly, Mr. Love was a little bit caught off-guard. And he went back last night, looked at that data, and would like the opportunity to respond briefly to those questions and try to explain some of this to Judge Carpenter.

[Board members conferring off the record.]

JUDGE BOLLWERK: Do you want to do that?

JUDGE CARPENTER: I think it's a fine idea. I thought maybe it might happen in May but this morning is just as good.

JUDGE BOLLWERK: Does the staff have any objection?

MR. HOLLER: If Judge Carpenter is interested in hearing this, the staff has no objection.

JUDGE BOLLWERK: All right. Why don't we then -- do we need to bring the whole panel back or just Mr. -- I suppose it's best to impanel the whole panel. I guess that would be the best idea if they are all here.

MR. REPKA: They are all here.

One administrative matter. Mr. Love has prepared some markups on Board Exhibit No. 1 and some other documents, and those have gone off for copying and should be back here. But, I think it's going to greatly facilitate his explanation.

JUDGE BOLLWERK: How long do you think this is going to take?

MR. REPKA: I am hoping it won't take more than 10 minutes.

JUDGE BOLLWERK: All right.

Why don't you gentlemen be seated. Do we need to

wait for the exhibits to come for him to explain. Is that a problem.

MR. REPKA: Why don't we go ahead.

Whereupon,

JAMES E. SUNDERGILL,

JESSE E. LOVE,

DAVID H. JONES,

were called as a panel on behalf of Alabama Power Company, and resumed the witness stand, and having been previously duly sworn, continued to be examined and continued to testify as follows:

RESUMED REDIRECT EXAMINATION

BY MR. REPKA: [Resuming.]

Q Mr. Love, do you have something there that you can talk from?

A [Witness Love] Yes. I have some things that I can refer to.

Q Let me just advise all of you that you remain under oath.

A [Witness Love] I guess to do this what we will need will be the APCo Exhibit or the Staff Exhibit on the JCO that we were looking at yesterday that had the figures.

Q Let me orient you a little bit, Mr. Love.

A [Witness Love] Okay.

Q The JCO you are referring to is the November 24th,

1987 justification for continued operation that has been marked and admitted as APCo Exhibit 59.

A [Witness Love] Okay.

Q And do you have a copy of that in front of you?

A [Witness Love] No. I don't have it with me here.

Q I would be glad to lend my copy for now.

A [Witness Love] Okay.

Q The second document of relevance is what has been marked and was admitted this morning as Board Exhibit No. 1. Do you have a copy of that that you can talk from?

A [Witness Love] Board Exhibit No. 1. Is that the Judge Carpenter exhibit?

Q Yes.

A [Witness Love] Yes, I do.

Q Exactly.

JUDGE CARPENTER: To identify it as a copy of page 210 of the Sandia report.

WITNESS LOVE: I agree. Yes. Okay. The other thing with the page 210, as marked by Judge Carpenter -- the Exhibit that I was preparing was essentially to do some marking on top of your marking, in order to clarify some points that were escaping me yesterday that -- when I went back and looked at my files and recreated this, I failed to recognize yesterday.

And the other exhibit that we need is the -- from

the Sandia Test Report -- to look at the Phase Two test profile, which is, I believe page -- one second. I'll find the page number. It's also one of the exhibits we have prepared. It's on page -- well, it is figure two, page nine of the Sandia Test Report, in which the insulation resistance data was taken from.

MR. REPKA Let me give you your originals back, and then I'm going to ask, first that the document which is your mark up, and I would ask that the Board mark for identification what is labeled as Board Exhibit 1/revised by J.E. Love, 2-21-92.

And perhaps that could be marked as Board Exhibit 2, or APCO Exhibit 110.

JUDGE BOLLWERK: Could you describe it again, just briefly for the record?

MR. REPKA: That is a mark up of Board Exhibit 1 prepared by Mr. Jesse Love this morning, or last night.

JUDGE BOLLWERK: Let the record reflect that APCO Exhibit 110 has been marked for identification.

[Alabama Power Company Exhibit 110 was marked for identification.]

MR. REPKA: The second document that Mr. Love will be referring to, I will ask that it be marked for identification as APCO Exhibit 111. It is a one-page mark

up of a figure, labeled Figure 2, Phase 2 Environmental Temperature Profile.

Does everybody have copies?

And I believe, and Mr. Love can correct me, that's taken from the Sandia Report?

WITNESS LOVE: That is correct.

Okay, what I would like to start with, since I think this is the area that was causing some confusion yesterday, in referring to APCO Exhibit 59, the questions that were evolving were around Figure 1 in this document.

I would like to point out that there are other attachments in this document, which also contain a Figure 1. It's Attachment 2 to this document. And just to clear up the issue regarding the provision of the data and identifying the endpoints and correctly representing the data, referring to Attachment 2, I believe it's Bates 0064096 in APCO Exhibit 59, and give them a minute for that to be located.

JUDGE CARPENTER: Would you give me the page number again?

WITNESS LOVE: It's in Attachment 2. The Bates number is 0064096, I believe.

JUDGE BOLLWERK: At this point just let me state: Let the record reflect that APCO Exhibit 111 has also been marked for identification.

[Alabama Power Company Exhibit 111 was marked for identification.]

BOARD EXAMINATION

JUDGE CARPENTER: To be sure that I have found the right figure, this is a plot of temperature versus insulation resistance in a logarithmic sketch?

WITNESS LOVE: Yes, sir. It's a sketch of a plot, and it has two endpoints identified: a 95 degree endpoint, with an indicated value of 10 to the 8th ohms; and another endpoint at 175 degrees centigrade, indicated to be 5 times 10 to the 4th ohms.

This figure right here, if that helps.

Okay, also I would like to draw the attention to the upper right-hand corner in this. This is the significant aspect of where this data, how this, and what part of this the data was extracted from, page 210 of the Sandia Report.

If I might read that upper right-hand corner of this graph?

It references terminal block hour versus temperature from SNL Report Sand 83-1617, Figure A1-21, Phase 2, First P/T Ramp. The significance of the Phase 2 is that page 210 of the Sandia Test Data is the Phase 2 test data for the Phase 2 testing.

And the information that was depicted in this graph was from the first two sets of data, which represent essentially two data points on page 210. And I can give you a chance to refer back to page 210, if I might.

MR. REPKA: Just to be clear, Page 2 is the page that has been identified this morning as APCO Exhibit 111.

WITNESS LOVE: Page 210.

JUDGE CARPENTER: Are you referring to page --

WITNESS LOVE: I'm referring to page 210 out of the Sandia Test Report, as marked. It's Board Exhibit 1, excuse me. Board Exhibit 1.

JUDGE CARPENTER: Just to be sure we're with you, Mr. Love, are you referring to the data points in the center of the figure that are at an irregular enclosure?

WITNESS LOVE: Well, what I would like to -- I'm referring to, sir, the -- if we go on the temperature axis, there is ambient indicated -- 175 degrees C, 95 degrees C -- then it goes back to 175, 161, 95, and then it goes back to 149, 121 and 105. The points that I am referring to are the first points after the ambient 175 and 195. And once you find those points, then I would like to go back to the test profile. But I want to be clear about which points we were talking about in our figure.

The points from 175 to 95, represent the values and insulation resistance of the First Phase Pressure

Temperature Ramp of the Phase 2 Environmental Temperature Profile, which I have marked on the profile -- as First DBA P/T Test Profile?

JUDGE CARPENTER: I see it.

WITNESS LOVE: Okay. So, in the recording of the data by Sandia, the data was recorded at the 175, which was the plateau of the peak, and again recorded at the bottom of the transient or the cool-down period at 95 degrees.

So the excessive data available were just at those two plateaus, if you will, the peak plateau and then the bottom of the cool-down ramp at 95 degrees C. That was the only data used from this figure in preparing this JCO.

It was not the intent to draw a curvilinear graph of all the datapoints as was done with, I believe, Staff Exhibit 50, which was provided.

JUDGE CARPENTER: Would you agree that the legend on the figure doesn't tell the reader of the document that's the basis?

WITNESS LOVE: Pardon?

JUDGE CARPENTER: Would you agree that the legend on Figure 1, the first Figure 1 on the Justification Statement, doesn't tell the reader what you just told the Board?

WITNESS LOVE: What was confusing you yesterday was the first Figure 1, sir, and that was confusing me as

well. However, when this information was presented in the November meeting, I do not believe there was any confusion at that point as to the intent of using these datapoints.

MR. REPKA: If I could interject?

WITNESS LOVE: Yes.

MR. REPKA: Mr. Love, on Figure 1, does it not bear a legend identifying it as Phase II testing from the first PT transient?

WITNESS LOVE: Yes. In the middle of the page, there is a note that indicates S&L Report, SAND-83-1617, Figure A-1-21, page 210, Phase II, first PT, so that note was carried over from the graphical sketch which was contained as the other Figure 1 in Attachment 2 which was the basis for this Figure 1.

WITNESS JOHNSON: If I might add, Judge Carpenter, what I recall happened at this timeframe is, Bechtel drew the Attachment 2 line and either Alabama Power Company or Westinghouse took that information and just put it on nice, pretty graph paper and typed in the notes. So there was no intention there of changing any data or misrepresenting the information. It was just the fact that we were transferring it from one telecopy page I believe we got from Bechtel, onto this logarithmic paper so it would be a little nicer and prettier for the JCO.

JUDGE CARPENTER: Well, I want to apologize for

jumping into this with both feet. You realize I only had an opportunity to look at the Sandia Report beginning at 9:00 yesterday, but what I'd like to do is ask the following question:

Have you looked at the staff testimony with respect to the validity of this figure?

WITNESS LOVE: I believe this is in reference to APCo -- I mean, Staff Exhibit 50?

MR. REPKA: Staff Exhibits 50 and 51 both show a curvilinear plot of the data as opposed to a linear plot. Is that what, Judge Carpenter, you are referring to?

JUDGE CARPENTER: That's correct.

MR. REPKA: Then perhaps, Mr. Love, you could explain why a linear plot versus a curvilinear plot?

WITNESS LOVE: I believe the reason that those graphs were curvilinear -- and I think I briefly mentioned this yesterday -- what was done in those plots is essentially -- and I don't have the references on those curves. There is a lot of data in the Sandia report as to the page numbers that the data was taken from. It's not indicated on that report. It just says data from SAND report.

But I have looked at that data, and it appears to me what was done is that the graph actually does utilize the data over time from all the plateaus. So, if you will, it

uses the data for the consecutive exposure of these terminal blocks to essentially three design basis accidents and then equates that to being appropriate for the cooldown period of 1 DBA transient which would be the case that would apply for an accident, either main steam line break or a LOCA.

JUDGE CARPENTER: Essentially, what we -- and as I recall going back and reviewing this again last night, when we were putting this JCO together, we concluded that the first of the three consecutive ramps in the Sandia test enveloped the Farley condition, so, therefore, it wasn't necessary for us to take all of the datapoints from the three consecutive ramps, plot them and make a curvilinear.

It was acceptable just to take the first two datapoints from the first ramp which enveloped Farley, was conservative for the Farley condition. So, that's the reason and the logic for coming up with the linear graph that you discussed yesterday.

JUDGE CARPENTER: Do you have a basis for anticipating that if there had been more datapoints collected by Sandia in Phase I, that the observed dependence would have been linear, rather than curvilinear? I agree with you that there are only two points, you know. What have you got but a straight line?

WITNESS LOVE: The way I would like to address that is there may be some curvilinear aspects of it,

however, I do not believe the profile would be anywhere near as radical as that which is predicted by using the numbers across all of the DBA profiles that were consecutively applied to these terminal blocks.

JUDGE CARPENTER: If I may add, going back in time and history and sequence of events, is that as I referred to you yesterday, we had a similarity analysis to another terminal block that was no accepted for a qualification argument. So, before we went into this meeting with the NRC on that Wednesday, we concluded that the only data of correlation that would be accepted by the NRC, was a correlation back to the Sandia test.

Well, we felt like that since the first ramp enveloped our condition, we could at least take credit for only having to use those two datapoints and not having to use all of the data in the second and third round. The fact that there was only two datapoints there was as good as we had available to us at the time, so that's why we used the two datapoints.

JUDGE CARPENTER: To state my question in somewhat different terms, Mr. Love, do you have a basis for judgment that the variation of the logarithm of the insulation resistance versus temperature would be linear during the first phase, or what looks to me to be the first cycle, vis a vis the curvilinear dependence in later phases and later

cycles? Is there any physical reason why they should be different?

WITNESS LOVE: I need to understand your question about the phases and cycles.

JUDGE CARPENTER: The staff testimony is -- takes all this data and makes a plot and says, look, Board, it's not linear. That's where I am this morning. And your testimony is that it is linear. I'm just trying to get a basis for making a finding of which is closer to the truth.

So, I want to ask you -- you've only used the first phase data, the first cycle. And I'm asking you, is there a technical reason for rejecting the other observations?

WITNESS LOVE: Well, maybe a way to explain that, using the Board Exhibit 1, would be to look at the second DBA/PT test profile which does happen to have three points. If you plot -- or, if one were to plot those three points, it still would give you basically a linear relationship. It's somewhat curvilinear, but it's not to the degree that would be --

JUDGE CARPENTER: What would be fair to say, within the error bounds of the observations?

WITNESS LOVE: Yes.

JUDGE CARPENTER: I would just like to add that at the time Sandia put this report together, I would think if

they thought it was important and it wasn't linear, they would have recorded more than two datapoints.

WITNESS LOVE: I think the other thing that this data indicates is, if one then goes to the third PT test profile that I've circled, that -- and there's no need to go into this, but I think the explanations exist in the Sandia report in the Significant Anomalies Sections, but there is obviously something that's happened to the recovery capability of the terminal block by the time it's gotten to the Phase III DBA.

The significance of this is, this is essentially subjecting this same terminal block to three very severe design basis accidents and the using insulation resistance data across that complete timeframe and saying that is representative of the cooldown period of the terminal block, which I believe to not be valid.

JUDGE CARPENTER: You don't expect there ever to be three design basis accidents at one plant?

WITNESS LOVE: No, sir.

WITNESS JONES: Absolutely not at Farley.

JUDGE CARPENTER: I don't want to belabor this. I thank you very much for your clarification. It will take more than a little while to lock through all of these papers, which we only started looking at yesterday morning.

Thank you.

JUDGE BOLLWERK: Does the Staff have any other questions at this point?

[Counsel for NRC Staff conference of the record.]

MR. HOLLER: We reserve our rebuttal testimony.

JUDGE BOLLWERK: Absolutely.

All right. Thank you gentlemen again.

[Panel excused.]

MR. REPKA: Judge Bollwerk, I thank the Board also for the opportunity to present the panel. I would like at this time to move APCo Exhibits 110 and 111 into evidence.

JUDGE BOLLWERK: Any objection from the Staff?

MR. HOLLER: No objection, Your Honor.

JUDGE BOLLWERK: APCo Exhibits 110 and 111 will be received in evidence.

[APCo Exhibit Nos. 110 and 111 are received in evidence.]

JUDGE BOLLWERK: I think we are probably ready for the next panel.

Whereupon,

VINCENT S. NOONAN

and

PHILIP A. DiBENEDETTO

were called as a panel of witnesses by the Alabama Power Company, and having been first duly sworn, were examined and testified as follows:

DIRECT EXAMINATION

BY MR. REPKA:

Q I will introduce your testimony separately since they are separate documents, and I will start with Mr. Noonan, since you are on the left.

Mr. Noonan, do you have in front of you a document entitled "Direct Testimony of Vincent S. Noonan on behalf of Alabama Power Company"?

A [Witness Noonan] That is correct, I do.

Q Did you assist in the preparation of this document?

A [Witness Noonan] Yes, I did.

Q If you were asked these questions today, would these be your answers to the questions?

A [Witness Noonan] That is correct, they would be.

Q And do you have any corrections you want to make?

A [Witness Noonan] A very minor correction on Page 13. There is missing a word -- I will get it for you in a second here -- the first answer in the Question 14, the last sentence that starts out with the word "rather" it was my opinion, the word "was" is missing.

Q Okay, thank you.

A [Witness Noonan] That is the only correction I have.

Q With that correction, is this testimony true and

accurate to the best of your knowledge and belief?

A [Witness Noonan] Yes, sir, it is.

MR. REPKA: And with that I will ask that the Direct Testimony of Vincent S. Noonan on Behalf of Alabama Power Company be bound into the record in this proceeding.

JUDGE BOLLWERK: Any objection?

MR. HOLLER: No objection, sir.

JUDGE BOLLWERK: Then the Testimony of Vincent S. Noonan will be bound into the record.

[The direct testimony of Vincent S. Noonan on behalf of Alabama Power Company follows:]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	Docket Nos. 50-348-CivP
ALABAMA POWER COMPANY	)	50-364-CivP
	)	
(Joseph M. Farley Nuclear Plant, Units 1 and 2)	)	ASLBP No. 91-626-02-CivP

DIRECT TESTIMONY OF VINCENT S. NOONAN
ON BEHALF OF ALABAMA POWER COMPANY

I. INTRODUCTION

A. Experience and Qualifications

Q1. Please state your name and describe your current employment.

A: My name is Vincent S. Noonan. I am employed by HALLIBURTON NUS Environmental Corporation as General Manager of the Rocky Mountain Center (RMC) and Safety and Licensing Divisions. I am responsible for the technical and administrative management of all consulting services provided by both divisions, including services in the area of environmental qualification of electrical equipment (10 CFR 50.49).

The RMC provides consulting services pertinent to operational readiness reviews, safety system functional inspections, and diagnostic inspections. As part of the RMC, I currently serve as a member of a five-man Technical Advisory Group to the

Department of Energy contractor, EG&G Rocky Flats, for the resumption effort at the Rocky Flats Plant. In addition, my staff and I provide consulting services to utility management and utility engineering groups, industrial groups, and individual companies relating to self assessment programs. We also provide assistance to utilities regarding the NRC's severe accident program, seismic upgrade program (ISAP/ISEP), seismic qualification of electrical and mechanical equipment (A-46; NUREG-1211), Appendix R (10 CFR Part 50), IE Bulletins 79-02, 79-04, 79-07, 79-14, and the Mark I, Mark II, and Mark III new loads.

Q2. Please describe your educational background.

A: In 1959, I graduated from Saint Louis University with a Bachelor of Science degree in Aeronautical Engineering. Later, in 1973, I earned a Master of Science degree in Engineering Mechanics from the University of Missouri at Rolla.

Q3. Please describe your employment experience.

A: A résumé outlining my education and employment history, as well as my profess onal affiliations, is included in APCo Exhibit 81.

However, of particular importance to this proceeding, I was employed by the U.S. Nuclear Regulatory Commission (NRC) from 1974 to 1981 and again from 1982 to 1987. I had specific responsibilities in the area of environmental qualification of electrical equipment in 1980-1981 and again from 1982-1984.

From 1982 to 1984, I was Chief of the Equipment Qualification Branch, Division of Engineering, Office of Nuclear Reactor Regulation (NRR). I supervised the Division of Engineering staff's overall development of engineering safety reviews, analyses, and evaluations of electrical and mechanical components for all reactor facilities licensed for operation.

During 1980-1981, I also served as Assistant Director, Materials and Qualifications Engineering, Office of Nuclear Reactor Regulation. In this position, I planned and directed the programs and activities of the Materials Engineering, Chemical Engineering, Equipment Qualification, and Quality Assurance Branches. I also had responsibility for forming the Equipment Qualification Branch and oversaw the development of many of its major policies.

From 1978 to 1980, I served as Chief of the Engineering Branch, progressing from Section Leader of Mechanical Engineering from 1977 to 1978, in the Division of Operating Reactors, Office of Nuclear Reactor Regulation. I managed the

overall engineering safety review, analyses, and evaluations of structural and mechanical components for all reactor facilities licensed for operation. As Chief, I supervised detailed technical reviews and evaluations with the mechanical, structural, and materials engineering disciplines, directing an engineering staff of 37 specialists. As Section Leader, I planned, coordinated, and reviewed all work assigned to the Mechanical Engineering Section.

B. Specific Role of the Witness

Q4. How have you been involved in the events leading up to the enforcement action at issue in this proceeding?

A: As I stated, while I was with the NRC Staff in 1980-81, I served as the Assistant Director of Materials and Qualification Engineering. This position encompassed the new Equipment Qualification Branch, so the responsibility for early environmental qualification efforts fell under my management. Therefore, my EQ responsibilities specifically began in 1980. As the Assistant Director of Materials and Qualifications Engineering, I was involved in the formation of the Equipment Qualification Branch and in the development of many of the NRC's initial EQ initiatives.

While I was Assistant Director, the EQ Branch prepared the initial Staff Safety Evaluation Reports (SERs) evaluating operating reactor licensees' EQ programs based on licensees' responses to IE Bulletin 79-01B. In this capacity, in 1981, I supervised the NRC review and evaluation of Alabama Power Company's environmental qualification program for the Farley Nuclear Plant, Units 1 and 2 as well as the EQ programs for all nuclear reactor facilities licensed for operation. The Farley Unit 1 SER was dated May 21, 1981 (APCo Exhibit 14). The Farley Unit 2 SER was issued in conjunction with plant licensing, which occurred on March 31, 1981.

My involvement in EQ did not end when I first left the NRC in 1981. I returned to the agency in 1982 and served until 1984 as Chief of the Equipment Qualification Branch. All responsibilities for reviewing licensees' EQ programs, and for assuring compliance with the new EQ rule (10 CFR 50.49), had been assigned to this Branch. I typically supervised preparation of EQ SERs drafted by the Branch during this time. These SERs would have transmitted the Franklin Research Center (Franklin) Technical Evaluation Reports (TERs) and related Staff SERs on the Farley EQ program.

Due to my subsequent reassignment to NRR's Comanche Peak Project, I was not involved in the review or issuance of the Staff's December 13, 1984, SERs concerning the Farley EQ

program. However, I am familiar with the intent and scope of the 1984 SERs. I am also very familiar with our EQ expectations in this pre-November 30, 1985, timeframe.

I did not become involved in Farley EQ again until after the initiation of the enforcement action at issue in this proceeding. While employed by the NUS Corporation, I went to Farley to review the EQ files mentioned in the NOV and, where necessary, reviewed other documents pertinent to the issues raised in this enforcement action.

Q5. What is the purpose of your testimony in this proceeding?

A: Based on my personal knowledge of the actions taken by Alabama Power Company while I was with the NRC, I will discuss Alabama Power Company's efforts to achieve compliance with NRC EQ requirements prior to the November 30, 1985, EQ deadline. In NRC enforcement action (EA) 88-40, and the Order of August 21, 1990 imposing the civil penalty, the NRC Staff has concluded that Alabama Power Company did not exercise its best efforts to comply with 10 CFR 50.49 prior to the deadline. My recollection is otherwise.

I also will provide general background testimony on NRC and industry EQ initiatives prior to November 30, 1985. In this regard, I will convey the facts as I recall them regarding EQ

knowledge, practices, and experience prior to November 30, 1985. I believe this w ` support and verify Alabama Power Company's position on several issues regarding what it knew or should have known prior to the EQ deadline.

II. DEVELOPMENT AND REVIEW OF ALABAMA POWER COMPANY'S EQ PROGRAM

Q6. Prior to the promulgation of 10 CFR 50.49, were commercial nuclear power reactor licensees addressing EQ?

A: Yes. Although prior to promulgation of 10 CFR 50.49 there was no NRC rule mandating EQ documentation, licensees were nevertheless addressing and documenting the environmental qualification of equipment in their plants pursuant to the guidance in industry standard IEEE-373, and in the NRC's guidance documents, IE Bulletin 79-01B, the DOR Guidelines, and NUREG-0588 (For Comment version).

At a more fundamental level, all plants had to satisfy General Design Criterion (GDC) 4, "Environmental and Dynamic Effects Design Bases," set forth in 10 CFR Part 50, Appendix A. (APCo Exhibit 31). Compliance with GDC 4 was necessary before the NRC would issue an operating license. GDC 4 requires that all systems, structures, and components important to safety be designed to accommodate the effects of environmental

conditions associated with normal plant operations, maintenance, testing, and postulated accidents.

Q7. Please explain the purpose and history of IE Bulletin 79-01B.

A: IE Bulletin 79-01B, along with the DOR Guidelines, was issued by the Staff in January 1980. It required that licensees identify all of the safety-related electrical equipment in their plants that was subject to a harsh environment and to environmentally qualify this equipment. In addition, corrective action plans were required in connection with any safety-related electrical equipment for which environmental qualification could not be demonstrated.

Q8. How did the NRC respond to the licensees' efforts to address IE Bulletin 79-01B?

A: By early 1980, the Commission had made it clear that it wanted to ensure that plant electrical equipment was environmentally qualified. On May 27, 1980, the Commission issued Memorandum and Order CLI-80-21, directing the Staff to establish the EQ Branch and put together a formal EQ program. (APCo Exhibit 9). The Staff was also required to review and evaluate licensees' responses to IE Bulletin 79-01B. The Memorandum and Order further required that all safety-related electrical equipment be environmentally qualified by June 30, 1982. The

deadline was subsequently changed by 10 CFR 50.49 to November 30, 1985.

During early 1980 and into 1981, the Staff and licensees engaged in a cooperative effort to generate the information requested in IE Bulletin 79-01B. By April 1981, the Staff had begun to evaluate the information provided by licensees and to develop the first EQ Engineering Evaluation Reports (EERs) and SERs. These EERs and SERs were issued to document the status of licensees' efforts to respond to IE Bulletin 79-01B.

Q9. Were you involved in the review of Alabama Power Company's responses to IE Bulletin 79-01B for Farley?

A: As I stated, the first EERs and SERs assessing licensee's responses to IE Bulletin 79-01B were prepared in 1981. I was involved in that process for Farley and other licensees in a management capacity prior to my departure from the NRC in April 1981. Typically, I would not review individual reports in any detail unless the EQ Branch had determined that a facility had some significant EQ problem. I recall no specific problems at that time -- programmatic or otherwise -- relating to Alabama Power Company's EQ efforts.

Q10. What was the nature of your EQ-related activities after you became the Chief of NRR's Equipment Qualification Branch in 1982?

A: As Chief of the EQ Branch, I was responsible for the overall management of reviews and evaluations performed by the Branch's Environmental Qualification Section. I supervised the Engineering Staff's overall development of engineering safety reviews, analyses, and evaluations of electrical and mechanical components for all reactor facilities licensed for operation, including both Farley units.

The Staff had contracted with Franklin Research Center to prepare Technical Evaluation Reports for 71 operating reactors. The purpose of these TERs was to evaluate licensees' responses to the initial EQ SERs issued in 1981. The bulk of the work for these reports was completed subsequent to my departure from the NRC in 1981. Upon my return to the NRC as Chief of the Equipment Qualification Branch in 1982, the TER effort was nearly complete. Accordingly, during 1983, the EQ Branch issued SERs which transmitted the TERs for each operating reactor. An SER for each Farley unit was issued to Alabama Power Company on February 4, 1983 (APCo Exhibits 18 and 19).

During this same period, the Environmental Qualification Section provided technical input to the Office of Research for the development of the EQ rule, which was issued during my tenure as Branch Chief. The Staff did not release the TERs to the licensees until the final EQ Rule was issued by the Commission. Once the rule was issued, the reports were issued for appropriate action by each licensee. Subsequent technical reviews of the licensees' submittals would be the responsibility of the Environmental Qualification Branch, which ultimately documented its reviews in SERs issued in late 1984. These SERs, however, were issued after I had left the Equipment Qualification Branch.

Q11. What was the purpose of Franklin's review of the EQ submittals?

A: The purpose of the Franklin review was to evaluate the licensees' qualification documentation and the resolutions of outstanding EQ issues as discussed in the 1981 EERs and SERs. This was a very detailed review -- one of the most exacting undertaken by NRR at that time. In particular, Franklin performed an extensive review of licensee documentation pertaining to EQ. It was charged with reviewing the completeness of licensees' EQ Master Lists, as well as sufficiency of documentation being gathered for EQ files.

Q12. What resulted from the Franklin evaluation?

A: At the completion of the review, Franklin issued a TER for each operating reactor. The Franklin TERs were specifically based on then-existing qualification documentation. The TERs reached conclusions about the environmental qualification of electrical equipment in licensee facilities -- specifically identifying equipment that was qualified, not qualified, or for which qualification was not yet established (i.e., documented).

Q13. Did the Staff at that time intend that licensees rely on the results of in the Franklin TERs?

A: Certainly. The Staff relied upon and adopted the conclusions specified in the Franklin TERs. Therefore, licensees could also rely on the Franklin TER. For instance, if a TER concluded that a particular piece of electrical equipment was environmentally qualified, then the Staff understood that the licensee would rely on that conclusion and treat that piece of equipment accordingly for EQ purposes. Similarly, if the TER concluded that the EQ Master List was complete, the Staff expected that the licensee would rely upon that finding.

Q14. What did the TERs for Farley conclude?

A: The TERs for Farley concluded that the licensee had an EQ program in place that would assure qualification of electrical equipment by the deadline. Certain equipment was determined to be qualified since Alabama Power Company had the necessary EQ files in place. Further qualification documentation would not need to be developed for this equipment. Franklin also identified certain deficiencies that required additional documentation to support qualification. However, there was nothing in the Farley TERs that suggested an inadequate EQ program, organization, procedures, efforts, or resources at Farley. Rather, it was my opinion at the time that Alabama Power Company was headed in the right direction to achieve complete qualification by the November 30, 1985 deadline.

Q15. Did the EQ Branch interact with licensees subsequent to issuance of the Franklin TERs, yet prior to the EQ deadline of November 30, 1985?

A: Yes. In this time frame, there was licensing correspondence between the EQ Branch and licensees. The Staff would send requests for information, and the licensees would typically provide written responses.

In addition, prior to the issuance of the final EQ SERs, the Equipment Qualification Branch Staff conducted a series of "1-day" meetings with approximately 52 licensees, on an individual basis, to discuss their EQ programs and how the licensees proposed to resolve the deficiencies identified by Franklin in the TERs. If an issue could not be immediately resolved, then the utility explained how the issue would be resolved prior to the deadline.

Q16. Did the EQ Branch meet with Alabama Power Company in one of these meetings?

A: Yes it did, on January 11, 1984. The meeting with Alabama Power Company had several objectives. First, the Staff wanted to discuss Alabama Power Company's proposed resolution of the EQ deficiencies identified in the Franklin TERs in order to be certain that Alabama Power Company was resolving these matters correctly and to the Staff's satisfaction. Any other deficiencies identified subsequent to the issuance of the TERs were also addressed in the meeting with Alabama Power Company. Another objective of the meeting was to reach a consensus that the Farley Nuclear Plant was safe to operate in the interim while deficiencies were resolved. During this meeting, the Staff would have addressed any programmatic concerns it may have had, or any concerns regarding the licensee's approach to qualification of an item of equipment. The Staff was fully

satisfied with Alabama Power Company's resolutions of the deficiencies identified by Franklin in the 1983 TERs. This satisfaction is evidenced by the Staff's acceptance of Alabama Power Company's letter dated February 29, 1984, which documented the minutes of the January 11, 1984 meeting.

Under normal circumstances, my participation in these meetings was only required if the Staff identified a serious problem with a utility's compliance with the EQ rule. In the case of Farley, no problems were identified, and as a result, I found no need to attend the meeting with Alabama Power Company in January 1984.

Q17. On December 13, 1984, the NRC Staff issued the EQ SERs to Alabama Power Company for the Farley units. Are you familiar with the document?

A: Yes. While I was Branch Chief, the EQ Branch was responsible for performing the technical reviews of licensee responses to the requirements specified in the EQ rule. These reviews were documented in SERs issued in late 1984. The Farley SERs for both units were issued on December 13, 1984 (APCo Exhibit 21). I played a supervisory role in the events leading up to the issuance of the Staff's 1984 SERs.

Q18. What did the Staff do in preparation for the issuance of the Farley SERs?

A: As EQ Branch Chief, and in accordance with NRC policy, I required my Staff to review and consider the entire EQ compliance history of a licensee prior to the issuance of an SER. As a result, the Staff, prior to the issuance of the Farley SERs, considered, among other things, Alabama Power Company's responses to 79-01B, the 1981 SERs regarding Farley's Master List, the Franklin TERs, Alabama Power Company's resolutions to the Franklin-identified deficiencies, the 1980 Norman Merriweather TER, and the EQ Branch's 1980 audit/walkdown of Farley Unit 2.

Q19. What did the Staff conclude in the December 13, 1984, SERs?

A: The December 1984 SERs contained the Staff's conclusion that Alabama Power Company was in compliance with the requirements of 10 CFR 50.49. The Staff made three findings: First, that Alabama Power Company's EQ program was in compliance with 10 CFR 50.49; second, that the licensee's resolutions of the EQ deficiencies identified in the January 1983 SER and Franklin TERs were acceptable to the Staff; and, finally, that continued operation of Farley would not pose an undue risk to the public health and safety.

Q20. What is the significance of the December 1984 SERs?

A: While I was employed by the NRC, an SER was a document not to be taken lightly; rather, it was heavily relied upon by the Commission, the Staff and the industry. It contained NRC Staff judgments on the status of a licensee's entire EQ program.

The findings of the SERs are not limited in scope to the methodological or procedural aspects of Alabama Power Company's EQ program. Rather, the SERs conclusions also pertain to each item of electrical equipment included in the scope of the Farley EQ program. If the SER stated that particular equipment was in compliance with 10 CFR 50.49, the Staff did not expect that a licensee would need to revisit these areas in its effort to achieve compliance by the deadline.

The significance of the Farley SERs, therefore, both to the licensee and the Staff was in the conclusion that each item of electrical equipment in the scope of the Farley EQ program was environmentally qualified. Indeed, if these individual items of equipment were not so qualified, the Staff would have required a justification for continued operation or would have shut down the plant. In addition, the SERs also concluded that Alabama Power Company's EQ Master List was complete and

that the files adequately established qualification. Since the SER stated that Farley's EQ program was in compliance with 10 CFR 50.49, the Staff intended that Alabama Power Company could rely on these conclusions.

While I was Chief of the Equipment Qualification Branch, if the Staff learned of significant issues affecting qualification or safety, it was the Staff's responsibility to inform the licensee of this new information so that licensees could take the proper steps to ensure continued compliance with the EQ rule. No further work was required of Alabama Power Company to meet the November 30, 1985 deadline.

Q21. What about the outstanding issues for which the licensee had offered "proposed resolutions"?

A: The term "proposed resolutions," as stated in the SERs, refers to Alabama Power Company's resolutions to the deficiencies identified by Franklin and discussed with the Staff at the January 11, 1984 meeting. With the exception of the Reg. Guide 1.97 equipment, Alabama Power Company had already implemented the proposed resolutions by December 13, 1984.

