

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-Civ1
 Units 1 and 2] :

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Nuclear Regulatory Commission
 5th Floor Hearing Room
 East-West Towers
 4350 East West Highway
 Bethesda, Maryland
 Thursday, February 13, 1992

The above-entitled matter came on for hearing,
 pursuant to notice, at 10:05 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

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1 [continued next page]

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I N D E X

	Witness	Direct	Cross	Redirect	Recross	Board
1						
2	James G. Luehman	466	470	516		452/519
3	Norman Merriweather	466	470	516		452/519
4	Charles J. Paulk, Jr.					
5		466	470	516		452/519
6	Paul C. Shemanski	466	470	516		452/519
7	Harold Walker	466	470	516		452/519
8						
9						
10	Charles J. Paulk, Jr.					
11		531	534	562		562
12	James G. Luehman	531	534	562		562
13						

E X H I B I T S

	Exhibit Number	Description	Identified	Received
14				
15	APCo 96	Environmental Qualification		
16		Assessment, 10/19/87	450	451
17	Staff 28	Evaluation for Continued		
18		Operation, 7/30/87	470	529
19	Staff 29	Electric Hydrogen Recombiners		
20		Splices, 9/17/87	470	529
21	Staff 31	WCAP-9347, Qualification		
22		Testing for Model B		
23		Electric Hydrogen		
24		Recombiner, 7/78	470	529
25				

1	Exhibit Number	Description	Identified	Received
2	Staff 32	WCAP-7709-L Electrical		
3		Hydrogen Recombiner,		
4		7/71	470	529
5	APCo 97	Instruction Manual		
6		B-3620-8	542	574
7	APCo 98	Instruction Manual		
8		B-3620-Rev 19,		
9		3/19/89	546	574
10	APCo 99	Installation and		
11		Maintenance Manual	550	574
12	APCo 100	Revision 9 to B-3628,		
13		4/86	552	574
14	APCo 101	Revision 10 to B-3628,		
15		1/89	558	574
16	APCo 75	6/10/76 Letter with		
17		Attached Equivalency		
18		Chart	560	574
19				
20				
21				
22				
23				
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P R O C E E D I N G S

[10:05 a.m.]

1
2
3 JUDGE BOLLWERK: On the record. Good morning
4 everyone. It's approximately 10:05. We're getting a little
5 bit of a late start this morning because of the weather.
6 We're waiting for one witness. Why don't we take up a
7 couple of administrative matters.

8 One, maybe I can mention. The Staff yesterday had
9 g'ven us a copy of, I guess, a number of the background
10 documents relating to the Sandia Seminar, and I think the
11 Board would like that to be provided in three copies and
12 have it marked as an exhibit and at some point received into
13 evidence, if there is no objection on the part of Mr.
14 Miller.

15 MR. MILLER: No objection. We don't need any
16 other copies in terms of Board copies, so all we'd need
17 would be three for the record.

18 MR. HOLLER: Certainly. Since it's for the record
19 and in view of the weather, we'll provide that tomorrow.

20 JUDGE BOLLWERK: That's fine. I have no problem
21 with that.

22 MR. HOLLER: We'll wait for the three copies and
23 then mark it for identification.

24 JUDGE BOLLWERK: Yes, let's wait till we have all
25 the copies here. That's fine. Mr. Miller, do you have

1 another procedural matter you want to bring up?

2 MR. MILLER: Yes, sir. We've got what I'm marking
3 for identification purposes as Alabama Power Company Exhibit
4 96, and I'll identify it for the record: It is an
5 Environmental Qualification Assessment of V-type tape
6 splices used at Farley Nuclear Plant, Units I and II, prior
7 to October 1987 Refueling Outage with a cover letter of
8 October 29, 1987 from Jacqueline S. Graham to J.E.
9 Garlington.

10 By way of stipulation between the parties, the V-
11 type panel, if asked, would testify that they have never
12 seen this study before, and that avoids us having to ask
13 them.

14 JUDGE BOLLWERK: All right. But with that
15 stipulation, it's agreed by the parties that there will be
16 no objection to it coming into evidence. I'll provide 6
17 copies. I've just marked the top one with 96 and ask you if
18 you would mark the others.

19 All right, APCo Exhibit No. 96 has been marked for
20 identification; let the record reflect that.

21 [APCo Exhibit No. 96 was
22 marked for identification.]

23 JUDGE BOLLWERK: I understand there's no Staff
24 objection to that document being received into evidence?

25 MR. HOLLER: No objection, sir.

1 JUDGE BOLLWERK: Then it will be received into
2 evidence as APCo Exhibit 96.

3 [APCo Exhibit No. 96 was
4 received into evidence.]

5 JUDGE BOLLWERK: Any other administrative matters
6 we need to take up at this time, anyone?

7 [No response.]

8 JUDGE BOLLWERK: Let me just say that we
9 appreciate everyone getting here this morning. I recognize
10 it was a little difficult with the snow. I think we can
11 proceed on now, and hopefully get a few things accomplished
12 this morning.

13 Before we move into the 5:1 Splice Panel, both
14 Judge Morris and I would like to ask a couple of questions
15 of the panel that is sitting. I recognize -- sort of closed
16 out the V-splices yesterday, but given that it's the same
17 witnesses, I think we both have a couple of questions we'd
18 like to ask members of this panel, going back generally to
19 the question of V-splices, if the parties have no objection.

20 MR. BACHMANN: No objection.

21 MR. REPKA: No objection.

22 JUDGE BOLLWERK: Judge Morris, why don't you go
23 ahead and ask your questions?

24

25

1 Whereupon,

2 JAMES G. LUEHMAN,
3 NORMAN MERRIWEATHER,
4 CHARLES J. PAULK, JR.,
5 PAUL C. SHEMANSKI, AND
6 HAROLD WALKER,

7 members of Panel I", concerning V-type Splices, having been
8 previously duly sworn, resumed the witness stand, continued
9 to be examined and continued to testify as follows:

10 CONTINUED BOARD EXAMINATION

11 JUDGE MORRIS: Mr. Merriweather, I believe that
12 yesterday afternoon I had asked about the guidance for
13 inspectors for the EQ inspectors. We were provided two
14 documents; one, a Staff Exhibit 57, which is labeled Draft
15 Temporary Instruction 2515/XX, Evaluation of Licensee's
16 Program for Qualification of Electrical Equipment Located in
17 Harsh Environments.

18 On page three of that document, under Inspection
19 Requirements, -- I'll just read it to you. On page 3, under
20 the heading, Inspection Requirements, there is first a
21 Section 06.01, labeled Pre-Inspection Tasks. And it says,
22 "Prior to the site inspection, a site-specific inspection
23 plan must be prepared.

24 The second document which is APCo Exhibit 93,
25 dated March 27, '86, is Temporary Instruction 2515/76, and

1 the title is Evaluation of Licensee's Program for
2 Qualification of Electrical Equipment Located in Harsh
3 Environments. There is a similar heading, Inspection
4 Requirements, with a similar subheading, 06.01, labeled Pre-
5 Inspection Tasks, but there is no instruction about
6 preparing a site-specific inspection plan prior to the site
7 inspection.

8 So, is it true that you did not prepare a
9 specific, site-specific inspection plan?

10 WITNESS MERRIWEATHER: That's not true. I did
11 prepare an inspection plan for the Farley inspection. I
12 don't have a copy of the plan, but I did prepare a plan.

13 JUDGE MORRIS: Was that plan made available to the
14 licensee during discovery?

15 WITNESS MERRIWEATHER: I couldn't find a copy of
16 the plan.

17 WITNESS PAULK: During discovery or at the
18 inspection?

19 JUDGE MORRIS: Either.

20 WITNESS PAULK: At the inspection, we could not
21 give that to the licensee because that would be pre-
22 decisional information that we would not be allowed to show
23 them. I don't know about discovery on that.

24 WITNESS MERRIWEATHER: We're not allowed to give
25 any draft information in any written form to the licensee

1 during an inspection.

2 JUDGE MORRIS: Yes. I'm not so much interested as
3 to whether the licensee knew about it, but I'm interested in
4 how you went about your inspection.

5 WITNESS MERRIWEATHER: Oh, okay. The way we went
6 about it -- I did make an inspection plan based on some
7 information we received from the licensee in terms of their
8 EQ master list, and from that, I selected which components
9 we were going to look at during the inspection and made
10 assignments, you know, appropriately, for the team. I
11 provided that, disseminated that to the team members.

12 JUDGE MORRIS: The team members, themselves, in
13 referring to the inspection refer to what sorts of
14 background material?

15 WITNESS MERRIWEATHER: Excuse me. I don't
16 understand the question.

17 JUDGE MORRIS: For the individual members of the
18 team who were to inspect certain areas of the EQ Program,
19 what kinds of materials did they review in preparing
20 themselves for the inspection?

21 WITNESS MERRIWEATHER: As far as I know, I
22 provided -- most of the information that I received from the
23 licensee, in terms of their program, if they had particular
24 procedures for the EQ program, in terms of maintenance,
25 replacement or procurement, the particular inspector that

1 may have been assigned to look at that program area, I
2 provided those procedures to him.

3 As far as any particular test reports, we don't
4 have those in the region, so I can't provide that. And
5 there's no way for the inspectors to review that, because
6 they're site-specific.

7 I was aware, I guess, that most of the inspectors
8 that are regional inspectors had been to the training
9 program, so they did have some, you know, like I say,
10 documents, relating to different issues, like information
11 notices. We had a list of all the information notices
12 relating to EQ. And I think that was part of the package.
13 So, he could refresh -- review the information notice
14 relating to a certain piece of equipment that he may have
15 been assigned to look at.

16 JUDGE MORRIS: Is it also true that Franklin
17 Research prepared guidance for the Commission as to how to
18 conduct EQ inspections?

19 WITNESS MERRIWEATHER: I believe there was some
20 document. I don't have -- I didn't have a copy of it. I
21 wasn't aware of what it was. I'm not really familiar with
22 that document.

23 JUDGE MORRIS: Would any of the other inspectors
24 on the team be aware of it?

25 WITNESS MERRIWEATHER: I wouldn't believe that any

1 other inspectors on the team would have been familiar with
2 that. I probably had the most years in the region.

3 WITNESS WALKER: I'm aware that such a document
4 was prepared. I know there was a draft copy provided to the
5 staff. I don't know if that plan was ever implemented. But
6 it was called, I believe, an Inspection Module, and it was
7 prepared by Franklin Research. But I was a member of the
8 Inspection Team, and I don't know that I knew that before
9 that inspection. I certainly didn't use it in preparation
10 for that inspection.

11 In response to one of your other questions, as far
12 as what I did for preparation -- what I typically do is look
13 at the latest SER, look at the latest information we have
14 from the licensee indicating that there may be deficiencies
15 in some areas, and try to determine if they're taking care
16 of those deficiencies. And if the answer is yes, they have
17 resolved them, then I would hope I would be assigned to look
18 at some of those things that supposedly previously was
19 determined to be a deficiency and are now resolved.

20 But, as far as what I was specifically assigned to
21 look at, I don't know that I knew until I arrived on site.
22 I mean, sometime -- you know, sometimes I might know and
23 sometimes I won't. I mean, it just depends on how much
24 communication takes place between the Team Leader and the
25 inspectors before arriving onsite.

1 WITNESS LUEHMAN: Especially inspections coming
2 from headquarters.

3 WITNESS WALKER: Yes, I mean, for an inspection
4 led by headquarters, chances are I would have known. But,
5 inspections led by region, often I don't know until I arrive
6 there.

7 JUDGE MORRIS: Franklin conducted or produced a
8 number of technical evaluation reports, TERS. And did they
9 try to digest information from these many TERS?

10 WITNESS WALKER: The inspectors?

11 JUDGE MORRIS: No. Did the staff -- anyone in the
12 staff or Franklin, for that matter?

13 WITNESS WALKER: You mean in preparation for the
14 inspection, or do you mean --

15 JUDGE MORRIS: No, I mean, in general?

16 WITNESS WALKER: You might want to address that,
17 Paul.

18 WITNESS SHEMANSKI: Yes, we basically used the
19 TERS developed by Franklin to support the safety evaluation
20 reports that were written by the staff. There were a total
21 of 71 plans involved at the time. This effort was under
22 what the staff referred to as multi-plant action B-60.

23 Again, there were 71 operating reactors. And
24 Franklin generated a technical evaluation report for each of
25 those operating reactors. And, again, that formed the basis

1 for the staff to generate safety evaluation reports.

2 We did use the information -- that is, the staff
3 did utilize the information from the TERS to support
4 generation of the safety evaluation reports, and also, some
5 of that knowledge was used for the forthcoming inspections
6 that were to take place.

7 We had a lot of interface with Franklin, while the
8 TERS were being developed. There were many phone calls on
9 individual plants, regarding the development of these TERS,
10 so we had a very active technical exchange between Franklin
11 and the staff of the Equipment Qualifications Branch. So,
12 the TERS did provide a detailed technical basis for us to
13 proceed with the safety evaluation reports and then,
14 subsequently, the EQ inspections.

15 So, what I'm saying is the TERS were a key
16 document in this particular process.

17 JUDGE MORRIS: Let me ask it a different way. Do
18 you know whether or not Franklin prepared an additional
19 document which kind of distilled what it had learned from
20 all of these TERS into guidance as to how to inspect certain
21 types of equipment or components?

22 WITNESS SHEMANSKI: Yes, they did. As part of the
23 contract with Franklin, one of the tasks that we had in the
24 technical and systems contract was for Franklin to do
25 basically what you described -- to summarize information

1 they had gained through their review of all the licensee
2 submittals, again, from 71 operating reactors, and put that
3 information into a document.

4 The intent of that document was to be used for
5 giving guidance to the staff to help them write the SERs and
6 also with the thought that that information might be useful
7 for forthcoming inspections.

8 As Mr. Walker mentioned, Franklin did fulfill
9 their contractual obligation. They did generate the
10 document. It really never got off the ground. We had it,
11 we used it internally in the Equipment Qualification Branch,
12 but it basically faded away. It was used, on occasion, for
13 reference, but it never became a formalized document. So,
14 it basically just dropped out of site.

15 JUDGE MORRIS: I'm sorry. I didn't hear that.

16 WITNESS SHEMANSKI: That document was never fully
17 implemented in terms of the inspection program.

18 JUDGE MORRIS: Would it be fair, then, to conclude
19 that it's existence was generally known in headquarters, but
20 probably not in the field?

21 WITNESS SHEMANSKI: That's probably true. I don't
22 recall if draft copies were sent to the Regions, or not. I
23 simply don't recall that. It was more known in
24 headquarters, it would seem.

25 JUDGE MORRIS: Mr. Luehman and Mr. Walker -- were

1 you aware of this document?

2 WITNESS WALKER: I found out about the document
3 much later than the time when it first appeared. As a
4 matter of fact, I am not sure exactly when I found out about
5 it, but I know that it was before the Farley inspection. It
6 was, you know, fairly recently in the time-frame of when the
7 EQ first began, or when the document was prepared.

8 WITNESS LUEHMAN: Yes, sir. I was aware of the
9 document well after the inspection we are talking about. I
10 think that some, at least one licensee who received -- a
11 different licensee than Alabama Power Company -- that
12 received a civil penalty under the modified policy, made
13 some arguments relative to the inspection guidance that you
14 have just talked to us about, as well as previous Franklin
15 information relative to inspections.

16 And so in that regard, I think I did interface
17 with a number of people in NRC headquarters discussing those
18 documents.

19 JUDGE MORRIS: But coming back to you, Mr.
20 Merriweather, as far as you know that document was not used
21 in any way for the first-round EQ inspections?

22 WITNESS MERRIWEATHER: I didn't use that document.
23 I didn't have a copy of it. I may have been aware of it,
24 but I don't think I ever saw it.

25 JUDGE MORRIS: Thank you very much.

1 JUDGE BOLLWERK: Okay. Anything else?

2 JUDGE MORRIS: No.

3 JUDGE BOLLWERK: I guess my question is addressed,
4 I guess mostly to, to Mr. Luehman. But if anyone else has
5 any comments on it, I would appreciate knowing them, or
6 hearing them.

7 Yesterday you and Judge Morris had a dialogue just
8 before lunch -- I guess it's on pages 330 and 331 of the
9 transcript -- about the clearly known or should have known
10 standard, and the question of what the standard means. And
11 you had mentioned that, basically, a knowledgeable
12 professional in the EQ field, and the information they had
13 in front of them, that that information would have alerted
14 them to a problem -- that was a sort of clearly knew or
15 should have known. That would have met the standard.

16 And I'm paraphrasing it, maybe not quite as
17 accurately as you might.

18 WITNESS LUEHMAN: That's basically correct, yes.

19 JUDGE BOLLWERK: In this instance on your, I guess
20 your direct testimony on page 20, there are four factors
21 that have been listed as the reasons why the staff felt that
22 the clearly knew or should have known standard was met in
23 this instance.

24 Under factor 4, there are two circulars, or there
25 is a circular -- I'm sorry, two circulars that are

1 mentioned; a 7808 and an 8010. And I guess I'm interested
2 in to what -- what is it in those circulars that a
3 knowledgeable professional in the EQ field, looking at those,
4 would have known that there was a problem with V-splices
5 with respect to this facility?

6 WITNESS LUEHMAN: I think that we did not -- we,
7 when the panel considered those particular circulars, I
8 think the thrust of the panel's reliance on those circulars
9 was simply the fact that information had been put out to
10 licensees that splices or terminations were of concern to
11 the staff, because as we state in other places in our
12 testimony, the staff does not feel, did not feel that it was
13 incumbent on the licensee to specifically list splices on
14 the EQ master list as stand-alone items. They may well have
15 been, you know, listed by various licensees as part of the
16 piece of equipment in specifics.

17 So I think that some licensees listed
18 terminations, or generic terminations individually or in
19 groups if they were generic. And other licensees may not
20 have listed any, or may have listed a combination. On some
21 equipment they may have specifically listed the termination,
22 and others they wouldn't have.

23 So the point that we were making was since the
24 staff did not specifically -- since splices were not
25 specifically called out as a piece of electrical equipment

1 that had to be individually listed on the EQ master list, we
2 wanted to make sure, or we used those documents to basically
3 make the argument, or help us make the argument, that the
4 industry was aware, that although they weren't specifically
5 required to be listed, their impact on equipment
6 qualification was clearly something of concern to the staff.