As stated in the SERs, the Staff reviewed Alabama Power Company's resolutions for each identified EQ deficiency and found them acceptable. The Staff stated, in the SER, that a

follow-up inspection would be conducted at a later date to verify that the licensee had implemented the proposed resolutions. However, this follow-up inspection was not intended to re-evaluate the compliance of equipment found by Franklin to be qualified.

Q22. Mr. Shemanski testified in his deposition that the SERs were "boiler plate." Do you agree with this?

A: No. Mr. Shemanski worked for me. While I was with the NRC Staff, SERs were not "boiler plate," they were based on substantial efforts by the Staff, Franklin, and the licensee and reflected the Staff's position about compliance with 10 CFR 50.49.

Q23. As an NRC Staff manager, what were your conclusions regarding the "efforts" made by Alabama Power Company to address EQ and respond to the Staff's requirements prior to the EQ deadline?

A: I was satisfied that Alabama Power Company exercised its best efforts to meet every NRC requirement or expectation relating to EQ. This was evidenced by the various regulatory actions taken by the Staff discussed above. As I have also stated, there were no programmatic problems at Farley of any kind. Moreover, I recall that Alabama Power Company was very responsive and cooperative with the Staff and Franklin during

the review of the qualification documentation prior to the issuance of the December 13, 1984 SERs. My perception that Alabama Power Company was committed to achieving compliance with the rule prior to the deadline; it had committed the necessary resources, and it was developing appropriate documentation. During my tenure at the NRC, Alabama Power Company also was appropriately addressing the outstanding issues raised by the Staff's review.

III. NRC EXPECTATIONS PRIOR TO NOVEMBER 30, 1985

A. Walkdowns

Q24. In the August, 1988 Notice of Violation ("NOV") transmittal letter, the Staff states that Alabama Power Company failed to exercise "best efforts to complete environmental qualification of electrical equipment by the November 30, 1985 deadline." In particular, the Staff accuses Alabama Power Company of conducting inadequate walkdowns. In your experience at the NRC, was 10 CFR 50.49 intended or interpreted to require detailed walkdowns of all EQ equipment or disassembly of EQ equipment in order to prove that all subcomponent parts are qualified?

A: There was never a formal EQ policy calling for detailed walkdowns of electrical equipment during my tenure with the

NRC. In my experience prior to the EQ deadline, name plate data on installed equipment would be routinely checked against relevant test data that identified equipment by name and serial number. However, electrical equipment was not routinely disassembled in order to check the subcomponent parts.

This was the practice -- at least prior to the EQ deadline -- for two reasons. First, most non-vendors (including the NRC) did not believe they had the technical expertise to disassemble and reassemble electrical equipment. Moreover, vendors and licensees often took exception to disassembly of electrical equipment because such action could disturb sealings.

Q25. Prior to November 30, 1985, did the NRC Staff issue detailed guidance to licensees relevant to EQ walkdowns?

A: No it did not. Both the Staff and the Commission had made only general references to equipment walkdowns regarding EQ prior to November 30, 1985. In the Commission Memorandum and Order (CLI-80-21), the Commission asked licensees to check equipment to verify that the as-installed equipment was the same as the tested equipment. (APCo Exhibit 9). The DOR Guidelines also made a reference to the licensee conducting walkdowns. However, the Staff wanted licensees simply to

check that the as-installed equipment was the same as the equipment that was tested during the qualification process. These guidelines did not require disassembly of equipment.

Q26. While you were Chief of the EQ Branch, was the Staff aware that utilities were not conducting the type of detailed walkdowns that the current Staff now says was required?

A: Yes. The Staff was certainly aware that licensees were not disassembling electrical equipment in order to verify the qualification of subcomponent parts. As I explained previously, the only routine walkdown activity that the Staff was aware of concerned name plate verification.

Q27. Did the Staff, in your experience, communicate to Alabama Power Company, prior to November 30, 1985, that it was the Staff's position that detailed walkdowns of all electrical equipment was required?

A: Certainly not.

Q28. Did the Staff, in your experience, communicate to Alabama Power Company, prior to November 30, 1985, that disassembly of all equipment was required to assure that internal subcomponents were qualified?

A: No. There was no such Staff position prior to November 30, 1985.

Q29. As you recall, was the level of walkdowns performed by Alabama Power Company prior to the deadline consistent with NRC expectations at that time?

A: Yes. We viewed Alabama Power Company's walkdown efforts as sufficient.

B. <u>Lubricants/Greases</u>

Q30. Prior to November 30, 1985, was grease, or any other lubricant, considered to be or treated as an item of electrical equipment under 10 CFR 50.49?

A: No. The EQ rule only applies to items of electrical equipment. The Staff, in my experience, did not consider lubricants to be items of electrical equipment. They serve a mechanical function. The EQ rule does not suggest that lubricants (including grease) are items of electrical equipment required to be on the EQ Master List, or required to have documentation providing reasonable assurance of qualification. In addition, I am unaware of any Staff generic guidance associated with environmental qualification that states or suggests that lubricants are items of electrical

equipment requiring qualification. Further, I do not recall the Staff ever stating that a lubricant was an item of electrical equipment required to be environmentally qualified. Lubricants were considered to be a part of maintenance and not EQ.

Q31. Do you recall whether any operating licensee, prior to November 30, 1985, provided the Staff with an EQ Master List identifying lubricants as items of electrical equipment?

A: I am not aware of any operating licensee who included lubricants on its Master List prior to the deadline, nor am I aware of any Staff action taken as a result of the failure to do so.

C. <u>EQ Documentation - Level of Detail</u>

Q32. Do you know of any facts indicating that Alabama Power Company's EQ documentation efforts did not satisfy NRC requirements as they existed prior to November 30, 1985?

A: No, I do not. The level of detail in Farley EQ files was not questioned by the Staff prior to November 30, 1985. The purpose of the Franklin TERs was to review this level of documentation and, as I have testified, these TERs concluded

that Alabama Power Company's level of documentation, except for the identified deficiencies, was acceptable.

D. Engineering Judgment

Q33. What was the proper role of engineering judgment in complying with the EQ regulations while you were with the NRC?

A: During my tenure with the NRC, engineering judgment had long been recognized by the Staff as being worthy of significant regulatory and utility discretion. We recognized that within many engineering disciplines, multiple reasonable conclusions, based on the same set of facts, are possible. As a regulator of the nuclear industry, the NRC has historically recognized that utility engineers can sometimes reach different, albeit reasonable, engineering conclusions when presented with the same information. Therefore, in areas requiring significant judgmental analysis, the Staff has been receptive to alternate views -- meaning different engineering judgments.

Q34. During your tenure with the NRC Staff, how did the Staff treat exercises of licensee engineering judgment in the context of EQ requirements?

A: The EQ Branch understood the need for, and certainly accepted, the exercise of reasonable engineering judgment in the

qualification of equipment. As long as the end result was the establishment of qualification, the Staff considered the use of engineering judgment to he acceptable. In fact, it was expected that such judgments would be relied upon both by the licensee and the Staff. While I was with the Staff, engineering judgment had always played an important and necessary role in complying with EQ regulations. The Staff was aware of the potential for judgment calls by licensees that differ from the Staff's preferred approach. The test applied in such situations to determine whether the licensee was in compliance with EQ requirements was whether the licensee's technical position was reasonable. The Staff, in appropriate situations, may have required the licensee to add documentation to the file. However, enforcement action in response to the licensee's differing view would not have been considered appropriate.

Q35. Did the NRC Staff, prior to November 30, 1985, interpret 10 CFR 50.49 as requiring that all engineering judgments be documented in the licensee's EQ files?

A: Absolutely not. In practice, the Staff did not require licensees to document all engineering judgments because many of them are intuitively obvious. Engineering judgments are based on the experience and specialized knowledge of qualified engineers and, while still perfectly legitimate, may not be

quantitative in nature or easily documented. The Staff's focus was on the end-analysis and conclusion reached by the licensee. Was the conclusion reasonable and supportable? The engineering judgment relied upon to reach the ultimate conclusion was of secondary importance. Furthermore, I am unaware of any regulatory requirement, in existence in 1985, requiring a licensee to document its methodology for arriving at an engineering judgment -- except perhaps for a detailed analysis or systems evaluation.

Q36. Does this conclude your testimony?

A: Yes it does.

BY MR. REPKA:

Q Mr. DiBenedetto, you have in front of you a document entitled "Direct Testimony of Phi'ip A. DiBenedetto on Behalf of Alabama Power Company".

A [Witness DiBenedetto] Yes, I do.

Q Did you assist in the preparation of this testimony?

A [Witness DiBenedetto] Yes, I did.

Q Do you have any corrections that you wish to make to the testimony?

A [Witness DiBenedetto] Yes, I have two minor corrections on Page 83 of my testimony. The answer to Question 98 in the last two lines of that paragraph where there's a parenthetical on the second last line where it says "Scotch 33", it should be "Scotch 70". And in the following line, beginning in the sentence where it says "Scotch 33", that should also be changed to "Scotch 70".

Q Any other corrections?

A [Witness DiBenedetto] No, sir, that's it.

Q If I were to ask you these questions today, would these be the answers that you would give?

A [Witness DiBenedetto] Yes, sir, they would.

Q And with the correction you just noted, is this testimony true and accurate to the best of your knowledge and belief?

A [Witness DiBenedetto] Yes, it is.

MR. REPKA: With that I will ask that the Direct Testimony of Philip A. DiBenedetto on behalf of Alabama Power Company be admitted into the record in this proceeding.

MR. HOLLER: The staff has no objection, sir.

JUDGE BOLLWERK: Then the direct testimony of Philip A. DiBenedetto will be bound into the record.

[The direct testimony of Philip A. DiBenedetto on behalf of Alabama Power Company follows:]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	Docket Nos. 50-348-CivP
ALABAMA POWER COMPANY	)	50-364-CivP
	)	
(Joseph M. Farley Nuclear Plant, Units 1 and 2)	)	ASLBP No. 91-626-02-CivP

DIRECT TESTIMONY OF PHILIP A. DIBENEDETTO
ON BEHALF OF ALABAMA POWER COMPANY

I. INTRODUCTION

A. Experience and Qualifications

Q1. Please state your full name and business address.

A: My name is Philip A. DiBenedetto. My business address is 231 Sutton Street, Suite 2E, North Andover, Massachusetts.

Q2. What is your business organization and what is your position with that organization?

A: I am president of DiBenedetto Associates, Inc. (DBA). DBA is an engineering and management services company that provides services to utility clients related to equipment qualification, quality assurance, and nuclear regulatory licensing. I am responsible for the technical and administrative management of the company, including

participation in, and supervision of, the extensive environmental qualification (EQ) services that DBA offers.

Q3. On whose behalf are you testifying?

A: I am appearing on behalf of Alabama Power Company (APCo).

Q4. What is your professional and educational background?

A: A copy of my resume is provided as APCo Exhibit 78.

Q5. Would you please summarize your experience?

A: I have been associated with nuclear power since 1966. My experience and training includes completion of the Navy's nuclear power training courses and subsequent assignment to the U.S.S. Will Rogers (SSBN 659), a nuclear powered Polaris submarine. My duties there included the maintenance and operation of the ship's propulsion systems. As part of the training that I completed, I qualified on several reactor system designs and plants.

In 1973, after graduation from Lowell Technological Institute with a Bachelor of Science degree in Nuclear Engineering, I was employed by the General Electric Company at the Knolls Atomic Power Laboratory (KAPL) as a primary systems engineer.

My responsibilities included design cognizance of several submarine systems, which included the preparation and testing of safety equipment to function in normal and abnormal situations, and the writing of system operational procedures. Submarine safety equipment is designed to function in all extremes. The qualification of the equipment on board a submarine is the responsibility of the designer/builder, not the crew. (The crew of a submarine is trained to operate and maintain the ship and its systems.) While at KAPL, I received additional nuclear training as well as qualification on another reactor plant design.

In September of 1974, I joined the Staff of the Atomic Energy Commission (AEC), which later reorganized to become the NRC. While employed by the NRC, I completed a reactor safety course at Massachusetts Institute of Technology and completed several Pressurized Water Reactor (PWR) and Boiling Water Reactor (BWR) systems courses as well as a course on Equipment Environmental Qualification. I was assigned as licensing project manager for several operating reactor licensees. My responsibilities included technical evaluations of day-to-day activities of the licensees, and preparing Technical Specification chang, and environmental reviews. During this assignment, I was involved in the first issues that arose in industry regarding environmental qualification of safety-related equipment. I was also part of a task force to

investigate the failure of certain electrical connectors under accident conditions.

Due to my systems background, experience, and achievements, I was assigned to a special task force called the Systematic Evaluation Program (SEP). The SEP program task developed a standard set of guidelines to be used to assess older operating plants so as to provide the same level of safety assurance as if these plants were reviewed for a contemporary operating license. Environmental Qualification of Class IE Electrical Equipment was within the scope of the SEP Program, and once the criteria were established, I was responsible for EQ.

In late 1979, I became the first Section Leader of the Environmental Qualification Section of the newly formed Equipment Qualification Branch. My responsibilities as EQ Section Leader included the establishment of a review plan to evaluate utility responses to Inspection and Enforcement Bulletin (IEB) 79-01B and to manage the conduct of on-site EQ inspections of Near Term Operating License (NTOL) units like Farley Unit 2. I specifically established the review process and participated in the technical evaluation of many utility EQ programs. Under my leadership the Section drafted the format for NRC's subsequent evaluations of these responses. Additionally, I trained NRC Staff teams in the inspection and

review of utility qualification programs and developed the technical portion of 10 CFR 50.49, the Equipment Environmental Qualification Rule.

In 1981, I resigned from the NRC and was employed by Nutech Engineers (a consulting firm) as Director of Engineering. In this capacity, I was responsible for the establishment of an Environmental Qualification Group. The group, under my direction, provided utilities with Equipment Qualification consulting services. The services included the setup of program documents, review of equipment qualification files, and technical/licensing support during NRC reviews and audits. During this time I supervised and/or performed the development and implementation of EQ programs for over ten operating or NTOL nuclear plants.

In 1983, I left Nutech Engineers to establish DiBenedetto Associates, Inc. Since then, DBA has provided equipment qualification services to over thirty nuclear utilities and groups and has developed training seminars on equipment qualification for utilities and professional societies. Moreover, I have developed and presented training seminars on Equipment Environmental Qualification and other technical disciplines to numerous utilities in seven different countries.

Q6. Are you a member of any professional organizations?

A: Yes, I am Chairman of the American Nuclear Society (ANS) Subcommittee, 56.9, Environmental Envelopes. I am also a member of the ANS 56.11 Subcommittee for Flooding. I am Chairman of the American Society of Mechanical Engineers (ASME) Pressure Vessel and Piping Division, Operations, Applications and Components (PVP-OAC) Subcommittee SC2, Qualification and Testing. I am a member of ASME Subcommittee SC8, Plant Life Extension. I am also a member of the Institute of Electrical and Electronic Engineers (IEEE) Subcommittee SC2, Qualification, and was a member of IEEE Subcommittee 3.3 (Working Group 3.3), Maintenance Good Practices. As a corporation, DBA is a member of the New England Coalition for Reliable Energy.

B. Purpose of Testimony

Q7. What is the purpose of your testimony?

A: The purpose of my testimony is to provide factual and opinion testimony supporting Alabama Power Company's response to the Order Imposing a Civil Penalty issued by the NRC Staff on August 21, 1990 (Order). (Staff Exhibit 3). This testimony amplifies testimony I have already provided to the NRC Staff in an affidavit submitted by APCo in response to the Staff's

Notice of Violation and Proposed Imposition of Civil Penalty dated August 15, 1988 (NOV). (APCo Exhibit 33).

I will also provide testimony on the history of EQ development, the Staff's expectations of licensee efforts, and the related industry and regulatory guidelines.

Q8. Are you familiar with APCo's EQ program at Farley Nuclear Plant?

A: Yes. I am very familiar with that program. While employed by the NRC I participated in the evaluation and assessment of the EQ program for both Farley units. Specifically, as a Section Leader of the EQ Section of the Equipment Qualification Branch, I was responsible for the initial NRC Staff reviews of APCo's responses to IEB 79-01B for Farley Unit 1. I also reviewed and concurred in the findings of the Staff's initial Safety Evaluation Report (SER) related to EQ for the licensing of Farley Unit 2.

More specifically, for Unit 1, we reviewed the IEB 79-01B responses. The preliminary results of the EQ Section review were initially documented in an Equipment Evaluation Report, attached to correspondence issued to APCo on February 13, 1981, (APCo Exhibit 13). Subsequently, in mid-1981, the NRC issued SERs on environmental qualification of safety-related

electrical equipment to all operating licensees. On May 21, 1981, the Staff issued the SER for Farley Unit 1. (APCo Exhibit 14). In this document the Staff concluded that APCo's list of safety-related systems and associated equipment to be qualified to function in a harsh environment was complete and acceptable, except as specifically noted. Although there were many items of electrical equipment for which sufficient documentation was lacking; this was typical. We were assured that APCo was properly developing a program and that no outstanding items required immediate corrective action to ensure plant safety.

For Unit 2, the EQ Section was responsible for reviewing the EQ program prior to initial plant licensing. The Unit 2 license was issued on March 31, 1981. Prior to issuing the license, the Staff performed a physical site inspection and review of EQ files to verify that APCo was developing and implementing a satisfactory EQ program. The NRC Staff had reviewed and approved APCo test reports, EQ files, the Master List, and the installed equipment configuration.

Unlike other NTOLs at the time (e.g., Salem Unit 2, LaSalle, Diablo Canyon), we did not hold up licensing of Farley Unit 2 for EQ concerns. The review of documentation and selected installed equipment confirmed the satisfactory state of APCo's EQ program. The site inspection was conducted on

September 22-24, 1980, and was documented in a trip report to Z.R. Rosztoczy, then Chief of the Equipment Qualification Branch, dated May 27, 1981. (APCo Exhibit 10).

Q9. What was your subsequent involvement with the Farley EQ program?

A: In the summer of 1987, DBA was asked to assist APCo by providing EQ program assistance, audit support, and technical representation in preparation for the upcoming "first round" EQ audit to be conducted by the NRC. I visited the plant with a DBA team to review pertinent documentation and discuss the EQ program.

I was also present during the NRC's audit and assisted APCo in providing answers to NRC questions. Furthermore, at the request of APCo, I attended the Enforcement Conference held in Atlanta, Georgia in March 1988.

Q10. After leaving the NRC, and prior to returning to Farley in 1987, did you remain current with technical and regulatory developments in the area of EQ?

A: Definitely yes. This was our business. Part of the services DBA routinely offers are mock audits to prepare for NRC EQ inspections.

Consistent with this approach, we received and reviewed all NRC notices, circulars and bulletins on the subject. We monitored generically the findings of the NRC Staff's "first round" EQ inspections in 1986 and 1987. I also participated in the industry groups, committees, and task forces I described earlier, and developed and provided EQ training for utilities from 1983-1991. In general, I kept abreast of the EQ field quite aggressively in order to assist my clients.

At Farley, while we were attempting to prepare APCo for the upcoming inspection, we made recommendations for file enhancement based on what we were observing at other inspections. We applied the most contemporaneous EQ perspectives and expectations.

II. EQ DESCRIPTION/BACKGROUND

Q11. Before we get into the details of the APCo EQ Program, I think it would be appropriate to define equipment environmental qualification as it relates to Class IE electrical equipment. Will you please do that?

A: Yes. Equipment Environmental Qualification, in accordance with the IEEE standards definition, is the demonstration and documentation of an electrical piece of equipment's capability to perform its intended safety function when challenged by

external environments resulting from a design basis event (DBE) such as a Loss of Coolant Accident (LOCA) or high energy line break (HELB).

In order to demonstrate this capability, an electrical equipment item is subjected to testing which simulates the environments which are postulated to result from the selected DBE. During testing, the equipment is monitored and the critical functional characteristics of the equipment are recorded (e.g., insulation resistance, accuracy, leakage current, etc.). Once testing is completed, the recorded performance data is analyzed and a test report is prepared. The test report results are then compared to the plant specific operating requirements. This analysis is documented in a utility equipment qualification file. Equipment qualification files are developed for each piece of electrical equipment, by type/manufacturer, which has been determined to be within the scope of the program. The program covers, generally speaking, equipment that provides a safety function to mitigate the consequences of an accident, or equipment whose failure could adversely impact safety related equipment or mislead an operator.

In order to determine which equipment types should be qualified, it is necessary to perform an evaluation of all safety systems utilized to mitigate the accident consequences,

identify all equipment within these systems that may be potentially exposed to the adverse environment, and develop a master list. A qualification file is developed for every equipment type on the list. Typical utility EQ programs generate approximately 100 EQ files relating to approximately 1500-2000 individual pieces of equipment. Contained within the qualification file is information relative to the installation of the equipment, its maintenance, and its procurement. The latter information and data ensure continued qualification through the installed life of the equipment.

In order to perform effective qualification reviews/ analyses, develop an EQ Program, etc., a utility typically develops procedures and program documents which govern the process and further assure replication of the process by new personnel. Training programs are also provided to familiarize all personnel with EQ requirements.

Q12. What is the purpose of environmental qualification?

A: Environmental qualification is an approach to ensure that safety-related electrical equipment (Class IE) in nuclear power plants will perform its intended safety function in the harsh environments. For example, postulated high energy line pipe breaks contain high temperature and high pressure fluids (steam or water). Given a postulated rupture of a high energy

line or pipe (i.e., a pipe carrying fluid whose pressure is greater than 275 pounds per square inch gauge (PSIG) or whose temperature is greater than 212°F), the electrical equipment in the vicinity of the postulated break is exposed to increased stresses that could potentially impact its intended safety function. EQ involves the demonstration that the electrical equipment will perform its intended function under these harsh conditions.

An EQ program must consider the combined effects on the safety-related electrical equipment of high temperature, steam, humidity, high pressure, radiation, chemical and/or water spray, cyclic and thermal aging, and submergence. Further, the program must consider synergistic effects of various environmental influences such as the effect of radiation and slightly elevated temperature on equipment component materials.

Q13. Will you briefly describe the qualification and documentation process?

A: Demonstration of qualification can be by test or by a combination of test and analysis. Typically, qualification by test is performed on a generic equipment type. That is, a sample of a particular piece of equipment or device is tested for its worst case application. Qualification by analysis, or

partial analysis, can be based on "similarity" to tested equipment. Alternatively, an analysis can demonstrate qualification, for example, by showing qualification of materials or by showing how applicable environmental factors cannot affect the equipment involved.

Once qualification has been demonstrated, documentation is prepared to delineate what was done to demonstrate the qualification and how the demonstration envelopes plant conditions. This documentation is maintained for the life of the subject equipment. The qualification report or file is subsequently used throughout the operation of the plant to order replacement parts, maintain equipment operability, and preserve qualification. Qualification is preserved through the implementation of maintenance/surveillance programs geared to maintaining the equipment such that assurance is always provided that the equipment is capable of responding to design basis challenges such as postulated pipe breaks.

Q14. What were the NRC qualification criteria prior to the issuance of an EQ rule?

A: The only NRC criterion that existed relevant to EQ was 10 CFR Part 50, Appendix A, General Design Criterion 4 (GDC-4), which was issued in 1971. (APCo Exhibit 31). GDC-4, "Environmental and Missile Design Bases", stated in part that:

"Structures, systems, and components important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents. . . ."

Although this regulation addressing EQ existed in general terms, specific guidance for the qualification of safety-related electrical equipment was not available until later.

Q15. How did the industry contribute to the development of EQ?

A: Industry groups, such as the Institute for Electrical and Electronic Engineers (IEEE), assisted in the development of a standard for the environmental qualification of electrical equipment. (APCo Exhibit 37). In 1971, IEEE-323 was issued as a trial-use standard for the environmental qualification of electrical equipment. The standard was revised in 1974. (APCo Exhibit 36). Both issues of the IEEE standard were adopted and approved by the NRC in 1971 and 1974, respectively. It was the adoption by the NRC of IEEE-323-1974 that focused attention on the EQ issue.

The NRC Staff later developed two additional independent documents as further guidance for the qualification of electrical equipment: 1) "The Division of Operating Reactors-Guidelines for Evaluating Environmental Qualification of Class IE Electric Equipment in Operating Reactors" (DOR Guidelines)

(APCo Exhibit 8, at enclosure 4) and 2) "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment" (NUREG-0588), the for comment version. (APCo Exhibit 42).

Q16. How did the industry implement these guidelines?

A: Long before an NRC EQ rule, nuclear utilities endeavored to apply the latest industry standards for the qualification of their Class IE electrical equipment. As this electrical equipment was tested, utilities reported equipment failures to the NRC. Each failure was investigated by the NRC Staff to determine if the failure was isolated or if similar conditions existed throughout the industry. The results of these investigations were reported by the Staff to the NRC Commissioners. The NRC Office of Inspection and Enforcement (IE) also issued Bulletins, Notices, and Circulars which informed industry of the potential for failure of specific items of safety-related electrical equipment due to the environmental influences resulting from postulated accident conditions.

Q17. What action did the NRC take next?

A: On January 4, 1980, IE Bulletin (IEB) 79-01B was issued to all operating reactor licensees. Attached to IEB 79-01B were the

DOR Guidelines. (APCo Exhibit 8, at enclosure 4). The Bulletin required each utility to develop a list of all Class IE electrical equipment that performed functions necessary to respond to and mitigate the consequences of an accident. Additionally, the IE Bulletin requested that licensees provide a description of the EQ status of each item of safety-related electrical equipment, as well as corrective action plans for equipment for which qualification could not be demonstrated. The Bulletin required formal written responses in several phases. If a utility identified any Class IE electrical equipment that was not capable of meeting EQ requirements for its intended service, prompt corrective actions were expected.

Q18. How did the NRC evaluate the developing EQ process?

A: After reviewing the responses to IEB 79-01B, the Staff made a presentation of their findings and recommendations to the NRC Commissioners. In May of 1980, the NRC Commissioners issued a "Memorandum and Order," CLI-80-21, which delineated actions to be taken by the Staff to implement a program. (APCo Exhibit 9).

The Commission Memorandum and Order required all safety-related class IE electrical equipment to be environmentally qualified by June 30, 1982. This requirement was made a license condition of all operating reactor licensees. (As

alluded to above, the order effecting this requirement for Farley Unit 1 was issued on February 13, 1981.) (APCo Exhibit 43). The deadline for this requirement was later extended through the issuance of the final EQ rule, 10 CFR 50.49.

Q19. What standards were established by the Memorandum and Order?

A: The Memorandum and Order established the DOR Guidelines and the for comment version of NUREG-0588 as the interim criteria documents to be used for the qualification of safety-related electrical equipment in operating reactors and those about to be licensed (NTOLs). Prior to this mandate, the two documents were considered guidance by both utilities and the NRC, and had not been issued for public or industry comment.

The DOR Guidelines were the criteria to be used by operating plants, such as Farley Unit 1, for their qualification programs. (Staff Exhibit 8). NUREG-0588, prescribed two distinct criteria: Category I and Category II. (APCo Exhibit 42). The criteria contained in Category I were to be used by NTOLS receiving their NRC Construction Permit Safety Evaluation Report (CPSER) after July 1, 1974. Category II was to be used by NTOLS, such as Farley Unit 2, whose CPSER was issued prior to July 1, 1974.

The criteria in Category I and II of NUREG-0588 are similar to the methodology contained in IEEE 323-1974 and 1971, respectively. The application of the criteria in NUREG-0588 differed according to the age of the plant and corresponds to the issuance and acceptance of the IEEE Standards. Category I relates to IEEE 323-1974. Category II relates to IEEE 323-1971. Since no criteria were available prior to 1971, the DOR Guidelines were assigned to the operating plants licensed for construction prior to 1971.

All three sets of criteria allow qualification by testing or a combination of testing and analysis. A key distinction between the criteria concerns the testing where equipment is qualified by type testing. Under DOR Guidelines, which applied to operating units, "separate effects" testing is permitted. That is, different EQ parameters (e.g., radiation, temperature) may be tested on separate test specimens. NUREG-0588 applied to plants which had not yet received operating licenses. Category II of NUREG-0588 requires, for type-tested qualification, testing of all parameters on the same sample, or justification where separate effects testing is used. Category I of NUREG-0588 requires complete testing on one sample of the component to be qualified. Category I, unlike Category II, also requires that testing be on an aged component to simulate accident conditions occurring at the end of qualified life.

Q20. What is a "Justification for Continued Operation?"

A: The Memorandum and Order also required utilities to provide a "Justification For Continued Operation" (JCO) for any equipment whose qualification could not be readily established or determined. The term has since been used in the context of equipment for which qualification documentation may not be complete.

The nature of a JCO is to evaluate, on a system performance/function level, the effect of a potential failure of an unqualified item or device on the system or safety-related function to be accomplished. A JCO needs to establish that continued operation with the unqualified equipment would not pose an undue health or safety risk. A JCO can accomplish this by several means: by establishing assurance that the equipment would be "operable;" by establishing that the equipment does not need to operate under accident conditions; by establishing that the equipment is "qualifiable," regardless of a present deficiency in the area of qualification documentation; or by establishing that the postulated failure of the component does not impact safety.

Q21. In the interim EQ criteria, what were the documentation requirements?

A: Documentation aspects of equipment qualification were established in the Memorandum and Order by a mandate that "tangible evidence" be provided to support qualification. (APCo Exhibit 9). Record keeping was addressed by requiring that each utility establish a "central file" for qualification records. These records had to be maintained, as quality records for the life of the equipment.

These requirements were later changed such that the records did not have to be stored or kept in a central location. The qualification records had to be available for inspection by the Staff. As long as they were made accessible within a reasonable amount of time after a request for inspection, they could be stored or kept in locations at the discretion of the utility.

Q22. What was the NRC's final action on the Environmental Qualification Rule?

A: The final rule for environmental qualification of Class IE electrical equipment, 10 CFR 50.49, was issued in January 1983, and became effective on February 22, 1983. The rule adopted the qualification criteria as set forth in the

Memorandum and Order under 10 CFR 50.49(k). Equipment that had been qualified to the earlier standards (DOR Guidelines, NUREG-0588) did not need to be requalified.

The rule also set new deadlines for the qualification of electrical equipment. All utilities were to have all Class IE electrical equipment qualified by the second refueling outage following the effective date of the rule or November 30, 1985, whichever came first. The rule permitted qualification schedules for post accident monitoring (Regulatory Guide 1.97) equipment to be established on a case-by-case basis by the NRC. As such, this equipment was not subject to the schedule requirements in 10 CFR 50.49.

Q23. How does a licensee identify the equipment in its plant within the scope of 10 CFR 50.49 pursuant to the NRC requirements?

A: In order to establish environmental qualification for electrical equipment, it is first necessary to identify all of the electrical equipment and components that are used to mitigate the consequences of the design basis events (DBE) described in the accident analysis section of the plant's Final Safety Analysis Report (FSAR). Environmental qualification is required for electrical equipment important to safety whose safety-related function is required to achieve the following conditions: Emergency Reactor Shutdown,

Containment Isolation, Reactor Core Cooling, Containment Heat Removal, Core Residual Heat Removal, and Prevention of Significant Release of Radioactive Material to the Environment. The equipment considered to accomplish these functions are those that perform the function automatically, those used by an operator to perform the functions manually, and any equipment whose failure can prevent the satisfactory accomplishment of one or more of the safety functions. The accident scenarios are reviewed to determine which systems are required and which emergency procedures are used to respond to the situation. Once the list of systems and procedures are established, electrical drawings are used to identify and list each piece of equipment by plant identification number and plant location.

Q24. Is the utility required to perform an EQ analysis of non-safety-related equipment?

A: In addition to safety-related electrical equipment, a utility must also review the functions and failure modes of certain non-safety-related electrical equipment or safety-related electrical equipment which has no accident safety function. The purpose of this review and evaluation is to provide assurance that, when exposed to adverse environmental conditions, the equipment will not fail in a manner that would impact the operation of safety-related equipment or mislead an

operator. If this review results in a finding or determination that the equipment can fail in a manner having adverse operational consequences to other safety-related equipment, the equipment must either be replaced with qualified equipment or a qualified isolation device must be installed between the qualified device and the equipment whose potential failure could impact the operation of the safety-related equipment.

During the rulemaking process as well as the review efforts of the NRC Staff, the only electrical equipment considered for the EQ program was equipment that was potentially exposed to adverse environmental conditions resulting from a design basis event (equipment exposed to a harsh environment). The remaining electrical equipment was termed "Mild Environment" equipment and did not require any special consideration.

Non-electrical equipment was also, of course, not made subject to formal qualification documentation requirements.

Q25. What follows identification of electrical equipment that requires environmental qualification?

A: The next step is to establish the environmental challenges to the equipment; that is, in what environmental conditions created by a postulated accident will the equipment have to

demonstrate its operating capability? Each accident is reviewed to determine the parameters of the accident. Typically, a utility will develop a composite accident profile which considers the worst parameters of each accident analyzed. This ensures that qualification will be provided for all electrical equipment, regardless of location and function, for the worst possible environmental conditions that can result from any analyzed accident. The parameters of an accident that require review, as applicable, are Temperature, Pressure, Radiation, Humidity, Chemical Spray, Submergence, Operating Time, and Required Time. Additional concerns are Synergistic Effects, Qualified Life, Margin Considerations, and equipment operating characteristics such as Voltage, Current, and Frequency Extremes.

Q26. What follows the determination of the accident parameters?

A: In addition to the accident profiles, the normal and abnormal operating conditions at various locations within the plant must be identified. These conditions are used to establish the normal life expectancy of a particular piece of equipment.

A separate set of accident conditions and composite profiles are developed for equipment located and subjected to accidents inside the reactor containment and those located and subjected to accidents outside the reactor containment.

Q27. What occurs after the equipment and accident parameters are identified?

A: Once all the equipment to be qualified is identified and the normal, abnormal, and accident conditions are determined, procedures and a methodology for evaluating the equipment is developed. Regulatory Guide 1.89 (APCo Exhibit 35), entitled "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants" presents a typical, NRC-approved, approach to the qualification of equipment. Documentation is next assembled and evaluated to determine the extent of qualification required. Based on the equipment location, the parameters for the qualification of the device are determined.

Q28. Could you please provide an example of the process used in the qualification of a piece of equipment?

A: For the purpose of this discussion we will assume qualification will be prepared for an instrument used to activate a safety-related motor.

The instrument, a pressure transmitter, will be required to sense a pressure condition within the containment. When pressure in containment has increased to a predetermined

setpoint, a signal will be generated to actuate a device (e.g., start at motor).

The challenges to the transmitter are the environments from a classic loss-of-coolant-accident (LOCA). Temperature will reach 340°F, Pressure 60 psig, Radiation 200 megaRads, 100% Humidity, and intermittent Containment Spray. Operational characteristics are assumed to be accurately indicated within 5%, Current of 4 to 20 milliampere, Operating Time/Required Time are for the first two hours of the accident, and then the instrument is not required to perform any active functions other than to monitor pressure for the duration of the event. The duration of the total event is assumed to be 30 days. The event is separated into short-term and long-term periods. Short-term is the approximate time that the accident is releasing energy to the surroundings; in this case 4 hours is assumed. Long-term is defined as the time it takes for the environmental conditions in the containment to return to near pre-accident conditions (i.e., 30 days).

The vendor specification and design manual are reviewed to determine the equipment design characteristics for normal operation. It is established, from the vendor information and the design specification, that the transmitter is designed to operate continuously in a normal environment of 75% Humidity, 120°F and at Atmospheric Pressure. Under these conditions the

instrument accuracy specification states that it will operate within a tolerance of plus or minus 0.25%. We also determine that the normal operating environment at the instrument location is 90° F. Under these normal operating conditions we establish that without any replacement of components, the transmitter has a Qualified Life of ten years.

The Qualified Life can be based on one of two assessments. The first is an evaluation of the parts that make up the sensitive circuit of the transmitter. The parts, analyzed and compared to test results of the same or similar parts, indicate that the transmitter can function properly during normal and abnormal operating conditions.

The alternative, or second assessment, is an accelerated aging technique or test which brings the equipment to its end of life condition. Under the DOR guidelines and NUREG-0588, Category II, the first analysis is permitted. New equipment or equipment qualified under NUREG-0588, Category I, generally require pre-aging of equipment in order to demonstrate qualification. Radiation qualification is accomplished by similarity analysis or testing in accordance with the requirements of the criteria mentioned above.

When testing is the method chosen for qualification, functional characteristics of the equipment are monitored and

recorded prior to and following each step of the test sequence. This enables the evaluator of the equipment to determine where anomalies occur and helps to pinpoint potential causes of failure. All of the regulatory criteria require, as a minimum, that the equipment to be qualified be subjected to a steam test. The transmitter is installed in a LOCA chamber. A LOCA chamber is a vessel that is capable of simulating, as closely as possible, the conditions that occur during a design basis event. Temperature, Pressure, Steam, Humidity, and Spray conditions can be established within the vessel to simulate the actual inside containment accident conditions.

Once the transmitter is installed in the test chamber, it is instrumented to monitor the various critical performance characteristics of the transmitter as well as the internal environment of the chamber. All test vessel monitoring devices are connected to recording devices that accumulate and record data throughout the test. At the termination of the test the data is evaluated and the results are compared to the acceptance criteria. The acceptance criteria are established prior to testing as part of the test procedure, and a report is published.

Q29. What happens after the testing is completed?

A: The information obtained from testing and analysis alone does not complete the qualification process. The information must now be assembled and documented in an auditable form. The documentation, referred to as the qualification file, provides typical information such as the equipment model number, manufacturer, operability requirements by challenge, unique identification number, purchase order information, installed location and system, all pertinent test reports, analyses, vendor information, vendor correspondence used to support qualification, evaluations to justify any deviations from the requirements, any needed technical evaluation of the test report, and discussions of any anomalies that may have occurred during testing.

Q30. Is there any other way to qualify equipment other than the procedure described above?

A: The method described above is a typical example of qualification of a device by test and analysis. However, most qualification is performed by similarity analysis. A similarity analysis is performed when a device has been tested to a generic qualification profile. Most equipment qualified by an equipment vendor is qualified in this manner.

Under this approach, one device is tested that may be similar to the vendor's total production line. In these instances it is the responsibility of the utility to establish the qualification basis. The utility review would consider, first, whether the qualification profile used during the test enveloped the plant requirements. The next step would be to compare the equipment on a part-by-part basis. If the materials of fabrication can be shown to be similar, that is, respond in the same manner as those tested under test conditions, then similarity has been established and the generic test report can be used as a plant specific test document. A qualification file is established which contains the same type of information as previously discussed.

Q31. How is the qualification documentation maintained?

A: A qualification file is developed for every equipment type contained on the Master List of qualified electrical equipment. Typically, 50 to 100 qualification files are developed which relate to approximately 2500 individual pieces of equipment. Files developed contain all of the pertinent information necessary to support environmental qualification for the equipment's intended use. Some files may be straightforward and contain a minimum amount of information and others may rely more heavily on analysis and vendor information and may be quite voluminous.

Prior to November 30, 1985, utilities were required to establish an environmental qualification program that documented and demonstrated that safety-related electrical equipment was qualified to perform its intended safety function in postulated accident conditions. As qualification files were developed, the preparer needed to consider what maintenance activities must be routinely performed to maintain the qualification of the equipment. Once identified, the maintenance activities and their frequency would be recorded in the qualification file and the information transmitted to the maintenance department of the utility. The requirement to establish a well defined maintenance program for equipment qualification was introduced as the third aspect of qualification for implementation after the November 30, 1985, qualification deadline. (The first two aspects were to demonstrate that equipment was qualified and to document that demonstration. Only the first two were required by the Staff prior to the EQ deadline.)

III. PERSPECTIVES ON DEVELOPMENT OF EQ

A. General Perspectives

Q32. Much will be said in this hearing regarding the "evolution" of EQ standards. Do you have a perspective on this?

A: Yes. Obviously, as of issuance of 10 CFR 50.49, the EQ requirements were established. Those requirements have not changed since that time. However, without a doubt, EQ has continued to evolve.

Q32. What kinds of evolutionary changes do you believe have occurred?

A: I think two basic changes occurred between November 30, 1985, and the EQ inspection at Farley in 1987. The first resulted from the continued advancement of EQ knowledge. By 1987 industry and the NRC knew much more about several types of equipment (e.g., Limitorque motor operators), how that equipment performs, its acceptability for various applications, and how it was installed/maintained around the country. Another good example is the evolution of the instrument accuracy issue as it related to terminal blocks. This new knowledge was available to the industry and inspectors in 1987; it was not available as of the EQ deadline of November 30, 1985.

Second, by November 1987, there had been a significant evolution in how NRC inspectors were interpreting EQ requirements. Perhaps this resulted when the responsibility for EQ within the NRC shifted from headquarters to the regions. In any event, we saw some fundamental shifts in what

was expected. Most significantly, these shifts occurred with respect to EQ treatment of splices and terminations, grease or lubricants, the scope of walkdowns expected, and the level of documentation to be included in a file. This evolution was not foreseeable in my view prior to November 30, 1985.

Q34. With respect to the first category of evolution, can you explain further the basis for your belief?

A: Yes. Limitorque motor operated valves is just one example. However, the example is fairly typical. Here, both the NRC and industry were learning about qualification problems of various internal components -- such as wiring, terminal blocks, wire nuts, wire connectors, grease reliefs, and T-drains. Previously it had been assumed the vendor test reports covered these internal piece parts. We learned that that was not necessarily so, or at least that a closer look was warranted. Therefore, by 1987 it was reasonable to assume that disassembly of this equipment would be prudent. (In fact APCo did this for its Limitorques prior to the NRC inspection.) This was not the case in 1985 or earlier.

Another example was Raychem heat shrink splice material (not an issue at Farley). Prior to the EQ deadline it was assumed that this was the best material available, qualified for all applications. Post-1985 it was found that the installation

process, the amount of overlap, or the bend of the splice could make a difference. As we learned, these items were addressed.

Another example is the issue of instrument accuracy I mentioned above. I will discuss this further below in connection with the alleged terminal blocks violation at Farley. However, suffice it to say here, total loop effects (such as leakage currents due to cables and terminal blocks) on instrument accuracies were still being addressed as an ongoing generic industry issue in 1986, 1987, as well as in 1990. It is simply unfair to conclude that APCo or any other licensee clearly should have done more in this area prior to November 30, 1985.

Finally, the NRC's first round EQ inspections were the first detailed (including disassembly) walkdowns of installed configurations conducted by the agency. The issues identified were often in themselves new issues, providing a growing base of industry/NRC knowledge on specific EQ concerns or conditions to look for at nuclear plants.

Q35. Did the identification or evolution of these kinds of issues or problems subsequent to the EQ deadline lead to increased emphasis on the issues during the first round EQ inspections?

A: Yes, I believe so. I have reviewed the findings for all of NRC's first round EQ inspections/enforcement actions. There is no doubt that the NRC focused on specific problem areas as they were identified during other audits (e.g., T-drains, lubricants). In a sense, the later a licensee's inspection was on the schedule, the more likely that licensee would be cited for these newly-identified problem areas.

I believe this is also apparent from the Sandia National Laboratories/NRC EQ training materials introduced in this proceeding. The August 1987 materials show that inspectors were briefed on the latest findings and latest perceived problems. (APCo Exhibit 1). These findings included T-drains, lubricants/grease, splices, etc., which, not surprisingly, then became inspection and enforcement issues at Farley.

In this respect, therefore, the "evolution" of EQ was really an accumulation of experience. Such an accumulation of experience would seem only natural in an area such as EQ where testing/analyses were complete prior to the deadline, but detailed (including equipment disassembly) walkdowns did not occur until the first round inspections.

Let me add, however, that the accumulation of experience, and responding to changing times, is an important part of the

regulatory process. Neither I, nor Alabama Power Company advocate an "ostrich head in the sand" approach as suggested by the Staff. As information about electrical equipment evolves, then an appropriate action should be taken by all NRC licensees.

What is objectionable to me is using the enforcement process as the Staff has done in this case. In my judgment, they have unfairly and retroactively applied evolving technical knowledge and Staff positions back in time to a date when they did not exist. Under the normal enforcement process, Part 2, Appendix C, such an attempt would be accompanied by an actual operability analysis, which, in this case, would not result in escalated enforcement action.

What the Staff has done through the Modified Enforcement Policy, as I understand it, is to create a fiction of equating document deficiencies with operability deficiencies and, hence, safety significance. In my opinion, it is manifestly unfair, then, to do this while simultaneously holding the licensee to a state of knowledge that didn't exist in November 1985.

Q36. You mentioned a second example of EQ evolution -- changing inspector interpretations. Please explain.

A: I've already mentioned a few examples of these changed positions. Inspectors began arguing in 1987 for much more detailed documentation than had been expected during initial qualification prior to November 30, 1985. Inspectors began arguing that detailed walkdowns of installed configurations were necessary, even though that is not mentioned in the rule. Inspectors began stating that grease was an item of electrical equipment and that splices could only be made in one way. All of these interpretations, in my view, represented "evolutionary" changes. I will talk more specifically about these changes in the context of the individual alleged violations below.

Q37. Can you describe the circumstances surrounding your being asked to do some work at Farley in 1987?

A: I was contacted in the summer of 1987 by personnel from APCo and asked if I could do a mock review in preparation for the scheduled NRC audit. The express purpose of this review or audit was to prepare the utility for the real thing. We were to see if there were any areas in the program that needed amplification or enhancement.

In September 1987 I brought a team, myself and five or six of my employees, to Farley. We performed a mock review and audit.

I think part of the reason APCo was looking for this was that they had become aware that the NRC's expectations were changing as evidenced in the prior first round EQ inspections. To this end, they knew the NRC inspectors were applying much different standards than had previously been the case. When we went there we specifically applied what we knew about EQ and the NRC's expectations as of 1987 -- to upgrade the files to those standards.

Q38. Was this separate and independent from the APCO-EQ Task Team that was also going on at that time?

A: That's correct. We were a third party reviewer who had not been previously involved in the preparation of any of their programmatic documents or their EQ files.

Q39. Do you have any general conclusions regarding the APCo EQ program and the Notice of Violation/Order?

A: I believe in general that the Notice of Violation and the Order do not reflect the proper context of EQ as it was developing from 1981-1987. I believe APCo's files, its

"efforts" to achieve compliance by the deadline, and what it "clearly knew or should have known" can only be judged from the perspective of the evolution of EQ. This hasn't been done by the Staff in a realistic way.

Essentially, during this time utilities were required to address a constant stream of emerging EQ and other issues at the same time they were attempting to develop and implement an EQ program that would satisfy the new rule. The EQ program was initiated during the post-TMI licensing and regulatory environment which also required numerous other plant backfits and huge resource commitments.

Further, during its 1986-87 EQ inspection efforts, as I've discussed, the NRC Staff altered previously approved technical acceptance criteria, by interpretation, thereby calling into question the basis for the equipment qualification program and what constituted acceptability of qualification. That is, equipment previously found to be qualified during NRC inspections and submissions was now deemed to be in violation.

The expectations regarding walkdowns announced in 1987 were also fundamentally different from prior practice. For example, name plate data had previously been an acceptable means of verifying that installed equipment matched the tested (and documented) equipment. However, when NRC inspections

were conducted, disassembly of equipment was requested. Disassembly of equipment permitted inspectors to identify subcomponents of equipment which were not specifically identified in the qualification documentation. Note that this often involved internal conditions found earlier by inspectors (at other plants), but of which industry was not notified. Therefore, equipment that was previously considered acceptable because the name plate data matched the documented data, was now considered unqualified or lacking qualification information.

In this environment, I believe APCo made better than normal efforts to comply with the EQ rule. Any difficulty it may have had in preparing files to the satisfaction of the inspectors in 1987 (and beyond) was not due to a lack of effort or competence on APCo's part. Rather, it was due to the complex and evolving nature of the EQ issue and to a changing regulatory focus which only became evident through inspection.

Q40. Are you satisfied that APCo devoted satisfactory resources to its EQ program?

A: Yes. I had several occasions to review and participate in the development and implementation of APCo's EQ program. As I've discussed, while at the NRC Staff I supervised the NTOL review

of Unit 2 and reviewed the IEB 79-01B response for Unit 1. I also conducted similar reviews for virtually all other operating plants and NTOLs in the country. In my opinion, Alabama Power Company's EQ program was complete, responsive to the pertinent issues, and was among the best of the EQ programs I evaluated. Based on the Staff reviews prior to issuing the Unit 2 operating license, as compared to other NTOLs at the time, Alabama Power Company's EQ program was one of the few that was approved after only one visit.

Since becoming involved with APCo in 1987, I have become even more aware of the efforts the Company undertook to comply with EQ after I left the Staff in 1981. In my opinion, the level of effort expended by Alabama Power Company thereafter increased, not diminished, and thus I believe that it maintained its best efforts to complete EQ within the deadline. I have no reservations regarding APCo's commitment of resources or efforts either before or after the deadline.

From my personal knowledge I can say that APCo was responsive to EQ and had a desire to excel in this area. My work and that of the EQ Task Team in 1987 are illustrative of this desire to excel. Another indication is the corrective actions taken by Alabama Power Company after the EQ audit. APCo quickly and efficiently resolved any perceived problems in a

conservative and prudent manner -- and often by replacing equipment which we still believe was qualified.

Further, APCo's commitment to improve its program based on the NRC Staff's 1987 interpretations and guidance is illustrated by the results of the Staff's follow-up EQ inspection in September 1989. As documented in an inspection report dated October 31, 1989 (APCo Exhibit 79), the Staff at that time found APCo's program to be in full compliance and identified no violations or deviations. The inspector specifically noted "substantial improvements" in the program (e.g., training, procedures, documentation and hardware) and in the "level of knowledge regarding EQ at the site." This is testimony to the effectiveness of APCo's efforts to bring its program and files up to the level of the NRC's 1987-88 guidance and expectations.

Q41. Are you satisfied that APCo had a sufficient and effective EQ organization prior to the deadline and the inspection?

A: Yes. The APCo EQ organization and approach compared well to that of other utilities with which I am familiar. APCo used a centralized EQ technical/licensing coordinator and drew resources from throughout its operating organization. APCo also had resources from Southern Company Services, Inc. and the very significant Bechtel-Farley organization. The support

provided by Bechtel included staff augmentation to develop EQ files as well as staff used for special analytical tasks associated with the EQ program. I'll also add that there was nothing unusual about APCo's use of a contractor such as Bechtel to comply with the EQ rule prior to the deadline. In total, I am well satisfied that APCo had a sufficient and effective EQ organization.

B. **Walkdowns**

Q42. Let's turn more specifically to the subject of walkdowns, which you have introduced above. In the NOV and the Order, an often stated complaint is that prior to the EQ deadline APCo conducted inadequate EQ walkdowns. Are you familiar with this Staff position?

A: Yes.

Q43. Based on your experience, prior to November 30, 1985, was 10 CFR 50.49 interpreted to require detailed walkdowns of all EQ equipment or disassembly of EQ equipment in order to prove that all subcomponent parts are qualified?

A: No it was not. Prior to the EQ deadline, the most the NRC ever expected were walkdowns of equipment to verify by equipment make and model number what was in the plant. This

was for purposes of establishing a Master List and assuring that qualification documentation was being compiled for the right equipment. The expectation was to conduct a walkdown to verify installed configurations and name plate data. There was no expectation or practice prior to 1986 or 1987 to conduct disassembly of components to verify qualification of internal pieces or subcomponents.

Q44. Does this mean that prior to November 30, 1985, the industry and specifically APCo, ignored installed configurations?

A: No. Prior to the deadline the licensees were encouraged by the NRC, not in writing, but verbally, to at least confirm through a walkdown that the equipment that was installed matched the test report. As I stated, the way one confirmed this was through a walkdown verifying that the equipment installed matched the test report. This was done by specifically confirming matching name plate data. You looked at what was tested as documented in the EQ file, in the qualification report; you took that data and compared it to the installed configuration name plate. That was the extent of a walkdown; that was the extent of the walkdowns that the NRC conducted; and that was the extent of the walkdown that the NRC encouraged the utilities to conduct.

Q45. During the period when you were the Section Leader of the NRC EQ Section, was the Staff aware that the utilities were not conducting detailed walkdowns?

A: When I was a Section Leader in the Equipment Qualification Branch, we were well aware of the fact that most licensees were neither disassembling all equipment to verify qualification of subcomponent parts, nor conducting walkdowns of all installed equipment in the detail now suggested by the Staff.

It was never our intent to require a detailed walkdown of all equipment. Indeed, it would be impracticable to conduct a detailed walkdown of items such as cable and splices. Some utilities even put together little books with pictures of the equipment name plates to show verification of installed equipment -- and that was the extent of the walkdowns done.

Q46. Prior to November 30, 1985, did the NRC Staff ever issue detailed guidance to licensees on conducting walkdowns to support equipment qualification?

A: No. There was no detailed guidance issued by the NRC Staff prior to November 1985 on this type of effort. We have conducted a literature search for Staff references on plant EQ walkdowns conducted by licensees. Based on this search, and

on my personal involvement in the NRC's Equipment Qualification Program, I can testify that the Staff never issued detailed guidance on this subject.

Both the NRC Staff and the Commission -- prior to the first round enforcement actions -- made only general references to plant walkdowns. In Commission Memorandum and Order (CLI-80-21) dated May 23, 1980 (APCo Exhibit 9), the Commission simply required that licensees check their equipment to provide assurance that the installed equipment is the same (model and serial number) as the equipment that was tested. Also, in the DOR Guidelines issued as part of IE Bulletin 79-01B, dated January 14, 1980 (APCo Exhibit 8), the Staff stated its concern regarding the configuration of installed equipment. It stated that utilities should verify that the installed equipment conformed to the tested configuration. As I have stated, this was done by name plate data verification. DOR Guidelines did not mandate a subcomponent inspection or disassembly.

Q47. Let's turn to component disassembly. When did that "requirement" or issue begin to appear?

A: In 1986 or 1987. Prior to that time there was no generalized concern regarding qualification of subcomponent parts. If a vendor qualified a component and shipped that component to the

licensee, it was generally assumed that the component was qualified. Absent some specific notification of a problem with internals (e.g., a Part 21 notice), widespread walkdowns involving component disassembly were not required.

In 1986 and 1987, during licensee EQ assessments and during the NRC's inspections, qualification of internals started to become a bigger issue. I think it was this perspective that the Staff inspectors were applying at Farley.

Q48. In your opinion, was this increased emphasis on walkdowns something that was foreseeable by a prudent licensee as of November 30, 1985?

A: No, I don't think so.

Q49. In your opinion can APCO be said to have clearly known, or clearly should have known, that more detailed walkdowns would have been necessary as of November 30, 1985?

A: I don't think they possibly could have known that more detailed walkdowns or walkdowns of a more sophisticated nature were necessary; certainly not in the 1985 time frame.

Q50. Prior to November 30, 1985, were any licensees out there conducting such detailed walk-downs, at least that you're aware of?

A: I don't believe so.

Q51. In your opinion, was the level of walkdowns conducted prior to November 30, 1985, at the Farley plant indicative of an inadequate EQ program?

A: Definitely not. It would have been indicative of an adequate program by a responsive and responsible licensee.

Q52. If the walkdowns had been viewed as inadequate in that timeframe, do you have a sense of whether or not that sort of programmatic deficiency should have been written up by the NRC Staff in, for example, the Staff's Safety Evaluation Report?

A: I think that if the scope of walkdowns were a deficiency identified by the Staff, it would have been identified as a programmatic deficiency in one of the EQ engineering evaluations or safety evaluation reports. In these documents -- at least when I was with the EQ Section -- we tried to identify fundamental program flaws. Industry-wide we did identify problems such as licensees that did not have the right procedures, or that did not evaluate their environmental

profiles properly. Walkdown problems certainly would have been articulated in our evaluation. The licensee would have had to respond to that deficiency. In the case of Farley, for walkdowns, the Staff did not do that.

Q53. In your opinion, then, was the level of walkdowns conducted by APCo at its Farley plant indicative of an inadequate EQ program?

A: No. I strongly disagree with the statements in the Notice of Violation transmittal letter and the Order such as those alleging that Alabama Power Company conducted "superficial walkdowns" which were "indicative of an inadequate program." It is also my opinion that APCo performed adequate receiving and/or field verification inspections to determine that the configuration of the installed equipment matched the configuration of the equipment that was qualified by the vendor.

C. <u>Documentation</u>

Q54. You have earlier testified that the NRC inspectors in 1987 were changing prior interpretations of documentation requirements. Please explain.

A: There was never any question but that EQ documentation was necessary. This was stated in the industry standards, the NRC interim guidance documents, and in 10 CFR 50.49. There was, however, between November 30, 1985, and November 1987, a significant evolution with respect to how much documentation would be needed to constitute an "auditable form." The level of detail in the documentation viewed as necessary to conclude that a piece of equipment was qualified was significantly less in 1985 than in 1987, or in 1991.

"Similarity analyses" are a good example. A similarity analysis, for example, for qualification of a piece of cable would have been a fairly simple matter pre-1985. The documentation would simply have compared a piece of cable to be qualified made by one vendor to a qualified cable made by another vendor. The analysis could have been a simple statement that the cable insulating material and jacket were of material similar to the tested sample. By 1987, NRC inspectors told us that cable cannot be qualified by similarity analysis. This position, in my opinion, is contrary to the rule which allows qualification by similarity analysis. The NRC stated, in any event, if the similarity analysis were to be accepted, it needed to be in painstaking detail. In order to perform a similarity analysis for cable we now would need to document, step-by-step, a discussion of the relative fabrication processes -- regardless of the fact

that there can only be minor deviations in processes for fabrication of cable if the process is to stay within the standards used for fabricating cable. For example, we now would need to address how much blackening agent one manufacturer uses relative to another, the pros and cons of adding this or that, and the effects of slight variations in percentages of ingredients. Compared to pre-1985, it now takes a significant amount of detail to document a similarity analysis. You are now documenting a total form, fit and function analysis.

Q55. This was not the type of documentation originally contemplated or expected prior to November 30, 1985?

A: No it was not. To establish qualification prior to the EQ deadline, licensees provided a System Component Evaluation Worksheet (SCEW) which delineated on a component level all of the necessary attributes for qualification, all of the challenges, and how the equipment met the challenges along with the reference documents. There would be a check sheet, or checklist, documenting how the reviewer compared the plant's specific conditions against the tested conditions. The files would also include any test reports, and a brief write-up of the evaluation of the test report if additional analyses were necessary. Typical analyses would be an aging analysis or a similarity analysis. One did not attempt to

analyze all potential installed configuration variations -- particularly where the variations could as a matter of judgment make no difference to operability.

Q56. What served the function of providing in an "auditable form" the basis for the evaluator's conclusions that a piece of equipment was qualified?

A: The EQ file: the SCEW sheet, the checklist, the test reports and the additional analyses. A test report is typically generic and could apply to a number of plants/applications. The checklist and evaluation were the documentation taking the test reports out of the generic realm and putting them into the plant specific qualification realm.

Q57. Was the documentation format that APCo used fairly typical in the industry?

A: Very typical. It was in a format that even the NRC encouraged when they sent out IEB 79-01B. In the Staff's request for information and for the formation of qualification files, they sent out sample check sheets and asked utilities to fill them in and develop files around the check sheets. The format that APCo was using was similar to that of the majority of utilities.

Q58. In your opinion, did that sort of documentation satisfy what NRC expectations were as they existed prior to November 30, 1985?

A: Yes, they did.

Q59. If in some way that basic documentation scheme had been deficient, and the NRC Staff had viewed it as deficient, would that deficiency have been reflected in the Staff's pre-deadline reviews?

A: The safety evaluations and reviews should certainly have reflected whether or not the files contained "auditable" information.

Q60. In this enforcement action the Staff has defined "unqualified equipment" as equipment for which there is not "adequate documentation." Prior to November 30, 1985, did the NRC Staff equate documentation deficiencies with lack of equipment qualification under 10 CFR 50.49?

A: Absolutely not. Prior to November 30, 1985, I am not aware of any circumstances where the Staff treated documentation deficiencies the same as hardware deficiencies. The Staff has always been significantly (and properly) more concerned with a hardware problem that could result in a safety-related

component not being able to perform its intended safety function. While identification of documentation deficiencies of equipment qualification is a legitimate objective of any regulatory audit, in my opinion it should not be given the same weight as the actual ability of the electrical equipment to perform its intended safety function. This is the philosophy we communicated to utilities while I was at the NRC.

Q61. Does an EQ documentation deficiency -- absent any operability or hardware problem -- have any intrinsic safety significance?

A: No. A failure to dot "i's" or cross "t's" has nothing to do with the performance or operation of the equipment.

Q62. Can you provide an example of how this philosophy was communicated to licensees?

A: Yes. Prior to November 30, 1985, the Staff did not consider that equipment was "unqualified" where qualification documents did not directly address a particular qualification parameter. In recognition of this, there were several NRC Qualification categories used in the TER/SER process, including, among others, "Equipment Qualified"; "Equipment Not Qualified"; and "Equipment Qualification Not Established."

The category entitled "Equipment Not Qualified" was defined as including:

> equipment items whose qualification documentation has been judged to be seriously deficient . . . . The qualification documentation indicates serious deficiencies reported during testing; for example, severe anomalies or failure of the test specimen, which could affect the ability of the equipment to perform its safety function.

(Emphasis added.) In contrast, the category entitled "Equipment Qualification Not Established" was defined as follows:

> The qualification of equipment items in this category, in accordance with the requirements of the DOR Guidelines or NUREG-0588, is significantly deficient or inconclusive based upon review of (1) the documentation provided by the Licensee or (2) applicable and available qualification documentation associated with the overall equipment environmental qualification program. The qualification documentation indicates significant deficiencies, which can be categorized as follows: (1) appropriate documentation reflecting qualification has not been cited and made available for review by the Licensee and there is no knowledge of applicable documentation; (2) the Licensee is awaiting qualification from the equipment vendor; or (3) the qualification documentation indicates significant deficiencies; however, where testing was conducted, no reported failures or severe anomalies were observed which

would unquestionably affect the ability of the equipment to perform its design basis safety function(s).

(Emphasis added.) Under this approach, documentation deficiencies were treated as exactly that, not as "qualification" deficiencies (i.e., deficiencies in the ability to perform their intended safety function). Equipment in this category might have remained operable because assurance existed that the equipment would be capable of performing the intended safety function. The equipment might also be termed as "qualifiable" where the needed documentation was known or likely to be available. However, simply because a little more documentation would be needed for the file, the equipment was not "unqualified" and thereby deemed unable to perform its intended safety function.

In sum, the NRC, in implementing the requirements of the DOR Guidelines and NUREG-0588 (and hence 10 CFR 50.49), provided for three categories (rather than just "Qualified" and "Unqualified"). It is clear that prior to the EQ deadline, the NRC did not equate the situation where a qualification document did not directly address a particular qualification parameter with "unqualified equipment." The NRC properly recognized that it is possible for a piece of equipment to have incomplete qualification data, but still prove to be qualifiable and ultimately qualified.

Q63. Prior to November 30, 1985, if a licensee had qualification documents that did not directly address a reviewer's or inspector's particular question, would that equipment be treated as "unqualified?"

A: No. At most, this would be treated as an open item on the file. Our Section had some of those in the 1981 time frame. We had a coding system that had as many as 15 different codes for identified deficiencies. It meant that the utility had to go back and add that type of information to the EQ file, whether it be a humidity consideration, or an amplified radiation analysis, a similarity analysis, or a discussion about margin. But the equipment was not labeled "unqualified."

Q64. Do you view the approach taken during the 1987 Farley inspection as different from the prior approach?

A: Absolutely. During the 1987 inspection, if a reviewer had asked questions of what something meant in a file, or if it wasn't totally clear how the preparer went from step A to step B, or the reviewer raised a question not explicitly addressed in the file, the reviewer determined that the equipment was not "qualified." This conclusion was made apparently regardless of whether the equipment was qualifiable or operable, and regardless of the validity of the question.

The file documentation "deficiency" was treated the same as a real hardware problem.

Q65. And, therefore, it was a violation just the same as if the equipment was inoperable?

A: That's the way they were terming it, yes.

Q66. Do you agree with this approach that the inspectors were taking?

A: No, I don't. I think in many instances, two reasonable engineers reading the same EQ file will reach different interpretations of its meaning. It's through conversation and dialogue that the matter should be resolved. This information exchange is a necessary part of the review. It is not fair for an inspector to decide, simply because he doesn't agree with the utility engineer, that the file is deficient. Likewise, simply because a file does not explicitly address an issue, it should not mean that the file is deficient. I think the need for further dialogue should be recognized as inherent to reaching the technical merits of an argument.

Q67. And some of that dialogue may address engineering judgments inherent in the file?

A: Yes.

D. Engineering Judgment

Q68. In your opinion, what is the proper role of engineering judgment in complying with the EQ regulations as you helped develop them?

A: Engineering judgment has long been recognized by the Staff as an area where significant regulatory and utility discretion is appropriate. An engineering judgment is a judgment made or an opinion offered by an engineer experienced in a discipline, based on his/her specialized knowledge and experience. Such a judgment or opinion is founded on adequate knowledge of the facts at issue, on a background of technical competence in the subject matter, and on honest conviction of the accuracy and propriety of this opinion or judgment. As the regulator of the nuclear industry, the NRC should be properly receptive to reasonable, and sometimes differing, engineering judgments. In short, in my opinion, engineering judgment plays an important and necessary role in complying with EQ regulations, as well as every other facet of NRC regulation and plant design.

Staff management has always been aware of the potential for judgment calls by licensees that differed from the Staff's preferred approach. While I was at the NRC, the test applied to licensee's compliance with EQ regulations was whether the licensee's technical position was reasonable. If it was, then the Staff may have still exercised its regulatory authority and required a licensee to adopt the Staff position that additional documentation was required; however, enforcement action regarding the differing view would not be considered appropriate.

Based on my involvement at Farley, as well as experience at other utilities, it appears that the Staff has inexplicably retracted its prior acceptance of reasonable engineering judgment. I refer specifically to alleged violations of 10 CFR 50.49(j) where Alabama Power Company and the Staff have differing engineering opinions about whether a document properly demonstrates equipment qualification. As I discuss the violations later, I will call attention to what I perceive to be reasonable engineering judgments made by APCo.

Q69. While you were with the Staff did you interpret 10 CFR 50.49 as requiring that all exercises of engineering judgment be documented in the licensee's files?

A: No. In this respect, a discussion of engineering judgment is akin to my discussion of documentation above. I am unaware of any regulatory requirement in 1985, or today, that requires a licensee to document its methodology for arriving at an engineering judgment (excluding, for example, a detailed analysis or systems evaluations). By 1987, however, the Staff's interpretation of the regulations had apparently changed dramatically. The Staff expected detailed documentation, including apparently a discussion of the basis for even the most trivial engineering judgments.

In the event a documented basis for the engineering judgment should be desired by the Staff, a licensee should be able to, at that time, document its engineering judgment without being penalized. Nothing more has been required in other regulatory areas and nothing more should be required for equipment qualification.

Q70. Does the opinion you just expressed comport with the requirement of 10 CFR 50.49(j) which states that the licensee must provide qualification documentation in an "auditable form."

A: Yes. Section 50.49(j) requires that, "a record of the qualification, including documentation in paragraph (d) of this section, must be maintained in an auditable form for the

entire period during which the covered item is installed in the nuclear power plant . . . ." The list provided in 10 CFR 50.49(d) does not require or imply that documentation of engineering judgments be maintained in written form or in the EQ file.

As a practical matter, engineering judgments are frequently and continuously made during operation of a nuclear plant (e.g., technical specification operability determinations). It would be impractical to document each such "judgment." This applies to EQ as well as other areas of plant operation.

I personally do not believe that prior to the EQ deadline APCo could have anticipated that the Staff now would require complete documentation of all engineering judgments in order to avoid imposition of a civil penalty. The Staff never communicated any such requirement to utilities.

IV. V-TYPE ELECTRICAL TAPE TERMINATIONS

Q71. The Staff alleges that APCo violated 10 CFR 50.49 because V-type electrical tape terminations were not documented as being environmentally qualified. Do you have any understanding from your personal experience of the genesis of this issue?

A: Yes. The Staff's concern with tape splices at Farley arose in 1987, following an inspection at Baltimore Gas & Electric Company's Calvert Cliffs plant. There, for the first time, the Staff indicated in their inspection report that they were dissatisfied with the qualification of certain tape splices. Prior to this inspection, both the Calvert Cliffs licensee and APCo had believed that all of the splices/terminations at their facilities were qualified and that EQ files were sufficient.

Q72. Can you describe the issue at Calvert Cliffs?

A: Yes. NRC inspectors at Calvert Cliffs discovered tape splices on the leads for large motors -- terminating motors to the power cables. The inspectors asked for qualification data. Baltimore Gas & Electric (BG&E) had no qualification data on tape splices. BG&E had no qualification package at all for those splices, and they had no qualification package for the material used in making the splices. In this regard, these facts were different from the issue that subsequently arose at Farley. But, nonetheless, BG&E maintained (unsuccessfully) that the splices/terminations were qualified based on the fact that they had been installed by trained personnel in a manner within normal expectations of skill of the craft.

Q73. After this issue was identified at Calvert Cliffs, what did APCo do at Farley?