7 So, with regard to V-type splices, I don't think
8 that -- at least my personal position is: I don't think
9 that we expected a licensee to find a problem with a
10 particular configuration of splice, necessarily, based on
11 those information notices -- or circulars, excuse me, sir.

12 WITNESS PAULK: Let me add something to this.

13 In the 1980 time-frame, I was working for a
14 utility as a start-up engineer. And that utility had access
15 to these same circulars. And the policy there was no tape
16 splices on safety-related equipment in harsh environments --
17 period. Based on these circulars.

18 And it's part of the job of the start-up engineer,
19 to insure that termination splices were not in those
20 circuits in, for example, in the containment building. It's
21 --

22 JUDGE BOLLWERK: Did that utility have V-type
23 splices like these?

24 WITNESS PAULK: No, sir.

25 JUDGE BOLLWERK: Of the four factors that are

1 mentioned, I guess, in the testimony, is there one that you
2 consider the most significant in terms of the clearly knew
3 or should have known standard?

4 WITNESS LUEHMAN: Well, speaking personally I
5 think that the biggest one to me would really be factor 2,
6 in that as was discussed yesterday, based on, primarily
7 based on, I think, the information that Mr. Paulk gave the
8 Board yesterday. that the licensee had no documents that
9 described how the splices were made.

10 They had no written verification that the quality
11 of the splices had been checked in any way. The interviews
12 with the individual electricians, which Mr. Paulk alluded
13 to, which indicated that they had various interpretations of
14 what material they could use in the splices.

15 And also apparent confusion -- I think that the
16 factor that the in-line splice or the Raychem sleeve were
17 those configurations specifically called out on the note in
18 detail that the electricians were supposed to know about.
19 Yet despite that fact, they ended up making a V-type splice
20 rather than an in-line splice, or using a Raychem.

21 So I think that most of that information, I think,
22 fits under item 2 of the four factors.

23 JUDGE BOLLWERK: I don't have anything else.
24 Anybody else?

25 [No response.]

1 JUDGE BOLLWERK: All right.

2 MR. MILLER: At this point I might point out one
3 thing, just to make sure there is no misimpression.

4 Judge Morris asked about Mr. Merriweather's
5 recollection -- that inspection plan could not be found, and
6 was not produced to us during discovery. And I've got the
7 areas.

8 I may have misunderstood, and I don't mean to
9 waste time, but I thought there was an impression left that
10 it was provided to us, but it was not.

11 JUDGE MORRIS: No, I understood it was not.

12 JUDGE BOLLWERK: If there's nothing else, why
13 don't we go ahead and -- the Doard's questions, I think, are
14 complete, and we can continue on the next panel on 5-to-1
15 splices.

16 MR. BACHMANN: Your Honor, I think, at this
17 point, we could omit reintroducing the panel, since they're
18 already on the record, and they've been previously sworn.

19 And I'll remind them that they've been previously
20 sworn.

21 JUDGE BOLLWERK: You are under oath.

22 And I recognized that you understood that this
23 morning as we asked you questions, as well. Everyone
24 understands that?

25

1 Whereupon,

2 JAMES G. LUEHMAN,
3 NORMAN MERRIWEATHER,
4 CHARLES J. PAULK, JR.,
5 PAUL C. SHEMANSKI
6 and
7 HAROLD WALKER

8 the panel concerning 5-to-1 tape splices, were called as
9 witnesses for examination by the NRC and having been
10 previously duly sworn, were examined and testified as
11 follows:

12 DIRECT EXAMINATION

13 BY MR. BACHMANN:

14 Q Gentlemen, I will proceed as yesterday on the 5-1
15 splices. I'll ask you questions and you will respond from
16 Mr. Shemanski to Mr. Walker.

17 Do you have before you a document entitled
18 Testimony of James G. Luehman, Norman Merriweather, Charles
19 J. Paulk, Jr., Paul C. Shemanski and Harold Walker, on
20 behalf of the NRC staff concerning 5-to-1 tape splices?

21 A [Witness Shemanski] Yes, I do.

22 A [Witness Merriweather] Yes, I do.

23 A [Witness Paulk] Yes, sir.

24 A [Witness Luehman] Yes, I do.

25 A [Witness Walker] Yes, I do.

1 Q Did you assist in the preparation of this
2 document?

3 A [Witness Shemanski] Yes, I did.

4 A [Witness Merriweather] Yes, I did.

5 A [Witness Paulk] Yes, sir.

6 A [Witness Luehman] Yes, I did.

7 A [Witness Walker] Yes, I did.

8 Q At this point, do any of you have any corrections
9 or changes to be made to this document?

10 A [Witness Shemanski] Yes, I do.

11 On page 11, in the middle of page 11, the first
12 line of my testimony, the word V-type should be replaced
13 with 5-to-1.

14 Also, on page 12, that same correction needs to be
15 made. The first line on the top of page 12, replace the
16 word V-type with 5-to-1.

17 Those are the only corrections I have.

18 A [Witness Merriweather] I have some corrections.
19 On page three of my testimony, the sentence says I was
20 unaware of the exact configuration, but at the time, I
21 believe that it might also be like. So, I insert the word
22 "like," L-I-K-E.

23 JUDGE BOLLWERK: Could you repeat that again, I'm
24 sorry. You might speak a little more -- go a little closer
25 to the microphone perhaps.

1 WITNESS MERRIWEATHER: Okay. On page three in my
2 testimony, almost in the middle of the paragraph where it
3 says also be the V-type configuration, be like the V-type
4 configuration.

5 On page four, there's a typo. This is Mr. Paulk's
6 testimony. There's a typo. It's about the middle of that
7 paragraph, where we say the splicers, it should be splices.

8 On page 12 there's another typo. Down at the
9 bottom of that page where the paragraph starts, the basis
10 for asserting that APCo clearly, insert the word "should."

11 That's all the corrections I have.

12 MR. BACHMANN: I advise the Board that these
13 corrections have been made in the testimony provided to the
14 Court Reporter.

15 JUDGE BOLLWERK: Thank you, Mr. Bachmann.

16 BY MR. BACHMANN:

17 Q And now I'll ask the panel and, again,
18 individually would you answer for the record. Is this
19 testimony of yours true and correct to the best of your
20 knowledge and belief?

21 A [Witness Shemanski] Yes, it is.

22 A [Witness Merriweather] Yes, it is.

23 A [Witness Paulk] Yes, sir.

24 A [Witness Luehman] Yes, it is.

25 A [Witness Walker] Yes.

1 MR. BACHMANN: I would then -- I'll move the Board
2 that this testimony be bound into the record as of read.

3 JUDGE BOLLWERK: Let the record reflect that the
4 testimony of James D. Luehman, Norman Merriweather, Charles
5 Paulk, Paul Shemanski and Harold Walker, concerning 5-to-1
6 tape splices should be bound into the record.

7 [The Testimony of James G. Luehman, Norman
8 Merriweather, Charles J. Paulk, Jr., Paul C. Shemanski and
9 Harold Walker follows:]

10

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

TESTIMONY OF JAMES G. LUEHMAN, NORMAN MERRIWEATHER,
CHARLES J. PAULK, JR., PAUL C. SHEMANSKI AND HAROLD WALKER
ON BEHALF OF THE NRC STAFF CONCERNING 5-TO-1 TAPE SPLICES

Q1. State your full name and current position with the NRC.

A1. James G. Luehman, Senior Enforcement Specialist, Office of Enforcement.

Norman Merriweather, Reactor Inspector (Electrical), Region II.

Charles J. Paulk, Jr., Reactor Inspector, Plant Systems Section, Division of Reactor
Safety, Region IV.

Paul C. Shemanski, Senior Electrical Engineer, License Renewal Project Directorate,
Office of Nuclear Reactor Regulation.

Harold Walker, Senior Reactor Systems Engineer, Plant Systems Branch, Division of
Systems Technology, Office of Nuclear Reactor Regulation.

Q2. Have you prepared a copy of your Professional Qualifications?

A2. (All) A copy of each of our Professional Qualifications is included in Staff Exh. 1.

Q3. What is the purpose of your testimony?

A3. (All) The purpose of our testimony is to support the Staff's position regarding the violations of the environmental qualification (EQ) requirements for the 5-to-1 tape splices at the Farley nuclear plant as set forth in the Notice of Violation (NOV), dated August 15, 1988 (Staff Exh. 2), and the Order Imposing a Civil Penalty (Order), dated August 21, 1990 (Staff Exh. 3).

Q4. What are the EQ requirements and how were they violated?

A4. (All) The EQ requirements and the nature of the violations are stated in the NOV, page 1, under the heading "Violations Assessed A Civil Penalty" (Violation I.A.2) as follows:

10 CFR 50.49(d), (f) and (j), respectively, require in part that (1) the licensee shall prepare a list of electric equipment important to safety covered by 10 CFR 50.49, (2) each item of electric equipment important to safety shall be qualified by testing of, or experience with, identical or similar equipment, and that such qualification shall include a supporting analysis to show that the equipment to be qualified is acceptable; and (3) a record of the qualification of the electric equipment important to safety shall be maintained in an auditable form to permit verification that such equipment is qualified and that it meets the specified performance requirements under postulated environmental conditions.

Contrary to the above, from November 30, 1985 until the time of the inspection which was completed on September 18, 1987:

[Alabama Power Company] did not have documentation in their EQ file to demonstrate that the in-line 5-to-1 field-to-pigtail tape splice configuration, used on the Hydrogen Recombiners, which are important to safety, in both units, would perform its intended function during a design basis accident. The tape splices had not been tested nor demonstrated by supporting analysis to be similar to a tested configuration, and were not identified on the Master List of electrical equipment required to be qualified under 10 CFR 50.49.

Q4. What was your role, if any, in the September 1987 inspection referenced in the NOV?

A4. (Merriv:eahter) During the September 14-18, 1987 inspection, I served as team leader. The team had a concern about the qualification of the splices on the recombiners because they were considered to be operable in the Justification for Continued Operation (JCO) for Limitorque operators with V-type splices, APCo letter NS-87-0241, dated July 30, 1987 (Staff Exh. 28). Discussions with licensee representatives did not resolve the concerns of the team. Thus, we decided to address this issue in the exit meeting regarding the splice qualification. I was unaware of the exact configuration, but at that time I believed it might also be ^{like} the V-type configuration. The licensee informed the team in the exit meeting that a 5-to-1 cable splice/termination was installed on the recombiners. Subsequent to the inspection a JCO on H-Recombiners, Bechtel Letter No.13525, dated September 17, 1987 (Staff Exh. 29), was provided to the NRC, and which was later determined to be inadequate. This was communicated to the licensee by Region II.

The team examined the hydrogen recombiners during the walkdown of the November inspection. This review was performed by C. Paulk and W. Levis. I do not recall if the tape splices were still installed at the time, or if they had been replaced with heat shrink. However, I was aware that they were identified to be replaced with this type of splice or termination. The hydrogen recombiner file was assigned to C. Paulk for review during the second week of the November inspection. No deficiencies were found in the file as noted in the Inspection Report. However, this did not remove the original concern identified in the September inspection regarding the 5-to-1 tape splices.

The splices were not on the EQ master list at the time of the September inspection and the recombiner file did not include a similarity analysis to demonstrate qualification for the splices. The after-the-fact analysis performed by the licensee was not completed prior to the end of the inspection and was not considered adequate by itself to qualify the 5-to-1 splice.

(Paulk) During the September 14-18, 1987, inspection, I reviewed the hydrogen recombiner qualification package and the Okonite NQRN-3 report (Staff Exh. 21) to determine the tested configuration of the power lead splices. We were not aware that the splices in the hydrogen recombiners were V-type splices until W. Shipman (APCo) explained that the splices were not installed as we had assumed. Mr. Shipman said that the recombiner splice was like the V-type splices. It was during the November inspection that the walkdown was performed to verify the configuration. The recombiner qualification package stated that the power leads were to be spliced utilizing the purchaser's (licensee's) qualified splice procedure.

Q5. What were the Staff's findings regarding the 5-to-1 splices as a result of the September 1987 inspection?

A5. (Merriweather) The Staff's findings regarding the 5-to-1 splices are summarized in NRC Inspection Report Nos. 50-348/87-25 and 50-364/87-25, dated October 16, 1987 (Staff Exh. 11) and NRC Inspection Report Nos. 50-348/87-30 and 50-364/87-30, dated February 4, 1988 (Staff Exh. 12).

Q6. What was your role in the preparation of the Inspection Reports?

A6. (Merriweather) I received inputs from each member of the team to prepare the inspection reports.

(Paulk) I prepared paragraph 5.a on Page 4 of Inspection Report Nos. 50-348/87-25 and 50-364/87-25, which deals with the unqualified splice on the hydrogen recombiners as an unresolved item, and which I adopt as part of my testimony, as follows:

The licensee has not established qualification for the in-line splice configuration used on the hydrogen recombiner on both trains in both units. The assumed configuration as described in the licensee's JCO dated September 17, 1987 (letter No. 13525), identified a one-to-five splice configuration. The team's concern is that this configuration will allow moisture egress into the unsealed splice region along the heater lead cables causing potential fault paths. The EQ central files only address a 5KV in-line one-to-one splice configuration and do not provide adequate information to establish reasonable assurance that the five-to-one splice will perform its intended function. It should be noted that the licensee also took credit for operability of the hydrogen recombiners in their JCO on motored operated valves dated July 30, 1987 (letter No. NS-87-0241). This item is identified as Unresolved Item 50-348, 364/87-25-01, Unqualified Splice on Hydrogen Recombiners.

I wrote paragraph 3.a on Page 4 of Inspection Report Nos. 50-348/87-30 and 50-364/87-30, dated January 28, 1988, which closed the unresolved item and upgraded it to a violation, and which I adopt as part of my testimony, as follows:

This item is being upgraded to violation 50-348, 364/87-30-16. The licensee operated Units 1 and 2 of the Farley Plant at various power levels for some unknown period of time after November 30, 1985 without adequate documentation in their EQ files to demonstrate that the in-line 5-to-1 field to pigtail tape splice would perform its intended function during a design basis accident.

Q7. What was your role in the preparation of the 5-to-1 tape splice portion of the Notice of Violation (NOV)?

A7. (Merriweather) I helped prepare the initial draft of the violation and specifically reviewed the changes if any occurred.

(Paulk) I prepared most of Violation I.A.2 of the NOV as quoted above in A4. I obtained concurrence from NRR and SANDIA.

(Luehman) I reviewed and edited the NOV. While some specifics in the violation may have been changed, my major involvement in the NOV was upgrading the Region's "clearly should have known" language. In addition to my reviews, as an OE staff member I was a member of the EQ Enforcement Review Panel. As a member of this panel, I compared this action and this violation with others taken against the Modified Policy to ensure consistency.

(Walker) I was a member of the EQ Enforcement Review panel.

Q8. What was your role in the preparation of the Staff's Order Imposing a Civil Penalty, dated August 21, 1990 (Order)?

A8. (Merriweather) I helped prepare the initial response to APCo's answer to the Notice of Violation for all of the proposed violations, not just 5-to-1 tape splices. I was assisted in this effort initially by C. Paulk prior to his departure from Region II. This initial response was later changed several times over a period of approximately a year. I was aware of most changes and agreed with the proposed changes. I was involved in

reviewing markups and rewrites of the Order and responded to Staff questions regarding the Order and was routinely asked to review drafts of the Order.

(Paulk) N. Merriweather and myself prepared the original draft of our response to APCo for NRC management. We coordinated with various groups within the NRC to come up with the final draft that was accepted. I left Region II prior to the Order being finalized. I reviewed APCo's response along with other members of the NRC Staff. I concurred that APCo's response was not adequate. I prepared the evaluation of the 5-to-1 taped splice on pages 20-22 of Appendix A of the Order with inputs from other NRC inspectors and SANDIA consultants. I adopt that portion of the Order on page 20 as part of my testimony as follows:

The licensee's claim that the hydrogen recombiner splices were qualified by similarity to splices qualified by Westinghouse reports WCAP-9347 [Staff 31] and WCAP-7709-L [Staff 32] is not valid. These reports do not indicate the materials used or the configuration of the splices. Therefore, a similarity analysis cannot be made nor, at the time of the inspection, was there sufficient documentation provided to support a similarity argument. The NRC letter from J. Stolz, dated June 22, 1978, which approved qualification of the hydrogen recombiners, did not approve the specific type of splices APCo installed at [Farley] and did not provide further information with which APCo could have performed a similarity analysis to the splices discussed in the Westinghouse reports.

The NRC staff agrees that the Westinghouse test reports discussed above demonstrate qualification for the heaters and power cables that are subcomponents of the recombiner. The NRC staff also agrees that the tested sample had some kind of splice configuration. However, Westinghouse states in its installation literature for hydrogen recombiners that the purchaser is to use its own installation procedures to install qualified splices on the pigtail connections. Therefore, it was incumbent on APCo to ensure a qualified splice was used. Further, given that the type of splice used by Westinghouse was not specifically described, it was APCo's responsibility to provide other documentation of the qualification

besides a reference to an unknown splice, in order to qualify the particular type of splices that were used.

The only thing that could be added to the above discussion is that Raychem had been making a Raychem kit for the recombiners since at least 1984. Therefore, a qualified splice was possible and available.

(Luehman) I reviewed and edited the Order. Our emphasis was to explain in more detail why the licensee clearly should have known about the deficient 5-to-1 splice.

(Walker) I'm the primary author of three sections of Appendix A to the Order imposing a Civil Penalty dated August 21, 1990; those sections are, NRC Staff's evaluation of Licensee Response in Attachment 2, Sections V.A.1, V.A.2 and V.A.3. In addition, I was a member of the NRC EQ Enforcement Review panel that reviewed all NOV's related to Generic Letter 88-07 that resulted in escalated enforcement.

Q10. Is it your opinion that the 5-to-1 tape splices were required to be on APCo's Master List?

A10. (Merriweather and Paulk) The 5-to-1 tape splices are not the same as the in-line splices that were addressed in the qualification file that was reviewed at the site during the September 14-18, 1987 inspection. Based on this finding and the fact that tape splices are considered electrical equipment the rule indicates that it should be included on the list of electrical equipment required to be qualified. Our comments as they related to V-type splices also apply to this issue. However, the licensee claimed that these splices were qualified as part of the recombiner qualification by Westinghouse. To establish qualification based on similarity the licensee provided a Westinghouse letter dated

September 22, 1987 subsequent to the inspection. In this letter Westinghouse indicated that a tape splice was used during the qualification testing of the recombiners. Electrical tape used was Scotch #70 and not Okonite T-95 and No. 35. This information was reviewed by us and we concluded that this information alone was not acceptable as a similarity analysis to show qualification for the 5-to-1 tape splice.