A: When APCo became aware that a splice/termination concern had been raised at Calvert Cliffs, APCo contacted BG&E to determine the nature of the concern and the licensee's proposed response. APCo then conducted an investigation of its own equipment and found tape terminations at Farley of a similar configuration to the splices at Calvert Cliffs (i.e., tape splices). However, unlike the Calvert Cliffs situation, APCo had a qualification file which established qualification of the tape (Okonite T-95) used at Farley. The only issue at Farley was whether a "V" rather than an "in-line" connection, as illustrated in EQ documentation, made a difference to qualification. Based on engineering judgment and some testing of splices already completed by Commonwealth Edison Company (APCo Exhibit 27), APCo made a prompt determination that the configuration difference was not significant for qualification at Farley.

Q74. So the Calvert Cliffs and Farley cases are not comparable?

A: No. The fact that both licensees identified tape as a splice material (rather than Raychem material) is the only similarity there is between the two cases.

Q75. The NOV states that APCo violated 10 CFR 50.49 because V-type electrical tape terminations were not documented as being environmentally qualified, in that there had been no previous testing or similarity analysis. It adds that the terminations were not installed in accordance with design details and were not identified on the EQ Master List. In your opinion is the condition described in the NOV appropriately characterized as a violation of 10 CFR 50.49?

A: No. I do not believe that the NOV describes an EQ violation, for the following reasons.

First, prior to November 30, 1985, there was no requirement to list splices and terminations on the Master List.

Second, prior to the deadline, APCo had accomplished exactly what was expected from an EQ standpoint. By November 30, 1985, APCo had established an EQ file showing a qualified tape material. The file illustrated one approved configuration (in-line termination) and specified in notes and details how the qualified terminations were to be made. At that time APCo had reasonable assurance that the tape splices/terminations had been properly constructed using qualified methods because of the existence of, among other things, (1) the explicit notes and details for the construction of these connections, (2) detailed instructions for the splice/termination

installation, and (3) existing quality assurance/design controls to assure implementation of the above notes, details and instructions.

Third, prior to the deadline, APCo placed reasonable reliance on skill of the electrical craft to make qualified splices (based on training and certification of the craft by the splice vendor), so long as the electricians used the qualified material (T-95 tape) specified in the EQ file. This practice was fairly normal in the industry at the time. At Farley, the electricians apparently made V-type connections consistent with their skill, rather than the illustrated in-line connection, where they needed to conserve space in an enclosure.

Finally, APCo's judgment regarding the operability of these terminations in a "V" configuration was verified by a test developed during the inspection. Thus, there was no operability or qualification problem with the installed terminations.

Q76. Please explain the EQ file that existed for terminations.

A: As of November 30, 1985, APCo established a qualification file which contained appropriate documentation regarding qualification of the Okonite tape splice/termination sealing

system. This documentation included an Okonite test report (Test Report NQRN-3, Revision 1 (June 30, 1982), (APCo Exhibit 25), that provided reasonable assurance of qualification of the material. The Test Report showed a tested in-line splice configuration and a bolted termination. In both instances, the qualification Test Report referenced detailed notes and instructions for preparing these splice/termination connections.

APCo generic design details (Detail Nos. A-172389-172398) addressed terminations. (APCo Exhibit 38). Accompanying each detail were notes and instructions specifying the method of installation of an electrical tape sealing system, including Okonite, and setting forth specific directions as to the construction of the termination (i.e., preparation of the connection, use of Okonite cement, and application of tape). These notes, which were prepared by APCo's A/E, implemented Okonite instructions.

Further, APCo maintained appropriate programmatic controls, that had been reviewed and accepted by the NRC, which controls provided assurance that qualification criteria, including installation instructions, would be followed, thereby producing qualified terminations.

Q77. Prior to the EQ deadline, was 10 CFR 50.49(d) interpreted to require that individual termination or splice configurations be included on the EQ Master List?

A: No. The relevant provision of that section required APCo to "prepare a list of electric equipment important to safety covered by this section." 10 CFR 50.49(d). When this provision was enacted, it was intended to assure that each piece of electrical equipment that required qualification was identified by licensees. In my experience, prior to the deadline the Staff did not consider splices and terminations to be individual pieces of "electric equipment" required to be independently included on the list required by 10 CFR 50.49(d). Terminations, and other connections, while certainly requiring qualification when used in qualified applications, are at most parts or subcomponents of electrical equipment. In neither case were they required to be listed separately on the EQ Master List. The materials of fabrication were included on the list, but the splice itself was not.

It is important to understand how splices and terminations are used. They can be used routinely throughout the plant. There could be a thousand, two thousand, three thousand applications of these terminations at a particular plant. To list each and every one of these applications on the Master List would not

be a simple matter -- it wouldn't be practical. Instead, in accordance with accepted practice, one would list the materials of fabrication and demonstrate from the qualification process that the materials were qualified to perform their intended function under the extremities of a design basis accident. The application of the termination, the technique of putting the termination together, and the wrapping of it, were always considered a matter of skill of the electrical craft. The qualification of the material, combined with skill of the craft, qualified the termination.

I am aware that many other utilities interpreted 10 CFR 50.49(d) in this manner. Moreover, the majority of utilities qualified terminations as APCo did (e.g., qualification of the materials for the anticipated environment, use of approved installation procedures, and reliance on skill of the craft).

Q78. In your opinion, were the V-type electrical terminations identified at Farley operable and/or qualified?

A: Each of these terminations was operable and qualified in the as-found condition.

First, APCo maintained qualification documentation that qualified the materials used for sealing connection. In addition, Wyle Test Report 17859-02 (APCo Exhibit 27),

documenting the tests performed for Commonwealth Edison Company, provided qualification data on V-type termination configurations using the electrical tape sealing system employed by APCo. Further, the qualification of each of the V-type termination configurations identified at Farley was confirmed, prior to the EQ inspection in November 1987, by tests performed for APCo by Wyle Laboratory. These tests, documented in qualification Test Report 17947-01 (APCo Exhibit 39), dated October 8, 1987, demonstrated explicitly that each of the V-type termination configurations was, in fact, qualified to the appropriate environmental parameters for Farley.

In my opinion, the above data provides reasonable assurance that V-type terminations at APCo were qualified and would have performed their intended safety function as demonstrated by test. Documentation confirming this was available by the completion of the EQ inspections. Moreover, this documentation should only be viewed as confirmatory. As I have stated, as of the EQ deadline in November 1985, I believe it was sufficient for APCo to know that the materials utilized were qualified (they were) and that the terminations would be made by electrical craft consistent with their reasonable skill.

In your opinion, when APCo was creating these terminations and qualifying them prior to the EQ deadline, did they act in conformance with prevailing industry practice?

A: Yes.

Q80. Based on your knowledge and experience, were detailed walkdowns of splices and/or terminations the norm in the industry prior to the EQ deadline?

A: No. A detailed walkdown of a termination would have accomplished very little. You would see an area where two cables were butted together and terminated. Other than that, you would not be able to tell what was under the tape wrap and you would not be able to tell what the material of fabrication was, unless the tape or material were marked in a fashion similar to cable jackets. It is not usually the case for splicing tape to be marked in this fashion. A requirement for detailed walkdowns of terminations doesn't make any sense to me.

Q81. To the best of your knowledge, were there any licensees who, prior to November 30, 1985, conducted detailed walkdowns of splices and terminations to clearly identify in each case the material and the configuration?

A: No. Other than identifying that there was a splice at a particular location or that a splice was used to terminate a certain cable to a certain piece of equipment, no. Nobody was performing detailed walkdowns of splices prior to the deadline. For the majority of utilities, a generic EQ package would be typical. For example, at Farley the qualification for a termination was either by tape splice or by terminal block. If the former, a qualified material was provided. If the latter, a qualified block was specified. These were the termination techniques deemed acceptable for Farley applications. This was a standard industry practice.

Q82. In the Order imposing the civil penalty, the Staff relies on two IE Circulars in claiming that APCo had prior notice that splices and terminations were an issue of concern. Do you remember splices or terminations ever being identified as an EQ issue prior to November 30, 1985?

A: IE Circular 78-08 (APCo Exhibit 4) was the predecessor to IE Bulletin 79-01B. It was probably the first document issued by the NRC alerting industry of the NRC's interest in equipment qualification. The Circular identified generically different types of equipment and applications that should be considered for qualification. Terminations associated with certain electrical penetrations were among the issues identified. However, by no means did the Circular specifically identify

all splices or terminations. From this very specific and tentative notice, one should not conclude that APCo should have conducted detailed walkdowns of all terminations. That, historically, would simply not be accurate. Moreover, this is especially true where, as here, the licensee specifically considered EQ for terminations and provided a qualified material. APCo clearly and appropriately believed that their termination application, utilizing the Okonite T-95 tape, was different than that identified in Circular 78-08. There would have been no reason for it to take any other action to address splicing materials based on Circular 78-08.

Q83. Let's turn to IE Circular 80-10. Are you familiar with that Circular?

A: Yes, I am. IE Circular 80-10 (APCo Exhibit 41) discusses a specific event at the H.B. Robinson plant that involved use of the wrong class of insulating material in reconnecting the leads of a containment fan cooler.

Q84. What is your recollection of the specifics that led to the issuance of Circular 80-10?

A: At Robinson there was an insulation class deficiency. In performing maintenance, the licensee used the wrong insulation. You can have an R-insulation, an RH-insulation,

and a B-insulation; each one has a different capability with respect to its ability to perform in various temperature and radiation environments. Simply stated, the insulation class defines the temperature range and radiation range for an insulating material. If an application calls for an RH-insulation, one should not substitute a B-insulation. This is a totally different condition than occurred at Farley.

Q85. Circular 80-10 also seems to emphasize, and I quote, "the importance of properly installing and maintaining environmentally qualified equipment clearly requires more than a review of records." (APCo Exhibit 41). Do you believe that statement should have given notice to APCo that they needed to conduct more detailed walkdowns of splices and/or terminations?

A: No. The Circular makes no mention of walkdowns and does not list walkdowns as a recommended action. This follows because -- to address the concern identified in the Circular -- a walkdown would have served no purpose. A walkdown of a termination would not give you any insight as to the insulation class. That is a matter of records. The records will show that a tape is a class B-insulation or a class RH-insulation; looking at the termination will not tell you the difference, unless the information was clearly marked on the name plate. So I do not believe that this Circular can be

read fairly, in context, to have prompted detailed walkdowns of terminations.

Q86. Are you saying that Circular 80-10 was only admonishing licensees to look at those areas which would have revealed something about cable insulation?

A: Yes. The broad quotation you referenced above regarding maintenance of EQ, in an appropriate historical context, did not provide notice that more detailed walkdowns were necessary. This is particularly true when applied to splices and terminations.

Q87. Following the issuance of IE Circular 80-10 are you aware of any licensees that began conducting walkdowns to specifically look at the configuration of splices and terminations?

A: No.

Q88. Do you agree with the Staff that APCo clearly knew or should have known, prior to November 30, 1985, that a qualification deficiency existed with regard to V-type electrical tape terminations?

A: No. In my opinion, APCo had taken reasonable steps to assure qualification of tape terminations used at Farley as of

November 30, 1985. On November 30, 1985, APCo possessed vendor documentation that provided reasonable assurance that the Okonite splice/termination sealing system, when implemented in accordance with the approved instructions or reasonable skill of the craft, produced a qualified connection. Given the instructions for applying this system in accordance with the qualified notes and details, and when considered in conjunction with routine checking in accordance with established procedures, APCo would have had a reasonable basis to believe that it had adequate qualification for the tape terminations at Farley.

Moreover, I am unaware of any NRC issuances or other communications to APCo which would have provided prior notice of either the existence, or likelihood of existence, of terminations not in conformance with approved designs. None of the Staff's generic communications referenced in either the letter transmitting the NOV, or the Order, direct attention to potential concerns regarding misapplication of tape splice/termination configuration details.

Q89. Are you familiar with the methodology used by Wyle during its confirmatory testing for APCo in 1987 on the installed Farley splices?

A: Yes. The test specimens were taken out of the plant and sent to Wyle, a well-known test laboratory. An IEEE-323 type test was performed on representative samples. In other words, a full blown qualification test was performed on each sample termination.

Q90. Do you have any opinion as to whether the tested terminations adequately bounded the terminations that existed at the plant?

A: Approximately 14 splices were tested, and I think they were a reasonable representation. There may be as many as a thousand splices/terminations at Farley, and 14 is a reasonable representation. It is important to recognize that, by comparison, when vendors EQ test their own equipment, they test one piece of equipment for everything supplied throughout the nuclear industry. Fourteen specimens bounding installed applications at Farley is a reasonable test sample.

Q91. This subsequent testing by APCo was completed in October of 1987. Do you believe that the documentation provided by Wyle in the test report was sufficient documentation to establish qualification of the V-type splices as found in Farley?

A: Yes. In fact, in my opinion the documentation in existence before APCo performed the test sufficiently demonstrated qualification of the splices. The further testing by Wyle of

the actual installations from the Farley plants certainly enhanced that file in support of qualification.

Q92. In your opinion was the condition described by the Staff in the Notice of Violation safety significant?

A: No. These V-type terminations would have performed their intended functions if called upon to do so during a design basis event. Note also that APCo properly exercised its engineering judgment in evaluating these terminations upon identification of the issue. They reached the conclusion that the splices were operable prior to confirmation by the Wyle Laboratories testing.

V. 5-TO-1 PIGTAIL TAPE SPLICES (HYDROGEN RECOMBINERS)

Q93. Let's turn to the issue of the hydrogen recombiner, and more particularly the 5-to-1 pigtail splice that was utilized on the hydrogen recombiner power leads. Can you explain this issue to me briefly?

A: As I understand it, the Staff is alleging that the 5-to-1 pigtail tape splice configuration was not a qualified configuration because a specific EQ file was not established for that configuration.

Q94. What is your understanding of the documentation that existed for this equipment at the time of the inspection?

A: There was a qualification report supporting qualification of the Westinghouse hydrogen recombiners as installed at Farley. (APCo Exhibit 44). The qualification file was established by Westinghouse under their topical EQ program, which program was approved by the NRC. The report provided to APCo by Westinghouse was based on testing in accordance with the latest requirements at that time and demonstrated that the hydrogen recombiner was qualified to perform its intended function under accident conditions. The recombiner at Farley was installed as tested, including a 5-to-1 termination between the heater leads and the field power cables. A 5-to-1 termination is shown in the Westinghouse test report. Correspondence with Westinghouse later clarified the installation details as being similar to the tested configuration.

Q95. Is the condition described in the NOV appropriately characterized as a violation of 10 CFR 50.49?

A: No. On November 30, 1985, APCo had an approved EQ program and had a qualification file for the hydrogen recombiner. The recombiner had been installed at Farley, under supervision of Westinghouse representatives, in accordance with Westinghouse

installation instructions. The splice configuration for the connection of the heater leads to the field power cable was made in a 5-to-1 configuration as called for by the equipment design and was made utilizing qualified Okonite T-95 tape material. No more needed to be done from an EQ perspective.

Further, the NRC Staff had approved the Westinghouse recombiner qualification tests, by letter dated May 1, 1975 (Vassallos to Eicheldinger) as demonstrating qualification under IEEE 344-1971 and IEEE 323-1971. (APCo Exhibit 39). APCo also maintained this letter in its qualification files. In addition, by letter dated June 22, 1978, the NRC Staff (John F. Stolz, Chief, LWR Branch No. 1) approved the Westinghouse recombiner qualification reports. (APCo Exhibit 48). Staff acceptance of the recombiner qualification at Farley was also acknowledged in TER item 16 (Unit 1) and item 11 (Unit 2), at page 5F. (APCo Exhibits 16 and 17).

In addition to the above, the NRC Office of Inspection and Enforcement (Mr. T. D. Gibbons-Inspector) conducted an inspection of the Farley EQ installed equipment. This inspection took place on December 2-5, 1980. The purpose of the inspection was to review the installation, interface integrity, and nameplate data of Farley EQ equipment within the scope of IEB 79-01B and NUREG-0588. The Hydrogen Recombiners, along with numerous other types of safety-related

electrical equipment, were inspected. No deficiencies or violations were identified by the NRC as a result of this inspection. The details and results of the inspection are presented in the Safety Evaluation Report dated January 15, 1981. (APCo Exhibit 11).

In sum, it was reasonable for APCo to assume, in assessing qualification of its electrical equipment prior to November 30, 1985, that installation of the splice in accordance with the vendor's instructions would comply with EQ requirements, and that the recombiners (including the 5-to-1 terminations) were qualified.

Q96. Prior to the EQ deadline, was 10 CFR 50.49(d) interpreted to require that individual splice configurations be included in the EQ Master List?

A: No. The 5-to-1 pigtail splice was not required to be listed separately on APCo's EQ Master List. It was sufficient that the hydrogen recombiners were identified on the Master List

Q97. In your opinion did a violation of 10 CFR 50.49(f) exist?

A: No. My review of information provided to APCo convinces me that the splices were qualified as originally installed. The qualification file was based on an actual type-test by

Westinghouse of the hydrogen recombiner. Westinghouse provided several WCAP documents demonstrating the qualification of the recombiners. The NRC letter written by Mr. John Stolz attests to the early review and acceptance of the qualification of the Westinghouse hydrogen recombiner. Additional correspondence from Westinghouse provided clarification that the unit was tested with a 5-to-1 pigtail tape splice. In my view, the above information, as verified by APCo's subsequent testing of V-type splices, provided reasonable assurance that these connections were in fact qualified.

Q98. The 5-to-1 splices at Farley were made of Okonite T-95 material. Was this material covered by the Westinghouse tests?

A: The splice covered by the Westinghouse test was a 5-to-1 configuration. The 5-to-1 pigtail splice is illustrated in the qualification test report. The report doesn't delineate the materials for fabrication, but it is the illustration in the qualification test report that the inspectors used to identify the 5-to-1 splice in the first instance. After APCo pursued the issue based on the questions by the NRC inspectors, Westinghouse informed APCo that Westinghouse had used a Scotch brand (Scotch 70) tape for their 5-to-1 splices. (APCo Exhibit 46). Scotch 70, like Okonite T-95, is a

qualified material. In any event, APCo had a file on the Okonite T-95 tape (discussed earlier) and the test report from Westinghouse on a 5-to-1 configuration. These should have been sufficient to lead the inspector to conclude that the Westinghouse recombiner was qualified and that the termination, using skill-of-the-craft splicing techniques and Okonite T-95 material, was qualified as well.

Q99. Would there have been any other way to install these terminations other than in a 5-to-1 arrangement?

A: No. The terminations were installed in accordance with the manufacturer's recommendation, under the supervision of a Westinghouse on-site representative. The 5-to-1 arrangement was mandated by the design of the equipment (five heater leads per power cable) and by the installation instructions.

Q100. Would it matter whether each of the five splices in one 5-to-1 termination was of a V-type or in-line configuration?

A: In my opinion it would not. As I discussed earlier, the specific configuration is a matter that has been left to the skill of craft, assuming the qualification of the materials being used. Again, the craft people have been trained on how to make splices that resist moisture intrusion. They must be afforded some latitude to make connections that fit the field

conditions. In view of the fact that the electricians used a qualified material, Okonite T-95, there should be no question but that the installation was adequate. This of course was later confirmed by the Wyle testing of V-type terminations.

Q101. Do you agree with the Staff that APCo "clearly knew or should have known," prior to November 30, 1985, that the Westinghouse hydrogen recombiner power cable splices were not qualified?

A: No. It is my opinion that APCo took appropriate steps to qualify the hydrogen recombiners prior to November 30, 1985, consistent with the Staff's expectations at the time. APCo, therefore, should not be held to a "clearly should have known" standard for any potential EQ deficiency related to the hydrogen recombiner power lead splices on November 30, 1985.

Further, I am unaware of any notice disseminated to the industry or otherwise provided to APCo prior to November 30, 1985, that would have alerted APCo to question the hydrogen recombiner power lead splice qualification. I am also unaware of any earlier specific actions by other licensees that would have identified these splices as a qualification concern. To the contrary, I am aware that, after APCo's inspection, NRC inspectors identified at least two other licensees in Region II that had <u>not</u> addressed this question to the satisfaction of the inspectors.

Even apart from the fact that there was no generic communication identifying this as a concern, APCo had the NRC letter in its files confirming that the hydrogen recombiner was in fact qualified. This is another example of a change in the inspectors' philosophy or change in understanding from qualification as performed and reviewed in the past. In years past, the Staff had accepted the Westinghouse recombiners as qualified. Suddenly, the Staff's previous reviews were no longer valid and the Staff was focusing on the 5-to-1 power termination. The splice was more than adequate, and the qualification status of the hydrogen recombiner had been previously accepted. APCo could not have known that the Staff would have a change of position with regard to its treatment of the hydrogen recombiner.

If the Staff characterizes this as a documentation issue only, it is still not an issue APCo clearly should have known. This issue did not need to be addressed in the documentation prior to the deadline. To the extent it might now be necessary, there has been a change in Staff position resulting from evolving documentation expectations.

Q102. Even if the Staff determines that a documentation violation existed, did the information or data APCo obtained or developed at the time of the inspection or shortly thereafter demonstrate that the equipment was qualified/qualifiable?

A: Yes. APCo provided additional items of information, demonstrating that APCo was justified in concluding from the engineering review of the original qualification file that the as-installed hydrogen recombiner was environmentally qualified. One item of information was the successful test of the V-type Okonite tape splices by APCo at Wyle Laboratories. (APCo Exhibit 39). (APCo also had the prior testing by Wyle on tape splices for Commonwealth Edison Company.) (APCo Exhibit 27). The report on this test provided the details and supported a determination that the tape splices would have performed their intended functions under accident conditions.

The second item of information was a letter received from Westinghouse which confirmed and identified a 5-to-1 taped splice configuration as the method of termination used during the original testing of the equipment. (APCo Exhibit 46). This information related to the actual tested configuration reported in the Westinghouse test report, and was therefore only a clarification of existing data. This was not new documentation resulting from any new tests or analyses. I believe that this information clearly confirmed that the equipment was, at all pertinent times, qualified.

Q103. Was the condition described by the Staff in the Notice of Violation safety significant?

A: No. Based on the information available at the time of the audit as well as on November 30, 1985, the hydrogen recombiner was, by the Staff's own admission, qualified. The splice configuration, although not specifically identified, was also qualified prior to the deadline. It was further verified, by test, that the installed configuration would have performed as intended regardless of whether the documentation existed prior to the deadline. Based on the above, there were no safety issues involved nor any risk to public health and safety because of the use of a 5-to-1 field to pigtail tape splice installed on the hydrogen recombiner.

VI. CHICO A/RAYCHEM SEALS

Q104. Are you familiar with the Chico A/Raychem seals utilized by APCo on NAMCO limit switches at Farley?

A: Yes, I am.

Q105. Can you briefly describe those seals?

A: Those seals basically consisted of a separately and previously qualified Raychem seal kit backed up with a separately and previously qualified Chico A compound. Chico A is similar to an epoxy compound. The compound was used because testing of the equipment with only the Raychem boot had resulted in a

pressure blowout of the seal. The Raychem material and seals were environmentally qualified for all other EQ parameters. The Chico A provides a satisfactory backing, preventing a pressure problem. It also provides an additional barrier to moisture.

Q106. What do you mean when you say that the Raychem seal material was "qualified"?

A: Prior to the EQ deadline, the Raychem material had been environmentally tested under conditions of high temperature, high pressure, radiation, aging, and chemical spray. The material had been subjected to the full range of IEEE 323-type testing. With the exception of the pressure anomaly, the Raychem boot had proven to be an effective moisture seal. The Chico A compound was used as an enhancement for the mechanical properties of the seal to address only the pressure situation.

Q107. As configured with the Chico A compound, in your opinion was the seal qualified?

A: Yes. In my opinion, the seal was qualified, as configured and modified by APCo. APCo had adequately enhanced the capability of the seal to contend with a pressure differential situation. All of this was done, and documented adequately, prior to the deadline.

Q108. In your opinion, did the Chico A compound provide sufficient support to address the pressure problem?

A: Yes, it did.

Q109. The NRC Staff alleges that APCo violated 10 CFR 50.49 because documentation reflecting qualification of the Chicc A/Raychem cable entrance seals was deficient. It reached this conclusion by stating, among other things, that the temperature profile used in the testing did not simulate the initial thermal shock of a loss of coolant transient. Do you agree with this conclusion?

A: No. I do not share the Staff's concern that testing did not simulate the initial thermal shock of a LOCA. The Farley environmental profile for inside containment temperature graphically shows an increase from ambient to 316°F. The thermal tested configuration began at 310°F, and thus was more severe than the actual environmental profile. In my opinion, any thermal shock or differential thermal expansion would have been more severe in the tested configuration. Based on my experience, tested configurations which are ramped steeper than the environmental peak profile temperature, as is the case here, are more conservative than the norm for testing and should have been accepted by the Staff without further concern.

Q110. One of the specific concerns raised by the inspectors, as reflected in the Staff's February 4, 1987, inspection report, was a lack of testing of potential chemical interactions between chemical sprays and the metal pipe nipple to which this seal is connected. Is that a concern that you are familiar with?

A: Yes. Apparently the inspectors were concerned that testing did not simulate these postulated chemical interactions, and that there was no written engineering analysis in the file addressing the issue. I do not believe the Staff's concern is justified. The utility was testing and evaluating the materials used in its seal, and the capability of the seal to perform its function. These types of materials are used throughout the country in nuclear power plants and have undergone chemical spray-type testing. These are not little-known materials. In my opinion, the lack of testing of this precise chemical interaction, and the absence of documented engineering judgment analysis did not render the qualification documentation inadequate or the equipment unqualified. When the question was raised, APCo looked at the corrosive potential of the pipe against the chemicals that are typically in containment. APCo decided appropriately that the potential for such effects was insignificant.

Even assuming some chemical interaction on the bonding (a point which is impliedly rejected in Raychem Test Report 58730 dated June 22, 1982 (Staff Exhibit 34), and a Sandia Lab Report [NUREG CR-2812]), the path required for significant moisture intrusion is too tortuous for one to conclude that the limit switch would not have performed its intended function. I believe that the Chico A compound, combined with the Raychem seal, would have prevented moisture from reaching the limit switch in sufficient amounts to cause a failure.

Q111. Based on your review of the documentation, was the qualification documentation in APCo's files as of November 30, 1985, adequate to establish qualification of the seals?

A: Yes. As previously noted, there is no requirement that all engineering judgments be documented in an EQ file. The governing criterion is that a reasonably well qualified EQ engineer auditing the files must be able to arrive at the same qualification conclusion reached by APCo. From my experience and from auditing numerous such files, an engineer evaluating this documentation could correctly, and easily, conclude that there was reasonable assurance that no adverse effects impacting seal bonding would be present from chemical spray on the seal configuration.

Q112. Do you agree that APCo "clearly knew or should have known" that an EQ regulatory violation as identified in the NOV had occurred by November 30, 1985?

A: No. In my opinion, APCo exercised reasonable engineering judgment by concluding that these seals were qualified prior to the deadline. Simply because the Staff reached a different engineering conclusion in 1988, and again in 1990, does not mean that APCo crossed the high threshold required by the "clearly knew or should have known" standard.

Q113. Assuming a violation existed, were the alleged deficiencies identified in the Notice of Violation safety significant?

A: No. As I have previously testified, the seals were qualified for their intended purpose. APCo's detailed evaluation and analysis transmitted to the Staff by the January 8, 1988, letter fully documents this position. (APCo Exhibit 64). The installed configuration was demonstrated to be capable of preventing moisture intrusion into the limit switches. On this basis, the safety objective of the seals would have been accomplished. Even if an EQ documentation deficiency existed, it would not have created a safety significant issue since the seal would have performed as intended.

Q114. Have you read the testimony provided by the NRC Staff with respect to the concerns relating to the Chico A/Raychem seals?

A: Yes, I have.

Q115. Do you agree with the statements made by Mr. Wilson and Mr. Luehman?

A: No, I do not agree with their statements and conclusions.

However, before I delineate my objections, I would like to re-emphasize the nature and application of the Chico A/Raychem configuration. Alabama Power Company chose, at a time when no effective moisture seal was widely available or available to it, to modify an environmentally capable material (i.e., Raychem) to serve their purpose. Efforts to utilize a Raychem boot as a seal encountered a differential pressure concern which would violate the Raychem boot as a boundary. Therefore, experience and ingenuity dictated that a solid backup material, providing support to the Raychem, would eliminate the pressure differential concern and facilitate an adequate moisture boundary. Raychem heat shrink material has been successfully tested time after time against the most stressful environmental conditions postulated to occur following a design basis event such as an LOCA. These successful tests have demonstrated the capability of the

Raychem material and configuration to well beyond the enveloping requirements of the Farley environmental conditions. The addition of the Chico A compound was only intended to enhance the mechanical property of the total configuration. The seal itself has no electrical function to perform (although Chico A has good electrical characteristics) but instead was installed to provide a mechanical boundary to prevent significant moisture intrusion, thereby, preserving and protecting the electrical characteristics of the end device (in this instance, a limit switch).

Having said this, the points which I most vehemently disagree with in the Staff's testimony are:

(1) The Staff at several points draws unsupported conclusions that the thermal expansion and contraction of the various materials would negate the effect of the seal. The Staff is correct in its assessment of the normal conductivity coefficients of the various materials; however, they misapply the facts and consequently arrived at the wrong conclusion. If the metal were to expand, as it should, and the Raychem material shrink, as it will, the seal itself would become more positive. Furthermore, as stated above, the intent of the Chico A/Raychem seal was only to prevent significant moisture intrusion and not total exclusion.

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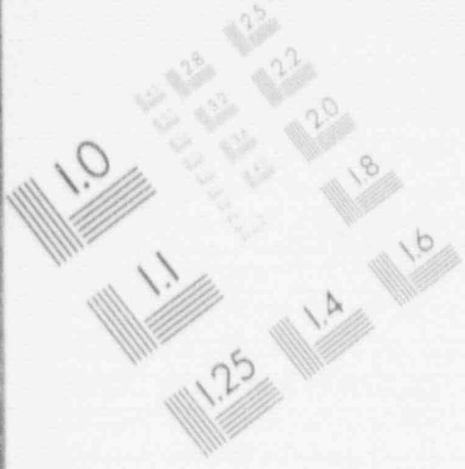
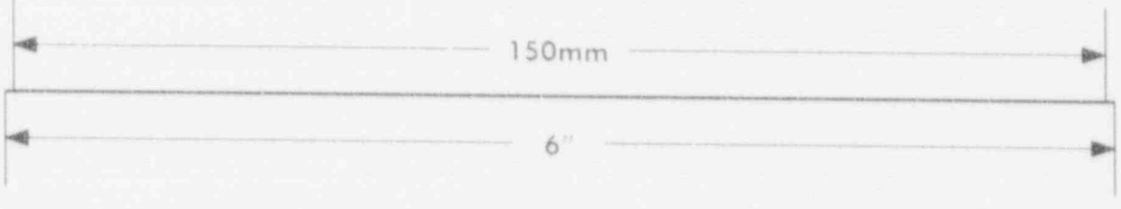
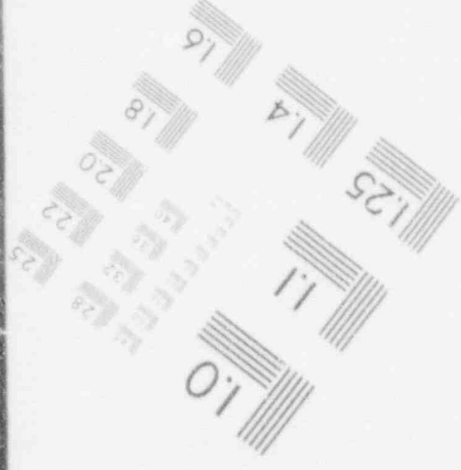
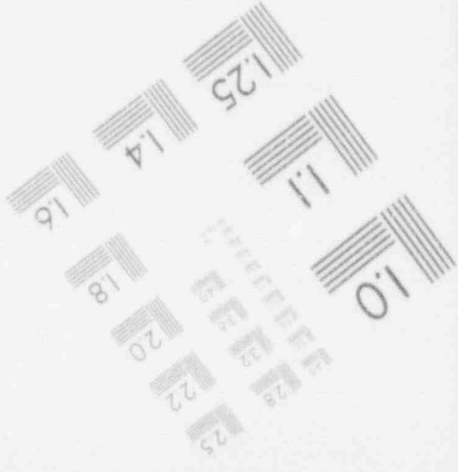
IMAGE EVALUATION TEST TARGET (MT-3)









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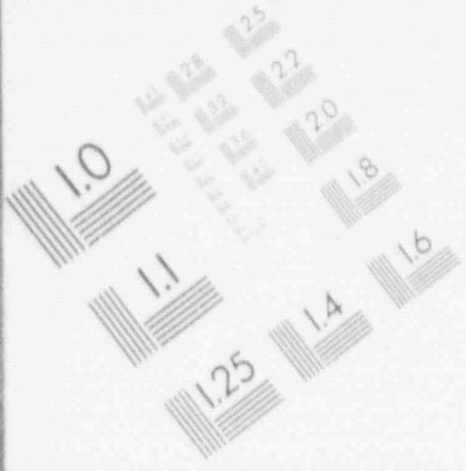