The licensee had developed a JCO for the 5-to-1 splice on the recombiners dated September 17, 1987 (Staff Exh. 29), which was provided to NRC after the September 14-18, 1987 inspection but prior to the Inspection Report being issued. The licensee informed us in the exit meeting that the 5-to-1 configuration existed on the recombiner. Up until this point the team had a concern about the qualification based on the fact that the installation could be a V-type splice. The recombiners were discussed with W. Shipman (APCo) as part of our investigation into what other components could have non-design tape splices. Sometime after the exit meeting the NRC received a copy of a JCO as discussed above. This JCO was determined to be inadequate by NRC. The licensee revised the JCO to include additional information about the as-built configuration and to address the possible failure modes due to moisture intrusion. In this JCO transmitted by Bechtel letter (AP-13541) dated September 23, 1987, subject: Electric Hydrogen Recombiner Splices - Justification for Continued Operation (PCR 87-0-4441) (Staff Exh. 30), Bechtel indicated that the Westinghouse test program on the hydrogen recombiners described in WCAP-7709-L utilized splices in the power junction box whose configuration could not be verified. The WCAP also included a statement that the

licensee was to install its own qualified splice in the field in accordance with the licensee's procedures.

Sometime later, either during the November inspection or after the enforcement conference, the licensee provided the NRC a copy of a letter from Westinghouse dated September 22, 1987 to support the fact that a 5-to-1 tape splice was used. It would be acceptable if the licensee qualified the splices as part of an end device qualification, in which case it would be acceptable for the termination/splice not to be identified separately on the EQ Master List. The licensee would have maintained configuration control by including this information as part of the qualification file for the end device. However, at the time of the September inspection, the licensee had not addressed the splices in the qualification for the hydrogen recombiners and they were not identified on the EQ Master List of record. Without similar provisions the splices would have to be separately identified on the EQ Master List consistent with the position discussed in NRC's Order Imposing dated August 21, 1990.

NUREG-0588 provided information to the industry that equipment interfaces must be "recognized and addressed" in the qualification process. In addition to the above, Enclosure 2 to IE Bulletin 79-01B (Staff Exh. 24) provided a method to the industry that was acceptable to NRC for addressing "cable splices" on a typical EQ Master List example. The typical list identified a cable splice and tape as a component requiring qualification in accordance with the bulletin. Furthermore, the licensee admitted that it failed to address the configuration of terminations and splices in the EQ program submitted to NRC as stated in LER 87-12 dated July 30, 1987 (Staff Exh. 16).

(Luehman) Page 19 of Appendix A to the Order states the Staff's position that ". . . splices to be on the master list as separate items or to be explicitly considered as parts of other equipment." While 10 C.F.R. § 50.49 does not specifically call out subcomponents such as splices, connectors, etc. equipment that uses these sub-components can only remain qualified if the sub-components are qualified. This position was well recognized before the November 30, 1985 deadline and was promulgated to licensees in NUREG-0588. Further, generic documents such as NRC Circulars 78-08 & 80-10 discuss splice qualification deficiencies and thereby reinforced to licensees the importance of these sub-components in maintaining equipment qualification.

5-6-1

(Shemanski) 10 C.F.R. § 50.49 does not require that ~~V~~-type splices or any other specific type of electrical equipment important to safety be identified on the EQ master list. Electric equipment important to safety identified by the requirements of 10 C.F.R. § 50.49(b)(1), (b)(2), and (b)(3) comprise the master list. The licensee has the option as to how the equipment is categorized and listed on the master list. Splices, for example, can be qualified individually or as part of a larger assembly. Industry practice has been to qualify splices separately since it is usually impractical to qualify a splice and its associated equipment such as a cable, penetration, motor, etc. In my experience, other than APCo, licensees have normally included splices separately on a EQ Master List, since industry test reports qualify individual splices and not subsystems.

Q11. On what basis do you assert that APCo "clearly should have known" the ~~V~~-type tape splices required environmental qualification?

(Luehman) The "clearly should have known" test is set forth in the Modified Enforcement Policy Relating to 10 CFR 50.49, "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants" (Generic Letter 88-07), dated April 7, 1988 (Modified Policy) (Staff Exh. 4). (A detailed discussion of the Modified Policy and how it was applied in this case is found in the Testimony of James G. Luehman, Uldis Potapovs and Harold Walker on Behalf of the NRC Staff Concerning Enforcement, filed December 20, 1991.) As stated in the Modified Policy, the NRC will examine four factors in determining whether a licensee clearly should have known that its equipment was not qualified:

1. Did the licensee have vendor-supplied documentation that demonstrated that the equipment was qualified?
2. Did the licensee perform adequate receiving and/or field verification inspection to determine that the configuration of the installed equipment matched the configuration of the equipment that was qualified by the vendor?
3. Did the licensee have prior notice that equipment qualification deficiencies might exist?
4. Did other licensees identify similar problems and correct them before the deadline?

The basis for asserting that APCo clearly ~~s~~^hould have known of the requirement for environmental qualification of the splices is set forth in the Staff's Order at pages 20-21.

The Staff's position, which I adopt as my testimony, is as follows:

[T]he NRC staff considered all four factors of the Modified [Enforcement] Policy in making the determination that APCo clearly should have known that the 5-to-1 tape splices on the hydrogen recombiners were not qualified. The NRC staff did not balance those factors, but each of them provide information to demonstrate that APCo clearly should have known of the violation before the deadline.

Factor one was considered applicable because the vendor documentation does not address what type of splice was used in the test report. The licensee indicated that the splices were made in accordance with vendor instructions which provided direction regarding the construction of connections with the power leads. Because the vendor instructions referred to the unidentified splice of the test report, the licensee should have clearly known that its procedures were inadequate to create a qualified splice similar to the tested configuration. Additionally, the licensee also clearly should have known that the configuration was not similar to the qualified shielded power cable configuration. Specifically, the qualification file for power shielded cable splices only addressed a one-to-one splice and not the 5-to-1 splice used by APCo.

Factor two was considered applicable because the licensee's documentation and walkdowns or field verifications were inadequate as discussed earlier for V-type tape splices.

Factor three was considered applicable because NUREG-0588 states that it is necessary to recognize and address equipment interfaces to qualify equipment. In addition, while the NRC staff had not previously provided notice specifically identifying qualification questions regarding the hydrogen recombiner power lead splices or terminations, the NRC staff did give prior notice of splice problems.

Factor four was considered applicable because other licensees had reported problems with unqualified splices (NRC Circulars 78-08 and 80-10....), although not specifically on hydrogen recombiners.

Furthermore, Westinghouse states in installation instructions that the purchaser was responsible for the installation of the splice. Westinghouse test reports WCAP-9347 and WCAP-7709-L do not indicate the particulars of the splices that they used in the

qualification test, thereby alerting the licensee to either obtain that data or separately test the splice that they installed.

Q12. Does this conclude your testimony?

A12. (All) Yes.

1 MR. BACHMANN: At this point, I would ask that
2 Staff Exhibits, which have been pre-numbered, 28, 29, 31 and
3 32 be marked for identification.

4 JUDGE BOLLWERK: All right. They have been
5 marked.

6 [Staff Exhibit Nos. 28, 29, 31
7 and 32 were marked for
8 identification.]

9 MR. BACHMANN: And three copies of each have been
10 provided to the Court Reporter.

11 JUDGE BOLLWERK: All right.

12 MR. BACHMANN: At this point, I will now make the
13 panel available for cross examination.

14 MR. REPKA: Before I begin, I'd just like to alert
15 the Judges that I have left a copy of our cross examination
16 plan on this issue for the Board.

17 CROSS EXAMINATION

18 BY MR. REPKA:

19 Q Gentlemen, I would like to start today by just
20 clarifying in my own mind, what your individual roles were
21 at the inspection in this enforcement action and in your
22 testimony to make sure I understand and we all understand
23 what your individual personal involvement in this case was.

24 Mr. Merriweather, is it fair to say that you were
25 the team leader on this inspection?

1 A [Witness Merriweather] That's a fair assessment,
2 yes.

3 Q And are you the leader on this witness panel?

4 A [Witness Merriweather] I believe I'm the leader
5 on this witness panel, yes.

6 Q And, Mr. Paulk, you also attended the inspection?

7 A [Witness Paulk] The two inspections, yes.

8 Q The two inspections, that being the September 1987
9 inspection and the November 1987 inspection?

10 A [Witness Paulk] Yes, sir.

11 Q And the two of you, Mr. Merriweather and Mr.
12 Paulk, you are the two individuals responsible for this
13 finding that is in dispute; is that correct?

14 A [Witness Merriweather] I believe it was actually
15 all the members on the team who were involved, yes.

16 Q All the members of the team.

17 A [Witness Merriweather] Right.

18 Q Which one of you or which member of the team was
19 the one who identified this as an issue?

20 A [Witness Merriweather] I believe it was Mr.
21 Paulk.

22 Q Is that correct, Mr. Paulk?

23 A [Witness Paulk] It became an issue on the
24 hydrogen recombiners after we were informed by Mr. Shipman
25 about the configuration.

1 Q So, APCo did raise this as an issue?

2 A [Witness Paulk] Yes.

3 Q And did they, at any time, tell you that they
4 considered it to be a violation?

5 A [Witness Paulk] No, they did not.

6 Q Did they, at any time, tell you that they did not
7 consider this splice or termination capable of performing
8 its function?

9 A [Witness Paulk] No, they did not.

10 Q In fact, they told you that they believed it was
11 capable of performing its function?

12 A [Witness Paulk] Yes, they did.

13 Q And that includes performing its function in an
14 accident environment; doesn't it?

15 A [Witness Paulk] That's what they said.

16 Q Mr. Walker, you were at the inspection; is that
17 correct?

18 A [Witness Walker] That is correct.

19 Q Were you involved in this issue in any way?

20 A [Witness Walker] May I, before I answer that, ask
21 if it's the November inspection?

22 Q The November inspection.

23 A [Witness Walker] Right.

24 Q Were you involved in this issue during the
25 November inspection?

1 A [Witness Walker] I was there. I knew that it
2 took place. I was not the person who discovered it, but to
3 the extent that I was a member of the team, yes.

4 Q Did you ever render a technical opinion that this
5 splice was not qualified and therefore violated --

6 A [Witness Walker] I assume you mean at the
7 inspection?

8 Q At the inspection.

9 A [Witness Walker] I clearly don't recall. I don't
10 know.

11 Q You don't recall or you clearly don't recall?

12 A [Witness Walker] I don't recall.

13 Q Mr. Walker, you told me during your deposition
14 that you were the only individual at the inspection -- at
15 the Farley inspection, either Farley inspection, who had
16 been involved prior to November 30, 1985 with the NRC's EQ
17 Branch.

18 A [Witness Walker] With the EQ Branch, I believe
19 that's correct.

20 Q With one exception, that being Mr. DiBenedetto?

21 A [Witness Walker] That's correct.

22 Q And Mr. DiBenedetto was there on behalf of Alabama
23 Power Company?

24 A [Witness Walker] That's correct, and when I
25 answered that question, I was speaking in terms of

1 individuals from the NRC Staff at that time.

2 Q Right. So, you were the person there with the
3 corporate knowledge, prior to November 30, 1985?

4 A [Witness Walker] Well, that's a different
5 question. I was there -- I was the only person that was in
6 the former EQ Branch. Now, as far as who had corporate
7 knowledge, I'm not prepared to say.

8 Q Okay. Mr. Luehman, you were not at the
9 inspection; is that correct?

10 A [Witness Luehman] That's correct.

11 Q In fact, at the time, you were a resident
12 inspector at another facility?

13 A [Witness Luehman] That's correct.

14 Q And you only became involved in this issue as an
15 Enforcement Specialist with the Office of Enforcement; is
16 that correct?

17 A [Witness Luehman] That's correct.

18 Q And your participation at that point was
19 enforcement oversight; is that an accurate characterization?

20 A [Witness Luehman] It's accurate as far as it
21 goes, yes.

22 Q Let me try to nail that down a little bit. Your
23 job there was to assure consistency with other EQ
24 enforcement actions, correct?

25 A [Witness Luehman] I think if you put both of

1 those together, I had my normal enforcement -- my role as an
2 Enforcement Specialist is making sure that an enforcement
3 action got properly reviewed and approved by the necessary
4 members of the Staff. In addition, under the Modified
5 Policy, as a member of the "Q Review Panel, we reviewed the
6 actions for consistency, which was not something that was in
7 my normal job for other types of enforcement actions.

8 Q Was it part of your job to decide that this was a
9 violation?

10 A [Witness Luehman] Yes. I would render an opinion
11 as to whether it was a violation in formulating the ultimate
12 Staff position.

13 Q And that would be based on your personal
14 experience?

15 A [Witness Luehman] Insofar as, could I attest that
16 the violation existed when it did and when it was found by
17 the inspectors? No. Based on reliance on the documents
18 that portrayed the deficiency found, and the statements of
19 people involved, I drew my conclusions based on that
20 information.

21 Q Okay, so you were not the person who did a
22 technical evaluation of the issue; is that correct?

23 A [Witness Luehman] Any review that I do, obviously
24 involves some technical review, if the issue, if the
25 violation at issue is a technical issue.

1 Q Are you an EQ engineer?

2 A [Witness Luehman] I am not -- I don't know what
3 an EQ Engineer is, but I do not have a degree in EQ or
4 Electrical Engineering.

5 Q Have you ever performed an EQ test?

6 A [Witness Luehman] No, I have never performed an
7 EQ test.

8 Q Have you ever written an EQ test report?

9 A [Witness Luehman] No, I have not.

10 Q Have you ever written an EQ evaluation or analysis
11 for the purpose of qualifying a piece of equipment?

12 A [Witness Luehman] No, I have not.

13 Q As part of your role on the EQ Enforcement Panel,
14 you were responsible for rendering a "clearly should have
15 known" judgement; is that correct?

16 Q And, in fact, you've sponsored testimony in this
17 direct testimony directly on that point; is that correct?

18 A [Witness Luehman] That's correct.

19 Q Yesterday and this morning, you talked a little
20 bit about what the standard was that you applied for
21 "clearly should have known;" do you recall that testimony?

22 A [Witness Luehman] Yes, I do.

23 Q And do I understand you to say that you would find
24 the licensee, to "clearly should have known," if a
25 knowledgeable engineer, a knowledgeable EQ engineer with

1 pertinent EQ knowledge available prior to November 30, 1985,
2 clearly should have been expected to be aware of the issue?

3 A [Witness Luehman] That's correct. If -- there's
4 two considerations there: One is that one of the reasons
5 that perspectives like mine were involved in the Panel, as
6 well as some of the other panel members who were not
7 specifically EQ per se inspectors was, we had not been
8 involved in the issue prior to 19 -- November 30, 1985,
9 therefore it was felt that we would have a little bit more
10 of a questioning attitude with regard to what a licensee
11 should have clearly known about or not clearly should have
12 known about prior to the deadline, since we didn't have the
13 prolonged involvement.

14 Also, if it was clear to me as just an engineer
15 and inspector, in my mind, that a licensee should have known
16 about it, then somebody that had even more knowledge in the
17 area that concluded that, would reinforce that the standard
18 was met.

19 Q So you were brought on precisely because you did
20 not know what was the case prior to November 30, 1985.

21 A [Witness Luehman] I think that is not a
22 completely fair characterization of it. I knew as an
23 inspector I had done inspections in the EQ area as a
24 resident inspector. However, that was not my total focus
25 because I was the on-site inspector responsible for a lot of

1 areas.

2 I had some knowledge in this area. I had
3 inspection knowledge relative to how inspections are
4 conducted, how the NRC uses the information, how the NRC
5 promulgates information to the licensees, so in those
6 respects I was knowledgeable.

7 I'll freely admit that I did not have the in-depth
8 knowledge of some of the people that were on the team in the
9 EQ area.

10 Q And you were not involved prior to November 30th,
11 1985 in performing EQ analyses or in attempting to qualify
12 equipment prior to the deadline?

13 A [Witness Luehman] That is correct.

14 Q Were you responsible during that time for issuing
15 any generic correspondence related to EQ issues?

16 A [Witness Luehman] Prior to the deadline?

17 Q Prior to the deadline.

18 A [Witness Luehman] No, I was not.

19 Q And you were never involved in responding to one
20 of those notices, were you?

21 A [Witness Luehman] No, I was never involved in
22 responding to one of those notices, that's correct.

23 Q Are you familiar with the qualifications of APCo's
24 witnesses in this case on this issue?

25 A [Witness Luehman] Yes, I am.

1 Q Would you consider any of them to be an
2 enforcement specialist?

3 A [Witness Luehman] Since I have never talked to
4 them relative to their knowledge of enforcement, I would say
5 I can't answer that question.

6 Q But if they told you that I was involved in this
7 case therefore I am an enforcement expert, what would you
8 say?

9 A [Witness Luehman] I would say everybody's
10 entitled to their opinion and I'll base my opinion on how
11 much you know.

12 Q I think that's fair enough.

13 Mr. Shemanski, you were not at either of the
14 inspections, were you?

15 A [Witness Shemanski] That is correct.

16 Q Were you in any way involved in this notice of
17 violation prior to November -- prior to its issuance in
18 1988?

19 A [Witness Shemanski] No, not to my knowledge.

20 Q And when did you become involved in this case?

21 A [Witness Shemanski] Primarily as a result of the
22 hearing, of the discovery process of the hearing itself.

23 Q 1991?

24 A [Witness Shemanski] Yes. I was aware that the
25 violation had been issued prior to the hearing process but I

1 wasn't involved to any of its detail.

2 Q Your testimony on this issue is fairly limited,
3 isn't it?

4 A [Witness Shemanski] It's limited from the
5 standpoint I was not involved in the inspection itself.
6 However, I was responsible for generating the safety
7 evaluation and also I conducted the meeting with Farley in
8 January of '84 and so the safety evaluation report I think
9 that was issued in 1983. So I think my involvement with
10 Farley essentially stopped when I issued the final SER.

11 Q Do you -- you don't talk about any of those
12 matters in this piece of written direct testimony, do you?

13 A [Witness Shemanski] No, I do not.

14 Q In fact, the sum and substance of your testimony
15 appears on page 11, isn't that correct?

16 A [Witness Shemanski] That is correct.

17 Q Basically there you tell us first that what 10-
18 CFR-50.49 requires, is that correct?

19 A [Witness Shemanski] Yes, in reference as to
20 whether or not 5-to-1 splices are specifically required to
21 be listed in the EQ master list.

22 Q Right, and you testified, and I quote, at the
23 bottom of page 11, "In my experience other than APCo,
24 licensees have normally included splices separately on an EQ
25 master list since industry test reports qualify individual

1 splices and not sub-systems."

2 A [Witness Shemanski] Yes, that is correct.

3 Q Prior to reaching that conclusion, did you consult
4 a list of licensees to decide how many licensees put splices
5 on the master list?

6 A [Witness Shemanski] Let me give you a little
7 background --

8 Q I asked a fairly easy question. Did you consult a
9 list?

10 A [Witness Shemanski] I did not consult a specific
11 list.

12 Q Do you know if such a list exists?

13 A [Witness Shemanski] Yes.

14 Q And you did not consult it?

15 A [Witness Shemanski] The lists I am referring to
16 are lists that I have seen on 10 previous EQ inspections
17 that I was involved in.

18 Q Is it your testimony that splices must be on the
19 master list in all cases?

20 A [Witness Shemanski] Not in all cases -- as a
21 practical matter, we have seen them or I have seen them on
22 all master lists that I have been involved with as a result
23 of EQ inspections.

24 Q Is it fair to say that a termination terminating a
25 piece of equipment for example to a power lead can be tested

1 with the end device?

2 A [Witness Shemanski] Yes, it can, but as a
3 practical matter many splices are attached to cables and
4 it's simply impractical to put a thousand foot cable in a
5 LOCA chamber, so as a practical matter splices are
6 individually qualified with very short runs of cable or
7 pigtails.

8 Q This 5-to-1 termination at issue is a termination
9 on the hydrogen recombiner, is it not?

10 A [Witness Shemanski] That is my understanding,
11 yes.

12 Q It's not a splice in the middle of a cable run, is
13 it?

14 A [Witness Shemanski] I don't believe it is.

15 Q So it wouldn't require you putting a thousand foot
16 piece of cable into a test chamber to test it, would it?

17 A [Witness Shemanski] Not necessarily. However, if
18 you want to qualify it that way, then you better put the
19 entire hydrogen recombiner in the LOCA chamber.

20 Q But it can be tested with the hydrogen recombiner,
21 can it not?

22 A [Witness Shemanski] Yes, it can if you find a
23 large enough LOCA chamber.

24 Q Are you questioning whether the hydrogen
25 recombiners at Farley were not qualified?

1 A [Witness Shemanski] No, I am not.

2 Q And in fact the NRC's is that they were, is it
3 not?

4 A [Witness Shemanski] I don't know that as a fact.

5 Q Are you aware that Alabama Power Company contends
6 that the termination at issue here was tested with the
7 recombiner?

8 Are you aware of that fact?

9 A [Witness Shemanski] I have not reviewed the test
10 reports or any other documentation that would lead me to say
11 yes to that question.

12 Q So you don't know one way or the other?

13 A [Witness Shemanski] Not really, no.

14 Q Mr. Merriweather, do you know whether the hydrogen
15 recombiners at Farley were qualified?

16 A [Witness Merriweather] Yes, I do.

17 Q Were they qualified?

18 A [Witness Merriweather] Yes.

19 Q When was the first time you reached that
20 conclusion?

21 A [Witness Merriweather] The Franklin TER.

22 Q The Franklin TER --

23 A [Witness Merriweather] Yes.

24 Q -- of 1983?

25 A [Witness Merriweather] Right.

1 Q Are you familiar with the December 1980 TER? It's
2 been marked previously as APCO Exhibit 12?

3 A [Witness Merriweather] Okay.

4 Q You're familiar with that?

5 A [Witness Merriweather] Is that the one that I
6 signed?

7 Q I'll stipulate that it is.

8 A [Witness Merriweather] I don't have a copy of it,
9 so I have to assume that you're telling me that's the right
10 date. Okay.

11 Q That is the one you signed?

12 A [Witness Merriweather] Okay.

13 Q And do you recall finding a problem with the
14 hydrogen recombiners at that time?

15 A [Witness Merriweather] I mean, I -- as far as I
16 remember, there was a lot of data sheets we filled out. So
17 I can't tell you anything about the recombiner data sheet,
18 because I don't remember.

19 Q Your just don't remember?

20 A [Witness Merriweather] No.

21 Q But as of 1983, you know that they were qualified?

22 A [Witness Merriweather] I believe that -- if I
23 remember right, I looked at the TER and the hydrogen
24 recombiners as covered in the TER, as reviewed by Franklin.
25 And there is a discussion in the TER about the recombiners.

1 Q At the time you went to Farley in 1987, were you
2 aware of your own 1980 review of qualification of the TER at
3 Farley? Did you recall it at the time?

4 A [Witness Merriweather] Excuse me. I don't
5 understand that question.

6 Q When you went to Farley in 1987, were you aware of
7 your own TER?

8 A [Witness Merriweather] No, I wasn't.

9 Q Had you gone back and looked at the Franklin TERS
10 of 1983?

11 A [Witness Merriweather] When we went to Farley in
12 September '87, I did not have the Franklin TER.

13 Q And did you have with you, or were you aware of,
14 the inspection report prepared by Mr. Gibbon of the NRC?

15 A [Witness Merriweather] No, I wasn't.

16 Q Mr. Paulk, were you aware of any of those
17 documents?

18 A [Witness Paulk] At the September inspection --
19 no.

20 Q And at the November inspection you were?

21 A [Witness Paulk] I believe between the September
22 and November, we received a copy of the TER. I think it was
23 in that time-frame.

24 Q And how did that come to your attention?

25 A [Witness Paulk] What do you mean?

1 Q You just received it -- how did that happen? Did
2 Alabama Power give it to you?

3 A [Witness Paulk] I'm not sure.

4 Q How many hydrogen recombiners are we talking about
5 -- and I'll direct this either to Mr. Merriweather or Mr.
6 Paulk.

7 A [Witness Paulk] We're talking about two.

8 Q Two for each unit?

9 A [Witness Paulk] Per unit, yes.

10 Q So basically there's two systems affected by this
11 issue?

12 A [Witness Paulk] One system per unit. Two trains.
13 And let me add something to what Norm was saying, and some
14 of the questions you were asking.

15 The hydrogen recombiners were considered qualified
16 based on the test report. However, in the test report for
17 the termination, as you are referring to it now, it states
18 that the purchaser is responsible for installing a qualified
19 splice on that, on the recombiner to maintain the
20 qualification.

21 Therefore, if the splice wasn't qualified, the
22 test reports would not support that.

23 Q And it's your opinion that the splice wasn't
24 qualified?

25 A [Witness Paulk] It was not qualified.

1 Q Well, were you aware, or did you ask whether and
2 how the termination at Farley was installed?

3 A [Witness Paulk] Yes, we did.

4 Q And were you informed that it was installed in
5 accordance with vendor instructions?

6 A [Witness Paulk] We were told that it was done
7 during construction with the Westinghouse representative
8 observing.

9 Q But you were not told that it was performed in
10 accordance with the vendor installation instructions?

11 A [Witness Paulk] There were no installation
12 instructions shown to us to document that.

13 Q Does that mean you weren't told that, or you just
14 weren't shown anything?

15 A [Witness Paulk] Both.

16 MR. REPKA: For illustrative purposes, and I think
17 maybe this will help the Board, based on some of our
18 conversations yesterday -- I would refer everybody to what
19 has been marked as APCO Exhibit 43, the Appendix sheets 1 of
20 1, and two pages later is an unmarked page. There are some
21 illustrations that may be helpful to conceptualize what we
22 are talking about here.

23 And after some of the Board's questions yesterday
24 on the V-type splices, we went back last night and decided
25 one of the things we will endeavor in the near-term, is have

1 the plant make up an illustrative 5-to-1 termination. And
2 we will try to get that as soon as we can.

3 JUDGE CARPENTER: Well, with regard to that -- on
4 January 16, 1991 Mr. Holler provided to the Board from you
5 some drawings. And I'm sitting here with a 5-to-1, with a
6 drawing that shows me what it looks like.

7 So if you feel inclined to give us a physical
8 specimen fine. But in contrast to yesterday, where I
9 couldn't find the drawing -- the 5-to-1 situation is
10 somewhat different. I actually know what's inside the
11 connections.

12 MR. REPKA: Okay, we'll see what we can do, and
13 these drawings may be helpful.

14 MR. BACHMANN: Before you go ahead, I believe
15 APCO's -- was it 43 -- should be Staff Exhibit 30, which was
16 introduced I think the first day of testimony on, when we
17 had the enforcement panel.

18 MR. REPKA: It's a September 23, 1987
19 correspondence form Bechtel to Alabama Power Company.

20 MR. BACHMANN: For the Board's convenience, we
21 have verified this is Staff's Exhibit 30. It was moved into
22 evidence during the enforcement panel.

23 JUDGE BOLLWERK: Right. That's correct, thank
24 you.

25 BY MR. REPKA:

1 Q Are you with me? Mr. Paulk?

2 A [Witness Paulk] Yes.

3 Q Referring to the picture in Appendix A, sheet 1 of
4 1 in APCO Exhibit 43, Staff Exhibit 3C -- is that, does that
5 picture accurately reflect your recollection of the
6 termination work you are talking about?

7 A [Witness Merriweather] It's a 5-to-1, yes.

8 Q Mr. Paulk, do you agree?

9 A [Witness Paulk] It's a 5-to-1. But I'm having
10 trouble -- okay, it says: No tape between conductors.

11 So, yes, that's --

12 Q See -- what you have coming in from the left-hand
13 side, there is field cable, correct? And five splice -- the
14 five cables on the other side are going out to the
15 individual heater banks of the recombiner, is that right?

16 A [Witness Paulk] Yes, sir.

17 Q And this individual termination is for one phase,
18 is that correct?

19 A [Witness Paulk] Yes, sir.

20 Q Your concern, Mr. Paulk or Mr. Merriweather,
21 whichever of you feels like you want to respond, but Mr.
22 Paulk in your direct testimony on page 5, you state that the
23 team's concern is that this configuration will allow
24 moisture egress into the unsealed splice region along the
25 heater lead cables, correct?

1 A [Witness Paulk] Yes.

2 Q And that's taken from an excerpt in the middle of
3 page 5 from the inspection report?

4 A [Witness Paulk] Yes.

5 Q Okay, so moisture ingress is the concern?

6 A [Witness Paulk] Yes.

7 Q Moisture ingress in the area between the five
8 heater bank cables, is that right?

9 A [Witness Paulk] Of the ones in the plant. What
10 you can't really tell on this drawing is that the heater
11 leads themselves have a fabric outer-woven cloth over it
12 which would allow a wicking type effect to draw any moisture
13 down into the area.

14 I've been personally involved with a splice that
15 was opened such as this on a 480 volt system that had one
16 phase short to ground just due to condensation, not even in
17 an accident -- can blow a hole through a quarter-inch
18 termination cover.

19 Q But that was not your experience with one of these
20 terminations, was it? That is based on another experience?

21 A [Witness Paulk] That is based on an experience on
22 a similar type splice.

23 Q And what you're doing is, that's your judgment
24 based on that experience is that you might have a similar
25 problem here?

1 A [Witness Paulk] That, plus there was no
2 documentation provided to show one what the actual
3 configuration was, no documentation to show that there was
4 configuration control.

5 There was no documentation or analysis or testing
6 to show that the configuration had been tested.

7 Q Let's just talk about performance right now.

8 Moisture ingress -- that's the problem, correct,
9 either by wicking or by some other, some other way of
10 getting in through that what you are calling to be an
11 unsealed area?

12 A [Witness Paulk] Yes.

13 JUDGE MORRIS: Excuse me, Mr. Repka. You have
14 been using the word "ingress." The written word I see is
15 "egress." I just don't want people to have any confusion
16 about what's meant.

17 MR. REPKA: I view the problem as water getting
18 in, so I am saying "ingress."

19 Does that comport with your understanding?

20 WITNESS PAULK: Yes. I used the wrong word.

21 BY MR. REPKA:

22 Q So your concern here is not with the tape
23 material, is that correct?

24 A [Witness Paulk] It is kind of hard to say with
25 the tape material.

1 If you'd have used, if it were a different type of
2 tape other than the T-95 and No. 35 tape we may have had a
3 problem with that.

4 Q But you didn't have a problem with T-95 and No.
5 35?

6 A [Witness Paulk] If it was installed in a
7 configuration that it was tested in --

8 Q Right. But not the tape per se?

9 A [Witness Paulk] Not the tape per se.

10 Q The tape won't melt?

11 A [Witness Paulk] It may.

12 Q The T-95, No. 35?

13 A [Witness Paulk] The T-95 may.

14 Q Did it melt in the test document in NQRN-3?

15 A [Witness Paulk] Could not tell. It was
16 encapsulated, totally encapsulated by the No. 35 as Okonite
17 publishes it should be.

18 Q Returning to the moisture ingress problem, now
19 would you agree that -- let me put it this way. Is all
20 moisture entry into that termination going to have an
21 adverse effect on performance?

22 A [Witness Paulk] I don't understand.

23 Q Does water entry into this termination
24 automatically cause a performance problem with the
25 termination?

1 A [Witness Paulk] I don't know.

2 Q Well, isn't it true in order to have a problem we
3 need to have a short, phase to phase, phase to ground short?

4 A [Witness Paulk] Yes.

5 Q So water has to get in, create a conductivity path
6 outside of this splice and then into another unlike phase
7 termination or to ground, is that correct?

8 A [Witness Paulk] Yes, and with the fabric material
9 on there, with the wicking effects, that is very possible.

10 Q Possible.

11 JUDGE CARPENTER: Mr. Repka, if I could just ask a
12 question. Are you referring to within the area of this
13 connector that's shown in this drawing or someplace outside
14 of this area?

15 JUDGE BOLLWERK: Do you mean in the fabric?

16 WITNESS PAULK: The fabric would be a sheathing
17 along each of these individual -- the four individual
18 conductors all the way up to the terminal lugs.

19 JUDGE CARPENTER: Right. If someone asked if I'm
20 reading this figure correctly, it would appear to me that
21 all five of these leads are connected with metallic
22 connectors and there's about as good a short as you're going
23 to get. It is not necessary to count on the wicking and the
24 fabric to improve the connection between those.

25 WITNESS PAULK: No. No, sir, that's not the issue.

1 This is the --

2 JUDGE CARPENTER: Or conversely, why do you think
3 that it would be a deleterious effect of a little additional
4 conduction between the five leads?

5 WITNESS PAULK: It's not the problem of the
6 conduction between those five cables, sir. It is the
7 conduction between the termination and ground or another
8 phase.

9 There are four of these splices inside a cabinet
10 and it's about -- I have seen them approximately 18 inches
11 square and about 6 inches deep and there's four of these
12 cables in there, just laid inside the cabinet and it would
13 be the wicking effects from one of those.

14 Each one of these smaller ones goes to a heater,
15 one of the five heater banks and there's three phases of
16 each plus there's three ground wires for each bank or one
17 ground wire per each bank.

18 JUDGE CARPENTER: Now you are saying they are not
19 mounted in the cabinet, they are simply laying in the
20 cabinet?

21 WITNESS PAULK: Yes, sir. They are pushed into
22 the cabinet.

23 JUDGE CARPENTER: So there is no way to anticipate
24 the geometry which may exist?

25 WITNESS PAULK: No, sir.

1 JUDGE CARPENTER: Thank you.

2 JUDGE BOLLWERK: Thank you, Mr. Repka. Appreciate
3 you interrupting your cross examination with a lot of
4 questions.

5 BY MR. REPKA:

6 Q While we're talking about the fabric on the tape,
7 do you know whether or not the cable used in the
8 Westinghouse test on the hydrogen recombiner had fabric
9 coating?

10 A [Witness Paulk] No, I do not.

11 Q You don't know one way or the other?

12 A [Witness Paulk] [No response.]

13 Q Do you know whether the terminations tested in the
14 Westinghouse test passed the test?

15 A [Witness Paulk] I know that the Westinghouse test
16 report states that the -- or would lead to the qualification
17 of the recombiners and that Westinghouse stated that in
18 order to be qualified, the licensee or the purchaser has to
19 install a qualified splice according to his own procedures.
20 From that, one could conclude that Westinghouse used a
21 qualified splice.

22 Westinghouse did not provide a description of how
23 the splice was configured or put together.

24 Q Right, but their configuration, whatever it might
25 be, passed the test?

1 A [Witness Paulk] If the connection were in the
2 test chamber, you would have to say that, yes.

3 Q Okay, Mr. Merriweather, this concern you told me
4 earlier, was originally identified by APCo, correct?

5 A [Witness Merriweather] I think -- well, I guess
6 the way I found out about it is through discussions with the
7 licensee that they had a -- I guess we asked them about the
8 recombiner. That's when they told us, well, it's V-type or
9 something like that, yes.

10 Q And this was during the September inspection?

11 A [Witness Merriweather] That was during the
12 September inspection.

13 Q But the equipment was walked down in the November
14 inspection, correct?

15 A [Witness Merriweather] Right.

16 Q So there were discussions on this issue ongoing
17 September and November, correct?

18 A [Witness Merriweather] Correct, yes.

19 Q Do you recall when you were first given an
20 evaluation by Alabama Power Company of this termination and
21 its capability of performing its function?

22 A [Witness Merriweather] There was an evaluation
23 given, and I'm not sure if it was after the exit or that
24 Monday. Monday -- we exited on Friday and it was that
25 Monday or the next week.

1 Q Was that during the September inspection?

2 A [Witness Merriweather] That was during the
3 September inspection.

4 Q Do you know whether -- strike that. You had told
5 me earlier that you were not aware that APCo had ever
6 concluded that this termination was not capable of
7 performing its accident function, correct?

8 A [Witness Merriweather] I didn't say that; I said
9 they identified that it was V-type, similar or like V-type;
10 that's what I said.

11 Q Okay, did they ever tell you that it wasn't
12 capable of performing its safety function?

13 A [Witness Merriweather] I don't recall anybody
14 saying that. They never said anything was unqualified, so -
15 -

16 Q Did they give you a copy of what has been marked
17 as Staff Exhibit 28, which was the July 1987 evaluation of
18 the issue?