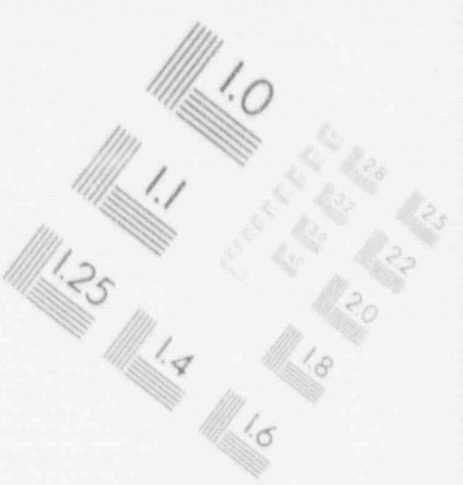

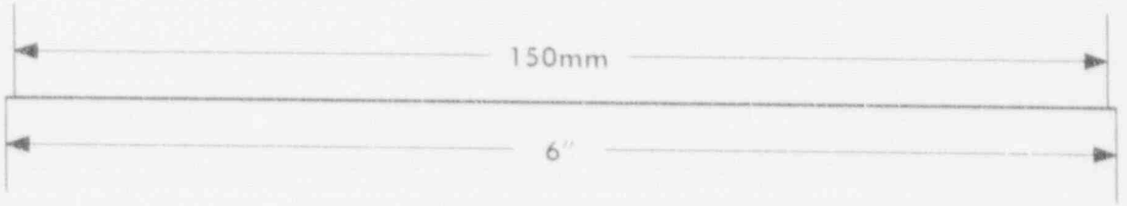

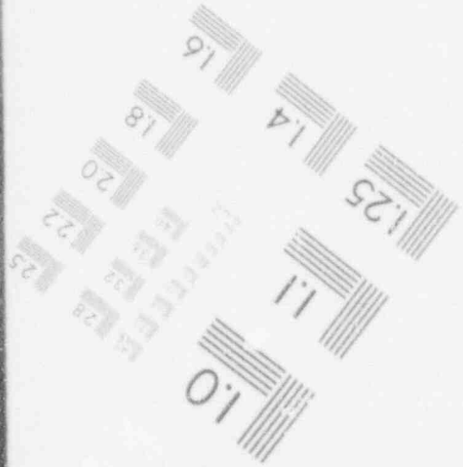

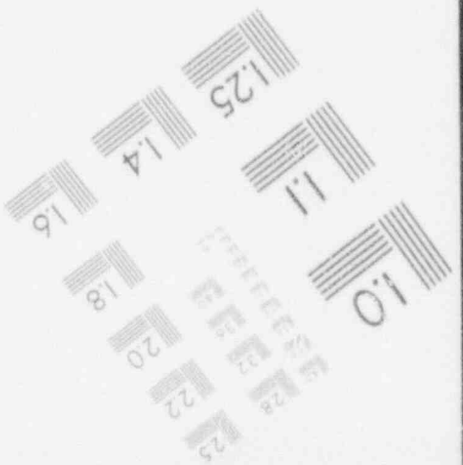

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IMAGE EVALUATION
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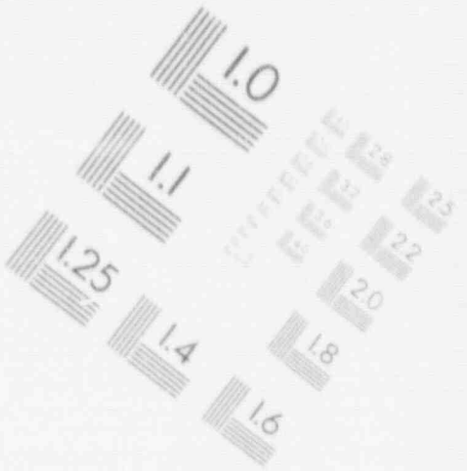

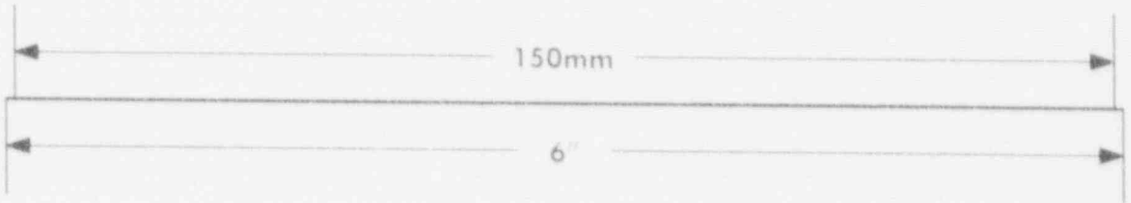

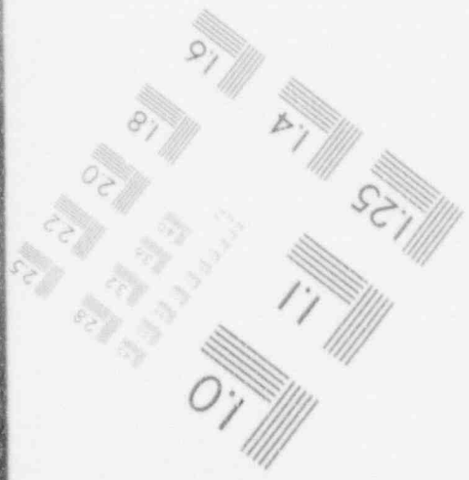

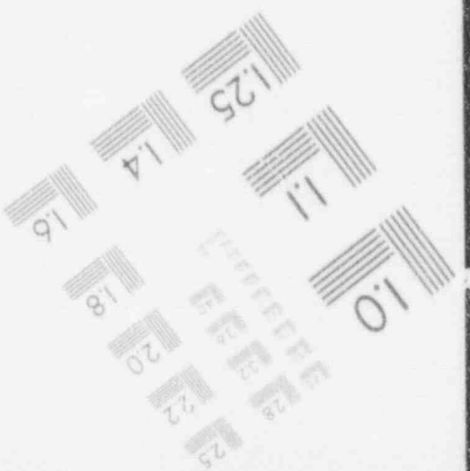

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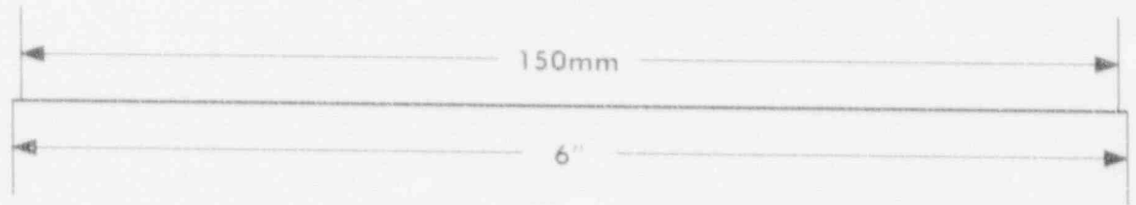
IMAGE EVALUATION TEST TARGET (MT-3)



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(2) Page 29 of the Staff's testimony alleges that I performed an incomplete review of the materials, or that I did not adequately understand those documents. Contrary to Mr. Wilson's opinions, the statements made in my 1988 affidavit as well as in this testimony are based on fact and consideration of all of the documents available, and are not based on speculation or the reading of partial or selective documents.

Information relating to the testing of the Chico A/Raychem configuration was presented to the Staff on several occasions. Several tests were performed, including preheating the chamber to 300°F and introducing the specimen, thereby providing an extreme thermal shock transient to the specimen. This information was presented to the Staff as well as Mr. Wilson in the Bechtel test report dated December 30, 1981, transmitted by Bechtel letter AP-6704 to Alabama Power Company (dated December 31, 1981). (APCo Exhibit 62).

(3) On page 34, Answer to Question 20, Mr. Wilson makes a statement that Alabama Power never addressed his "ten concerns" as originally spelled out in the 1988 inspection report. To the contrary, Alabama Power Company provided, on several occasions, written and oral responses to his concerns. We attempted then, as now, to address each and every concern. We have not changed our technical positions. Mr. Wilson's

pre-judgment of the seal configuration has apparently clouded his judgment and understanding of what constitutes an acceptable mechanical moisture seal.

Q116. Does the Staff's testimony change your conclusions regarding these seals?

A: No. The Chico A/Raychem seals developed by Alabama Power Company were fully qualified based on 1981 (and earlier) testing. Sufficient documentation for any reasonable engineer existed prior to the deadline. APCo attempted to address Mr. Wilson's broad and unsupported concerns at the inspection and during subsequent meetings, and no further analyses or documents were required for the EQ files.

VII. TERMINAL BLOCKS

Q117 Can you describe the terminal blocks issues raised during the Farley EQ inspection?

A: Several issues arose with respect to terminal blocks during the evolution of equipment qualification, but the one that became important to this alleged violation concerns the instrument accuracy effects of terminal blocks used in instrument circuits, or instrument "loops." In 1984, Sandia National Laboratories first reported significant terminal

block instrument accuracy problems. Sandia hypothesized that a moisture film on the block could create a substantial loss of current. If the terminal blocks were used in an instrument circuit, this "leakage current" could contribute to an instrument inaccuracy.

Q118. When did that moisture film issue first arise?

A: As I stated, the issue arose in the mid-80's. The very first indications were reported by Sandia National Laboratories, a contractor for the NRC, in 1984. Sandia had tested terminal blocks since the early 1980's, but in 1984 they tested some particular terminal blocks identified as being subject to the hypothesized moisture film phenomenon. Again, this film is said to diminish the capability of the terminal block for use in instrument circuits under high temperature, high moisture conditions.

Once the Sandia test results were made public, the NRC issued Information Notice 84-47 (APCo Exhibit 51) stating that use of terminal blocks in instrument circuits should be evaluated closely. This notice, which came out in June 1984, was the first generic notice of the issue.

Q119. Was this the first time instrument accuracy, or at least the contribution of terminal blocks to instrument accuracy, was ever considered to be a significant problem?

A: Generally, that is correct. Prior to this time, when considering instrument accuracy, the industry and the NRC Staff looked at each individual instrument rather than the total network. For example, for a transmitter, the rating on the equipment was normally given in percent accuracy, and the transmitter would be either a quarter-percent instrument or a half-percent instrument. Basically, with standard temperature and pressure on a bench, that instrument should be capable of maintaining an accuracy of plus or minus a quarter percent, or half percent, over its full range. As temperature and humidity increase, the accuracy drifts, so that a quarter percent instrument when exposed to 300°F may be as much as 5 to 6 percent inaccurate, but still within the tolerance level.

When the industry and Staff looked at instrument accuracy in the early 1980's, it was looking at the capability of the individual instrument sensor to determine whether a quarter-percent instrument could remain within an 8% inaccuracy. In other words, the Staff considered whether it could be demonstrated during a loss of coolant accident that the instrument would operate within this span. That is as far as our review went. We looked at every instrument to make sure

that accuracy was accounted for in this way. We did not look at instrument accuracy effects of loop components such as cables and terminal blocks.

Q120. How did this approach to instrument accuracy change over subsequent years?

A: As alluded to above, during the early to mid-1980's, virtually everyone -- the NRC, its consultant, and licensees -- addressed the instrument accuracy issue by examining instrument sensors; the implicit assumption being that potential inaccuracies due to other individual components of the circuit (e.g., splices, penetrations, cables, terminal blocks) were insignificant and would not contribute to overall loop inaccuracy as long as the component performed satisfactorily during the testing. Consistent with this approach and assumption, APCo had tested its terminal blocks and determined that they would not fail due to environmental conditions. There were no major concerns associated with insulation resistance and leakage current effects on instrument accuracy due to the blocks.

Subsequently, instrument accuracy became an "evolving" technical issue that needed to be addressed by industry as a generic matter. By 1984, industry had initiated efforts to address the instrument accuracy issue through Emergency

Operating Procedure (EOP) set points and error margins. This effort did involve some consideration of accuracies of terminal blocks. APCo -- through Bechtel and Westinghouse -- proceeded on the same path as did others in the industry. In early 1984, APCo had initiated an EOP set point effort. APCo was engaged with Westinghouse in addressing terminal block instrument accuracy through EOPs when they met with the Staff and when Information Notice 84-47 was issued. For "loop accuracy" issues, these efforts continued well into 1986 and 1987 and in fact continues today.

Q121. To the best of your knowledge was the Staff made aware of what APCo was doing in the area?

A: Yes. In response to IE Bulletin 79-01B, APCo had notified the Staff that they were using the States terminal blocks in instrument circuits. In 1984 the Staff completed its evaluation, through Franklin, of several EQ files and test reports for the Farley plant, including the States terminal block file. Franklin approved the qualification of the States terminal blocks. (APCo Exhibits 16 and 17).

APCo in early 1984 had also documented to the Staff its plan to address instrument accuracies for EOPs. (APCo Exhibit 20). Therefore, when Information Notice 84-47 came out in 1984 on the use of terminal blocks in instrument circuits, APCo

properly assumed that it was addressing the issue in a manner acceptable to the Staff. APCo had previously declared its use of terminal blocks in instrument circuits and had determined that those terminal blocks were neither affected by moisture filming or subject to loss of current to an extent which would create gross inaccuracies. Leakage current/insulation resistance data was being supplied through Bechtel to Westinghouse to perform the loop accuracy calculations.

Q122. Were the loop accuracy calculations still being conducted as late as 1987?

A: Yes. That is correct, for both APCo and the industry.

Q123. Why did it take until 1987 to complete those loop accuracy calculations?

A: It is a very long process and one which a lot of utilities were undergoing. The only people who were truly qualified to do a total loop accuracy calculation were the reactor vendors. The methodologies and the data needed to be developed. Scheduling was also a factor. These are very time consuming and expensive studies.

Q124. Was APCo reasonable in continuing upon its path of calculating EOP set points when IN 84-47 came out?

A: Yes. I believe that IN 84-47 alerted licensees to a potential problem related to the accuracy effects of terminal blocks. However, APCo clearly knew where and when they had to use the instruments for which the terminal blocks were in the circuits. As I'll discuss below, this provided a reasonable basis to believe the issue was not significant for Farley. They also reasonably assumed, based on their meetings with the Staff in early 1984, that they were addressing the EOP/accuracy issue adequately. I believe that their actions were reasonable.

Q125. Are you familiar with the details of what APCo was doing at that time to identify instrument accuracy contributions of terminal blocks?

A: Yes. As APCo explained to the Staff in 1984, APCo took data from a Wyle test report on the States Type NT terminal blocks and utilized that data as the basis for instrument accuracy contributions. That data was provided to Westinghouse for the EOP calculations.

Q126. Are you aware of the Staff's subsequent complaint (during the inspection) that the Wyle test for the Type NT terminal blocks

did not measure insulation resistance or leakage current at LOCA conditions?

A: Yes.

Q127. In your view, was that a significant deficiency in what APCo was doing?

A: No. Had Alabama Power Company been planning to use their instrumentation and terminal blocks from the onset of an accident all the way through to recovery from the accident, I might say that insufficient data existed to qualify that type terminal block for the time from the onset of the accident to recovery. However, APCo uses their instrument circuits in only the first and third of three phases of an accident.

The first phase would occur at the onset of the accident from time 0 to time 20 seconds. APCo uses these terminal blocks (or more aptly, the instrument circuits) in that time period, during which you go from the normal operating ambient temperatures inside containment to high pressure, 300°F temperatures, high humidity, and chemical spray. Typically, instruments used to detect the necessary parameters will cause an automatic function to occur before the instruments see the high temperature, high pressure, high humidity or the chemical spray. Therefore, in reality during the first portion of the

event the terminal blocks are not exposed to the accident environment, and they don't operate in an inaccurate mode.

The second portion is the steady state, high temperature, high pressure, high humidity accident portion of the curve. During this phase of the accident the terminal block is most subject to failure or inaccuracy. (Failure is not an issue for the Farley blocks. That had been demonstrated in LOCA tests.) However, the instruments are not used by the Farley operators during this period of time. Therefore, in my opinion, measured instrument accuracies for this period of time are completely unnecessary to qualify the Farley terminal blocks for use in these instrument circuits.

The third phase of the accident scenario is the recovery phase, approaching long-term cooling, during which temperatures are brought back down, almost back to ambient conditions. Also, during this phase, all of the equipment goes through a drying-out process. Qualification testing has demonstrated that leakage current or insulation resistance on cables and terminal blocks is recovered during this time, so that any associated inaccuracies diminish. This third phase, called long-term post-accident monitoring, is the other period during which instruments with terminal blocks are used at Farley. During the first part and the last part of an accident, as described above, the instruments are relatively

unaffected by the lower insulation resistance and loss of current.

Q128. Was this explained to the inspectors during the inspection?

A: Yes, it was. During the inspection, David Jones and I met with one of the inspectors. The inspector was an NRC contractor from Sandia National Laboratories. We explained the APCo use and application of terminal blocks and the inspector indicated that our response seemed reasonable but he would like to further discuss it with Mr. Jacobus when he arrived. The next day, David Jones and I met with Mr. Jacobus. At that time he also agreed that the scenario we presented sounded plausible and reasonable. Then, during the daily exit meeting, the Staff team leader identified terminal blocks and instrument accuracy as an outstanding concern. I asked Mr. Jacobus about his previous acceptance. He denied ever stating that the APCo scenario had merit.

Q129. Was any other information presented to the inspectors during the audit with respect to instrument accuracy?

A: Yes. On the last day of the audit we presented documented evidence from each instrumentation file showing that each instrument at issue, including those that contained integral terminal blocks, performed within their specified accuracy

requirements during accident testing. Based on the actual intended use of the instrumentation installed in the Farley units, this information should have further satisfied the inspectors that the terminal blocks associated with the instrumentation at Farley would have performed their pre-accident exposure and post-accident functions. It follows that peak LOCA insulation resistance data was unnecessary.

Q130 Are you familiar with subsequent Staff positions on this issue at the inspection and subsequent enforcement meetings?

A: They apparently did not believe APCo's position on when the instrument circuits would be relied upon by operators. I cannot explain what, if anything, was the technical basis for their position. As a matter of fact, subsequent to the inspection, and subsequent to the enforcement conference, additional data generated by Westinghouse attests to the fact that what we portrayed during the inspection was indeed correct. Undoubtedly, we were conservative in our estimates.

Q131. Was any correlation ever done that you are aware of that showed the particular instrument circuits where these terminal blocks existed, and when the instruments would be required to operate?

A: Yes. APCo, Bechtel, Westinghouse and I put together an evaluation, a scenario, for a technical meeting with the Staff. We presented this scenario to the Staff. They did not accept it. One Staff member argued only that the blocks had to work all of the time and that the instruments could not have a "blind spot" when going through an accident.

Q132. And you don't agree with that position?

A: No I do not.

Q133. Even though the instruments would not be required during peak LOCA conditions, are you aware of anything that APCo did to address temperatures, insulation resistance, or leakage current values?

A: Even knowing that their instruments would not have to perform any automatic functions during peak LOCA conditions, APCo took insulation resistance data for Connectron terminal blocks tested by CONAX. By similarity, they extrapolated that data for use in their EOP accuracy calculations for the States and General Electric terminal blocks. As I stated, the data was not at peak LOCA condition, but such data was not necessary.

Q134. Are you aware of any analysis by APCo to address the similarity between the Connectron and States terminal blocks with respect to design and materials?

A: Yes. An analysis was performed. APCo relied upon similarity of size, shape, and function. In my opinion, APCo was justified in concluding for EQ purposes that there was a gross similarity between the Connectron blocks, the States blocks, and even the General Electric terminal blocks at issue.

Q135. Would it make a difference that the Connectron terminal blocks used a step-type design as opposed to the straight configuration used in the States terminal block?

A: Based on my engineering judgment and experience, I believe that these blocks are similar enough for one to assume that their behavior will be the same. I've been involved with the testing and application of terminal blocks since the early 1970's. I was on-hand for the Staff in the 1974-75 time frame when they first started testing exposed terminal blocks. I have been involved with terminal blocks ever since. The physical arrangement of the block and the physical features of the block are relevant. The higher the fins, the more effective a terminal block will be in preventing shorting from terminal to terminal. However, with respect to external moisture films and resulting leakage currents, I believe the

physical differences between these terminal blocks are not significant.

Q136. Based on your judgment and your experience, do you have an opinion as to the adequacy of the documentation of the APCo/Bechtel analysis of similarity between the blocks?

A: In my opinion, the EQ file included an adequate write-up on similarity. This was in the file before the audit. To a reasonable engineer versed in EQ, there was sufficient auditable documentation.

Q137. In your opinion, were these States terminal blocks used at Farley qualified at the time of the inspection?

A: Yes. I think that all of the terminal blocks used in instrument circuits at Farley were qualified for their applications in accordance with 10 CFR 50.49.

Q138. Does this conclusion include not only States Type NT and ZWM terminal blocks, but also General Electric (GE) Model CR151B terminal blocks?

A: Yes. These conclusions also apply to the GE CR151B terminal blocks. The same evolving instrument accuracy issue and the same basic underlying technical issues applied to these

blocks. There was a basic technical disagreement on this issue just as for the States models. The issue concerned the instrument accuracy contribution of the terminal blocks, and particularly the instrument accuracies as measured (or calculated) for peak LOCA conditions.

Q139. Are you satisfied with APCo's analysis of instrument accuracy effects of the GE CR151B terminal blocks?

A: Yes, for the same reasons as discussed above. These terminal blocks also are utilized in instrument circuits not relied upon by operators during peak LOCA conditions. Moreover, these instrument circuits were included in the EOP set point study. APCo utilized the same conservative peak LOCA insulation resistance data for these blocks -- based on similarity to the Connectron terminal block tested by CONAX -- for input into the loop accuracy calculations as it had for the States terminal blocks. I believe this approach was acceptable.

Q140. For the GE CR151B terminal blocks -- putting aside instrument accuracy -- was there an otherwise adequate EQ file?

A: Yes there was. The terminal blocks were addressed as part of the GE electrical penetration EQ file. As I recall, at the time of the audit APCo was not readily able to locate the

file. However, this administrative matter in my opinion should not be treated as an EQ deficiency. The terminal block information was located in the qualification file for the penetrations.

Moreover, at the time of the audit I was personally aware of the existence of the test report qualifying GE CR151B terminal blocks from my general EQ experience. (APCo Exhibit 58). I know that several of the Staff inspectors at the audit were aware that the GE CR151B block had been qualified. We had discussed the matter at another licensee's EQ audit. The Farley environmental conditions were clearly bounded by this pre-existing test report. The Staff's own EQ enforcement policy allowed that documentation deficiencies -- where documentation was known to exist -- would be treated as insignificant. (APCo Exhibit 2).

Q141. Did you prepare any additional information for the NRC Staff with respect to terminal blocks?

A: Yes, I did. I prepared a document which was submitted to the NRC by APCo letter dated January 8, 1988. (APCo Exhibit 64).

Q142. What was the nature and substance of that information?

A: I had compiled a tabular summary of terminal block performance based on my review of twenty-eight test reports of terminal blocks exposed to LOCA or design basis event environments.

Q143. What was the purpose of this report or summary?

A: The data presented in the report demonstrates that terminal blocks used in the APCo applications, that is pre-accident exposure and post-accident long-term cooling, were capable of performing their intended functions. The lowest recorded insulation resistance was on the order of 1E5 ohms. This is a value Westinghouse supported during the audit and during the enforcement conference.

Q144. Have you reviewed the Staff's testimony with respect to terminal blocks?

A: Yes, I have, with particular emphasis on Mr. Jacobus's testimony on page 17.

Q145. Do you agree with the positions and conclusions of that testimony?

A: No, I do not. The Staff's testimony and my January 1988 report are simply looking at two different things. In my report, I was not looking at IR data for peak LOCA conditions.

As I stated previously, if the APCo terminal blocks were to be used during the peak conditions of the accident, the Staff's assessment would be correct and justified. Mr. Jacobus cites in his testimony deficiencies in the test reports and the terminal block performance. However, these deficiencies and performance anomalies occur at temperatures and times beyond the use and applications intended and stated by APCo. He further goes on to analyze other test reports and data relating to the performance of the terminal block in the actual accident profile (i.e., high temperature), well beyond the time in which the APCo terminal blocks would have performed their functions.

Q146. Do you have any other comments about the Staff's testimony on this issue?

A: Yes. On page 19, the last paragraph, in the Answer to Question 16, Mr. Luehman states that my report submitted by APCo on January 8, 1988, was not utilized in consideration when the Staff cited APCo for the terminal block violation for reasons such as (1) the report was technically flawed as discussed by Dr. Jacobus and, (2) the NRC will not consider for enforcement purposes refinements on operability arguments or after-the-fact testing. My previous answer discussed the technical merits of the information provided. I want to point out here that I disagree with Mr. Luehman when he states, in

substance, that my report was refinement of an operability argument and should not be a valid reason for mitigation consideration.

APCo did not refine its operability requirements as a result of the Staff's inspection. APCo has maintained from the inception of its EQ program and in discussions with the NRC, prior to, during, and after the inspection, that the terminal blocks installed at Farley would be required at the onset of the accident and not again until post-accident long-term cooling. It is the Staff and its inspectors who have refused to consider the viability of these arguments. The reports and analyses generated and submitted after the audit were only prepared to further clarify for Staff reviewers a position that APCo had articulated and maintained throughout their interactions with the NRC. Moreover, these were not analyses and documentation that needed to be in an EQ file. They simply rebutted an apparent Staff misunderstanding or unsupported position. Mr. Luehman's logic would lead to the result that a licensee could not present its case in writing without, in so doing, creating a documentation violation (which in turn would then be treated for enforcement the same as a hardware violation).

Q147. If the Staff believes these two terminal block issues (States and GE terminal blocks) constitute violations, do you believe

that these were violations APCo knew or "clearly should have known" prior to the EQ deadline?

A: Emphatically, no. As I have stated, for both types of terminal blocks, the key issue at the inspection and cited by the Staff was the instrument loop accuracy issue. This was an evolving technical issue long after the EQ deadline. In fact, on the H.B. Robinson docket, the Staff specifically recognized this fact. In an order dated March 30, 1990 (APCo Exhibit 80, Appendix at p. 6, ¶3.A) addressing the EQ civil penalty for the Robinson facility and responding to the licensee's objections, the Staff withdrew a violation associated with instrument loop accuracy in apparent recognition of the fact that the licensee could not have known of the issue prior to the EQ deadline.

As of the deadline, APCo had received assurances from Franklin that the terminal blocks were qualified. Moreover, it had embarked -- with the apparent consent of the Staff -- on a significant effort to address instrument accuracies in the context of EOP set points and error margins. Finally, prior to the inspection APCo had a reasonable basis to conclude that instrument accuracy data for these terminal blocks at peak LOCA conditions was not necessary. And if such data was deemed necessary, it had provided conservative estimates based on similarity to tested terminal blocks. Given all of these

considerations, I conclude that no realistic factual basis exists proving that APCo should have known that its EQ files were somehow deficient in this area prior to November 30, 1985.

VIII. GREASE ISSUES (FAN MOTORS AND COOLERS)

Q148. Issues concerning greases or lubricants arise in a violation related to fan motors inside containment and room coolers outside containment. Are you familiar with this issue?

A: Yes. The Staff argues that the greases/lubricants found in the equipment installed at Farley was not the same as that used in the components tested for qualification purposes. APCo had utilized substitute greases. (There is also an implication in the Staff's testimony that the greases were mixed because of insufficient flusing of th old grease before adding the substitute.)

The Staff finds a deficiency because the APCo EQ files did not explicitly include a file for the substitute greases/lubricants. The Staff also seems to charge that the Master List was deficient in that the greases were not identified as items of electrical equipment to be qualified.

Q149. Let's begin with that last assertion. In your opinion is grease an item of "electrical equipment" within the scope of 10 CFR 50.49?

A: No. 10 CFR 50.49 applies by its terms only to items of "electrical equipment." Grease, or any other lubricant, is not an item of electrical equipment -- unless it serves an electrical function. In the fan motors/room coolers at issue at Farley, the greases/lubricants served exclusively mechanical functions.

Q150. From your time at the NRC, and subsequent to that time, are you aware of any instance prior to November 30, 1985, in which the NRC Staff stated that a grease or lubricant was an item of electrical equipment required to be environmentally qualified?

A: Neither the Statement of Considerations addressing 10 CFR 50.49, nor any other Commission or Staff documents associated with issuance of the rule, state or suggest that lubricants (including greases) are items of electrical equipment required to be on an EQ Master List, or required to have documentation providing reasonable assurance of qualification. Further, I am unaware of any NRC generic guidance document associated with EQ that states or suggests that lubricants are items of electrical equipment requiring qualification and/or qualification documentation.

More importantly, prior to November 30, 1985, I am unaware of any instance where the NRC Staff stated that a lubricant was an item of electrical equipment required to be environmentally qualified. Further, I know of no operating licensee during this time that provided to the Staff an EQ Master List listing lubricants as items of electrical equipment. Nor do I know of any Staff action taken as a result of this purported failure to list lubricants on the Master List.

This appears to be an example of a situation in which the inspectors in 1987 were adopting a new position or interpretation, as compared to what was being done prior to the EQ deadline.

Q151. Does the EQ rule in your opinion address the qualification of mechanical equipment?

A: No it does not. In fact, there was a conscious decision made at the NRC -- that I recall from my personal involvement -- that the agency would not pursue qualification of mechanical equipment in the final EQ rule. If you look at the rule, it is entitled "Environmental Qualification of Electrical Equipment Important to Safety." There was to be a separate rule addressing the seismic qualification issue and, only if necessary, a rule for mechanical qualification.

In the early 1980's Commissioner Bradford raised the issue of mechanical qualification and suggested that we sample mechanical qualification to see if there was a concern similar to that for electrical qualification. To do this, the Staff sent letters to new license applicants and asked them to put together a mechanical qualification program along the lines of NUREG 0588, and evaluate where there were problems. Of the 10 plants evaluated, I believe there was only one piece of equipment identified that could not withstand the high radiation levels of a postulated accident environment. Based on that, the NRC decided not to implement mechanical qualification documentation requirements.

Q152. As a regulatory matter, what assures the proper performance of mechanical equipment?

A: Depending on the type of equipment, a good maintenance program, and perhaps a technical specification; not the EQ rule.

All maintenance activities, including lubrication, must of course be performed in a manner such as not to adversely impact the qualification of any associated electrical equipment. For example, IEEE 323-1974 (not applicable to either Farley unit) identifies lubricants as needing to be addressed should they be modified after the affected equipment

is qualified. (APCo Exhibit 36). However, it does not follow from this that lubricants should be on the Master List, or that EQ documentation must explicitly address substitute grease issues. Those issues are really maintenance matters that can be addressed outside the EQ files -- as would be other maintenance issues related to electrical equipment within the scope of the rule.

Q153. Prior to November 30, 1985, did APCo have reasonable assurance that the greases utilized at Farley would not adversely impact qualification of room coolers/fan motors?

A: As of November 30, 1985, APCo had established as a maintenance matter a reasonable regime for substituting greases/lubricants. In my opinion, this documentation, coupled with engineering judgment, provided reasonable assurance that the greases used at Farley would not adversely impact qualification.

The fact that some of this information was in APCo's maintenance files is not dispositive: As I said, the EQ rule does not require documentation of maintenance matters. There is no EQ requirement to address grease issues in an EQ file or have a "central" file. I do not believe that grease/lubricant maintenance documentation should be considered subject to the auditability requirement under 10 CFR 50.49. Furthermore, the

specific location of documentation has no bearing on whether the equipment was actually qualified.

Q154. What documentation did Farley have on the interchangeability of greases such as the Premium RB grease?

A: While I was at the Farley plant I had an opportunity to review their maintenance department records. There was a section of about four bookcases full of information on greases and lubricants used in various applications. This information specified which greases and lubricants could be interchanged, based on their operational characteristics and the operation requirements of the equipment involved. These records were pointed out to the inspectors during the inspection.

Q155. According to the NOV, APCo specifically violated 10 CFR 50.49 by not having documentation in a file to demonstrate qualification of Premium RB grease for use in fan motors inside containment and room coolers outside containment. Do you agree with this conclusion?

A: No. As I have stated, grease is not an item of electrical equipment in this application. It serves no electrical function. The use of greases and lubricants on this equipment was entirely a mechanical maintenance matter.

Moreover, it is also my opinion that because APCo evaluated the substitute grease in accordance with principles of sound engineering judgment (which included documentation in its maintenance files), it had reasonable assurance that the substituted grease would not impact the qualification or operation of the associated motors.

Q156. Assuming this was a violation, do you agree that Alabama Power Company "clearly knew or should have known" of the alleged deficiency as of November 30, 1985?

A: No. Prior to November 30, 1985, this issue had never been raised in the context of electrical equipment qualification. As previously noted, there was no guidance applicable to Farley that suggested that lubricants be formally qualified pursuant to 10 CFR 50.49. If the Staff had felt that lubricants were items of electrical equipment requiring qualification, the Staff should have assured that each Master List submitted to it during the 1981-1985 time period included lubricants. The Staff made no such requirement.

This fact, when combined with APCo's reasonable belief that grease is not an item of electrical equipment, supports the conclusion that APCo cannot be said to clearly know or should have known of this as a regulatory violation as of November 30, 1985.

Q157. If the Staff determines that a violation existed with regard to this issue, was the condition sarety significant?

A: No. As previously stated, the documentation contained in the Farley maintenance files provided reasonable assurance that the lubricants used would not adversely impact qualification of the associated equipment. Accordingly, there was no safety significance to the alleged violation.

IX. T-DRAINS (LIMITORQUE MOVS)

Q158. Let's turn to the subject of T-drains in Limitorque MOVs. Please describe a T-drain for the Board.

A: A T-drain is a small plug. It looks like the plug in the oil pan of a car, but instead of being solid it has an orifice drilled through it perpendicular to the threads. Then, perpendicular to that orifice, is another orifice going through it. This simulates a "T" internal to the plug and it allows for the venting or draining of moisture. It is not readily recognizable as a "T" formation.

Q159. According to the NOV, APCo violated 10 CFR 50.49 because its qualification files did not provide reasonable assurance of qualification of some Limitorque MOVs, because T-drains were missing. Do you agree with this allegation?

A: No. It is my opinion that the Limitorque test reports contained in the APCo EQ file for the MOVs prior to November 30, 1985, coupled with reasonable engineering judgment (not required to be documented), provided reasonable assurance that the Limitorques were qualified without T-drains.

APCo's qualification files contained two Limitorque Test Reports: Test Report Nos. 600198 and 600456. (APCo Exhibits 68 and 69). These reports encompass the Farley environmental accident conditions. One report tested the operator with T-drains and one tested the operator without T-drains. Both tests were successful. A thorough review of these reports against the Farley accident profiles, coupled with reasonable engineering judgment, would have led a reasonable engineer to conclude that the Limitorque motor operators were environmentally qualified in either configuration.

Q160. Are you aware of any failures that can be attributed to moisture in the Limitorque?

A: No. I am unaware of any failure reported in the industry where the Limitorque motor operator failed because of moisture intrusion.

If the Staff believed that failure to install T-drains reflected an equipment qualification concern, it should have

issued an Information Notice. Although IE Notice 83-72 (APCo Exhibit 72) did contain a brief discussion related to T-drains, it did not conclude that a potential problem existed. It only stated that it was presently unknown whether the existence of drain plugs or the orientation of the drain hole was essential to proper operation or was in conformance with the qualification tests. Subsequent to this notice and prior to the inspection, APCo had a reasonable basis to conclude that T-drains were not essential to qualification of the MOVs. Furthermore, there is still no evidence that indicates that the Limitorque operators would be unqualified without T-drains.

Q161. Based on information available to the industry prior to November 30, 1985, should APCo clearly have known that the absence of T-drains (or the absence of an express analysis of the issue in the EQ files) reflected a violation of 10 CFR 50.49?

A: No. The NRC reviewed Limitorque MOVs on several occasions prior to the EQ deadline and never raised T-drains as an issue. The issue was not raised in either the 1983 Franklin TERs or the 1984 SERs for Farley. (APCo Exhibits 16, 17, and 21). To the best of my recollection, there were no other TERs or SERs prior to November 30, 1985, that addressed the absence

of Limitorque T-drains as being a qualification concern. This simply was not an issue prior to November 30, 1985.