19 A [Witness Merriweather] [Reviewing document.] I
20 believe I had a copy of this, yes.

21 Q And you got that?

22 A [Witness Merriweather] Right.

23 Q And did anybody look at it?

24 A [Witness Merriweather] I believe we looked at
25 this during the September inspection, I believe. That's --

1 I mean, hold in just a minute. Let me --

2 [Witness reviewing document off the record.]

3 WITNESS MERRIWEATHER: I believe this is the
4 document they gave us, yes.

5 BY MR. REPKA:

6 Q Is it fair to say the intent of that document was
7 to prove to you, the NRC, that this termination was
8 qualified?

9 A [Witness Merriweather] This is -- I don't believe
10 that was the intent of this document. I think this was more
11 of an operability analysis.

12 Q It was an operability analysis?

13 A [Witness Merriweather] Right.

14 Q Meaning it was intended to show you, by analysis
15 or whatever, that this splice was capable of performing its
16 function in an accident environment; true or false?

17 A [Witness Merriweather] If you say it's capable --
18 it's operable, yes.

19 Q Do you agree that that was the purpose of what
20 they were trying to show you here; that this splice was
21 capable of performing its function?

22 A [Witness Merriweather] I don't agree that this
23 would be a qualification document, if that's what you're
24 asking me, but I --

25 Q I didn't ask you that.

1 A [Witness Merriweather] It is a JCO to show that
2 it is --

3 Q It shows that they --

4 A [Witness Merriweather] -- or they took credit for
5 other systems or whatever, that would perform the function,
6 yes.

7 A [Witness Paulk] This JCO doesn't -- where does it
8 include the hydrogen recombiners? This was the one that was
9 sent for the motors, the limitorque motors and solenoid
10 valves.

11 Q I think you have the wrong exhibit.

12 A [Witness Paulk] You said Staff Exhibit 28, July
13 30, 1987; is that correct?

14 JUDGE BOLLWERK: You might look on page 2, the
15 middle paragraph.

16 WITNESS PAULK: It says hydrogen -- what they're
17 doing there is, they're taking credit for the hydrogen
18 recombiners as a mitigating factor for not having the other
19 systems available. It's not to try and show operability of
20 the recombiners.

21 BY MR. REPKA:

22 Q While we look for that, let me refer you to what's
23 been previously marked as APCo Exhibit 45. This is a
24 correspondence from Bechtel Eastern Power Company to Mr.
25 W.T. Hairston, III, September 17, 1987.

1 JUDGE BOLLWERK: My records reflect that that's
2 staff 29.

3 MR. REPKA: I think I have the wrong exhibit
4 number again.

5 JUDGE BOLLWERK: Is it 46?

6 BY MR. REPKA:

7 Q Okay. Let's skip the APCo numbers and go to Staff
8 Exhibit 29. Okay. Let's go to Staff Exhibit 29. Do you
9 have that in front?

10 A [Witness Paulk] Yes, sir.

11 Q That's the September 17, 1987 Bechtel -- it's
12 called a JCO; is that correct?

13 A [Witness Paulk] Yes, sir.

14 Q And it specifically addresses the splice
15 connection between the heater leads and the field cables;
16 correct?

17 A [Witness Paulk] Yes, it does.

18 Q Okay. And is it or is it not the intent of this
19 evaluation to show that that termination is capable of
20 performing its function?

21 A [Witness Paulk] That may have been the intent.

22 Q And you just didn't agree with that?

23 A [Witness Paulk] We do not accept this JCO, no.

24 Q Because technically, you didn't feel it was
25 accurate?

1 A [Witness Paulk] True.

2 Q Let me refer you to APCo Exhibit 43. That's staff
3 30. It's the one we were looking at the picture earlier.
4 On that last question you said adequate or accurate?

5 A [Witness Paulk] Accurate. Agree with it,
6 whatever. We didn't think it was adequate.

7 Q When you say you didn't think it was adequate, is
8 that because you didn't believe the conclusion or because
9 you didn't believe the documentation was sufficient?

10 A [Witness Paulk] There wasn't enough in there to
11 evaluate.

12 Q Did you ever look at the September 23rd, 1987
13 evaluation? That's staff 30, APCo 43?

14 A [Witness Paulk] I do not remember reviewing this
15 one at that time.

16 Q And you don't remember reviewing it during the
17 November inspection either?

18 A [Witness Paulk] I may have.

19 Q You just don't recall?

20 A [Witness Paulk] No.

21 Q Have you looked at it recently like today?

22 A [Witness Paulk] Yes.

23 Q Mr. Luehman, yesterday we talked a little bit
24 about Modified Enforcement Policy Section Three. Do you
25 recall that discussion?

1 A [Witness Luehman] Yes.

2 Q And isn't it true that Modified Policy Section
3 Three allows certain issues that the NRC considers to be
4 violations to not be treated as a basis for escalated
5 enforcement; is that correct?

6 A [Witness Luehman] That's correct.

7 Q Now, that's based on -- if information is
8 developed during the inspection, shortly thereafter?

9 A [Witness Luehman] That's correct.

10 Q Did you ever, prior to issuing the NOV in this
11 case, review Staff Exhibit 30, APCo Exhibit 43?

12 A [Witness Luehman] I may have.

13 Q You don't recall?

14 A [Witness Luehman] No. This exhibit is a
15 justification for continued operation, not a qualification
16 document. And as I -- I think we discussed at length
17 yesterday, the justification for continued operation allows
18 the licensee to continue to operate. It doesn't prove -- it
19 doesn't either show -- it doesn't prove or disprove that the
20 component is qualified. So, I would have looked at it in
21 the context of it was some information that was provided by
22 APCo that would -- but I don't know that we would have
23 looked at it -- that I would have looked at it specifically
24 as anything other than a justification for continued
25 operation.

1 A [Witness Paulk] Also, at the September 24th, I
2 believe, meeting, as a result of that, I believe APCo stated
3 that they were going to look into replacing the splices.
4 So, we didn't pursue it anymore.

5 Q If APCo replaces its splices, does that mean the
6 original splices were bad?

7 A [Witness Paulk] Don't know. There was no
8 documentation to show they were good.

9 Q And, in fact, the NRC's enforcement policy
10 encourages APCo to replace the splices to respond to the
11 NRC, doesn't it?

12 A [Witness Paulk] No. They encourage them to take
13 proper corrective actions.

14 Q Right.

15 A [Witness Paulk] Whatever they be.

16 Q And if the NRC is telling you that the splice is
17 bad and you've replaced the splice, wouldn't the NRC
18 consider that to be proper corrective actions?

19 A [Witness Luehman] That is proper corrective
20 action, it's not necessarily the only corrective action that
21 could be taken.

22 Q Right. Mr. Luehman, you referred to this
23 document, September 23rd, 1987 evaluation as a JCO. And
24 that is what it's called on the front page?

25 A [Witness Luehman] That's right.

1 Q I want to get beyond the title of this document a
2 little bit.

3 A [Witness Luehman] Okay.

4 Q Let me stipulate to you just hypothetically, that
5 this -- since none of you have read it recently, that this
6 document is intended to show that this -- this termination
7 is capable of performing its safety function. Will you
8 stipulate to that hypothetically?

9 A [Witness Walker] That is the purpose of a JCO.

10 A [Witness Luehman] I guess I'll say that that's
11 true.

12 Q Okay. That kind of approach to documentation is
13 something fundamentally different, is it not, from a
14 document that tells you I don't need this piece of equipment
15 to operate, because I have three other back-up systems, is
16 it not?

17 A [Witness Luehman] That's correct.

18 Q And if the equipment -- the evaluation shows that
19 the equipment can operate in an accident environment, isn't
20 that the purpose of a qualification document; is it not?

21 A [Witness Luehman] If a document can show that a
22 piece of equipment could operate in an accident environment,
23 you know, then, under all the conditions it's got to, then I
24 guess that is a qualification document.

25 A [Witness Walker] May I interject something here?

1 Q Let me finish this line and then I'll come back to
2 Mr. Walker.

3 And the 10 CFR 50-49 specifically allows for
4 qualification by analysis, does it not?

5 A [Witness Luehman] Yes, it does. I would say it
6 allows qualification as long as you can establish
7 similarity.

8 A [Witness Paulk] With partial test results.

9 A [Witness Walker] The purpose of the JCO is to do
10 one of two things or perhaps both.

11 One is to do what you have suggested is to show
12 that the piece of equipment is capable of performing the
13 function in an accident condition; or that the function can
14 be accomplished either by that piece of equipment or by some
15 other piece of equipment, so the idea behind a JCO is to be
16 able to accomplish that function.

17 If you can do it with that piece, fine. If you
18 have to rely on something else, that is acceptable also.

19 Q Have you read the September 23rd, 1987 evaluation,
20 Mr. Walker?

21 A [Witness Walker] Is that this?

22 Q Yes.

23 A [Witness Walker] I have not.

24 Q Do you know whether Alabama Power Company in this
25 evaluation was relying on anything but this termination?

1 A [Witness Walker] I do not.

2 A [Witness Paulk] Yes, they were in the
3 assumptions.

4 A [Witness Walker] My purpose here is to clarify
5 the definition of a JCO.

6 Q I understand that. I understand that. I am
7 trying to get beyond the title to the essence of it.

8 A [Witness Paulk] They are making some assumptions
9 in here that weren't borne out. They even address the
10 moisture intrusion into the bolted area --

11 Q I am sure they regarded --

12 A [Witness Paulk] Pardon?

13 Q I am sure they did address moisture intrusion
14 since that was the issue before them.

15 A [Witness Paulk] Yes, but they, you know, they
16 considered it not credible.

17 Q That's your opinion, right, that this is not
18 credible, right? That's your opinion?

19 A [Witness Paulk] They have a test report in their
20 records that they used that had a failure because of that.

21 Q Time out. Your opinion of that evaluation is that
22 it's not credible, correct? Isn't that what you just said?

23 A [Witness Paulk] No. Their evaluation says it was
24 not credible for moisture intrusion.

25 I am saying that they had a test report in their

1 files that had a failure because of moisture intrusion and
2 based on personal experience of seeing a failure of a splice
3 using moisture intrusion.

4 Q Mr. Paulk, do you know what the conclusion of that
5 evaluation was?

6 A [Witness Paulk] Which evaluation? This one?

7 Q September 23rd evaluation.

8 A [Witness Paulk] I believe -- let's see --

9 Q Regarding the performance of the termination.

10 A [Witness Paulk] Alabama Power concluded I guess
11 that the hydrogen recombiner will perform its intended
12 functions in the relevant environment.

13 Q Okay, thank you, and you disagree with that?

14 A [Witness Paulk] I guess I have not read the full
15 thing in detail recently.

16 Q In fact you'd never read it in detail during the
17 inspection, did you?

18 A [Witness Paulk] I don't believe so.

19 MR. REPKA: Okay, thank you. Judge, if you would
20 bear with me a second, I'd like to take about a two or three
21 minute break, just to caucus here a little bit and --

22 JUDGE BOLLWERK: Why don't we go ahead and take
23 five minutes right now? We'll call it our mid-morning break
24 and we'll be back at 25 till.

25 [Brief recess.]

1 JUDGE BOLLWERK: Let's go back on the record and
2 Mr. Repka, please proceed with your cross examination.

3 BY MR. REPKA:

4 Q Okay. Mr. Merriweather, Mr. Paulk, I want to
5 focus your attention a little bit on -- to page 10 of your
6 testimony. Do you have that in front of you? Now I have to
7 get it. On this page you are talking about, I believe, the
8 application of NUREG-0588 and, specifically, you say here
9 that that provided information to the industry, that
10 equipment interfaces must be recognized and addressed;
11 correct?

12 A [Witness Merriweather] Right.

13 Q Is this testimony in connection with the clearly
14 should have known standard? Is that the purpose?

15 A [Witness Merriweather] No. That's not the
16 purpose of this. The purpose of this is to show that
17 splices should be included on the master list or covered as
18 part of the qualification for the end device. That's what -
19 -

20 Q Okay. And so that was -- that was recognizing and
21 addressing the issue for NUREG-0588 purposes -- either
22 putting it on the master list or addressing it as part of
23 the end device qualification?

24 A [Witness Merriweather] Well, no. What I'm saying
25 here is that it recognized the need to qualify those

1 interfaces.

2 Q Mr. Merriweather, were you involved in issuing
3 NUREG-0588?

4 A [Witness Merriweather] No, I wasn't.

5 Q Mr. Paulk, same question?

6 A [Witness Paulk] No.

7 Q On page 10 of your testimony, you also referred to
8 enclosure two to IE Bulletin 79-01B, providing a method to
9 the industry that was acceptable to NRC for addressing cable
10 splices on a typical EQ master list example.

11 A [Witness Merriweather] Yes.

12 Q Do you see that? Now, isn't it true that the
13 Farley 5-to-1 terminations at issue here were not on the
14 master list?

15 A [Witness Merriweather] That's true.

16 Q And, in fact, they were addressed as part of the
17 recombiner qualification?

18 A [Witness Merriweather] That's not true. But they
19 were not on the master list.

20 Q In Alabama Power's view, they were part of the
21 recombiner qualification, is that true or not?

22 A [Witness Merriweather] I believe -- obviously
23 we're here because they believe it's qualified and we
24 believe it's not qualified.

25 Q After IE Bulletin 79-01B issue with this example,

1 are you aware of NRC reviews conducted of the Farley EQ
2 master list? Do any come to mind?

3 A [Witness Merriweather] Not that I know about.

4 Q Okay. None performed by Franklin?

5 A [Witness Merriweather] The master list? No. I
6 don't know of any -- I don't have any knowledge of anybody
7 reviewing the master list.

8 Q Okay. The master list was never reviewed by the
9 NRC?

10 A [Witness Merriweather] I'm not saying the master
11 list. They may have reviewed a list of systems.

12 Q Okay. But --

13 A [Witness Merriweather] I consider a master list
14 being all the equipment required to be qualified.

15 Q Right. And it's your testimony the NRC never
16 reviewed that?

17 A [Witness Merriweather] I'm saying, I'm not
18 knowledgable of it.

19 Q Okay.

20 A [Witness Merriweather] I don't recall it, let's
21 put it that way. I don't recall.

22 Q Mr. Paulk, do you recall any such review?

23 A [Witness Paulk] I do not have any personal
24 knowledge of a review. However, I think the Franklin TER
25 addressed the fact that they evaluated the methodology used

1 to establish the master list, and found that the methodology
2 was acceptable. But they did not comment on the
3 completeness or accuracy, you know, is what I remember about
4 it. That's been about four and a half years ago, since I
5 looked at it.

6 Q Okay. Mr. Luehman, you're the expert, are you
7 not, on clearly should have known here?

8 A [Witness Luehman] If there's an expert, I guess
9 I'm the closest thing to it, if there's not --

10 Q On page 13 of your testimony, in an excerpt from
11 the appendix to the order, you state that, according, as a
12 basis for a factor one clearly should have known of the
13 test, that the licensee said that splices were made in
14 accordance with vendor instructions which provided
15 directions regarding the construction of connections with
16 power leads.

17 A [Witness Luehman] That's correct.

18 Q Okay. And, in your view, that's a basis for
19 determining that Alabama Power Company should have known
20 that this would become an issue?

21 A [Witness Luehman] I think what we were saying is
22 that that showed that Alabama Power Company recognized, at
23 that point, that it would be necessary to establish the
24 qualification of this lead, because they asserted that it
25 was done under -- using documentation or vendor

1 instructions.

2 Q Do you have any first-hand knowldge of whether, in
3 fact, the splices were made in accordance with vendor
4 instructions?

5 A [Witness Luehman] I have no first-hand knowledge
6 of that fact.

7 Q If Alabama Power Company had made these splices in
8 accordance with vendors' instruction, doesn't that give some
9 assurance to Alabama Power Company that their splice was
10 properly made?

11 A [Witness Luehman] I guess it would -- if the
12 instructions -- I mean, previously we've heard of -- I mean,
13 making splices in the 5-to-1 case were skill of the craft,
14 so, I mean, it depends upon the extensiveness of the
15 document. If the vendor instruction were specific for a
16 hydrogen recombiner and this particular type of splice,
17 using the same material as the vendor material, then I would
18 say that that -- that -- and all that had been tested, then
19 I would say that that was probably an adequate document.

20 Q You are aware that the vendor representative did
21 oversee the installation of the splice? You have been told
22 that, correct?

23 A [Witness Luehman] I am aware of that. I don't
24 know -- but I'm not aware of what, if any, qualifications he
25 had to make a determination whether that was a good splice

1 or not.

2 Q But the vendor had tested the splice? Had tested
3 the recombiners with a termination?

4 A [Witness Luehman] I am aware that the vendor
5 tested a splice. I think I recall that the splice in
6 question was made with a Scotch tape. Which, right away --
7 I mean, I'm not saying that, that the fact that that splice
8 was a Scotch tape, made out of Scotch tape, necessarily --
9 and that the splices in question at Farley were not made out
10 of a Scotch tape -- that that necessarily raises a problem.

11 However, it would raise a potential flag. Because
12 right away I would say, it would raise a question in my mind
13 as to how explicit the documentation was. And whether it
14 had allowances for use of other types of materials. And
15 given that I don't think anybody has ever produced that
16 document for me to review, that leaves me with a lot of
17 questions.

18 Q So the flag was raised by the fact that
19 Westinghouse used Scotch tape, and Alabama Power Company
20 used the Okonite?

21 A [Witness Luehman] No. I'm saying that could
22 raise a potential question. I did not see -- I did not
23 know, in fact, what type of tape that Westinghouse had
24 originally used until, you know, only a short time ago. So
25 I'm not even going back to enforcement panel knowledge.

1 That's even more recent knowledge that I have, than when we
2 deliberated the enforcement panel -- or review panel, excuse
3 me.

4 Q But you recognized that at the time Alabama Power
5 Company made the splice, they used the Okonite tape,
6 correct?

7 A [Witness Luehman] Yes.

8 Q And that that Okonite tape was qualified at
9 Farley, was it not?

10 A [Witness Luehman] Well, my understanding is --
11 and again, you've reminded me that I'm not an EQ expert, per
12 se. But my understanding is, at least -- and you can ask
13 Mr. Walker, who is probably the best person to answer this -
14 - that a material is only, the material qualification is
15 only part of the qualification. That a material is only
16 good to be -- is only considered to be qualified if it's
17 tested in the particular configuration.

18 To just say a tape is qualified, I don't think is
19 completely accurate. So -- but I would have to defer that
20 to Mr. Walker. I think it's more correct to say that a tape
21 is qualified for use in a particular configuration at a
22 particular voltage.

23 Q Isn't it true that in September of 1987, while
24 these two inspections were still on-going, that Alabama
25 Power Company confirmed from Westinghouse that the tested

1 Scotch tape splice they had used was in a 5-to-1
2 configuration?

3 A [Witness Luehman] I think that's correct.

4 Q You also state, Mr. Luehman, in your testimony on
5 page 13, that the NRC -- and again, this is an excerpt from
6 the order -- the NRC did give prior notice of splice
7 problems. You say that.

8 A [Witness Luehman] That's correct.

9 Q And is that a reference to circular 78-08 and 80-
10 10? Are those the two -- you've talked about those two
11 notices before as splice problem notices. Is that what you
12 are referring to here, or do you have something else in
13 mind?

14 A [Witness Luehman] I think that -- right off hand
15 I can't recall if that was the totality, but I think clearly
16 those two circulars were some of the, were probably a large
17 part of that information.

18 Q And you weren't involved in those circulars in any
19 way?

20 A [Witness Luehman] If you mean the drafting of
21 them or the dissemination of them -- no, I was not.

22 MR. REPKA: I have no further questions for this
23 witness.

24 JUDGE BOLLWERK: Any redirect, Mr. Bachmann?

25 MR. BACHMANN: I'd like a short, say five-minute

1 break, so we can see if we have anymore redirect.

2 JUDGE BOLLWERK: All right. We'll take a five-
3 minute break, then.

4 [Brief recess.]

5 JUDGE BOLLWERK: Back on the record. Please
6 proceed, Mr. Bachmann.

7 REDIRECT EXAMINATION

8 BY MR. BACHMANN:

9 Q Just this question to Mr. Shemanski; during cross
10 examination, you were asked some questions concerning the
11 master list, the EQ master list, and at the time, you were
12 going to give some background, but the questioning went on.

13 Could you explain what you did not say about that
14 background area?

15 A [Witness Shemanski] Well, basically, I wanted to
16 discuss the history of what constitutes a master list.

17 MR. REPKA: That question and answer is beyond the
18 scope of my cross. I didn't ask about the history of the
19 master list, and Mr. Shemanski's testimony does not even
20 remotely purport to go into the history of the master list.

21 MR. BACHMANN: I don't remember the exact
22 questions. I do recall Mr. Repka questioning in the area of
23 the master list. Let me just check the notes.

24 JUDGE BOLLWERK: I would say that my recollection
25 of the master list was some questions he raised with Mr.

1 Merriweather, I believe.

2 [Pause.]

3 MR. BACHMANN: On further reflection, I'll
4 withdraw the question. The -- as I recall now, the question
5 was; did he have a list of utilities that had master lists
6 with splices on them? That's -- I just got a little
7 confused.

8 BY MR. BACHMANN:

9 Q However, -- all right, I'll go back one more
10 question, Mr. Shemanski. It was asked of other members of
11 the Panel and I'd like to have him have an opportunity to
12 respond to it. That is, did you have any involvement with
13 NUREG 0588?

14 A [Witness Shemanski] Yes, I did, as a member of
15 the Division of Operating Reactors in the 1979-1980
16 timeframe. As a member of the Operating Reactor Assessment
17 Branch, I was involved with the review and development of
18 both the Division of Operating Reactor Guidelines and NUREG
19 0588.

20 My function was primarily that of reviewing the
21 document as it proceeded through the development cycle
22 within the Division of Operating Reactors.

23 Q I have a question here, I guess, for Mr. Paulk,
24 and I refer you to page 9 of your testimony, the very last
25 sentence on that page where you're referring to WCAP-7709-L.

1 And the statement is the WCAP, also included a statement
2 that the licensee was to install its own qualified splice in
3 the field in accordance with the licensee's procedure. Do
4 you see that statement?

5 A [Witness Paulk] Yes, sir.

6 Q Is that a correct statement?

7 A [Witness Paulk] I believed it was a correct
8 statement until I reviewed the WCAP a few minutes ago. I
9 believe I referred to the wrong document.

10 Q In other words, that statement about it is not in
11 the WCAP?

12 A [Witness Paulk] It is not in the WCAP as far as I
13 can see, but I did see a statement to that effect in one of
14 the documents onsite.

15 MR. BACHMANN: We are basically correcting our
16 testimony at this point.

17 JUDGE BOLLWERK: Well, it sounds like you would
18 want that sentence stricken for all practical purposes?

19 MR. BACHMANN: Yes. That's all the questions I
20 have, sir.

21 JUDGE BOLLWERK: Anything else, Mr. Repka?

22 MR. REPKA: No.

23 JUDGE BOLLWERK: Judge Carpenter, any questions?

24 JUDGE CARPENTER: No, thank you.

25 JUDGE BOLLWERK: Judge Morris?

1 JUDGE MORRIS: No.

2 JUDGE BOLLWERK: Just very briefly, I want to ask
3 a couple questions about clearly known or should have known.

4 EXAMINATION BY THE BOARD

5 JUDGE BOLLWERK: Mr. Luehman, you've been
6 identified as the expert, to the degree there is one.
7 Again, in your testimony, you have four factors. I'll ask
8 the same question I did before. Which of those four do you
9 consider the most important here in terms of the licensee's
10 responsibility or they should have known -- knew or clearly
11 should have known?

12 WITNESS LUEHMAN: Well, I think the factors that
13 were the most critical, in my estimation, were Factors I and
14 II. Factor I, because although the licensee had a
15 Westinghouse document that showed the qualification of the
16 recombiner unit, we have not reviewed any -- we did not
17 review any documents that showed that the licensee had a
18 vendor document that showed the configuration or the
19 qualification of the splice the licensee used.

20 And Factor II is important, again because there is
21 no record, at least that we reviewed, of exactly how the
22 splice was made in the field or how it was verified in the
23 field.

24 JUDGE BOLLWERK: I think we got into this a little
25 bit yesterday, but I want to make sure that I am clear on

1 the Staff's position. Going back to the Gibbons inspection,
2 if you remember that document. It was marked as APCo
3 Exhibit 11.

4 WITNESS LUEHMAN: Yes, sir.

5 JUDGE BOLLWERK: There is a sentence in there that
6 indicates there is a listing of two hydrogen recombiners and
7 then a sentence at the bottom that states, "The equipment
8 inspected was examined for proper installation, overall
9 interface integrity and manufacturer's nameplate data was
10 obtained."

11 Again, given that they're talking about interface
12 integrity, why was that not a sufficient -- I guess,
13 denomination of the problem along with the last sentence
14 being, "Within the areas examined, there was no identified
15 violations ... " to put them on some kind of notice that
16 they were in the clear in terms of interface integrity and
17 splices like this one?

18 WITNESS LUEHMAN: I will say, right up front that I
19 can answer -- I'll answer that, but I did not talk to Mr.
20 Gibbons, as I stated earlier. I think the two things that
21 are critical here is: one is, if we assume that Mr. Gibbons
22 saw the splices, that he -- that he looked physically at
23 them, without reviewing the qualification file, just viewing
24 a splice from the outside, an inspector can't make a
25 qualification judgment, so he may have looked physically at

1 the splice, but he -- you know, just looking at it without
2 looking at the attendant documentation, going into the
3 licensee's records, which there is no indication in his
4 report that he did, and comparing what he saw with what was
5 in the document files, I -- he could not have made a
6 qualification decision.

7 The second thing is, given that these splices,
8 these particular splices or leads are in the unit, I'm not
9 aware that during his inspection that Mr. Gibbons actually
10 went in and looked at things that were not necessarily
11 accessible.

12 I think that his inspection says -- or it implies
13 to me, the way I took it -- is that where those interfaces
14 were, you know, available for viewing, he looked at them.
15 Again, when I was going through these types of inspection
16 reports to try to -- when I was going to become a member of
17 the EQ Review Panel, I specifically recall asking various
18 members of the Staff whether or not it was typical that on
19 these type of walkdowns, whether the inspector requested
20 licensees to take covers off of things or to look into
21 particular pieces of equipment.

22 The responses I got was that these were largely
23 nameplate walkdowns where the inspector could see the
24 various attributes of the equipment. He viewed them.

25 Of course, again, I'll state, I did not talk to

1 Mr. Gibbons about this particular inspection, nor did I talk
2 to his supervisors about those inspections. Those were
3 assumptions on my part.

4 That is the basis why I feel, as a former
5 inspector reading his report, that I would not rely on his
6 inspection to say that he did any extensive review on the
7 splices in question, because those splices are not culled
8 out in specific. It's a very general statement.

9 WITNESS PAULK: If I may, sir?

10 JUDGE BOLLWERK: Yes.

11 WITNESS PAULK: In our inspection reports, if we
12 look at an installation record or a maintenance work
13 request, or a procedure of such to verify how something was
14 installed, we document that in the reports. It's been --
15 that's the way I was trained and qualified. Mr. Gibbons had
16 more experience than I did and he didn't mention that he
17 looked at any of those documents.

18 JUDGE BOLLWERK: Have you ever talked to Mr.
19 Gibbons about this report?

20 WITNESS PAULK: Mr. Gibbons is dead.

21 JUDGE BOLLWERK: I take it before he died you
22 didn't talk to him about it?

23 WITNESS PAULK: No, sir. I wasn't in his section
24 at that time. I'm just relaying the type of training that
25 I've had in the agency, and the type of documentation that

1 our management requires of us.

2 JUDGE BOLLWERK: I think Judge Carpenter has a
3 question.

4 JUDGE CARPENTER: I don't want to belabor this.
5 It's very clear that it's not necessary for NRC to have a
6 disqualification file. It's only necessary for the licensee
7 to have a qualification file. But, I think, to get a little
8 better feel -- trying to learn a little bit about
9 environmental qualification. With the testimony by the
10 panel or the posture, is it necessary to test any particular
11 piece of material that's used in all the different
12 configurations that it might appear in a nuclear power
13 plant?

14 Now, vis-a-vis what I read in 50.49, the
15 qualification by analysis and by similarity is permissible.
16 Can you help me with the boundaries? For example, if I have
17 some insulating material and subject it to the severe
18 accident conditions for the proper length of time, at a
19 voltage that's considerably in excess of the voltage that
20 I'm going to argue for in the sense of a particular
21 application, is that a legitimate approach, or do I have to
22 test it for every single voltage that it might be used for?

23 I'm really asking can you use bounding value. For
24 example, I would think, for temperature, if you've heated
25 the thing to 400 degrees, you don't expect it to ever go

1 above 300, that you've bounded it. You don't have to test
2 it for a lot of hypothetical temperature curves.

3 Can you give me a little bit of help as to what
4 the boundary is?

5 WITNESS WALKER: Well, we have general bounding
6 conditions. For example, you mentioned insulating material.
7 Cables is what come to mind. I think we do and most of the
8 industry break them down into about three different areas:
9 Low voltage, medium voltage and high voltage cables. Those
10 three different areas should be tested we believe. We don't
11 believe you can test a high voltage cable and decide that a
12 lower voltage cable is qualified by virtue of that test.

13 You may be able to test a lower voltage cable and
14 make some decisions about a high voltage cable though. I
15 mean, that's the position you have taken. And the
16 qualification determination is based on that kind of logic.

17 JUDGE CARPENTER: Well, I was just trying to get
18 some feel here. And I admit to being prejudiced by
19 experience. For many many years I have made splices in
20 lines, on ships -- a Boy Scout, and as a research
21 oceanographer.

22 See, when I look at this drawing and it shows me a
23 Burndy Hylug Connector -- and I think that's what I'm
24 looking at. These cables were connected with the Burndy
25 Hylugs. And the real issue is the insulation of the

1 connector.

2 WITNESS WALKER: You're referring to the 5-to-1
3 splice?

4 JUDGE CARPENTER: Yes. Right.

5 WITNESS WALKER: Okay.

6 JUDGE CARPENTER: And so my question is, if that
7 material had been tested at a voltage higher than the
8 voltage it's going to be subjected to in this application,
9 would that be a basis for qualifying the material? It's not
10 the splice, this is insulating material that's being used to
11 insulate the connector.

12 WITNESS PAULK: I don't believe we said that the
13 material was unqualified. I don't think we had questioned
14 the qualification of the Okonite tapes.

15 JUDGE CARPENTER: Let me clarify this. Because
16 earlier the answer was that the material had to be tested in
17 a variety of configurations. Where, really, here, the issue
18 is not -- not the material, it's the configuration of the
19 device, if you will.

20 WITNESS PAULK: In this case, yes.

21 JUDGE CARPENTER: It's not a materials issue, it's
22 a geometry issue.

23 WITNESS LUEHMAN: Sir, I think that the -- this
24 question has arisen in a number of the -- in at least two of
25 the other modified policy enforcement cases, with regard to

1 the splices. And I think that the position that the agency
2 has taken, relative to this is that, with regard to splices
3 that we have -- I guess the way that the splices basically -
4 - the insulating materials put on the splice is, that
5 there's a certain amount of the tape or the insulating
6 material that's on the splice to provide for the electrical
7 properties -- to provide the insulation that's necessary,
8 from an electrical consideration standpoint.

9 There's also a certain amount of that tape -- or
10 if that's the material in question, that's on there for the
11 relevant -- to withstand the relevant environment that's
12 going to become either torn off -- it was torn off by the
13 LOCA, it's aged by the environment that it's in.

14 And, as a general practice, it's not simply good
15 enough to make a mils per volt correlation between -- let's
16 say I have "X" amount of tape for a 5,000-volt splice and
17 now I want to do a 500-volt splice.

18 So, how many -- how much tape do I need, and make
19 a strict correlation, to take it down from say a 5,000-volt
20 splice to a 500-volt splice? Because a certain amount of
21 tape is required for the LOCA environment, as well as for
22 the -- a certain amount of tape for the electrical
23 properties. And while you can make the extrapolation for
24 how much is required for the electrical properties, at least
25 the NRC's experience, and Mr. Walker can interject here,

1 because I'm just recalling from what the positions we took
2 in those -- those cases were -- is that you cannot make that
3 similar extrapolation for the amount of tape. And that even
4 becomes more difficult when you slightly modify the
5 configuration of where the tape is applied.

6 Did I say that correctly, Harold?

7 WITNESS WALKER: I think that is close enough.
8 Time and time again people have attempted to make the
9 argument that a certain number of volts per mil of
10 insulation indicate the capacity of a tape to perform in any
11 configuration.

12 No one has ever to my knowledge, at least I have
13 not seen any test data to support that assumption. I have
14 discussed this issue with many people and no one has ever
15 produced any experimental data to support that.

16 Therefore, we simply do not accept that.

17 A [Witness Luehman] That -- I think that's relative
18 to operation in a harsh environment. Obviously in just a
19 regular environment you can make such extrapolations.

20 JUDGE CARPENTER: Thank you for helping me with a
21 little better perspective.

22 JUDGE BOLLWERK: Judge Morris?

23 JUDGE MORRIS: No questions?

24 JUDGE BOLLWERK: No questions? Nothing further?

25 All right, we'll dismiss this panel.

1 JUDGE MORRIS: We have the exhibits --

2 JUDGE BOLLWERK: Exhibits to move in. I guess
3 some of you we will see back.

4 Mr. Walker, I believe you're finished?

5 WITNESS WALKER: I believe so.

6 JUDGE BOLLWERK: We appreciate your service to the
7 Board. I thank you very much.

8 Why don't we go ahead and the panel if they want
9 to can go ahead and step down.

10 [Panel excused.]

11 JUDGE BOLLWERK: Why don't we go ahead and move
12 the exhibits in that are necessary.

13 MR. BACHMANN: The Staff hereby moves the
14 following exhibits to be put into evidence:

15 Staff Exhibit No. 28, entitled Evaluation for
16 Continued Operation -- Limitorque MOV, Motor Power Lead
17 Splices, an environmental qualification scope with enclosure
18 constituting a memorandum to J.D. Woodard from W. G.
19 Hairston dated July 30, 1987.

20 Staff Exhibit 29, entitled Electric Hydrogen
21 Recoiners Splices -- Justification for Continued Operation
22 (PCR 87-O-4441), AP-13541 with enclosure. This is dated
23 September 17, '87.

24 Staff Exhibit 31, WCAP-9347, entitled Hydrogen --
25 excuse me, strike that -- Qualification Testing for Model B

1 Electric Hydrogen Recombiner, Westinghouse Electric
2 Corporation, July, 1978.

3 Staff Exhibit 32, WCAP-7709-L, entitled Electrical
4 Hydrogen Recombiner for Water Reactor Containments,
5 Westinghouse Electric Corporation and this is dated July,
6 1971.

7 I move that these Staff exhibits be admitted into
8 evidence.

9 JUDGE BOLLWERK: Any objection?

10 MR. REPKA: We have no objections.

11 JUDGE BOLLWERK: All right. Let the record
12 reflect that Staff Exhibits 28, 29 and 31 and 32 have been
13 received in evidence.

14 [Staff Exhibits Nos. 28, 29, 31
15 32 were received into evidence.]

16 JUDGE BOLLWERK: Anything that APCo wishes to move
17 into evidence? I don't think you had any exhibits on this?

18 MR. REPKA: We have nothing on this at this time.

19 JUDGE BOLLWERK: At this point I think we will
20 take our Noon break. Why don't we say 1:45 to return and
21 hopefully everybody can make it through the snow and get
22 something to eat.

23 All right. We'll see everybody back at 1:45.
24 Thank you very much.

25 [Whereupon, at 12:25 p.m., the hearing was

1 adjourned for lunch, to reconvene at 1:45 p.m., this same
2 day.]
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AFTERNOON SESSION

[1:47 p.m.]

JUDGE BOLLWERK: Good afternoon. Be seated. I think we're ready to begin with the Grease Panel, unless there's something preliminary that the parties have.

[No response..]

JUDGE BOLLWERK: No? All right. Both these witnesses have been previous sworn and are available. Mr. Bachmann, are you going to be taking this panel?

MR. BACHMANN: Yes, I will, sir.

JUDGE BOLLWERK: All right, sir.

Whereupon,

CHARLES J. PAULK, JR,

AND

JAMES G. LUEHMAN,

members of the Panel concerning RP Premium Grease in Fan Motors and Room Coolers, having been previously called for examination, and, having been previously duly sworn, resumed the witness stand, continued to be examined and continued to testify as follows:

DIRECT EXAMINATION

BY MR. BACHMANN:

Q I'll address the panel, and I'll do this just so the record is a little clearer when people read it. Will the members of the Panel state your full name and your

1 position with the NRC?