T-drains were identified as a potential issue generically subsequent to the deadline. However, even in April 1986, the Nuclear Utility Group on Equipment Qu ification, working in consultation with Limitorque, provided information to its member licensees concluding that it is acceptable to install these MOVs without T-drains. (APCo Exhibit 70). The Staff has simply provided no reference to pre-deadline information which would have led a reasonable licensee, then or now, to conclude that the Limitorques installed at Farley were suspect from an EQ standpoint. Based on my review of Alabama Power Company's actions during this time, I conclude that APCo properly considered its EQ program in this area to be complete.

I will also note as an aside that this "finding" regarding T-drains was a fairly prevalent finding during the Staff's first round EQ inspections. From my study of the inspection reports, I found this condition cited at 21 different utilities (relating to even more facilities). This fact to me underscores that this was not an issue generally anticipated to be a concern by many reasonable and prudent licensees.

Q162. Do you believe that there was a documentation deficiency with regard to T-drains?

A: No, not at Farley. APCo relied on the two Limitorque reports and those Limitorque reports substantiated qualification with and without T-drains. Nothing more needed to be documented -- especially (but not exclusively) under pre-November 30, 1985 documentation standards. (APCo Exhibits 70 and 81).

Q163. Assuming that a violation exists, is this violation safety significant?

A: No. As previously noted, there is reasonable assurance that the Limitorque motor operators would perform their intended function with or without T-drains. I do not think it has been demonstrated that the lack of having a T-drain would have caused an MOV to become inoperable.

Q164. Does this conclude your testimony?

A: Yes it does.

MR. REPKA: And at this point I will make Mr. Noonan and Mr. DiBenedetto available for cross examination.

JUDGE BOLLWERK: Before the cross examination begins, I want to acknowledge something on the record. Both of these witnesses were former NRC staff employees, and were involved in the environmental qualification area. And as a consequence, I guess both requested advice from the General Counsel's Office concerning this proceeding. My understanding is that Mr. DiBenedetto has been given more or less a clean bill of health in terms of any testimony he wishes to give. Mr. Noonan, however, based on an August 15, 1991 memorandum from Mr. Rothschild of the General Counsel's Office to Larry Chandler, who is the Assistant General Counsel for Hearings and Enforcement, advised Mr. Chandler that Mr. Noonan's testimony in this case is subject to certain restrictions. Basically, these are to comply with provisions of 18 USC 207(h) which is now 18 USC 207(j)(6). It was (h) at the time he worked for the NRC staff.

I want to read one paragraph of that into the record and to just make everyone aware.

"Under the Office of Government Ethics Regulations, Mr. Noonan may testify under oath in this proceeding provided that his testimony is limited to presenting factual information that he personally knows. We have discussed this matter informally with the Office of

Government Ethics and have been advised that he may testify about facts that he personally knows either as a result of his NRC employment or that he has learned after termination of such employment. The opinions that he held while serving as a federal employee and the opinions which were held by others during this period, would be deemed to be facts and therefore within the scope of the exception. Any testimony that fell outside of the parameters described above would be deemed to be unlawful compensated opinion testimony, thus testimony relating to Mr. Noonan's current views or opinions developed after terminating federal service would not be authorized under the limited exception."

Well, just to capsulize it, Mr. Noonan essentially is a fact witness, a historical fact witness, here to testify about matters that he knew while he was with the NRC staff, opinions that he formed while with the NRC staff, and is not to be testifying about opinions he may have formed subsequently. Do the parties all understand those restrictions?

MR. REPKA: We understand those restrictions.

MR. HOLLER: The NRC staff understands that.

JUDGE BOLLWERK: All right. Again, just only because I want to make sure that the questions to Mr. Noonan are phrased properly, and they are not asking him for information that might get him in any problems with the

Justice Department. I have explained these provisions to the other Board members as well, and we will abide by them.

Okay. Go ahead.

MR. HOLLER: Thank you, sir.

Good morning, gentlemen.

Mr. Noonan, just admin matters, I was quickly paging through here. You may want to or counsel may want to check while we go through the cross examination, but on Page 2, I believe your resume is referred to as Exhibit 81. Unless my record is off, I think that may be 82. But, like I said, that's just an admin item there we can clear up before we're finished.

MR. REPKA: 82 is correct.

MR. HOLLER: Thank you, sir.

CROSS EXAMINATION

BY MR. HOLLER:

Q On that question, it's correct, sir, that you were the branch chief of the EQ Branch in March of 1987?

A [Witness Noonan] Please refer me to the exact question you're talking about, sir.

Q Yes, sir. The question begins on Page 2, "Please describe your employment experience", and carries over to Page 3, and in particular, the second paragraph on Page 3, which begins, "From 1982 to 1984".

A [Witness Noonan] From 1982 to 1984, I was the

branch chief of the Equipment Qualification Branch.

Q Yes, sir.

A [Witness Noonan] Prior that, I was the assistant director for a number of branches. That occurred between 1980 and 1981, which included the Equipment Qualification Branch.

Q Understood. My question to you, sir, is, it says from 1982 to 1984. Does that include March of 1984?

A [Witness Noonan] It includes March of 1984, and I was actually -- although I took on different duties as director of licensing for the Comanche Peak project in the latter part of 1984, my name still appeared on the documents as the branch chief, and I had Mr. -- one of my section leaders acting for me in the capacity of branch chief.

Q Yes, sir. Fair enough. But in March, you were still fully employed as the branch chief of the EQ Branch?

A [Witness Noonan] That's correct.

Q Thank you, sir.

I'm going to give you a document that I've marked for identification as Staff Exhibit 61, and I'll identify that in a minute.

[Pause.]

MR. HOLLER: What we are making available now which I have marked for identification as Staff Exhibit 61 is an extract from the Federal Register, Volume 49, Number

46, dated Wednesday, March 7th, 1984, in particular a 10 CFR Part 50 environmental qualification of electric equipment statement of policy on environmental qualification. The Federal Register cite for that would be 49 Fed Red 8422.

JUDGE BOLLWERK: Let the record reflect that Staff Exhibit Number 61 has been marked for identification.

[Staff Exhibit No. 61 was marked for identification.]

BY MR. HOLLER:

Q While you're looking at that, sir, I'm going to ask you if you recall the particular policy statement that's in here.

A [Witness Noonan] Yes, sir, I recall this particular statement.

Q Did you contribute to the preparation of the policy statement, if you recall?

A [Witness Noonan] Let me explain how that was actually done. The rule was actually written by the Office of Research. We, as part of NRR, provided technical input to the people that performed that rule. So, as a result of that, we participated in that way.

Q Yes, sir. I don't want to mislead you. Perhaps you better take a look. This is not the preamble to 10 CFR 50.49, and I took your answer maybe to addressing that. Perhaps you should page through just to see what the major

headings are, and see if that refreshes you.

A [Witness Noonan] Let me take a look, please.

Q Okay.

[Witness Noonan reviewing document.]

WITNESS NOONAN: Yes, sir. I do recognize the document, yes. Go ahead.

BY MR. HOLLER:

Q I'll renew my question, then. Did you contribute to the preparation of this document which has been identified as Staff Exhibit 61?

A [Witness Noonan] I believe that I contributed in the way that I and my staff had input to this document, yes, sir.

Q Yes, sir. I would ask you, then, while the EQ Branch chief in March of 1984, do you recall having any differing opinion from the position that's expressed in Staff Exhibit 61?

A [Witness Noonan] I had no differing opinion, no, sir.

Q Okay. Let me put that aside, if I may, then, for a moment, and refer you to Question 20 on Page 17 of your testimony, sir.

A [Witness Noonan]" On Page 17?

Q Yes, sir.

A [Witness Noonan] Okay. All right, sir.

Q Is it fair to say, in your response, and I'm referring in particular to the second full paragraph and the answer, that it's your opinion that the December 1984 SERs, which I believe have been identified as APCo Exhibit Number 21, were not limited to methodology?

A [Witness Noonan] That is correct, sir.

Q Is it also fair to say, in your testimony, that it's your opinion that the December 1984 SERs, when they were issued, addressed each item in the scope of the program, in particular that each item in the scope of the program was qualified, and I'm referring to the third paragraph in the answer.

MR. REPKA: Let me interject here an objection only to the form of the question. Mr. Holler has characterized the testimony as opinion testimony. I don't believe it is. Mr. Noonan, in his testimony, is simply trying to say the way things were, and the characterization of the question of "It is your opinion" is what bothers me.

MR. HOLLER: What I am trying to get at is, as head of the EQ branch, whether it was Mr. Noonan's opinion that this is what the 1984 SERs conveyed at that time, in 1984.

JUDGE BOLLWERK: His opinion at that time.

MR. HOLLER: Yes, sir.

JUDGE BOLLWERK: All right. I'll allow it on that

basis, if that clarifies it.

MR. HOLLER: Thank you, sir.

BY MR. HOLLER:

Q Let me just back up, then, to the previous page, page 16 of your testimony and question 19.

[Pause.]

A [Witness Noonan] All right, sir.

Q Okay.

With regard to question 19 -- "What did the staff conclude on December 13, 1984?" -- fair to say that your testimony is that the staff made three findings?

A [Witness Noonan] May I ask for a copy of the SER we're talking about?

MR. HOLLER: Yes, sir. In fact, you anticipated me. I'd be happy to do that.

What I am giving Mr. Noonan now is a copy of what's been admitted into evidence as APCo Exhibit No. 21, identified as a letter from the NRC to Mr. R.P. McDonald, Senior Vice President, Alabama Power Company, with enclosures 1 and 2, safety evaluations that relate to the environmental qualification of electrical equipment important to safety at the Joseph M. Farley Nuclear Plant, Unit Nos. 1 and 2, etcetera. The date of the letter is December 13, 1984.

[Document proffered to witness.]

WITNESS NOONAN: Are you referring to the conclusion paragraph on page nine of that SER?

BY MR. HOLLER:

Q Well, I'll get there, sir, in a minute. In fact, this is the letter that forwarded the two December 1984 SERs.

A [Witness Noonan] That is correct.

Q Right.

And let me refer you to that, first of all to the enclosure, Enclosure 1, the SER for Unit 1, and in particular, on page nine of that enclosure, which contains the paragraph or the discussion entitled "Conclusions," and for the information of everyone, I believe that there is a Bates number 0054259.

A [Witness Noonan] Please ask the question again now.

Q Yes, sir. And as I was saying, referring now to your question 19, is it fair to say that what you have answered, that the staff made three findings, are, in fact, these three findings that appear in the conclusion for the SER?

A [Witness Noonan] That is correct. That is correct, sir.

Q Okay.

Is it also fair to say, though, that, at the

beginning of that Conclusion 1, it carries the statement, "Based on the above evaluation," and then lists the three conclusions?

A [Witness Noonan] The --

Q Again, I'm on page nine, where it says "Based on" -- pardon me -- conclusion paragraph.

A [Witness Noonan] The statement that says, "Based on the above evaluation," I have to go back and look at the document in total, and I go back to the -- to the document that starts out with the introduction and then goes into the background and then into the evaluation.

The staff was very clear on what they based their evaluation on. They refer to a lot of documents. They refer to the TERs. They refer to the --

Q Sir, if you will --

A [Witness Noonan] -- APCo letter. Please.

Q Yes, sir.

A [Witness Noonan] They refer to the APCo letter. So, everything in this document that the staff talk about was part of their evaluation that they used in coming up with those conclusions.

Q Fair enough, sir. In fact, why don't we do that? Why don't we go to page three, which is Bates 0054253, that begins, "Evaluation"?

A [Witness Noonan] Okay.

[Pause.]

BY MR. HOLLER:

Q In paragraph four of the evaluation, is it fair to say that the evaluation essentially says that the evaluation is based on the results of an audit review of three things, and I will list those three things, in particular: one, the proposed resolutions of the January 1983 SER and the January 1983 Franklin Research Center TERs.

A [Witness Noonan] The -- the document -- document says that, and I would like to make sure that the Board and everybody else in this room knows that all staff reviews are audit reviews, and historically, every review that I was involved with at the staff, prior to November 30, 1985, were -- were considered audit reviews. Some were in more depth and some were in less -- less depth.

In this particular document, the -- the staff considered everything that was on the record at the time that this document was written.

That included -- that included the results from the Farley 2 inspections that were done by the staff back in the 1981 timeframe. It included later inspection reports done by the -- by the region. It included the Franklin TERs.

In other words, it included everything that was known to the staff at the time for them to draw this

conclusion that -- that this was plant to safe to operate and that public health and safe y was not at risk.

Q Yes, sir, I'll accept that answer, but my question to you is, does it not say that the staff conducted -- and I will not quibble with the audit -- conducted a review, and the first item you list is the proposed resolutions of the EQ deficiencies identified in the January SER?

A [Witness Noonan] That's exactly what the words say, yes.

Q Yes, sir.

Then I would ask you, too, for item number two of the three items, that it's based on compliance with the requirements of 10 CFR 50.49.

A [Witness Noonan] That's correct, sir.

Q And then the third item, the justification for continued operation for those equipment items of which environmental qualification is not yet completed.

A [Witness Noonan] That's correct, sir.

Q Okay. And if you turn over -- I can see you're anticipating me -- to page four -- and just to keep track of where we're at, it's Bates number 54254 -- of the SER, the next section of the SER is entitled "Proposed Resolutions of Identified Deficiencies."

A [Witness Noonan] That's correct.

Q And fair to say, sir, that that would be item one

of the three items that we read in the evaluation paragraph.

A [Witness Noonan] That's correct, sir.

Q Okay.

Sir, I'll give you as much time as you would like to refresh yourself and read through, but what I am going to direct your attention to and ask my question on is at what I will describe as the last paragraph, the one-sentence paragraph that appears on page five for that section, and the section I'm referring to is the "Proposed Resolutions of Identified Deficiencies," and just so we're clear, that's Bates 54255, the first full paragraph on that page that begins "Based on our discussions . . ."

A [Witness Noonan] You're talking about the paragraph that starts out "Based on our discussions . . ."?

Q Yes, sir. Take the time that you need -- I have seen this -- I don't know -- it's been a while -- to refresh yourself, as much time as you want.

A [Witness Noonan] Give me a few minutes, please.

[Witness Noonan reviewing document.]

WITNESS NOONAN: Go ahead.

BY MR. HOLLER:

Q My question to you with reference now to what I'll refer to or what I'll characterize as the summation paragraph of that section, isn't it fair to say that the staff found that the licensee's approach for resolving the

identified EQ deficiencies was acceptable?

A [Witness Noonan] That is what the paragraph says, yes, sir.

Q Yes, sir. It sounded like an answer -- almost a question, sir. So it's clear, my question to you is that's what the document is purporting to say?

A [Witness Noonan] That's what the document purports to say, yes, sir.

Q Let me go to the second item. This is the second item that was addressed in the evaluation, the compliance with 10 CFR 50.49, and that is the next section.

A [Witness Noonan] That is correct.

Q Again, with an effort just to -- so we can understand what the staff meant when it said compliance with 10 CFR 50.49, I'll -- it's rather a long one. Take as much time as you need to skim it.

Again, I am going to direct my question to Page 8, which I will represent to you finally gets to the end of that discussion and contains two summation statements and just so we're absolutely clear, also on Page 6, at the top of the page, which contains a summation sentence for the three sections of this. Have I confused you with that? I apologize if I have. I'll restate it, if you need me to, or do you understand what I've asked you?

[Pause.]

BY MR. HOLLER:

Q I'm sorry. Mr. Noonan? Do you understand what I --

A [Witness Noonan] I understand. Let me just take time here to look at this.

[Witness Noonan reviewing document.]

BY MR. HOLLER:

Q Okay. This is a longer section that the other, but going back to Page 5, Bates 54255, and the compliance with 10 CFR 50.49, the second leg, if you will, in the evaluation, the first part, I'll represent to you, is addressing equipment that should be identified within the scope of Paragraph (b)(1). I will ask you, is it fair to say that the staff begins by saying that the -- describing the licensee's approach used to identify equipment within the scope of Paragraph (b)(1), (b)(1) referring to 10 CFR 50.49 (b)(1).

MR. REPKA: Excuse me, Mr. Holler. Where are you looking?

MR. HOLLER: Okay. Again, Page 5, Bates Number 54255, under the heading "Compliance with 10 CFR 50.49" -- -- we're all there now -- and the first sentence, which describes what the staff is going to say in this portion of the SER -- in fact, I'll read it verbatim so there's no confusion -- in its February 29th, 1984 submittal, which has

been previously identified for this hearing as APCo Exhibit Number 20. "The licensee has described the approach used to identify equipment within the scope of Paragraph (b)(1) of 10 CFR 50.49", and goes on, "Equipment relied upon to remain functional during and following design basis events". Is everyone with me now?

MR. REPKA: I'm with you.

WITNESS NOONAN: I read that sentence, and that's what it says.

BY MR. HOLLER:

Q Yes, sir. And now I would represent to you that this then goes on to describe what the licensee states in its approach to identify equipment, at least what the staff characterized as the licensee's.

A [Witness Noonan] That's correct.

Q Is that correct, sir?

A [Witness Noonan] That's correct.

Q And then I'll refer you to Page 6 at the very top of the page, and I'll represent to you that one-sentence paragraph there that begins "The licensee" is the summation for that Section (b)(1), and ask you is it fair to say that that is a statement of the staff's conclusion for that in particular, and I'll read it. "The licensee's approach for identifying equipment within the scope of Paragraph (b)(1) is in accordance with the requirements of that paragraph and

therefore acceptable".

A [Witness Noonan] That's correct.

MR. REPKA: Is that question, "What do the words say?" or -- in which case I think the words speak for themselves -- or is it, "What did the staff mean by those words?"?

MR. HOLLER: Well, we can get back to that, and I'm sure you will, sir. All I'm trying to ascertain now is what the basis is for Mr. Noonan's opinion of what this document conveyed. So there will be absolutely no doubt, let me rephrase that.

BY MR. HOLLER:

Q Does it say that the staff found that the licensee's approach that's discussed in here was acceptable for identifying (b)(1) equipment?

MR. REPKA: But again, I don't know. Are you asking him if that's what the piece of paper says, in which case again, the piece of paper says what it says, or are you asking him what the staff meant by that?

MR. HOLLER: The first question I'm asking him is, is that what it says, is that what this SER says.

MR. REPKA: Is that what the words say?

MR. HOLLER: That's correct.

WITNESS NOONAN: That's correct. That's what the words say.

BY MR. HOLLER:

Q Same set of questions on Page 6, 54256, and I'll represent to you now that this is going to be the same discussion with regard to identification of equipment within Paragraph (b)(2). And this one goes on for several pages. I will ask the question now and take as long as you need. I represent to you the Pages 6, 7 and 8 are describing the licensees, in this case Alabama Power Company's methodology for identifying equipment within the scope of (b)(2).

My question to you is as stated in the SER, was it not the Staff's finding that the methodology being used by the licensee is acceptable?

A [Witness Noonan] Words on Page 8, are you referring to the paragraph, "we find the methodology being used by the licensee is acceptable"?

Q Yes, it would apply to the (b)(2) equipment.

A [Witness Noonan, That statement says, yes, "we find the methodology being used by the licensee acceptable and find reasonable assurance that the equipment within the scope of Paragraph (b)(2) of 10 CFR 50.49 has been identified."

Q Yes, sir. And lastly, I think, the very last part of the (b)(3) equipment. The same thing. The discussion begins on Page 8 and ends "just before the justification for continued operation", I would ask you does not the SER say

that the Staff's finding was that the licensee's approach for identifying equipment within the scope of Paragraph (b)(3) was acceptable?

A [Witness Noonan] The words there say, "we find the licensee's approach for identifying equipment within the scope of Paragraph (b)(3), 10 CFR 50.49 acceptable since it is in accordance with the requirements of that paragraph."

Q Okay, we are almost at the end now. Please bear with me.

The next paragraph we have is "justification for continued operation".

A [Witness Noonan] That is correct, sir.

Q That was the third leg of the Staff's evaluation?

A [Witness Noonan] Yes, sir.

Q And I'll synopsize it in the form of a question and take the time you need. Is it not fair to say that the Staff finding was that Alabama Power Company, in its judgment, had found that the equipment was environmentally qualified and therefore justification for continued operations were not necessary?

A [Witness Noonan] That is correct, that is what that says.

Q As we have gone through this then, would it be fair to characterize the evaluation as including the three approaches and the methodology approval by the Staff and

their findings, at least as expressed in this SER?

A [Witness Noonan] As I stated previously, this document talks about what the Staff did in their conclusions regarding public health and safety and they came up with three findings. Are you asking me what the Staff actually did in order to come up with those words?

Q Well, my question to you, sir, is this SER as it is written, as it conveys, does not convey that the Staff first of all found the three conclusions that you state; is that not so?

A [Witness Noonan] That is correct.

Q And that it states that those conclusions are based on this evaluation which includes the three items that we've gone through?

A [Witness Noonan] Yes, sir.

Q And in going through each one of those items that consist of approvals of approaches, approval of methodology, and lastly approval of approach, and finally with regard to the JCO's finding that because Alabama Power Company told the NRC -- in Alabama Power Company's judgment the equipment was qualified, there was not a need for JCO's?

A [Witness Noonan] I disagree with the characterization of that last statement, because when Alabama Power did come in and said there was no need for JCO's because the equipment was environmentally qualified.

The Staff at that point in time had to accept that statement based on their knowledge, not what the utilities think, based on what they said, what the Staff's knowledge was at the point in time. If they disagreed, they would require JCO.

In this case here the Staff did not disagree, but the Staff basically concurred that the equipment was qualified. Or they never would have written the SER or they would have requested a JCO. The JCO is a very, very important thing in the terms of an SER. It says that this plant is okay to operate because -- in the interim -- and that is for justification of continued operation. Had the Staff had any doubt in their mind, any doubt, it would require JCO's. In fact, it was easy for the Staff to do that. The Staff would have went to that position rather than take any chance whatsoever.

Q Let me come back and ask then, sir, if a licensee said our equipment is qualified, absent knowledge to the Staff from any of the limited inspections that it may have done, would it have asked then for a JCO on a particular piece of equipment?

A [Witness Noonan] Let me answer the question this way. The Staff at this point in time -- we are talking prior to November of 1985 -- the Staff was probably the most knowledgeable group of people regarding equipment

qualification of anybody in the country. I don't care what we talk about, utilities, industry, owner's groups, whatever. The Staff had a base of knowledge that they were probably the most qualified people. They knew exactly when a piece of equipment was suspect based on review of all of these various documents. So, when the utility came in and said, I find this document qualified, and if the Staff was pretty much aware that there was even a test paper that said, yes, this equipment is qualified or there were some problems with that. If the Staff had a problem whatsoever, they were instructed to request a JCO. They request it by me, my management and even the Commission. Request the JCO if you have any doubt. So, therefore, when I read that statement, that statement is very, very strong in the fact that the Staff said we have looked at it, we agree with that statement and we are not going to request any other JCO's because we know that you're right.

Q Is it fair then, sir, with respect to that to say that the Staff's knowledge of the equipment was limited to those inspections or those things that it may have reviewed?

A [Witness Noonan] No, sir, not limited whatsoever.

Q Not limited to what it may have reviewed?

A [Witness Noonan] The staff actually looks at thousands of pieces of data in the time frame they had. Remember, this program started back in 1979 and this group

of people were put together, we hand-picked them because of their knowledge of electrical equipment and also mechanical equipment. The Staff became very, very knowledgeable and this group of people stayed pretty much together the whole time frame. So, there were very few people that left in the time frame that we had. The Staff had access to a lot of things. The national laboratories, we had the Idaho National Laboratory working with us on a day-to-day basis; there was the Sandia Laboratory that was involved in some of these things. And as a result, the Staff was very knowledgeable of what was out there in the field. So, I don't want to characterize what they based on certain tests and inspections. They had a broad base of knowledge.

Q Sir, I think you may have misunderstood my question.

You listed several things, national laboratories, Sandia, et cetera, and my question to you though was, if the Staff had not been alerted to a problem by actually finding an item in the review of these various things, would they have asked for a JCO with the licensee having certified to them that all of the equipment was qualified?

A [Witness Noonan] If they had not been alerted?

Q Yes, sir.

A [Witness Noonan] If there was something out there that they didn't know about?

Q Yes, sir.

A [Witness Noonan] Well, if they didn't know about it then they weren't very well qualified to ask for a JCO.

What I am saying is that the Staff pretty much knew exactly what was out there on all of this equipment, having gone through it and gone through it and gone through it a number of times.

Q Let me understand it then that it is your testimony that the Staff reviewed everything that was available, all of the Sandia reports, all of the documents that may have been available for each -- are you saying that to me, sir?

A [Witness Noonan] When I say the Staff, I am talking about the Staff in this contract; please understand that.

Q I understand, sir.

Just so I am clear on this, your testimony is that the Staff had reviewed all of these things for every licensee; is that correct, sir?

A [Witness Noonan] No, sir. I don't want to characterize that we went through every document page by page by page; that is not correct. I said earlier, our Staff always does audit reviews. But we used a broad base of information that was available to us to come up with these conclusions. When we first started this thing back in

the 1979 time frame, we contacted the NSSS vendors and asked them to bring in whatever they could. We contacted the architect engineers. We contacted the national laboratories. We went out and sent things out to all of the utilities. In 79-01B would be referred to as the SCEW sheets. So, there was just a wealth of information that was presented to the Staff.

If there were problems we most likely knew about it. The fact is, of all of the pieces of equipment that we looked at over the years, we discovered about 3.2 percent, if my memory serves me correct -- about 3.2 percent of 1,000 pieces of equipment we found to be unqualified.

Starting out, we had a very small number that were qualified. We had this big group in the middle that lacked sufficient documentation to put it in one bin or the other. So, we made a group which had about nine different categories in it that talked in terms of the places where we lacked documentation. There it could range anywhere from you lacked documentation over the whole range of things, or you only lacked documentation for maybe a chemical spray or specific items, just that they'd be limited.

We put it in those bins for two -- for one reason only: We were very careful to make sure that the staff talked in terms of either qualified or non-qualified because we're talking about the safe operation of a plant. When we

knew the stuff was qualified, we said that and it was documented.

Likewise, when we found out that things were unqualified, we made those statements, and it required us to add an SER to say why that plant was okay to operate. Did it require JCOs or some emergency operating procedure to by pass that particular piece of equipment; that was handled.

There was a large bulk of equipment in the middle, these thousands of pieces of equipment where there may be data missing here or there. It took us from 1980 until November of 1985 to fill in those gaps, but we were very, very careful not to say it was unqualified, and we were very, very careful to say it was qualified.

Once I say it's unqualified, I have to go to my tech specs and see whether or not I'm violating operations. It might require me to shut that plant down if I don't have any other means to do it. That's why we were very careful in how we raised that.

We talked to the Commission on this thing -- oh, I don't remember the number of times. We talked to them publicly, we talked to them privately and we explained exactly what we were doing to make sure the Commission was onboard at all times.

This was a very, very intense effort. It was an effort that was of interest to the Commission, of interest

to NRR management, and we stayed on top of it and presented our case the best we could.

Q Thank you, sir. Let me just back up though and see if I can sort some of that and just put it in proper perspective. With regard to the December SERs, is it fair to say that they, on their face, did not convey that there had been a review of all of the equipment?

A [Witness Noonan] No, sir, I don't really agree with that. I think the staff put down words into an SER that said, here's what we looked at. And they went back and they even talked in terms of historical events that occurred in the front part of this document.

So, the staff actually looked at as much data that they needed to do to come to those conclusions.

Q But they didn't say that; did they, sir?

A [Witness Noonan] I think they did.

Q Can you show me where they said that?

A [Witness Noonan] You want me to find the words that say I looked at document X or something like that? I can't find those words. None of our SERs are written that way, sir.

Q I understand. Well --

A [Witness Noonan] You krow --

Q My point sir, this SER does not say that then; does it?

A [Witness Noonan] But the point being, if you go back and look, all SERs are written in this timeframe. I don't care if it's EQ or any SER, probably none of them say that. They don't pinpoint every document they look at, none.

Q Then you do agree, sir, that the SER does not say that?

A [Witness Noonan] I would agree that it doesn't explicitly point out every document that was looked at, but I'm telling you what the staff had to do in order to reach that conclusion.

Q I appreciate that, sir, but my question to you is, does this SER say that?

A [Witness Noonan] Not specifically, does it state, item-by-item, what the staff looked at; that's correct.

Q Why don't we go back to the policy statement that I referred to before. This has been marked as Staff Exhibit No. 61, and in particular, I'm going to address your attention to page 8425 of that, 49 FR, Fed Reg, 8425.

A [Witness Noonan] 8425?

Q Yes, sir. I'll give you whatever time you need, but in the righthand column, there's a section that's titled Current Commission Policy. Again, this is March 7, 1984.

A [Witness Noonan] I have that particular paragraph, yes, sir.

Q Yes, sir, are you familiar with it, or do you -- I recognize that it's a long time. It's eight year.

A [Witness Noonan] It's been a long time. Let me take a minute and read it, please?

JUDGE BOLLWERK: Are you just asking him to look at the first paragraph or the whole section?

MR. HOLLER: Well, actually, sir, it may be easier -- I will represent to Mr. Noonan, if you will, for any of these questions to come back, and I'll ask the first rounds just from your recollection as the Branch EQ Chief. I didn't mean this to be a trick question or anything. It's obvious that I'm making reference to the current Commission policy as stated here.

BY MR. HOLLER:

Q With that as a background, I would ask you; is it not fair to say that the Commission in stating its current policy on environmental qualification, recognize that there had been extensive efforts in order to comply with the Commission's rules. I believe that's in the very first paragraph, the first four or five lines.

MR. REPKA: I think, Mr. Noonan, you tell me; do you need to read this before you answer that question?

WITNESS NOONAN: I think I need to read it.

MR. HOLLER: Please do, then, sir.

WITNESS NOONAN: I'd like to read the thing in

total -- not in total, but at least that particular paragraph.

JUDGE BOLLWERK: My question is only if you want him to read the whole section marked Current Commission Policy, or just the first paragraph, if that's all you're going to refer to?

MR. HOLLER: My questions would go to the whole section marked Current Commission Policy, which is approximately three columns. Mr. Noonan has asked me if he could have time to read the whole document and I certainly have no objection to that.

WITNESS NOONAN: Judge Bollwerk, if I may, I'd like to read the whole paragraph.

JUDGE BOLLWERK: The whole?

WITNESS NOONAN: Called Current Commission Policy.

JUDGE BOLLWERK: You want to read the whole thing? That's fine.

WITNESS NOONAN: Okay.

JUDGE BOLLWERK: Should we take five minutes at this point and let him read that?

MR. HOLLER: Yes, sir.

JUDGE BOLLWERK: Are there any other lengthy documents you're going to have for him to read, or was this --

MR. HOLLER: No, sir, this is the only document.

JUDGE BOLLWERK: All right, why don't we take five minutes at this point and let Mr. Noonan look at that, and we'll be back at quarter till.

[Brief recess.]

JUDGE BOLLWERK: Let's be seated. And we can go back into session. Mr. Holler?

MR. HOLLER: Thank you, sir.

BY MR. HOLLER:

Q Mr. Noonan, when we broke, providing you with an opportunity to refresh yourself with the current Commission policy, Section 4, of what has been identified as Staff Exhibit 61. Have you had enough time to do that?

A [Witness Noonan] I believe I have had enough. But I would like to ask a question, if I may?

Q Well, sir, may I ask my question if I may, unless it has to do with the question that I have asked you.

A [Witness Noonan] Go ahead, and ask the question.

Q All right. Let me put it this way -- we have all had a chance now to take a look at it. With regard to the December 13, 1984 SERs, the information conveyed by that SER, as I have asked you on the cross-examination questions, are not inconsistent with the statements of policy in Section 4, and especially with -- that's a broad question, I know, but I'll focus in on two items: 1) allowing plants to operate where the licensee's assertions were still

undergoing staff review; and 2) reliance on those licensee's assertions pending that independent staff review.

A [Witness Noonan] May I ask a clarifying question, please?

Q Please, do, sir.

A [Witness Noonan] This document that we are referring to here, this, the --

Q Staff Exhibit 61?

A [Witness Noonan] The March 7, 1984 document --

Q Yes, sir.

A [Witness Noonan] Was this a document that was written in response to the USC 2206 Petition?

Q Yes, sir. I think the front of the document clearly states that.

A [Witness Noonan] Does it?

Q Yes, sir. In the background -- the Commission goes on -- in fact, if you will read through the Summary Section, which is a short paragraph located on page 8422 --

A [Witness Noonan] Yes, okay.

Q But -- I'll direct your -- it explains, as you referred to, the Union of Concerned Scientists. And I'll direct your attention, in fact, to the last part that explains w. the statement of policy.

A [Witness Noonan] Yes, I recall now. I remember. I had -- okay, all right.

Q Shall I renew the question? I know this is difficult.

A [Witness Noonan] Let's go back to your question, again, please.

Q All right. In fact, let me -- the SER, as we've going through it this morning, that reading that I represented to you, is that inconsistent with the statements that the Commission made in this current policy statement, particularly with regard to reliance on licensee's assertions pending independent NRC staff review? I'll stop it there, so you have a chance to answer.

MR. REPKA: I'm not sure I understand that question, or what it's looking for. Again, is this a present opinion of whether two documents are consistent?

BY MR. HOLLER: No, sir. What I am asking you is -- and Mr. Noonan has testified that he had no problem, or had no differing opinion from the policies that are stated in the Commission's policy statement, is that correct, sir?

A [Witness Noonan] That is correct.

Q Mr. Noonan also has testified as to what the SER conveyed, is that correct, sir? The information that it conveyed?

A [Witness Noonan] Yes, sir.

Q And this morning we have gone through, and I would represent to you, and I believe Mr. Noonan has agreed, that

the words of the SER do not necessarily convey that -- is that a fair statement, sir?

A [Witness Noonan] I think I said that the words of the SER do not necessarily convey all that the staff looked at specifically.

Q Yes, sir. Let me ask you this, then. By that do you mean that the SER does not convey what the staff was relying on in making its findings?

A [Witness Noonan] I don't understand your question.

Q Do you agree that the SER, though, clearly states what the staff was relying on in making its findings?

A [Witness Noonan] I'm going to have to go back to the days when I was in the branch, back in 1984, 1983 time-frame. An SER meant something, and expect it still does.

Q If I may, I'll stop you there. Because I'm interested in just this particular one, the one that we spent the time going through this morning. And I'll just ask you if that conveys what the staff was relying on, as we went through it this morning? Just the words of it.

A [Witness Noonan] If I read the document in total, I would say that it conveys, everything that is in that document would convey what the staff relied on. Plus information that they had at their disposal. Any information that they had at their disposal, sir. It

doesn't necessarily convey specifics that they knew.

Q I won't argue with you, sir. I think we've gone through it. Let me pose the question to you this way: I'm suggesting that the SER does not, is not as broad as you would say. Is that fair to say, sir?

MR. REPKA: I don't know that the witness knows what you are suggesting, or not suggesting.