2 A [Witness Paulk] Charles Jasper Paulk, Jr. I'm a
3 Reactor Inspector in Region IV presently.

4 A [Witness Luehman] James G. Luehman, and I'm a
5 Senior Enforcement Specialist in the Office of Enforcement.

6 Q Do the members of the Panel have before them, a
7 document entitled Testimony of Charles J. Paulk, Jr., and
8 James G. Luehman on behalf of the NRC Staff Concerning
9 Premium RB Grease in Fan Motors and Room Coolers?

10 A [Witness Paulk] Yes.

11 A [Witness Luehman] Yes.

12 Q Did you assist in the preparation of this
13 document?

14 A [Witness Paulk] Yes, sir.

15 A [Witness Luehman] Yes, I did.

16 Q Do you have any corrections to be made to this
17 document?

18 A [Witness Paulk] No, sir.

19 A [Witness Luehman] No.

20 Q Is this document true and correct, to the best of
21 your knowledge and belief?

22 A [Witness Paulk] Yes, it is.

23 A [Witness Luehman] Yes, it is.

24 MR. BACHMANN: At this point, I move that the
25 document be bound into the record as if read.

1 JUDGE BOLLWERK: Any objection?

2 MR. HANCOCK: No.

3 JUDGE BOLLWERK: Let the record reflect that the
4 testimony of Charles Paulk and James G. Luehman concerning
5 Premium RB Grease in Fan Motors and Room Coolers should be
6 bound into the record.

7 [The Direct Testimony of Charles J. Paulk, Jr.,
8 and James G. Luehman concerning Premium RB Grease in Fan
9 Motors and Room Coolers follows:]

10

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

TESTIMONY OF CHARLES J. PAULK, JR., AND
JAMES G. LUEHMAN ON BEHALF OF THE NRC STAFF
CONCERNING PREMIUM RB GREASE IN FAN MOTORS AND ROOM COOLERS

- Q1. State your full name and current position with the NRC.
- A1. Charles Jasper Paulk, Jr., Reactor Inspector, Plant Systems Section Division of Reactor Safety, Region IV.
James G. Luehman, Senior Enforcement Specialist, Office of Enforcement.
- Q2. Have you prepared a copy of your Professional Qualifications?
- A2. (All) A copy of each of our Professional Qualifications is included in Staff Exh. 1.
- Q3. What is the purpose of your testimony?
- A3. (All) The purpose of our testimony is to support the NRC staff's position regarding the violations of the environmental qualification (EQ) requirements for fan motors inside containment and room coolers outside containment lubricated with Premium RB grease, as set forth in the Notice of Violation (NOV), dated August 15, 1988 (Staff Exh. 2), and the Order Imposing a Civil Penalty, dated August 21, 1990 (Staff Exh. 3).

Q4. What are the EQ requirements that the Staff alleges were violated?

A4. (All) The EQ requirements and the nature of the violations are stated in the NOV, pages 2 and 3, under the heading "Violations Assessed a Civil Penalty" (Violation 1.C.4) as follows:

10 CFR 50.49(f) and (j), respectively, require in part that (1) each item of electric equipment important to safety shall be qualified by testing of, or experience with, identical or similar equipment, and the qualification shall include a supporting analysis to show the equipment to be qualified is acceptable, and (2) a record of the qualification of the electric equipment shall be maintained in an auditable form to permit verification that the required equipment is qualified and that the equipment meets the specified performance requirements under postulated environmental conditions.

Contrary to the above, from November 30, 1985, until the time of inspection which was completed on November 20, 1987 (September 18, 1987 for #4.):

4. [Alabama Power Company] did not have documentation in a file to demonstrate qualification of Premium RB grease for use on fan motors inside containment and room coolers outside containment.

Q5. What was your role, if any, in the September 1987 inspection referenced in the NOV?

A5. (Paulk) I participated in the inspection at Alabama Power Company's (APCo or licensee) Farley Nuclear Plant (FNP) that was completed on September 18, 1987. During this inspection, I reviewed the documentation in the qualification files for the environmental qualification of the containment fan motors and outside containment room coolers.

Q6. With respect to both containment fan motors and outside containment room coolers, what were the results of the inspection?

- A6. (Paulk) The containment fan motors and outside containment room coolers could be subject to harsh environments after an accident they are required to mitigate, and were, therefore, included on the licensee's Master List of equipment that is required to be qualified in accordance with 10 C.F.R. § 50.49. The containment fan motors were Reliance motors used with Joy fans and the outside containment room coolers also utilized Joy fans with Reliance motors.

The documentation did support qualification of Reliance motors. The documentation did not, however, support the qualification of the motors as found at FNP. The motors at FNP had V-type taped splices and were lubricated with grease that was not as specified in the test report. (The issue of V-type splices is addressed elsewhere in the NOV, and is not the subject of this testimony.)

With respect to grease, the documentation required that Chevron SRI-2 grease be used as the lubricant. The licensee had replaced the Chevron SRI-2 grease with Premium RB grease. However, the licensee did not provide documentation to demonstrate that the grease was replaced in accordance with the vendor's instructions to maintain qualification of the motors, as discussed below.

10 C.F.R. § 50.49 requires that equipment be qualified to operate in a harsh environment to mitigate an accident. In this instance, the motor must be qualified. The motor includes the bearings and lubricant. Typically, the motor is tested by aging the stator and rotor thermally and by exposure to gamma radiation, the entire motor is assembled using new lubricant, and the assembled motor is then subjected to a harsh environment. If the lubricant is not capable of providing its lubricating qualities after an

accident resulting in a harsh environment, the bearings in the motor (and fan) could overheat and seize up because of lack of lubrication. If this occurred, the motor would not be capable of performing its intended function. In this case, the Joy fans and Reliance motors were tested with Chevron SRI-2 grease. The licensee did not provide any test data or analysis to demonstrate that Joy fans and Reliance motors lubricated with Premium RB grease were qualified in a harsh environment in accordance with 10 C.F.R. § 50.49.

In these motors, the licensee did not replace the qualified grease with the Premium RB grease in accordance with the vendor instructions, therefore, without a similarity analysis, the qualification was voided. Specifically, the vendor had placed special instructions for the changing of lubricants in the vendor manual. The vendor stated that those instructions must be followed in order to assure continued qualification. The licensee should have removed the old grease and replaced it with the new grease, run the motors for 100 hours and then replaced the grease again. The licensee did not provide any documentation to demonstrate that this procedure was followed in replacing the Chevron SRI-2 grease with Premium RB grease. The licensee did not have any documented test data or similarity analysis to support the qualification of the motors lubricated with Premium RB grease.

(Luehman) 10 C.F.R. § 50.49 requires that each item of electrical equipment important to safety shall be qualified by testing of, or experience with, *identical or similar* equipment, and the qualification shall include a supporting analysis to show the equipment to be qualified is similar to that which was tested. With different or mixed

grease the component is not identical to that which was tested and must be shown to be similar. Here, the grease used was different than that specified by the vendor or may have been mixed and there was no similarity analysis. No data was available to support qualification of the motors in a harsh environment.

Q7. How did you discover the facts identified in A6, above?

A7. (Paulk) I reviewed the qualification documentation, and after doing so, I asked the licensee what lubricant they were using in the fan motors. The licensee informed me that the grease was Premium RB.

(Luehman) I read the inspection reports (Staff Exhs. 11 and 12) and talked to the inspectors.

Q8. Did the licensee proffer any analysis to you during the inspection to show that qualification of the containment fan motors and outside containment room coolers lubricated with a grease different from that with which the equipment had been tested would not materially affect the results of the testing?

A8. (Paulk) APCo did not provide any analysis or documentation from its files to support qualification of the fan motors or room coolers using grease other than that tested. They informed us that they were in the process of developing a program to qualify greases during the November 1987 inspection.

Q9. Why should the licensee have been aware that the deficiencies the Staff has identified were a concern for the qualification of the fan motors and room coolers?

A9. (Paulk) The licensee should have known that the grease was required to be capable of providing lubricating qualities when subjected to a harsh environment, as was demonstrated in the vendor's test. Because 10 C.F.R. § 50.49 explicitly states that the equipment be identical or similar to that tested, the licensee should have known that the grease had to be the same as tested, or that supporting analysis be provided. The licensee did neither. Additionally, the DOR guidelines stated that the specimen being tested should be the same as that being qualified and should be of identical design and material construction. (DOR Guidelines, Section 5.2.2, Staff Exh. 24) These are in addition to the vendor's statements regarding the grease and the requirements for changing the grease.

(Luehman) The licensee clearly should have known that there was no documentation to qualify the containment fan motors and outside containment room coolers in the as-found condition (lubricated with Premium RB grease) because the vendor specifically identified the grease to be used and also outlined the procedure by which another acceptable type of grease could be substituted for the specific grease used in the qualification test.

Q10. What systems or components were affected by the discrepancies you have described?

A10. (Paulk) The containment fans; without the containment fans, the licensee would not have been capable of maintaining the containment temperature and pressure within design limits. Without the room coolers, certain equipment (e.g., pumps) required to mitigate the accident would not have sufficient cooling to remain operable.

Q11. Describe how you determined that this violation, under the provisions of the Commission's Modified Enforcement Policy, was sufficiently significant, standing alone, to be considered for escalated enforcement?

A11. (Paulk) This violation was significant because the licensee had installed grease in motors that was not tested in the qualification report; that was not substituted for the qualified grease in accordance with the vendor's instructions; and, the licensee did not have or provide any analysis or data to support its use in the qualified Joy fans and Reliance motors.

(Luehman) The containment fan motors and outside containment room coolers are electrical equipment important to safety and required to be qualified by 10 C.F.R. § 50.49. As discussed above, the licensee provided no documented basis for concluding that the motors were qualified at the time of the inspection. Specifically, the licensee had no test data or analysis to qualify the motors in the as-found condition (lubricated with Premium RB or mixed grease). For this reason, this qualification deficiency is sufficiently significant to be considered for escalated enforcement.

Q12. Does this complete your testimony regarding this matter?

A12. (All) Yes.

1 MR. BACHMANN: I might add that there is no --
2 there are no new exhibits for this Panel.

3 JUDGE BOLLWERK: Fine.

4 MR. BACHMANN: At this time, I will make the
5 Panel available for cross examination.

6 CROSS EXAMINATION

7 BY MR. HANCOCK:

8 Q Mr. Luehman, I'd like to start with you. In your
9 opinion, is grease or lubricants an item of electrical
10 equipment subject to the EQ Rule, 10 CFR 50.49?

11 A [Witness Luehman] I think that the testimony
12 addresses that in one of the questions, and my opinion is
13 that grease is not a component of electrical equipment
14 important to safety that has to be qualified under 50.49.

15 Q Did I understand you to say that grease is not a
16 component?

17 A [Witness Luehman] Grease is not a component of
18 electrical equipment.

19 Q I understand. Mr. Paulk, would you agree with
20 that; that grease is not an item of electrical equipment
21 subject to the EQ Rule?

22 A [Witness Paulk] Grease, itself, is not a piece of
23 electrical equipment.

24 Q And it would follow then that grease, by itself,
25 would not have to be included on a master list. It would

1 not have to be qualified and there would not have to be
2 documentation to establish that grease, by itself, would
3 perform its intended function in a design basis event?

4 A [Witness Paulk] Not necessarily so.

5 Q Well, tell me, Mr. Paulk, what would require
6 grease to be qualified. Now, if you've told me that it's
7 not subject to 10 CFR 50.49 and it's not an item of
8 electrical equipment, what would require it to be qualified?

9 A [Witness Paulk] I believe we've addressed that in
10 our response, but, briefly, grease is an integral component
11 of electrical equipment, i.e., motors. The Rule requires it
12 to be tested with identical or similar components with
13 analysis.

14 Q If I can interrupt you just a second, you just
15 told me a minute ago -- and I want to establish a jumping
16 off point -- you just told me that grease is not an item
17 subject to the Rule.

18 A [Witness Paulk] No, I did not. I said grease was
19 not a piece of electrical equipment by itself.

20 Q Okay, so you recognize in 10 CFR 50.49 items of
21 equipment that are not electrical items of equipment that
22 have to be qualified to the Rule?

23 A [Witness Paulk] The motor that the grease is
24 lubricating has to be qualified to the Rule.

25 Q So it's the motor we're interested in here now,

1 not the grease itself?

2 A [Witness Paulk] If the grease used is different
3 from that that was tested, then you have to demonstrate that
4 that grease is -- would be able to perform the same
5 functions as the grease that was qualified.

6 Q I'm not trying to trick you up; I just want to
7 make sure we have a good starting off point. What is
8 required to be qualified, the item of equipment -- in this
9 case, the motor -- or is it the grease?

10 A [Witness Paulk] You could do it either way, just
11 like with the tape splices; they could be either qualified
12 individually or as part of the component.

13 Q All right, but --

14 A [Witness Paulk] It's up to the licensees.

15 Q But in your testimony, you have said that it is
16 the fan motor that has to be qualified. And if I understand
17 the alleged violation, it is this: that Alabama Power
18 Company had a fan motor which was qualified with a certain
19 type of grease, but they used a different type of grease in
20 the actual application at Farley Nuclear Plant. Have I said
21 that right?

22 A [Witness Paulk] I believe so.

23 Q Okay, so what we're saying here is that the fan
24 motor is what has to be qualified with that grease, not the
25 grease itself, not a separate documentation or qualification

1 for just grease?

2 A [Witness Paulk] Unless you change the grease and
3 you don't have anything to show that it would stand up
4 underneath the environments that it would be seeing.

5 Q I fear we're running in circles. I just want to
6 try and pin this down. In your testimony, it appears to me
7 that the alleged violation is that Alabama Power Company had
8 fans that had a certain type of grease that, in your
9 opinion, were not qualified and therefore the fan was not
10 qualified. It wasn't that the grease was not qualified,
11 because, as we said a few minutes ago, grease doesn't have
12 to -- by itself -- doesn't have to be qualified under 50.49;
13 is that right?

14 A [Witness Paulk] It does not have to be..

15 Q Okay.

16 A [Witness Paulk] If the licensee elects to change
17 the grease from that which was tested and which he had
18 documentation, then he would be required to show that that
19 grease would be similar and be able to perform the same
20 functions.

21 Q All right, I just want to make sure we have the
22 starting off point. In the NOV -- and I'll reference you to
23 Staff Exhibit 2 and give you a second to get there. It's
24 the NOV, page 3.

25 [Witnesses reviewing document.]

1 Q Are we there? Page three. I think it's violation
2 of C-4. It says -- and correct me if I'm not reading this
3 correctly -- it says: APC did not have documentation in the
4 file to demonstrate qualification of premium RB grease.

5 Is that right -- what we really mean to say there
6 is they do not have in their fan file documentation to show
7 that that fan was qualified without the grease? That's the
8 alleged violation?

9 [Witnesses conferring off the record.]

10 A [Witness Paulk] It could be that some licensees -

11 -

12 Q I think that's a yes or no question. I think Mr.
13 Luehman is nodding yes.

14 Mr. Luehman would you agree with that statement?

15 A [Witness Luehman] I would agree in the specific
16 case of Alabama Power Company that the violation that the
17 staff is alleging that the fan motors were not qualified in
18 the configuration that they were found, because the grease
19 in them was not the grease that was in them when -- it was
20 not the grease in the motors that were tested to prove
21 qualification.

22 Q Okay. Okay. I think we're clear on this now. We
23 at least know what the violation is.

24 Mr. Paulk, let me ask you: How would you define
25 the word "equivalency" in the context of lubricants or

1 grease?

2 A [Witness Paulk] A grease that had been, or
3 lubricant, that had been subject to the same aging,
4 irradiation, thermal aging, and subject to the same
5 environment conditions as that which was tested.

6 Q Okay. So if a grease, if one grease has the same,
7 has similar characteristics -- as you said -- as another
8 greases, those two greases would, in your opinion, be
9 equivalent?

10 A [Witness Paulk] It may be equivalent.

11 Q It could be equivalent.

12 Mr. Paulk, I want to ask you another question.
13 Can you tell me the purpose of a vendor's installation or
14 maintenance manual? What would be the purpose in a vendor
15 giving to the purchaser of an item of equipment an
16 installation or maintenance manual?

17 A [Witness Paulk] It is to provide the purchaser
18 information as to what the vendor considers the minimum
19 requirements to maintain the fans, or the motors, in a
20 working condition.

21 Q All right. You say maintain in a working
22 condition. Can we carry that forward and say maintain in a
23 qualified condition? Would that be fair to say?

24 A [Witness Paulk] Some do say that.

25 Q All right. If a vendor gave an installation or

1 maintenance-type manual, do you think that that vendor would
2 recommend to the user of that equipment for him to do
3 something that might jeopardize the qualification of that
4 item of equipment?

5 A [Witness Paulk] I believe that I have seen some
6 vendor manuals that have misled licensees.

7 Q All right. How about ones that had actually
8 recommended that they do something?

9 A [Witness Paulk] That's what I mean. They have
10 recommended things, but they misled people in their
11 recommendations.

12 Q But typically a vendor would not intentionally try
13 to mislead?

14 A [Witness Paulk] I would hope not.

15 Q While she's grabbing this Exhibit, let me just ask
16 you this question: You were at Farley nuclear plant for the
17 September and November inspections?

18 A [Witness Paulk] Yes.

19 Q All right. Do you recall which of those two
20 inspections grease became an issue; where you identified
21 grease as an issue? Was it the September or the November?

22 A [Witness Paulk] I don't remember right now.

23 Q Well, do you remember how it came up as an issue?

24 A [Witness Paulk] No, I don't.

25 Q You don't recall if you were reviewing a

1 documentation file, or if you happened to ask the question?

2 A [Witness Paulk] It came up.

3 Q Okay. Did you review any documentation files for
4 the fan?

5 A [Witness Paulk] I believe I reviewed the
6 containment fan motors.

7 MR. HANCOCK: I am going to mark for
8 identification purposes the next Alabama Power Company
9 exhibit, and I'm told it's 97 -- is that correct? Okay.