BY MR. HOLLER:

Q Well, sir, from our discussions this morning, is it your testimony that the SER is broader in scope with regard to the findings than those we went through this morning?

A [Witness Noonan] The SER goes back to conclude the plan is safe to operate. Agreed? We have no disagreement between you and I on that subject, right?

Q Now, let's stop there, and we'll take each one of these. And that may be helpful.

We're referring now to the conclusion, is that correct?

A [Witness Noonan] I'm referring to the conclusion, back on page, whatever, 8?

Q Yes, sir. I'm sorry, page 9. Page 54259.

A [Witness Noonan] Page 9, yes.

Q And this is the continued operation will not present undue risks to the public's health safety.

A [Witness Noonan] Public's health safety.

Q Is that correct, sir?

A [Witness Noonan] That's correct.

Q And my question to you, sir, is that not based on the evaluation that we went through this morning?

A [Witness Noonan] It was based on the evaluation that the staff went through, at the time they wrote this document.

Q But I'll ask you, sir, the SER doesn't say that, does it?

MR. REPKA: Asked and answered. I think we have pursued this line at undue length. Frankly, I'm confused, and I think it's getting a little tortured here. And I would rather the record speak for itself.

MR. HOLLER: I'll withdraw the question, Your Honor. It is not my intention to do that. Let me just cut to the end of this.

BY MR. HOLLER:

Q And I will say to you sir -- reading the SER literally, to the extent that it relies on the assertions that the licensee makes, is it, would it be your opinion in 1984 that that would be contrary to Commission policy? Do you understand that question?

A [Witness Noonan] Contrary to the Commission policy? No, I don't understand your question at all.

Q Would it be inconsistent with Commission policy to rely on assertions by the licensee that equipment was qualified, and JCOs were not required?

A [Witness Noonan] To the extent that the staff, that the staff knew that they had any information to the contrary, then it could not rely upon that statement.

Q And, absent information to the contrary, it could, sir, is that correct?

A [Witness Noonan] If there was something out there that the staff didn't know about, I would guess, yes.

Q We'll leave it at that, then.

A [Witness Noonan] Is ---

Q I'm sure you'll have your chance, sir. If it's in answer to that question, I don't want to cut you off if you have more of an answer. But --

A [Witness Noonan] I was going to make a statement to the fact that --

Q Well, why don't we leave the statements to -- and move on the something else?

MR. REPKA: I'd be more than happy to move on.

[Counsel for NRC Staff conferring off the record.]

BY MR. HOLLER:

Q Let me turn to Mr. DiBenedetto. Good morning, sir. We haven't had a chance to talk, I know.

A [Witness DiBenedetto] Good morning.

Q If you would, sir, I'll refer you to page 54 of your testimony to question and answer 60. This is a question that refers to in this enforcement action the staff has defined unqualified equipment as equipment for which there is not adequate documentation. If you would just refresh yourself with that.

A [Witness DiBenedetto] Okay.

Q In fact, let me give you a copy of what has been previously identified as Staff Exhibit No. 7, a copy of Generic Letter 85.15, before I pose my question.

[Document proffered to witness.]

BY MR. HOLLER:

Q I'll ask you, sir, do you have before you a copy of what has been identified and admitted into evidence as Staff Exhibit No. 7, information relating to the deadlines for compliance for 10 CFR 50.49, otherwise known as Generic Letter 85.15?

A [Witness DiBenedetto] Yes, I do.

Q Do you recall or are you familiar with this document?

A [Witness DiBenedetto] Yes, I have seen it before.

Q Okay. Would you please read for me, on footnote one, would you read footnote one, please?

A [Witness DiBenedetto] Footnote one reads: "For the purposes of enforcement, unqualified equipment means

equipment for which there is not adequate documentation to establish that this equipment will perform its intended function in the relevant environment."

Q Okay. Now, in your testimony you testified, in fact, would you just read the first two sentences of your answer?

A [Witness DiBenedetto] "Absolutely not. Prior to November 30, 1985, I am not aware of any circumstances where the staff treated documentation deficiencies the same as hardware deficiencies. The staff has always been significantly and properly more concerned with a hardware problem that could result in a safety-related component not being able to perform its intended safety function."

Q Thank you, sir. That's fine.

November 30th, 1985, in fact, was the EQ compliance cut-off or deadline date, isn't that correct, sir?

A [Witness DiBenedetto] That's correct.

Q Okay. To the extent then that enforcement actions would not normally be taken for noncompliance of the rule prior to that date -- let me say this as a question. Is it not true then that enforcement actions would not be taken prior to that date for noncompliance with 10 CFR 50.49?

A [Witness DiBenedetto] I believe that to be correct.

Q Okay. To the extent then that the staff did not treat documentation deficiencies as they may be or as documentation -- strike that.

10 CFR 50.49 does require documentation of equipment, is that not correct, sir?

A [Witness DiBenedetto] 50.49 does require documentation be established.

Q Okay. And to the extent then that the staff would not treat documentation deficiencies, for enforcement purposes prior to November 30th, 1985, your statement is correct, is it not?

A [Witness DiBenedetto] I'm sorry, could you repeat that?

Q Sure. Your statement is that you are not aware of any circumstances where the staff treated documentation deficiencies the same as hardware deficiencies. And I'll ask you, does that not mean with regard to enforcement actions prior to November 30th, 1985?

A [Witness DiBenedetto] I think I need some clarification. Will you ask me every phrase what I think you're asking?

Q Sure.

A [Witness DiBenedetto] Are you asking me that if, during the timeframe prior to November 30, 1985, if there were documentation problems there wouldn't be any

enforcement activities?

Q Yes, sir.

A [Witness DiBenedetto] Okay. And I guess I would have to say the answer to that is no. We -- from a documentation standpoint, while I was at the staff, we advised utilities that equipment may have been lacking documentation to establish full qualification. But, if there were a hardware problem, there may have been -- notwithstanding documentation and hardware problems being a known failure of a piece of equipment, there may have been enforcement actions.

Q For hardware equipment. Yes, sir. I think we're on track.

A [Witness DiBenedetto] Prior to November 30, 1985, documentation deficiencies, to the best of my knowledge, were not an enforceable item, that's right.

Q Yes, sir. And, I'll, again, referring to Generic Letter 85-15, that was issued in August 6 of 1985; is that correct, sir?

A [Witness DiBenedetto] That's the date on the document, yes, sir.

Q And the footnote you read does, in fact say that unqualified equipment, for enforcement purposes -- well, strike that. Again, read the definition of footnote one, if you would, please.

A [Witness DiBenedetto] "For the purposes of enforcement, unqualified equipment means equipment for which there is not adequate documentation to establish that this equipment will perform its intended functions in the relevant environment."

Q Is it not fair to say then that after November 30th, 1985, that the Commission gave notice to licensees that it would treat equipment with document deficiencies as violations?

A [Witness DiBenedetto] No, I don't think so. I would not interpret that this was for several reasons. Again, we were interested in would the equipment perform its intended function? Was there classical evidence of whether or not this equipment would work -- pass or fail a test, a design-basis event? Could it be depended on to respond to mitigate the consequences of an accident?

The documentation deficiencies are not tantamount to a failure of equipment. When we use the word "unqualified," and as you heard Mr. Noonan state, we were very selective in the use of the word "unqualified." It meant the equipment would not work. It didn't mean that it was lacking radiation data or humidity data, it meant it wouldn't work. It failed. It could not be demonstrated that that equipment would perform its intended function. And, on that basis, I would not agree that strictly

documentation deficiencies put utilities on notice of potential enforcement.

The 85-15 policy also allows for a safety evaluation. Whether there's documentation deficiencies or hardware deficiencies, a safety-significant concern has to be found -- has to be concluded. It allows for the utility or anybody else to come back and say, I have a problem with equipment, whether it be documentation or it be operation. But here's why it doesn't impact the safe operation of my plant or impact public health and safety.

So, I'd say my answer to your question is no.

Q I take it that your statement is a statement of opinion, sir.

The question to you is does not 85-15, in fact, say that enforcement action will be taker against licensees that continue to operate their plants with unqualified equipment and, in fact, give that definition of unqualified equipment that you have read?

I'm just asking you, sir, if the document --

A [Witness DiBenedetto] The document says that but it is -- but I will add, in my opinion and in the opinion of staff reviewers that I am familiar with -- when I was on the staff, the policy that -- that we utilized in -- in reviewing equipment qualification, as well as after the staff, is not consistent with this philosophy.

Q I see. And so, you would not -- you do not agree with 85-15 as lined out by Mr. Thompson. Is that true? I'll withdraw that.

A [Witness DiBenedetto] I don't agree --

Q You do not have to answer, sir.

A [Witness DiBenedetto] Well, I'd like to clarify one point. I don't agree with the definition that you all had me utilize for "unqualified."

"Unqualified," to me, has been, as we had discussed, when I was working at the staff, the equipment didn't work, and it was demonstrated that it wouldn't perform its safety function.

Q Yes, sir. I won't belabor it. Thank you.

Let me move on and direct your attention to page 113 of your testimony.

[Pause.]

A [Witness DiBenedetto] I'm there.

Q Yes, sir. And, in particular, question 145.

A [Witness DiBenedetto] I'm there.

Q Okay, sir.

If you will just familiarize yourself with your answer, I believe it begins on page 113, the answer to question 145, and carries over to page 114, and in particular, I am interested in your statement on the top of page 114 that begins, "As I stated previously . . ."

A [Witness DiBenedetto] Okay, I'm there.

Q And if you could just read that into the record, sir.

A [Witness DiBenedetto] "As I stated previously, if APCo terminal blocks were to be used during peak conditions of the accident, the staff's assessment would be correct and justified."

Q Okay. And the staff's assessment I believe you were referring to is the testimony of the staff in its direct testimony; in particular, Dr. Jacobus' testimony on page 17. Is that correct, sir?

A [Witness DiBenedetto] Yes, sir, I believe that's correct.

Q And I would just ask you, sir, do you qualify that statement at this time, or is that your statement?

A [Witness DiBenedetto] I'm sorry. Can you be more specific?

Q That's your statement.

A [Witness DiBenedetto] That's my statement.

MR. HOLLER: Yes, sir.

If I might just have a minute, sir.

JUDGE BOLLWERK: Certainly.

[Counsel for NRC staff conferring off the record.]

BY MR. HOLLER:

Q If I may, just back to Mr. Noonan, just to clarify

something -- let me ask you, Mr. Noonan, if I recall correctly, making reference to the deposition, is it your opinion, in 1984, that enforcement was in its infancy and that you would not -- the staff would not cite licensees for violations of environmental qualification? Is that correct, sir?

A [Witness Noonan] It was a fact, in 1984, that the enforcement policies were just being formed by the -- by the -- by the staff, and it was in -- it was in its infancy.

Q Okay.

A [Witness Noonan] Let me continue.

Q Yes, sir.

A [Witness Noonan] There was a -- there was a very deliberate attempt by the staff to -- in order to get cooperation from the utilities and -- and in order to get these utilities to cooperate, we had to try to assure the utilities that we would not be coming out there and -- and hitting them with enforcement actions prior to the -- the November 30th date.

That was really a deliberate attempt by -- by NRC management, not -- not just the EQ staff. It was NRC management.

We needed -- we felt we needed time to work with the utilities to get this program from -- from -- well, the EQ branch would transition it to -- to a different group of

people, because the EQ branch was going to disappear. We knew that.

We didn't want -- we didn't want to put in effect enforcement policies that would -- that would sort of intimidate the -- the utilities. We wanted a free, open discussion until such time we felt that we had this thing really locked in. Then we could go ahead and go for it.

So, yes, the answer was these were at -- just being formulated.

Accordingly, we talked with -- it's in the Commission record, the public news -- we talked about the enforcement policies and how we were going to handle that, but they were in -- they were in its infancy.

Q Yes, sir. My question that was in 1984. Is that correct?

A [Witness Noonan] That's correct.

Q And certainly, then, in 1980, you would not have written violations for environmental qualification deficiencies.

A [Witness Noonan] There was no rule in 1980.

Q And that's just my question. You have testified that you wouldn't [illegible] it in '84, and I'm just going back and, certainly, not in '80, either, would you?

A [Witness Noonan] I -- I would -- I can't say there wasn't some -- someplace somewhere where there wasn't

a violation cited in 1980, but I don't -- I don't know what they would nave cited against. So, I don't --

Q Yes, sir.

Wouldn't it be fair to say, then, that -- well, strike that. Let me ask you this: You're familiar with an inspection conducted by Mr. Gibbons in 1980?

A [Witness Noonan] I'm aware of that one, yes.

Q Yes. And would it be fair to say, then, that he would not have ciced for violations of EQ deficiencies at that time?

A [Witness Noonan] No, I wouldn't say that. There was -- I don't recall any restrictions being placed on -- on Mr. Gibbons, and Mr. Gibbons would have cited whatever he wanted to cite.

Q I understand that, sir, but you've just testified, I believe, that the staff did not write enforcement actions for EQ deficiencies in 1984, '83, and '80.

A [Witness Noonan] I said -- I said, in the timeframe that we were talking about, in the 1984 timeframe, we made a deliberate attempt to -- to stay away from the -- stay away from the -- the violation area, because we were looking -- we were trying to seek the cooperation of the utilities.

In 1980, when the -- when this was all really just beginning, I would guess that, if Mr. Gibbons went out there

and he saw something wrong, he would cite them. On what basis he would cite them, I don't quite know exactly.

I'd have to go back and look why he would cite them, but I would say, if he found something wrong, he would cite it. He would say it's wrong.

Q If he found something wrong with environmental qualification, he would cite it.

A [Witness Noonan] Whatever he was looking at, sir.

Q Well, I'm asking you, sir, if he found something wrong with environmental qualification.

A [Witness Noonan] He would -- he would bring it to his management's attention. Then would be the -- the original management decision as to what they should do.

Q But you do not recall what he would cite that against?

A [Witness Noonan] I don't. No, I don't know exactly what he cited against.

MR. HOLLER: I have no further questions.

JUDGE BOLLWERK: Redirect, Mr. Repka?

MR. REPKA: Briefly.

REDIRECT EXAMINATION

BY MR. REPKA:

Q Mr. Noonan, in reference to the Mr. Gibbons inspection in 1980, you testified that you didn't think he'd be able to cite a violation against a regulation; is that

correct?

A [Witness Noonan]" I said I don't remember. I can state what he would have cited against. I just don't -- at this point in time, I can't say what he would do.

Q Are you aware of any restriction on him that would have prevented him from writing a finding, a deviation, an unresolved issue or any other kind of --

A [Witness Noonan] No, he had no restrictions, I'm sure, at that point in time.

Q So he could --

A [Witness Noonan] We really didn't start talking about this thing with violations until really during the '84 timeframe -- '83 timeframe.

Q So, if he thought something was deficient, he could have written that?

A [Witness Noonan] I'm sure he would have, yes.

Q You also testified earlier concerning the 1984 SER to Alabama Power Company for Farley, and Mr. Holler was asking you about some of the staff's bases for that SER.

Can you just very briefly describe for me, some of the documents the staff would have looked at as a basis for the SER?

A [Witness Noonan] I know the staff would have looked at the Franklin TERs. They would have looked at any inspection reports that were on the record. They would have

looked at the Farley II work that was done, because the Commission policy on sister plants would be to try not to repeat on one plant, what we've already pretty much agreed to on the other plant, so they would look at Farley II.

They would have looked at the trip reports on that Farley II inspection. I'm sure they would have looked at -- would have considered anything they had in their knowledge regarding any kind of anomaly to equipment where the utility was saying it was qualified but the staff maybe had some information to the contrary. They would have considered that.

We would have -- they were very familiar with what we were telling the Commission, because the staff was always involved in what we went to the Commission with. I thinking they looked at whatever the utility brought in. When the utility came in -- I believe it was January of '84 -- the utility brought in a number of items.

They would have talked about all the Information Notices. One of the things we were trying to make sure that the utilities stayed on top of the Information Notices. Some did a very good job of that; some didn't. Alabama Power had -- in my estimation back at that time, had done an excellent job on the Information Notices.

They would have talked in terms of Information Notices that we knew were in the works, Information Notices

that maybe had not been published yet. As an example -- and I can't recall the exact number, but it was the one on the terminal blocks. That information had been known by the staff.

In fact, the staff was working very closely with the I&E people in publishing that Information Notice, so all of that information in that particular timeframe, even though that Information Notice hadn't been published, the staff would have discussed it. I know the staff was very much aware on the terminal block issue. I guess, in general, I think that's what it is.

Q You mentioned the Franklin review. Could you tell me a little bit more, elaborate on what Franklin looked at?

A [Witness Noonan] Franklin looked at a lot of data that was submitted by just about every utility in the country. Franklin was the contractor that we hired because the staff -- we only had a limited number of staff people, but we had the dollars to go out and seek additional assistance through using contractors.

Franklin was one of the contractors that we worked with. They looked at the 79-01B stuff. They looked at all the SCEW sheets. Franklin requested certain documents to be sent to them, and they would look at all the documents that they had in their possession regarding equipment qualification, particular on various components.

I'm trying to recall what else they might have looked at, but the Franklin reviews were really the first detailed reviews that the staff looked at, and they were fairly -- at that point in tir they were really extensive reviews, probably the most extensive that the staff undertook in any area at that particular time.

Q So, Franklin did look at test reports?

A [Witness Noonan] Oh, yes, Franklin did. They requested test reports.

Q Did Franklin look at checklists and SCEW sheets from the licensees?

A [Witness Noonan] Yes, I'm sure they did.

Q So, ir total, when the staff wrote the SER, they were relying upon much more than what Alabama Power Company or any other licensee may have told them?

A [Witness Noonan] Oh, yes. In fact, I think the SER says they looked at all the TERs, considered all the TERs. I believe that's the case.

That's the point being, Mr. Repka, that the staff did not work in a vacuum when they wrote these SERs. They knew -- they were very knowledgeable about what was out there. They had a lot of information at their possession, and they would have considered it all.

Q Thank you.

MR. REPKA: If I could just have one minute to

confer in place?

JUDGE BOLLWERK: Certainly.

[Counsel for APCo conferring off the record.]

MR. REPKA: I have no further questions.

JUDGE BOLLWERK: Mr. Holler?

MR. HOLLER: If I may, sir?

RECROSS EXAMINATION

BY MR. HOLLER:

Q Mr. Noonan, you referred to Franklin and Franklin reviewing things. But Franklin didn't review V-type splices; did they, sir?

A [Witness Noonan] I don't recall that particular item. Maybe Mr. DiBenedetto could answer that better. I don't recall specifically whether they reviewed that or not. I would be --

Q This is in 198 -- prior to December, 1984?

A [Witness Noonan] I just do not recall at this point in time. I'd have to go back and look and see.

A [Witness DiBenedetto] If I may add to what Mr. Noonan as saying, at the time Franklin would have reviewed any -- '80 - '81 timeframe that I was working with Franklin, Franklin would have reviewed the file, if there were a file on the taping. They wouldn't have reviewed the actual configuration, but they would have reviewed the qualification of the materials used to make up the splices

or the connections.

Q Franklin -- and I'll direct this to either gentleman: Franklin didn't review the Chico-A/Raychem configuration either; did they, sir? This is prior to December 13, 1984. If you know.

A [Witness Noonan] I don't recall. I'd have to go back and look at the document to answer that question.

MR. HOLLER: I won't belabor the point and go through the others. Thank you, sir. I have no further questions.

JUDGE BOLLWERK: Anything further?

MR. REPKA: No further questions.

JUDGE BOLLWERK: Questions from the Board? Judge Carpenter?

BOARD EXAMINATION

JUDGE CARPENTER: Following up on staff's questions, the NRC requirement or lack of an NRC requirement, it is necessary for equipment to operate at peak LOCA temperatures, can you refer me to -- point me to a document from staff to licensees that informs them that that's a requirement? Can I find that requirement someplace?

WITNESS NOONAN: Are you -- if I can ask you to clarify the point, are you talking, in addition to 10 CFR 50.49?

JUDGE CARPENTER: Does it say that, what I just said?

WITNESS NOONAN: 50.49 was the document.

JUDGE CARPENTER: There's a difference of opinion between the staff, utility and you gentlemen on the question of whether the equipment needs to operate at peak LOCA temperatures, and I simply asked you, point me to a requirement that's in black and white that staff is utilizing.

WITNESS NOONAN: The way --

JUDGE BOLLWERK: Mr. Noonan, be careful now. We want to talk about past knowledge, not what you think at present.

WITNESS NOONAN: What we did in 1981. I'm not talking about anything other than 1981.

JUDGE BOLLWERK: It may well be that Mr. DiBenedetto is better able to answer this question.

WITNESS NOONAN: In fact, I'll even go back --

MR. REPKA: I think that's right.

JUDGE CARPENTER: If this question is awkward from this perspective, perhaps the Staff could supply more in their rebuttal testimony by giving me a reference. Thank you.

That would be simpler. Thank you.

JUDGE BOLLWERK: Judge Morris, do you have a

question?

JUDGE MORRIS: Mr. DiBenedetto, would you turn to page 21, please, of your testimony.

WITNESS DiBENEDETTO: Yes, sir.

JUDGE MORRIS: In the middle of the page there is a sentence that says "As long as they" -- and that refers to EQ records -- "remain accessible within a reasonable amount of time after request for inspection," et cetera.

WITNESS DiBENEDETTO: Yes, sir.

JUDGE MORRIS: What in your view would be a reasonable length of time?

WITNESS DiBENEDETTO: Again going back to my experience when I was auditing for the Staff, if information were made available during the audit or shortly thereafter and we allowed, I think we received information as much as a week, maybe more, after the audit, that would verify the information we were looking for, we found that to be acceptable.

In other words, if I requested a piece of information to support qualification and the utility that I was reviewing supplied it to me within that audit time period or shortly thereafter, within a week or so afterward, that was acceptable. If it took six months or a year to develop, that was certainly an unacceptable type of situation from a documentation standpoint.

A lot of times, and part of the reason this flexibility was there, a lot of times in the early reviews of equipment qualification, the NSSS vendors, the GEs, the Westinghouses, kept their test reports as proprietary information and the utility itself didn't always have that full test report with all the data. They supplied summary test reports and the Staff recognized that we couldn't mandate that the NSSS vendors turn those files over to us for review, so the utility if we requested them to would have to get us permission to go into the Westinghouses and the GEs to review that type of documentation, so that there was a time frame, a flexibility of providing the documents.

JUDGE MORRIS: Thank you. Would you turn to page 37, please.

WITNESS DiBENEDETTO: Yes, sir.

JUDGE MORRIS: And look at the last paragraph on that page. It starts "What the Staff has done" --

WITNESS DiBENEDETTO: Yes, sir.

JUDGE MORRIS: And you say "As I understand it, it's to create a fiction of equating document deficiencies with operability deficiencies and hence safety significance."

Do you have a copy of the modified enforcement policy handy?

WITNESS DiBENEDETTO: Not with me. We have one

here. I can --

JUDGE MORRIS: Could that be made available? If not, I'll loan my copy.

[Document proffered to witness.]

WITNESS DiBENEDETTO: I have a copy of it.

JUDGE MORRIS: Turn to page 2, please and look at Footnote 2.

Would you read that, please.

WITNESS DiBENEDETTO: "For the purposes of enforcement unqualified equipment means equipment for which there is not adequate documentation to establish that this equipment will perform its intended functions in a relevant environment."

JUDGE MORRIS: How do you reconcile that statement with your testimony?

WITNESS DiBENEDETTO: Again, my testimony is based on my knowledge of what we were doing and flatly being very cautious of how we applied the term "unqualified" versus "qualified" or "qualified" -- I'm sorry -- "lacking qualification documentation."

"Unqualified" in the context of the reviews we had started in the 1979-1980, up until the time I left the Commission in 1981, were if you had equipment failures, then you posed a potential safety significant concern.

The documentation deficiencies and if we look at

the '81 safety evaluations that were issued by the Staff, there were appendices attached to those which delineated upwards of 15 different categories of documentation deficiencies, yet we still did not classify the equipment as unqualified even at that time.

We had a category for unqualified equipment where it was known through the tests that a detrimental drastic failure of equipment and even before the equipment qualification branch was established we looked at and we shut down five utilities because of a gross failure of electrical equipment, those being connectors.

It wasn't because of the documentation problem, it was because of a gross failure, a gross inability of that equipment to perform its intended safety function when called upon to do so in light of an adverse environment.

JUDGE MORRIS: I understand your position on that but I don't think you have answered my question.

WITNESS DiBENEDETTO: I'm sorry. I see what the document says and I --

JUDGE MORRIS: Let's go back and review what you said in your testimony. It says "What the Staff has done through the modified enforcement policy is to create a fiction of equating document deficiencies with operability deficiencies and hence safety significance."

WITNESS DiBENEDETTO: Okay.

JUDGE MORRIS: Again, the footnotes says "Unqualified equipment means equipment for which there is not adequate documentation."

WITNESS DiBENEDETTO: Okay, in my testimony --

JUDGE MORRIS: So let me suggest something to you, that it's not the Staff that has done something in creating a fiction. You are disagreeing with the policy statement, is that correct?

WITNESS DiBENEDETTO: If I may answer it this way, yes, I am disagreeing with the policy statement but also it is truly a fiction that because an equipment file lacks a certain amount of specificity in documentation that the equipment is truly unqualified in the sense that it will not operate. That would be my clarification, sir.

JUDGE MORRIS: Okay. Then I'll suggest to you that in the policy statement those items which are on the master list of equipment or components important to safety are inherently safety-related, is that correct?

WITNESS DiBENEDETTO: Yes, sir. Safety-related is a sub-category of important to safety. I agree with that.

JUDGE MORRIS: My point being that -- I'll see if you agree with me -- that by definition if an item is on the master list, it has safety significance.

WITNESS DiBENEDETTO: Yes, sir.

JUDGE MORRIS: And that if there is no

documentation for its qualification, that has safety significance.

WITNESS DiBENEDETTO: Not necessarily, sir. It depends on the application of the equipment. If the application, for example if the piece of equipment has to perform a safety function during the adverse environment, then yes, I would expect documentation to be there.

If the equipment, such as the terminal blocks we're talking about, performs its intended function well before it sees the adverse environment, then the documentation that that's when it performs its function, that's all that's necessary.

The qualification testing, et cetera, is a moot point. It has done its job. The adverse environment can't impact the job it's already done, therefore no further documentation in my opinion would be necessary.

JUDGE MORRIS: Well, I won't argue but that's not a reasonable position to take, but I would suggest to you that's not what the import of the policy statement is.

You are nodding your head agreement?

WITNESS DiBENEDETTO: Well, I --

JUDGE MORRIS: Or are you just nodding you heard me talk?

[Laughter.]

WITNESS DiBENEDETTO: I guess I'll agree with your

statement that you find a difference in what the policy statement is saying and I still maintain in my opinion that the policy statement I am not in agreement with, nor was I ever when I was on the Staff or following the Staff, nor was that the intent of us when we had started the equipment qualification branch and inspections to penalize utilities for not dotting i's and crossing t's.

JUDGE MORRIS: Thank you. I think you have answered my question.

WITNESS DiBENEDETTO: Thank you, sir.

JUDGE MORRIS: I would like to ask a general question that either of you might respond to. And of course Mr. Noonan, based on your knowledge prior to the cut-off date.

It seems to me that the qualification tests that have been run on various pieces of equipment, have tested in many cases only one item. Is that correct?

WITNESS DI BENEDETTO: Yes, sir.

JUDGE MORRIS: Are you comfortable as a technical person with a test of one item, where this item was reproduced and was present in large numbers in many plants, and must work when it's called on to.

WITNESS NOONAN: I would like to respond to that, because that in a discussion that we had early, back at the start of the branch in 1980. Historically, equipment

qualification -- going back, I'll go back to the 1950s and 1960s when I was doing it in the aerospace industry -- usually required more than one item to be tested.

I came to the nuclear industry in 1974, when equipment qualification started. And I say as a technical person, we had concerns. But there were certain things you just couldn't do anything about. Some of the equipment we now test, the vendors that manufactured that equipment basically had gone out of business. We were reluctant to pull equipment out of the plant to run tests on it, because once you do that, then you can't very well put that equipment back into the plant.

So we basically compromised to require only one piece of equipment. But after much soul searching and much debate of the subject.

JUDGE MORRIS: Mr. Di Benedetto?

WITNESS DI BENEDETTO: I agree with that. And also that, again, if we look at the '70s and '80s time-frame, that typically was done in industry by the vendors. And to impose something different on that, would have created a lot of controversy.

I think that you will find in testing in today's area, even the utilities have satisfied themselves, and often test more. For example, on cables, etc. -- several samples of cable are tested, several pieces of equipment are

tested in different configurations and different orientations as well.

JUDGE MORRIS: Thank you. I have no further questions.

JUDGE BOLLWERK: I have a question I will address to Mr. Noonan first, and then Mr. Di Benedetto, if you have anything to say, you can certainly chime in.

In the 1984 time-frame, and during the time that you were with the Commission, it was generally considered to be the responsibility of the licensee to operate their facility safely?

WITNESS NOONAN: That's correct, sir.

JUDGE BOLLWERK: It's not the NRC staff's responsibility, the NRC's responsibility to operate that facility safely?

WITNESS NOONAN: That's correct, sir.

JUDGE BOLLWERK: Given that, given the licensee's responsibility for safe operation, how do you see that in terms of your view of what the SER was or wasn't saying at that time, the 1984 SER, given that responsibility of the licensee?

WITNESS NOONAN: When the Commission licenses a utility to operate a plant, it does so on a basis of a very extensive review. I have no reason to doubt the utility that has that responsibility that they are not going to tell

me the truth. I just don't come from that mindset. I always think that the utility is going to give me the best information that they have, and make it factual -- until I find otherwise.

But as long as I have trust in that utility -- which I can't say I do that for every utility, but for a majority of utilities -- most utilities came to us and were very forthright in their EQ program. They laid it on the table. They talked to us. They told us, giving the vendors, giving the architect/engineers -- it was really a cooperative effort from the standpoint of the staff to the utility.

Because back in 1979 and 1980 we didn't have much to go on. There wasn't much qualification data available to the staff to review. You can see that by looking at those early SERs and TERs. There are just a lot of holes. So it was like that.

Until I have reason to believe, other reason to doubt a utility that he is coming in and telling me the truth, I'm going to take him at his word. He is a responsible person. He knows what you have to do to operate that plant safely. He knows better than the staff does. I have to believe him, until I find something different. But if I do, then I go back.

JUDGE BOLLWERK: But again, gives the recognition

that it's the licensee's responsibility for safe operation, would the staff, consistent with that idea, make some kind of a broad safety finding?

WITNESS NOONAN: Yes, sir. The staff was always under direction to make a safety finding, but only on the basis that the utility made the statement first. That was historically, in every SER that I was involved with when I was at the staff, it was always our contention that the utility has to say first it's okay to operate. And then we would come in and concur with that position.

And every SER that I was ever involved with, that's exactly the basis for the SER. We wrote, early on we wrote something we called EERs, which were engineering evaluation reports. And the reason we called those EERs was, after the final review of the document -- it started out to be a safety evaluation, it started out that way.

After we got done, if we found that the utilities could not make the statement first that the plant was safe to operate because of the lack of data, we withdrew our safety conclusions, and issued an engineering evaluation.

Basically, it said: Here's where you stand. Now come back and fill in the holes. So if the utility can't draw the conclusion first, then as a staff member in 1984, and before that, I can't draw a conclusion either.

JUDGE BOLLWERK: Mr. DiBenedetto, do you have

anything to add to that?

WITNESS DiBENEDETTO: I would only add one other piece of information, in that the reviews performed, whether for the engin ring evaluation repo:t or for the early SERs, had more to go on than the -- the typical staff safety evaluations we were writing in support of tech specs.

As a project manager, I wrote a lot of safety evaluations, and you're right, the type of statement a utility would make, we would repeat back to them and say, yes, we believe with reasonable assurance that they were operating a safe plant, because they told us so.

Equipment qualification had a different foundation to it, and as we told Commissioner Bradford, because he had similar-type questions -- how do we know everything out there is okay? -- we told Commissioner Bradford, in 1981, this is the first time in regulatory history -- regulatory being the NRC and its predecessor, the AEC -- that we actually knew every -- and had identified every piece of equipment -- safety-related equipment in -- in a power plant, and on the basis of their submittals and on the basis -- basis of the information we are requiring, over those two years, there was reasonable assurance that -- that they were operating safely with equipment that was qualified to perform its function, and then the reviews went on, continued through '85 and etcetera.

JUDGE BOLLWERK: All right.

I have no further questions unless there are others from members of the Board.

[No response.]

JUDGE BOLLWERK: All right, gentlemen. We thank you very much for your testimony and your service to the Board, and you are excused subject to being recalled as it may be necessary.

WITNESS DiBENEDETTO: Thank you.

[Panel excused.]

JUDGE BOLLWERK: Is the designated reader coming? We have some exhibits we need to move in with regard to these two witnesses.

[Pause.]

MR. HANCOCK: All right. I believe all the exhibits referenced in Mr. DiBenedetto's and Mr. Noonan's testimony are going to be Alabama Power Company exhibits -- none have been previously identified and introduced as staff exhibits -- and begins with APCo Exhibit 78.

It is a October 31, 1989, letter to Mr. W.G. Hairston from Caudle Julian transmitting NRC Inspection Report No. 50-348/89-23 and 50-364/89-23.

APCo Exhibit 79 is the resume of Mr. Philip A. DiBenedetto.

APCo Exhibit 80 is the NRC order dated 3/30 1990.

It's a EQ civil penalty, H.B. Robinson.

APCo Exhibit 81 is a NUGEQ report entitled "Clarification of Information Related to the Environmental Qualification of Limitorque Motorized Valve Operators," and it's dated August 1986, and APCo Exhibit 82 is Vincent S. Noonan's CV.

At this time, I would move that APCo Exhibits 78 through 82 be admitted into evidence.

JUDGE BOLLWERK: Any objection?

MR. HOLLER: No objection, sir.

JUDGE BOLLWERK: The record will reflect that APCo Exhibits 78 through 82 have been marked for identification and are received in evidence.

[APCo Exhibit Nos. 78 through 82 were marked for identification and received in evidence.]

JUDGE BOLLWERK: Do you have an exhibit you would like to move in?

MR. HOLLER: Yes, sir. At this time, I move what's been previously identified as Staff Exhibit 61 into evidence.

JUDGE BOLLWERK: Any objection?

MR. HANCOCK: No objection.

JUDGE BOLLWERK: Then Staff Exhibit 61 will be received in evidence.

[Staff Exhibit No. 61 was received in evidence.]

JUDGE BOLLWERK: I believe, at this point, we're ready for Mr. Woodard.

Whereupon,

JACKIE D. WOODARD,

was called as a witness on behalf of Alabama Power Company and, having been first duly sworn, was examined and testifies as follows:

JUDGE BOLLWERK: Mr. Miller? Mr. Hancock.

MR. HANCOCK: Yes.

DIRECT EXAMINATION

BY MR. HANCOCK:

Q Mr. Woodard, you have just been sworn, and if you could, please, for the record, please state your name.

A [Witness Woodard] Jackie D. Woodard.

Q Mr. Woodard, do you have before you a document entitled "Testimony of Jackie D. Woodard on Behalf of Alabama Power Company"?

A [Witness Woodard] Yes, I do.

Q Did you assist in the preparation of this written testimony?

A [Witness Woodard] Yes, I did.

Q At this time, do you have any corrections you wish to make to this testimony?

A [Witness Woodard] Yes.

Page eight, the fourth line from the bottom, first word says "under," and it should say "undue," U-N-D-U-E. That's -- that's the only correction I have.

Q Thank you.

If you were asked these same questions today, would your answers be the same?

A [Witness Woodard] Yes.

Q Do you adopt this testimony as your written testimony in this enforcement action?

A [Witness Woodard] Yes.

MR. HANCOCK: At this time, I would move that the testimony of Mr. Woodard be bound into the record.

JUDGE BOLLWERK: Any objection?

MR. HOLLER: No objections from the staff, sir.

JUDGE BOLLWERK: Then the testimony of Jackie D. Woodard will be bound into the record.

[The direct testimony of Jackie D. Woodard on behalf of Alabama Power Company follows.]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	Docket Nos. 50-348-CivP
ALABAMA POWER COMPANY	)	50-364-CivP
	)	
(Joseph M. Farley Nuclear Plant, Units 1 and 2)	)	ASLBP No. 91-626-02-CivP

TESTIMONY OF JACKIE D. WOODARD
ON BEHALF OF ALABAMA POWER COMPANY

Q1. Please state your name and your current position.

A: My name is Jackie D. Woodard. I am a Vice President of Southern Nuclear Operating Company, Inc. I am also a Vice President of Alabama Power Company.

Q2. What is your educational background?

A: I received a Bachelor of Science degree in Physics from North Georgia College in 1965. I then enrolled in graduate school at Auburn University, where I earned a Masters degree in Physics in 1968. After joining Alabama Power Company in 1971 as a junior engineer, I was sent to Georgia Institute of Technology for additional graduate work at the Georgia Tech Research Reactor. My work at Georgia Tech was principally associated with health physics, but I also took courses in nuclear engineering and radiochemistry. Alabama Power Company then sent me to the Westinghouse facility in Zion, Illinois

for Senior Reactor Operator (SRO) Training. This training prepared me to obtain an SRO license for Unit 1 of Farley Nuclear Plant. I held this license from 1977 until 1988. I have also completed the Massachusetts Institute of Technology Sloan School Senior Executive Program.

Q3. Please describe your various responsibilities from the time you joined Alabama Power Company until the present.

A: From 1973 through 1988, I held various positions at Farley Nuclear Plant, including Chemistry and Health Physics Supervisor, Technical Superintendent, and Operations Superintendent. In 1978, I was promoted to Assistant Plant Manager and then General Manager in 1984. In 1988, I was promoted to Vice President-Nuclear and moved to Birmingham.

Q4. What is the purpose of your testimony?

A: The purpose of my testimony is to provide the Board with the perspective of senior management of Alabama Power Company and Southern Nuclear Operating Company, Inc. on two major policy issues raised by the enforcement proceeding: the application by the current enforcement Staff of the Modified Enforcement Policy and the meaning and intent of the Safety Evaluation Report (SER), which Alabama Power Company received for both units on December 13, 1984. I will explain why, from an

overall nuclear power industry point of view, this Board should reject the current enforcement Staff's position that an SER is little more than a "boiler plate" document which does not state the Staff's position and which cannot be relied upon by NRC-licensees. I will also explain my perception of the Modified Enforcement Policy and how equation of alleged documentation deficiencies with actual safety significance is contrary to sound regulatory policy and enforcement policy.

OVERVIEW OF ALABAMA POWER COMPANY'S POSITION

Q5. Why is Alabama Power Company challenging the imposition of the $450,000 civil penalty in this case.

A: There are four reasons for this challenge: (1) Alabama Power Company has received inconsistent communications from the NRC regarding compliance with EQ requirements; (2) the enforcement Staff's retroactive application of evolving knowledge to EQ requirements; (3) the lack of safety significance of the alleged deficiencies; and (4) Alabama Power Company's concern about the future of our regulatory process given the Staff's attitude of regulation by enforcement. Principally, Alabama Power Company wants to ensure that the regulatory process remains reasonable, fair, and equitable so that the long-term operation of Farley Nuclear Plant continues to be viable.

Q6. Please explain to the Board each of your four reasons for challenging this civil penalty.

A: I will do so in the order that I identified them.

1. Inconsistent Communications

Alabama Power Company has a longstanding commitment to operating the safest and most efficient nuclear plant in the country. We take extraordinary pride in our plant and our record of safe operations and our prompt, responsive compliance with NRC policy and regulations. This sense of pride and commitment was at the heart of our efforts to develop, implement and maintain an effective, efficient and successful EQ program.

Our commitment to comply with the Staff's EQ expectations has been recognized continually by the Staff since the early 1980's. During that time, the Staff accepted numerous submittals and constantly communicated to us their approval of our progress in achieving compliance with evolving EQ requirements. The Staff's acceptance of our EQ compliance was ultimately acknowledged in December, 1984, when it issued Safety Evaluation Reports for each unit stating that, "Alabama Power Company's electrical equipment environmental qualification program complies with the requirements of 10 CFR

50.49." We believed then, and continue to believe, that through these SERs, the Staff approved our EQ program and acknowledged that we had met the November 30, 1985 deadline imposed by the EQ rule. For the current enforcement Staff now to claim that Alabama Power Company's program did not comply with the EQ rule, that the Company either clearly knew or should have known of its alleged deficiencies at that time, and failed to exercise its best efforts to comply, is wholly inconsistent with the NRC's previous communications. We feel strongly that this inconsistency should be reviewed in an objective forum such as this proceeding.

2. Misapplication of the Regulatory Process

Alabama Power Company believes that it is the victim of evolving knowledge and interpretations of an EQ standard that the Staff has used to measure licensee compliance with the EQ rule. Though the language of the EQ rule has remained unchanged since its issuance, we believe that the Staff's enforcement policy effectively re-interprets the compliance standard. Alabama Power Company believes that subsequent to the November 30, 1985 deadline, the Staff gained new knowledge about EQ equipment that it applied retroactively to Alabama Power Company. Then, through the Modified Enforcement Policy, the Staff engaged in the inappropriate practice of equating a documentation deficiency with safety significance. It did

this by assuming, with no attempt at engineering analysis, that equipment for which alleged documentation deficiencies existed was the same as unqualified equipment and, thus, incapable of performing its intended function. Once this inoperability assumption was made, the Staff found "many" systems affected. The Staff then imposed on Alabama Power Company one of the highest EQ fines issued to the nuclear power industry. This retroactive application of evolving knowledge, and treating alleged documentation deficiencies as actual safety significant deficiencies, is poor regulatory policy.

3. Lack of Safety Significance and Concern for the Future Regulatory Process

Alabama Power Company believes that even if documentation deficiencies did exist in its EQ files, these documentation deficiencies were not safety significant. We further believe that it is poor regulatory policy to allow documentation deficiencies to equate to safety significance and then utilize the enforcement process to impose this policy. It takes but one example to appreciate the unfairness of this practice. The Staff has fined Alabama Power Company for failing to have T-drains in its Limitorque motor operated valves. The Staff claims that no documentation existed to establish qualification of the Limitorque MOVs without T-drains. However, as Mr. DiBenedetto has testified, prior to the

November, 1987, inspection at Farley Nuclear Plant, the Staff cited 21 utilities for Limitorque MOVs without T-drains installed, yet never told the industry of this widespread, allegedly safety significant condition. If the Staff truly believed that a lack of T-drains on the Limitorque MOVs had safety significance, why did the Staff fail to inform the industry? The Staff elected to inform licensees of these problems through the issuance of civil penalties rather than bulletins and generic letters. Rather than work with licensees to satisfy itself that all necessary documentation was in the appropriate file, and that only equipment that would perform its intended function in the event of a design basis accident was installed in nuclear plants, the Staff chose to "regulate by enforcement." Alabama Power Company fails to understand why, if the Staff truly considers these alleged violations to be safety significant, it did not promptly say so and solve the problem rather than lay an enforcement trap for unsuspecting licensees. This is particularly true where, as here, the equipment was tested and qualified by the vendor without T-drains and the vendor supports this conclusion. Other witnesses, however, have spoken to this issue and I mention it only as an example of the unfair result when the Staff chooses to regulate by enforcement.

Through discovery, Alabama Power Company has also learned that in August of 1987, numerous Staff inspectors attended a seminar presented by Sandia National Laboratories in New Mexico. The purpose of this seminar was to educate the inspectors on recent EQ developments so that they would be better prepared to conduct the remaining EQ audits. As part of the presentation, the inspectors were informed of various items of electrical equipment that had been identified as violations in previous EQ inspections, and a list of these items was distributed. (APCo Exhibit 1). Armed with this "hit list" of likely violations, the Staff then inspected Farley Nuclear Plant. Not surprisingly, the Staff's inspection report for Farley almost mirrors the Sandia list of findings at other nuclear plants. Alabama Power Company is convinced that if the Staff truly considered these alleged violations to be safety significant, it would have informed the industry as the problems were discovered in order that appropriate action could be taken. Alabama Power Company can only assume that the Staff, prior to November of 1987, did not believe that the cited "deficiencies" were safety significant.

Is this how the Staff intends to conduct itself in the future? Undue attention to the form of paperwork over the substance of actual safe plant operations, as evidenced by engineering and operability analyses, is, in my opinion, very poor regulatory policy, very poor enforcement policy, and a very poor signal

to send the nuclear energy industry. This type of treatment, regulation by enforcement and glorification of documents over engineering analysis is, in my opinion, counterproductive to safety, promotes an unhealthy operating environment for our employees, and inevitably will undermine the long-term efficient operation of our nuclear plants.

THE DECEMBER 13, 1984 SERs

Q7. You have stated that one of the purposes of your testimony is to provide your perspective about the meaning and intent of the December 13, 1984 Safety Evaluation Reports. Will you please explain your position?

A: Yes. I understand that the Staff has taken the position that the Safety Evaluation Reports were "boiler plate" and should provide no comfort to the receiving NRC-licensee. In my opinion, such an enforcement position is directly contrary to prudent regulatory policy. A Safety Evaluation Report from the Staff has always been viewed by NRC licensees as an extremely important document. Such SERs form the regulatory basis for license amendment requests, and are an important milestone in the regulatory process. At Alabama Power Company, we consider the receipt of the December 13, 1984 SERs to be a very important data point.

Through this SER, the Staff told Alabama Power Company that its EQ program was in compliance with the EQ rule and that it had met the November 30, 1985 deadline. Under the heading "Conclusions," the SER states:

> Based on the above evaluation, we conclude the following with regard to the qualification of electrical equipment important to safety within the scope of 10 CFR 50.49. 1) Alabama Power Company's electrical equipment environmental qualification program complies with the requirements of 10 CFR 50.49; 2) The proposed resolutions for each of the environmental qualification deficiencies identified in the January 31, 1983 SER and FRC (Franklin Research Center) TER are acceptable; 3) Continued operation will not present undue risks to the public health and safety.

This conclusion states in no uncertain terms that as of December 13, 1984, the Staff believed that Alabama Power Company was in compliance with 10 CFR 50.49.

Through discovery in this enforcement proceeding, we have learned that Mr. Paul Shemanski, the Staff's author of our December 13, 1984 SERs, has claimed that all the Staff was approving was our EQ "program." He has stated that what was issued to Alabama Power Company "essentially is a boiler plate SER" saying that we were in compliance with 10 CFR 50.49. (Shemanski deposition at page 93). Alabama Power Company is not accustomed to receiving "boiler plate" documents from the Staff that assess our compliance with safety-related requirements and, as a result, did not in 1984 take these SERs

as being meaningless. We relied on the Staff's words in the SERs that they had evaluated and approved our EQ program. The SERs were based upon the work done by Franklin (who also reviewed our qualification documentation) and our resolution of individual deficiencies. To Alabama Power Company, there is nothing "boiler plate" about the Staff's conclusion; rather, these SERs are very Farley-specific.

Furthermore, we did not interpret these SERs to be a conditional approval of Alabama Power Company's EQ program or that the SERs were based on a superficial review of our EQ program by the Staff. Instead, we saw this as the culmination of years of effort to comply with the Staff's EQ rules; effort which involved constant interaction, communication and cooperation with the Staff. Alabama Power Company, therefore, did not, and does not, see these SERs as having been issued in a vacuum. We believed that these SERs were based on the complete history of Staff review and audit of Alabama Power Company's EQ program that Mr. Jones and Mr. McKinney have already discussed in detail. This includes the 1980 on-site audit in which the Staff visited Farley Nuclear Plant and reviewed the installed condition of various items of electrical equipment. It also includes the Staff's review of numerous Alabama Power Company submittals, including the Master List submitted in response to IE Bulletin 79-01B. The Staff said then that Alabama Power Company's Master List was

"complete and acceptable." (APCo Exhibit 49, at p. 10). Finally, Alabama Power Company believed that the 1984 SERs were also based on the qualification documentation review by Franklin Research Center and the resolution of those deficiencies. This effort by Franklin involved taking the Master List prepared by Alabama Power Company (and previously approved by the Staff), and reviewing the documentation supporting qualification for each individual item of electrical equipment identified on that Master List. As noted earlier, Franklin agreed with Alabama Power Company that each item had sufficient documentation to prove qualification (with the exception of a few deficiencies). These are the deficiencies that Alabama Power Company discussed with the Staff at the January 11, 1984 meeting and for which the Staff accepted Alabama Power Company's resolutions. With this long and detailed record of Staff analyses, audits and reviews, the Staff issued the December, 1984 SERs. It was from this historical perspective that Alabama Power Company accepted the SERs as a final and formal blessing of our compliance with the EQ regulations before the November 30, 1985 deadline.

Q8. In this proceeding, the Staff takes the position that Alabama Power Company was subject to a subsequent EQ inspection and that it is not entitled to "Stick it's head in the sand" about EQ compliance. What is your response to this?

A: Of course, Alabama Power Company is not entitled to "stick its head in the sand" about evolving regulatory issues, EQ or otherwise. In fact, as Mr. Shipman and Mr. Jones testified, the Company expended considerable effort and resources after the deadline to address evolving EQ issues. Here, however, under the Modified Enforcement Policy, the "clearly knew or should have known" standard has been created and requires the enforcement process to focus on a state of EQ awareness as of November 30, 1985. Thus, while I agree that Alabama Power Company cannot "stick its head in the sand" about evolving EQ issues, I also feel strongly that it is unfair for the Staff to retroactively apply evolutionary knowledge against us. What could be more indicative of the Staff's expectations and Alabama Power Company's awareness as of the deadline than the two Safety Evaluation Reports? If there were any EQ deficiencies about which Alabama Power Company "clearly knew or should have known," then they certainly would have appeared in the 1984 Safety Evaluation Reports. Had Alabama Power Company not exercised its best efforts to comply with EQ by the deadline, then such a failing would certainly have been called out in the SERs. Obviously, this did not occur. The apparent reason for the disparate treatment in 1987 is that the most current state of knowledge was applied to Alabama Power Company's EQ documentation files.

CONCLUDING REMARKS

Q9. Do you believe that Alabama Power Company exercised its best efforts to comply with EQ prior to the deadline?

A: Yes. Alabama Power Company allocated the appropriate resources to complying with the various EQ requirements issued by the Commission and the Staff beginning in 1978. David Jones was assigned responsibilities as an EQ Project Engineer, and he had available to him independent consultants such as Mike Lalor, Bechtel, Westinghouse, Southern Company Services, Inc., and other resources which were deemed necessary to support our compliance effort. Under the EQ Administrative Program, any department at Alabama Power Company with EQ responsibilities was to ensure that those responsibilities were fulfilled. EQ compliance became a total Company effort. Accordingly, I believe that Alabama Power Company exercised its best efforts to comply with the EQ regulations prior to the deadline.

Q10. Does this conclude your testimony?

A: Yes it does.

MR. HANCOCK: At this time, I would tender Mr. Woodard for cross examination by staff.

MR. HOLLER: Sir, the Staff has no questions for Mr. Woodard.

JUDGE BOLLWERK: Questions from the Board then?

Judge Carpenter?

JUDGE CARPENTER: I don't believe so, Mr. Woodard. I believe your testimony is very clear. You have stated your position in a way that I can understand very well. I thank you for it.

WITNESS WOODARD: Thank you.

JUDGE BOLLWERK: Judge Morris.

BOARD EXAMINATION

JUDGE MORRIS: I have a few questions for Mr. Woodard.

First, let me see if I can distill your testimony into one sentence saying that, A, you don't think the policy statement is the right thing, if I can use those words; B, you think it has been misapplied anyway?

WITNESS WOODARD: Yes, sir, that's correct.

JUDGE MORRIS: What is of more interest to me, Mr. Woodard, is how the management of Alabama Power Company assured itself that its EQ program was satisfactory to itself and met the Commission's requirements fror a management point of view? Now, this would include say

philosophy, organization, procedure, whatever you wish to describe.

WITNESS WOODARD: Well, basically, when the requirements came out, we integrated these requirements into our plant organization, which to me is the right way to do business when new requirements come out. And I say that as opposed to creating a separate organization somewhere whose job is EQ management.

We took the procurement parts and we put in the procurement organization; we took the engineering parts and we put it in our on-site system performance group organization; we took other parts of engineering responsibilities and we put them in our main office engineering support organizations and interfaced those people with Bechtel. We had the quality assurance department whose job was to audit these requirements in conjunction with other requirements. So, basically what we did with this requirement is like we did with any of the other hundreds of requirements that come along, is we integrated it into our plant staff, every element of it. Then we interacted, as you can tell from all of the documentation in the years before 1985, numerous interactions with the NRC by correspondence or meetings or both to adjust to the change that was taking place when you have a new requirement.

And my experience has been that any time you get a new requirement, like a new technical requirement, that you simply just can't legislate that this thing will be in effect and perfect. You have to go through an evolutionary process and we went through one in the early '80s to get it right and to the standard that was expected.

JUDGE MORRIS: What I am trying to get at is how the president of the company or the Board of Directors knew that this program was effective? What procedures did they have? What attention did they pay? I am talking about top management. How were they on top of this EQ question?

WITNESS WOODARD: At the time of implementation in 1985, I was the plant manager. I reported to a vice-president in Birmingham who reported to an executive vice-president and he reported to the president of the company. The vice-presidente in Birmingham was responsible also for making direct reports, status reports, on plant operation directly to the Board, typically done on a monthly basis. The quality assurance organization that audited requirements of the plant reported also to that vice-president in Birmingham. It didn't report to me as the plant manager. It was designed that way so that you have an independent evaluation of what is going on outside the plant management.

We also had a nuclear safety subcommittee, which is a subset of the Board of Directors. It has oversight

over nuclear activities. But as far as specific -- them reviewing EQ procedures, I don't believe that happened.

JUDGE MORRIS: I wouldn't expect them to be reviewing nuts and bolts very often, although a good friend of mine once told me that the Chairman of the Board needs every once in awhile to check the bicycle rack.

WITNESS WOODARD: I agree with that, too. But I might add that since 1988, the Board has been very involved in EQ matters. I go to them myself and give them status reports on how we're coming along with this.

JUDGE MORRIS: How frequently would you do that?

WITNESS WOODARD: Typically done every month or every other month. We recently changed the Board meetings to occur every other month. Either I do this report or the person I report to does this report, or the person he reports to, but generally it is me that goes to the Board and makes this report because I am in charge of nuclear operations.

JUDGE MORRIS: So, there is an information flow from the bottom ranks up through top management?

WITNESS WOODARD: Yes, sir. And they knew we're here today.

JUDGE MORRIS: What kind of feedback has happened on the EQ question over the years from the top to the bottom?

WITNESS WOODARD: Basically, when they first learned of our civil penalty, we explained the civil penalty to them and, of course, their reaction was what is happening at the plant? What is different? I don't know how aware you are, but we have a fine reputation. The Farley nuclear plant is one of the top plants in the country in terms of safety, in terms of reliability, our capacity factors are excellent, and we are also well accepted in the community. And these Board members, you know, a lot of them think when they're on the nuclear safety subcommittee they pick the ones who are the nearest to the plant to be on these committees because they are more in tune with what is going on locally and with any concerns that local citizens may have. So, here we are with a wonderful operating record, high SALP ratings, high INPO ratings, and all of a sudden the Farley nuclear plant goes a $450,000 fine. So, their reaction is what has happened at Farley nuclear plant? And, of course, the general public's reaction is what is going on out there? Are we still safe?

So, we had to go through the process of putting these violations one by one -- I mean, very specifically in perspective for the Board in the nuclear safety subcommittee. So, there has been a great deal of interaction on that.

JUDGE MORRIS: Well, I can understand that in that

time frame.

I was wondering if over the years there had been any direction given by upper management to the troops, so to speak, or whether they listened and concurred passively?

WITNESS WOODARD: Are you speaking in general? Or on operations?

JUDGE MORRIS: On EQ.

WITNESS WOODARD: On EQ? No, sir, I don't know of any prior to us getting this inspection. But please keep in mind, you know, we face hundreds of new requirements as the years go by.

JUDGE MORRIS: I've observed this.

WITNESS WOODARD: Yes, sir.

JUDGE MORRIS: On a totally different subject, has there been any settlement discussions between Alabama Power and the staff?

WITNESS WOODARD: I would have to confer with our counsel on that. May I do that for a moment?

JUDGE BOLLWERK: I don't think it's necessary. Maybe this is something we should bring up. If he is not aware of it, I don't want to get into any --

JUDGE MORRIS: Yes. If you're not personally aware of any such discussions --

WITNESS WOODARD: Well, let me say that I have had no discussions, myself, directly with the Commission.

However, that subject comes up, by its very nature, like Mr. Woodard, what do you think? If someone wants to settle, what do you think? And we have had discussions along those lines.

JUDGE MORRIS: Internally.

WITNESS WOODARD: Yes, sir.

JUDGE MORRIS: You're personally not aware of any discussions, settlement discussions, with the staff.

WITNESS WOODARD: I have heard there have been some but that they have been on the periphery, like maybe with --

JUDGE MORRIS: You've haven't been involved.

WITNESS WOODARD: -- with legal counsel --

JUDGE MORRIS: Yes.

WITNESS WOODARD: -- with legal counsel on one side and legal counsel on the other side, and that's more or less hearsay, from my point of view.

JUDGE MORRIS: Thank you very much.

WITNESS WOODARD: Yes, sir.

JUDGE BOLLWERK: I have no questions.

WITNESS WOODARD: May I say something?

JUDGE BOLLWERK: Well, if the staff is not going to hop up and object -- all right. Why don't you go ahead?

WITNESS WOODARD: I -- I would like to say something. I have been working on this thing for five years

and was very much involved at the plant. I had been down there forever, until I got moved to the main office.

I am being asked all the time why we're doing this, also by the Board -- why are you doing this? -- because it obviously costs us a great deal more money to come this far and talk to you than it would be to just pay the fine.

Members of the general public have asked me the same thing -- why are you doing this? -- and it has to do, principally, with two things.

The first is our reputation. We have an excellent reputation. We're very proud of it.

I guess I'm -- I'm probably more proud of the fact that that plant is very well accepted in the local community, as well as throughout the country, as being a good plant than just about anything.

That's a really good witness, and we are here to protect our reputation. That's one of the most important things to us.

We also have a reputation to protect with our employees, who are a very stable group of employees, very low turnover, very high professionalism, and I feel we have a responsibility to defend their actions, our actions, to you.

The other interest that we have is the future of

nuclear power, and -- and I believe, when you are dealt an injustice by the NRC, that you have to stand up for yourself at some point, because if you don't, it will compound itself in the future, and it will have long-term cost implications, and I believe, in this particular area of EQ, we have been dealt an injustice.

I have a responsibility to operate that plant safely and in a cost-effective manner and in accordance with the regulations and rightfully so, but I think the NRC has a tremendous responsibility in managing it:: -- its regulatory process properly, and I believe they have mismanaged it in this case.

I believe that very strongly. That's why I am here.

Thank you.

JUDGE BOLLWERK: Thank you, sir.

If there is nothing further, you are excused, sir, and we thank you for your testimony and your service to the Board. You're subject to recall as may be necessary.

[Witness excused.]

JUDGE BOLLWERK: At this point, unless that was your summary, Mr. Miller --

MR. MILLER: Can I adopt that?

MR. BACHMANN: We assumed that was the summary, that Mr. Woodard did take it over from Mr. Miller.

JUDGE BOLLWERK: Do you want a couple of seconds, or are you ready to go ahead?

CLOSING ARGUMENT ON BEHALF OF ALABAMA POWER COMPANY

MR. MILLER: As a matter of fact, given the lateness of the hour and what we have done, I had planned a three- or four-hour summation, but I think I'll try and reduce it some, but hearing Jack say what he said reminded me of something that occurred in this country a couple of years ago, when the United States of America had a Secretary of Labor, Raymond Donovan, who got indicted for some alleged criminal acts, and they tried him in Federal Court, I believe in New York. They tried him in the newspapers.

They called him every bad name you could think to call an ex-Secretary of Labor, and the jury acquitted him, and I remember vividly watching the news report of him standing on the courthouse steps, and some news reporter said, well, now that you have been acquitted, Mr. Donovan, what do you have to say, and his words were this: Where do I go to get my reputation back?

For Alabama Power Company, this Board is where we have come to get our reputation back. This case is very, very important to us.

We have tried to approach it in a professional

manner that is reflective of how we operate our plant and how we prepared ourselves to comply with the EQ regulation.

I would like the Board, as we proceed through our endeavors and return in May, to reflect on our philosophy of case presentation and case preparation.

We went out and got the staff of the NRC during the relevant time. We did not shrink from what they had to say, because it is consistent with how we did our business.

We went out and got engineering testimony from people who were there when we were attempting to comply with EQ.

We have tried to present a broad-based case that tries to put things in context, that is not, by comparison, an accounting. I come, I sit down, I look at the piece of paper -- that's not good enough.

That is almost a mechanical -- I hesitate to use the phrase "bean-counting," but it almost rises to that, whereas we have tried to give this Board the evidence of how the state of affairs was as EQ developed and licensees responded to it.

One of the issues that we do not run from and do not complain about is the regulatory process.

We understand well that, in this industry, it is extremely important always to try to get better, and we are appreciative of that, and we are going to do that in this

issue and every other thing we face, but an issue here that this Board has to grapple with is the enforcement process, and it is of such importance to us that this Board realize that we don't look at it as an EQ game.

We don't keep scorecards and scoreboards. This is our profession, and we treat it seriously.

I could talk about some of the various issues, but I do want to talk about one thing that I think is illustrative, as the Board grapples with the level of documentation and how to resolve some of the testimony in this matter.

We have noticed a pattern in interpreting NRC documents.

If the NRC issues an SER to us or a license condition evaluation that says therefore your license is met, it is issued to Farley, it talks about Unit 1 and Unit 2, it uses very clear words: Your EQ program is in compliance. Therefore, your license condition is met.

We look at those and say look at this specific document, and the staff looks at that and says pay no attention to that, that's not good for what it says, it means something else.

But by comparison, what this just iss s -- for example, 84-47 which is what we heard about today, that has some vague references about Sandia test reports or you

should consider this. That becomes in their mind the document that causes us to clearly know or should have known, despite the fact that they told us our resolution of that issue was fine in our meeting and said again that we did that in the SER.

I bring that up because the level of documentation is going to be an issue. And as this Board considers what level of documentation is adequate, we are asking that the Board reject the Staff's level of documentation requirements. It is far higher than it needs to be.

An example such as how they interpret these very clear documents, examples of how they said Mr. Gibbons went to the Farley nuclear plant and did nothing, I think are illustrative of how they applied a level of documentation standard to us, that is virtually impossible to me.

Well, I won't walk through the individual items of equipment. That will certainly be part of the focus in the upcoming weeks. But I will do this, we ask for two things. We want for this Board to conclude that our equipment was qualified, that's what we want. That we had reasonable assurance of compliance with EQ as of the November 30th deadline. In the event that the Board is not comfortable with concluding that completely, then and only then do we ask to look at the modified enforcement policy and conclude that to the extent that some document deficiencies may have

existed, we did not clearly know or should have known of them.

But I say again how important it is that we have this opportunity to clear our reputation for the last five years. Every newspaper article, including one that appeared in the Dothan Eagle last week talked about this fine, and this is where we have come to get our reputation back.

Thank you, sir.

JUDGE BOLLWERK: Mr. Holler, do you have anything that you want to --

MR. BACHMANN: Your Honor, the Staff will reply through its rebuttal testimony.

JUDGE BOLLWERK: All right.

At this point then let's take up a couple of procedural matters briefly and then I think we can adjourn until our next proceeding in May. Is anyone aware at this point of any exhibits that have not been received into evidence or identified properly that they want anything to do with the Board?

[Discussion off the record.]

MR. MILLER: We have what we believe to be a substitution for Alabama Power Company Exhibit 27. In doing the xeroxing of that exhibit we xeroxed the qualification test report, the last two numbers 02B as in Bravo and should have xeroxed 02P, as in Papa. We have gotten the correct

one, and we propose to make the requisite number of copies and bring them up here this afternoon and substitute for the record the right test report for the one that is currently in the hands of the Clerk.

JUDGE BOLLWERK: Hold on one second and let me check with the clerk.

We will attempt to substitute those two. If there is a problem we may have to -- I don't know what -- mark another exhibit, or whatever, but we will get it in someway or another.

Anything else with regard to all of the exhibits that the parties are aware of at this point?

MR. HOLLER: If I may, just as a matter of clarification, Staff had moved what has been identified as Staff Exhibit No. 30 during the first panel. In reality that particular exhibit is not referred to until the testimony of 5-to-1. It has been moved without objection into evidence. It's in evidence, but I just didn't want to confuse the issue. If Alabama Power Company is comfortable with that, we have no problem.

MR. MILLER: We are comfortable with it.

JUDGE BOLLWERK: All right. I take it also that the Staff has no objection to the substitution of that one?

MR. HOLLER: We've had an opportunity to take a look and that is the document. We agree it is the document.

MR. BACHMANN: In fact I might add that it's the Staff's position it would be much cleaner on the record to substitute because it's referred to in their testimony by that exhibit number.

JUDGE BOLLWERK: Anything else with regard to exhibits?

All right, let's look at dates very quickly. In our earlier order we've indicated that rebuttal testimony would be due within 21 days. I have that as March the 13th. And we would request that that -- I should add that we will be putting out a separate order memorializing all of these dates, but just for the record at this point. We would like that done by overnight mail.

Mr. Miller, how much time are you going to need for your surrebuttal? They have three weeks.

MR. MILLER: If we could have three weeks also.

JUDGE BOLLWERK: All right, 21 days. That would put it to April 6th. And, again, we would ask that that be sent to the parties and the Board by overnight mail.

MR. BACHMANN: Now, Your Honor, that would be on that date to put it into the mail. So, we will put it into the mail on March 13th?

JUDGE BOLLWERK: March 13th, right. That is the day I want you to file mailing, the mailing date.

MR. MILLER: A mail date, not a received date?

JUDGE BOLLWERK: Not a received date; that is correct.

All right. Given those two dates, any motions to strike we would like to have in our hands by April 16th. If those are not extensive then they can faxed obviously, as the prior one was by the Staff. Any responses to motions to strike with regard to either the rebuttal or the surrebuttal testimony is April 27th. That is the date that it should be in our hands.

Just as a general matter, it is a little premature, but I would like to know what kind of a time frame are the parties looking for in terms of filing proposed findings? I recognize that we have some way to go yet, but how much time do you think you are going to need? I am not going to hold you to this, but I am just sort of trying to get some idea of where we are going down the road.

MR. BACHMANN: The Staff's initial reaction would be to stay with the schedule as set out in the regulations, absent something different happening.

JUDGE BOLLWERK: We will revisit that obviously at another time.

Mr. Miller, I talked to you previously about reporting to the Board on questions dealing with the status of equipment as of November 30th of '85.

MR. MILLER: Yes, sir.

JUDGE BOLLWERK: If you could, we would like to have a report to the Board on whatever you found describing what process you went through and what you found as of March 6th.

MR. MILLER: Yes, sir.

JUDGE BOLLWERK: And if that could be in-hand date as well, if it's short enough it could obviously be faxed to us.

MR. MILLER: All right, sir.

JUDGE BOLLWERK: One other matter. Transcript corrections. Is that something the parties think they can do within two weeks, if there are any?

MR. MILLER: Yes, sir.

JUDGE BOLLWERK: All right, that would be by March 6th then. You should submit any transcript corrections to the Board and then we'll determine their validity and entertain any objections there might be to any transcript corrections.

The May 18th date that we earlier set for any hearing on rebuttal and surrebuttal testimony, is that still a good date for everyone?

MR. MILLER: Yes, sir.

MR. BACHMANN: Yes.

JUDGE BOLLWERK: That will remain on the calendar then.

Do the parties have, and again I recognize we're early into the process, have any idea of how long they think they are going to take?

If we set aside a week, is that going to be sufficient?

MR. MILLER: I would think so.

MR. BACHMANN: Actually, I would say that if the licensee's counsel believes he can do it in a week, then I will go along with that.

JUDGE BOLLWERK: All right. Well, we can revisit that again after the testimony has actually been received by both sides but we'll set aside that week then at this point.

Any other procedural matters that the parties want to raise with the board at this point?

Nothing, either party?

MR. BACHMANN: Nothing.

MR. MILLER: No.

JUDGE BOLLWERK: At this point then we will stand adjourned, subject to your May 18th date for hearing rebuttal and any surrebuttal testimony that might be filed in accordance with the dates we have set.

I thank you, gentlemen.

I would like to say before we close the record that I think the Board very much appreciates the efforts of counsel up to this point. I think that you both have shown

a spirit of cooperation which has made our job frankly much easier and I hope that can continue. Maybe I should knock on wood here but the Board does appreciate it and hopes it will continue.

MR. MILLER: Thank you, sir.

MR. BACHMANN: Thank you.

JUDGE BOLLWERK: Could I see counsel back in conference for two seconds -- we're adjourned.

[Whereupon, at 12:15 p.m., the hearing was adjourned.]

REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission
in the matter of:

NAME OF PROCEEDING: Alabama Power

DOCKET NUMBER: 50-348-CivP

PLACE OF PROCEEDING: Bethesda, Maryland

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Lynn Estep

Official Reporter
Ann Riley & Associates, Ltd.