10 BY MR. HANCOCK:

11 Q I'll show you what has been marked for
12 identification purposes as Alabama Power Company Exhibit 97,
13 and I'll ask that you take a look at that, please. And I
14 will direct your attention in particular --

15 MR. BACHMANN: We would like to have a copy of
16 that, please.

17 BY MR. HANCOCK:

18 Q While they are marking it and looking at it, I
19 will identify it as the Instruction Manual B-3620-8 --
20 that's revision 8 -- For Reliance Fan Motors.

21 JUDGE BOLLWERK: And that's dated, what, June
22 1976?

23 MR. HANCOCK: Yes, that's correct.

24 JUDGE BOLLWERK: All right. APCO Exhibit 97 has
25 been marked for identification.

1 [APCO Exhibit 9" was
2 identified for the record.]

3 BY MR. HANCOCK:

4 Q And looking at it, I'll ask Mr. Paulk this
5 question: Was this instruction manual in the Alabama Power
6 Company Reliance Fan files that you reviewed, either in
7 September or November of 1987?

8 A [Witness Paulk] It may have been.

9 Q It could have been, but you don't know for
10 certain?

11 A [Witness Paulk] I don't know, no.

12 Q You see that it's dated June 1976 -- so it
13 certainly preceded that?

14 A [Witness Paulk] Yes.

15 Q And it's possible that it could be?

16 A [Witness Paulk] Yes.

17 Q Okay. Mr. Luehman, you have said in your
18 testimony on page 5 -- and actually we'll back up to page 4,
19 at the bottom of the page. And I'll read this, and see if
20 I'm reading this right.

21 It says: With different or mixed grease, the
22 component is not identical to that which was tested and must
23 be shown to be similar.

24 Here the grease used was different than that
25 specified by the vendor, or may have been mixed, and there

1 was no similarity analysis. And you say that the fact that
2 they used a different grease destroyed the qualification of
3 the fan motors, is that correct?

4 A [Witness Luehman] Well, I think destroyed the
5 qualifications is probably a little bit of a harsh term.

6 Q All right. Let's say it this way: It nullified
7 the qualification. Alabama Power Company was required to
8 requalify these fans with the new kind of grease, is that
9 correct? Is that a fair way of saying it?

10 A [Witness Luehman] That's fair with the addition,
11 I guess, that qualification did not necessarily mean they
12 had to retest the fan with this particular grease.

13 Q But you have testified, now -- and correct me if I
14 am wrong -- you've testified that be using the premium RB
15 grease the fans used by Alabama Power Company were no longer
16 qualified.

17 A [Witness Luehman] They were no longer similar to
18 the one that was qualified.

19 Q And the reason for that is that they used a grease
20 different than that which was recommended by, or used by,
21 Reliance, the tester of the equipment, is that correct?

22 A [Witness Luehman] That's correct.

23 Q All right. I'll ask you to turn to page -- I'm
24 not even sure we have page numbers on this. It's the third
25 page from the back. I don't know that this has page numbers

1 on it.

2 JUDGE BOLLWERK: What is the Bates number?

3 MR. HANCOCK: It is Bates number 0034219.

4 JUDGE BOLLWERK: I see it.

5 MR. HANCOCK: Are we there?

6 BY MR. HANCOCK:

7 Q At the bottom of the page, can you read for me
8 that heading?

9 A [Witness Luehman] "Grease for Anti-friction
10 Bearings of Reliance Motors."

11 Q Okay. Now, if you could read that first sentence
12 for me, please.

13 A [Witness Luehman] "There are a number of greases
14 which are suitable as lubricant for anti-friction bearings
15 in electrical motors."

16 Q Stop. Does that indicate to you that the vendor
17 or tester of this equipment thinks that there's only one
18 grease that's possible for this fan motor?

19 A [Witness Luehman] No. It indicates that there
20 are a number of greases.

21 Q All right. If you could read the next sentence,
22 please.

23 A [Witness Luehman] "It is impossible to list all
24 of the suitable greases in this instruction manual."

25 Q Stop. Does that indicate to you that the vendor

1 thought that if a licensee used a grease different than that
2 which was tested, it would nullify or destroy qualification,
3 yes or no?

4 A [Witness Luehman] No.

5 Q All right. If you could look at the head of the
6 -- actually, I'll let you read the next sentence just to
7 make sure it's all in context. Read the next two sentences,
8 please.

9 A [Witness Luehman] "The user's own experience will
10 undoubtedly determine grease to be used."

11 Q The user's own experience will undoubtedly
12 determine the grease to be used. Does that, in your opinion
13 -- actually, I'll turn this to Mr. Paulk. Does that, in
14 your opinion, make it sound like the vendor or tester of
15 these Reliance motors thought that there was just but one
16 grease?

17 A [Witness Paulk] We never said they didn't.

18 Q Okay. Thank you very much.

19 [Pause.]

20 MR. HANCOCK: I'm going to mark for identification
21 purposes Alabama Power Exhibit 98. I'm just going to hand
22 these to the witnesses. I hand each of you what has been
23 marked Alabama Power Company Exhibit 98 and ask that you
24 take a look at it, and while you are looking at it, I will
25 identify it for the record as Instruction Manual B-3620-Rev

1 19 for Reliance motors.

2 JUDGE BOLLWERK: That's dated March 1989?

3 MR. HANCOCK: This is dated March 19th, '89,
4 that's correct. March 19, '89, yes, sir.

5 JUDGE BOLLWERK: Let the record reflect that APCO
6 Exhibit 98 has been marked for identification.

7 [APCO Exhibit No. 98 was marked
8 for identification.]

9 BY MR. HANCOCK:

10 Q While you are looking at it, I will just tell you
11 or represent to you that this is the 19th revision of the
12 document that was identified as Alabama Power Company 97
13 that you just looked at for the same motors, just a more
14 recent version or revision.

15 I will ask you to turn to, and we don't have the
16 Bates numbers on this or page numbers, but I'll see if we
17 can do this -- the fourth page from the back -- check that
18 -- the fifth page from the back. It may be easier to go
19 from the front, but that was the way I did it. It's the
20 page that has the heading "Lubrication of Bearings." Are we
21 there?

22 A [Witness Luehman] Yes.

23 Q All right. Can you look down, please, in the
24 first column, and I'll direct your attention down here where
25 it says "Recommended lubricant."

1 A [Witness Luehman] Yes.

2 Q Are we there? Mr. Paulk, can you read for me very
3 quickly what follows underneath that heading.

4 A [Witness Paulk] "For the motors operating in
5 ambient temperature shown below, use the following lubricant
6 or its equal."

7 Q Or its equal. Okay. The first in that list we
8 see is what? Chevron oil SRI No. 2. Is that correct?

9 A [Witness Paulk] Yes.

10 Q If we look down four -- three down, actually,
11 what's that last one in that column?

12 A [Witness Paulk] Texaco, Incorporated premium RB.

13 Q Now, premium RB, just to clarify, is the grease
14 that was used by Alabama Power Company. Is that correct?

15 A [Witness Paulk] Yes, sir.

16 Q So we have the vendor recommending that licensees
17 use this premium RB. Is that correct?

18 A [Witness Paulk] You need to go down to the note,
19 where the vendor also says "Mixing of lubricants is not
20 recommended due to possible incompatibility. If there is a
21 desire to change the lubricant, follow instructions for
22 lubrication and repeat lubrication a second time after 100
23 hours of service."

24 Q I see that. We'll get to that in a second. But I
25 will ask you to pick up your Alabama Power Company Exhibit

1 Number 97, if you would, the one that we just had. If you
2 can go to that page we just referenced and show me on there
3 where that same note appears.

4 A [Witness Paulk] I do not see it in your 97.

5 Q Okay. But in 1989, that's what the vendor was
6 telling people: You need to flush it out. You need to pull
7 it out, run it for 100 hours, and then drain the grease and
8 put fresh grease back in. Is that what we're saying?

9 A [Witness Paulk] I don't see any revision bars on
10 there, so I don't know that that was revised in '89, or it
11 could have been revised in '77.

12 Q But we can certainly say --

13 A [Witness Paulk] I don't know.

14 Q We can certainly say by 1989, they were requiring
15 that.

16 A [Witness Paulk] Or sometime before 1989.

17 Q Sometime before that. All right. I'll ask you --
18 actually, we'll get to that in a few minutes. Let's go
19 back over to the first column, and I'll direct your
20 attention to lubrication procedure. This is the recommended
21 lubrication procedure.

22 JUDGE BOLLWERK: Just as a matter of information,
23 this does have a page number on the top righthand corner,
24 Number 9, I think it is. That may make it a little easier.

25 MR. HANCOCK: Oh, I bet that's a fax number.

1 Okay.

2 JUDGE BOLLWERK: Well, there is a page number.

3 MR. HANCOCK: All right. It doesn't appear very
4 clearly on mine, but I'll take your word for it.

5 BY MR. HANCOCK:

6 Q All right. Are we there, the lubrication
7 procedure? Let's look at Item Number 2. Mr. Luehman, if
8 you could read that for me.

9 A [Witness Luehman] Under Lubrication Procedure?

10 Q Under Lubrication Procedure.

11 A [Witness Luehman] "Item 2: Add the recommended
12 volume of recommended lubricant using a hand-operated grease
13 gun."

14 Q All right. Thank you. The recommended lubricant.
15 Now, we just went back up here, where Texaco premium RB is
16 one of the recommended lubricants. Is that correct?

17 A [Witness Luehman] Yes.

18 Q Okay. Thank you very much.

19 MR. HANCOCK: Let me mark, for identification
20 purposes, Alabama Power Company Exhibit Number 99. I will
21 hand the witnesses what has been marked, for identification
22 purposes, AP Code 99.

23 And while the witnesses are looking at that, I
24 will identify it as the installation and maintenance manual
25 for the "Joy Series 1000 Axivane Direct Connected Single and

1 Two Stage Axial Flow Fans."

2 JUDGE BOLLWERK: Let the record reflect that APCo
3 Exhibit 99 has been marked for identification.

4 [APCo Exhibit 99 was marked for
5 identification.]

6 JUDGE MORRIS: You didn't mentioned the date for
7 this. Is there one?

8 MR. HANCOCK: I'm not sure that there is a date
9 for this, Judge. But I will represent to you and to the
10 Board -- I mean, excuse me, to the panel, that this was what
11 was in the qualification file for the Joy Fan Motors in
12 November of 1987. So, it would be a manual dated some time
13 before that time.

14 BY MR. HANCOCK:

15 Q I would direct the panel's attention to -- and we
16 do have bates numbers -- bates number 00034207. The page is
17 headed lubrication. Are we there?

18 A [Witness Luehman] Yes.

19 Q Okay. If we'll look to the bottom of the page,
20 and I will show you what I'm directing your attention to.
21 It says: "The recommended grease for motors, pitch control
22 mechanism and fan shaft bearings." Mr. Paulk can you read
23 what's in that column right next to it?

24 A [Witness Paulk] Chevron SRI #2 or equivalent.

25 Q Or equivalent. So, what we're saying here or what

1 -- strike that, and let me ask it this way.

2 What Joy 's saying here is that if you use SRI #2
3 you're okay. And if you use an equivalent grease to SRI #2
4 you're okay. Am I right?

5 A [Witness Paulk] To a degree.

6 Q To a degree. Thank you very much.

7 MR. HANCOCK: Just a second. I've got two more
8 exhibits, and then I think we can wrap it up real quickly.
9 So, if we can take just a second. That is APCo 100.

10 And I'm handing to the witness Alabama Power
11 Company Exhibit 100.

12 BY MR. HANCOCK:

13 Q And I'll ask Mr. Paulk if ne has ever seen this
14 before? And I'll tell you that this is the routine
15 maintenance section of a larger document. But the date of
16 this document is April of 1986. It's Revision 9 to B-3628,
17 and it's dated April 1986.

18 Have you ever seen this before?

19 A [Witness Paulk] I may have. I don't recall.

20 Q Well, I will represent to you, and let me confirm
21 it, that this was in Alabama Power Company's files at the
22 time of the November inspection, having confirmation from my
23 expert over here. If you would just take a look at that
24 very quickly for me.

25 JUDGE BOLLWERK: Let the record reflect that APCo

1 Exhibit 100 has been marked for identification.

2 [APCo Exhibit No. 100 was marked
3 for identification.]

4 [Witness reviewing document.]

5 BY MR. HANCOCK:

6 Q Mr. Paulk, in your written testimony, on page
7 four, the first full paragraph. And I'm going to read this.
8 And stop me if I make a mistake. But, I'm going to read it
9 and see where we go. It says -- the first full paragraph
10 reads: "In these motors, the licensee did not replace the
11 qualified grease with the premium RV grease, in accordance
12 with the vendor instructions. Therefore, without a
13 similarity analysis, the qualification was voided.
14 Specifically, the vendor had placed special instructions for
15 the changing of lubricants in the vendor manual. The vendor
16 stated that those instructions must be followed in order to
17 assure continued qualifications."

18 Does it say that? Did I read that right?

19 A [Witness Paulk] Yes, sir.

20 Q Let me ask you, Mr. Paulk, if you could turn --
21 and I know I'm running you through some documents -- but if
22 you could turn to the inspection report from the November
23 inspection. I think it's been admitted into evidence as
24 Staff's Exhibit 12.

25 A [Witness Paulk] From the November?

1 Q From the November. Yes. It's Staff Exhibit 12, I
2 believe.

3 A [Perusing document.]

4 I think I've got it here somewhere.

5 Q Actually, I can show you my copy while Mr.
6 Luehman's looking for it.

7 I want to ask you this question, Mr. Paulk. If
8 you could look through there and tell me where you
9 identified this concern in the NOV? If you can show me
10 where you identified the concern that the vendor
11 instructions for replacing grease were not met by the
12 licensee?

13 And this may take a few minutes, because I can
14 tell you it's not in there. But, if you wish to look,
15 please take all the time that you need.

16 A [Perusing document.]

17 Q Have you been able to find it?

18 A [Witness Paulk] Not a direct reference to that.

19 Q How about an indirect reference to that?

20 A [Witness Paulk] Indirect we were talking about
21 mixed greases on the Limitorques being a concern.

22 Q That's the Limitorque. If I am not mistaken and
23 as I recall the Staff withdrew that allegation.

24 Am I correct in saying that?

25 A [Witness Paulk] Yes, sir.

1 Q Okay.

2 A [Witness Paulk] That's why I said it was
3 indirect.

4 Q It was indirect but that was on an allegation that
5 the Staff has unilaterally withdrawn from this proceeding.
6 Okay.

7 I'll now reference you to Staff Exhibit No. 2,
8 which is the NOV and instead of making you fumble, I'll hand
9 it to you and ask you this question.

10 Does this allegation appear in the Notice of
11 Violation, the allegation that the licensee failed to follow
12 the vendor's instructions on replacing grease?

13 A [Witness Paulk] I do not believe it's there.

14 Q It's not in the NOV?

15 A [Witness Paulk] I don't believe so.

16 Q I'll ask you and I'll get the order imposing if
17 you'd like but I'll ask you if it appears there?

18 A [Witness Paulk] I do not know or remember.

19 Q So the first time, you're telling me the first
20 time that this allegation appears is when you filed your
21 testimony in December, December 20, 1991, is that correct?
22 The first time it was communicated to the licensee?

23 A [Witness Paulk] I do not believe so --

24 Q All right. Tell me --

25 A [Witness Paulk] -- talked about it when we were

1 there at the site.

2 Q There is no documentation of that.

3 A [Witness Paulk] There is no documentation. No,
4 sir.

5 Q Thank you, thank you.

6 Now if we can go back to, I think it was Sta'f --
7 I mean Alabama Power Company Exhibit 100, 100 -- and that
8 was the -- tripping all over myself here -- and that has
9 been identified as the Reliance Manual B-3628, Revision 9,
10 dated April, 1986.

11 You have had a chance to look over it and I'll ask
12 you, sir, if there is anything in this section entitled
13 routine maintenance that would tell a licensee or a user of
14 this material, this fan, that the vendor recommended that
15 when you are replacing the grease you take it out, run the
16 motor for 100 hours, take out the grease, and replace it
17 again?

18 A [Witness Paulk] The caution statement would lead
19 me to that.

20 Q Show me the caution statement.

21 A [Witness Paulk] The caution statement in the
22 right-hand column, middle of the page: "Some greases are
23 not chemically compatible and should be checked with
24 Reliance sales office."

25 Q All right. If I am not -- if I am looking at this

1 correctly, that caution statement is contained in a box.

2 A [Witness Paulk] Yes.

3 Q Meaning everything that they want to caution you
4 about is in that box for the purposes of that caution and my
5 copy, and I think I xeroxed it right, does not have the
6 phrase "100 hours" in it, does it?

7 A [Witness Paulk] Not in this document.

8 MR. HANCOCK: Thank you, sir. Now I had Julie go
9 ahead and write the numbers on this next exhibit so we're
10 moving things a little faster -- that is, Alabama Power
11 Company Exhibit 100 - and one, excuse me, 101.

12 BY MR. HANCOCK:

13 Q Are we on Alabama Power Company Exhibit 101? This
14 is again the same section but from a different revision.
15 This is Revision No. 10 of B-3628, the Reliance Motors, and
16 I'll tell the panel and the Board that this one is dated
17 January, 1989, so the one we just looked at, Alabama Power
18 Company Exhibit 100, is dated April, 1986 and was in the
19 file at the time of the November inspection.

20 In January of 1989, Reliance felt compelled to
21 revise the instruction manual and I will direct the panel's
22 attention to page 2 of this exhibit entitled Section IV,
23 Routine Maintenance.

24 Are we there?

25 A [Witness Paulk] Yes, sir.

1 Q All right, Mr. Paulk, we're just about through
2 here. Can you look at the bottom right-hand column?

3 A [Witness Paulk] Where you've got the arrow.

4 Q Well, somebody wrote that. That's not my
5 handwriting but you're exactly right. It directs us all to
6 the right place.

7 If you could read that for me, please.

8 A [Witness Paulk] "Note: Mixing lubricants is not
9 recommended due to possible incompatibility. If it is
10 desired to change lubricant, follow instructions for
11 lubrication and repeat lubrication a second time after 100
12 hours of service. Care must be taken to look for signs of
13 lubricant incompatibility such as extreme soupiness visible
14 from the grease relief area."

15 Q All right, so Reliance in -- what did I say this
16 was? Reliance in January of 1989, some three years after
17 the inspection and some four and a half years after the
18 deadline, felt compelled to add this hundred hour
19 qualification, is that correct?

20 A [Witness Paulk] If this is the first it ever
21 shows up.

22 Q That's right. Well, I think we have established
23 that and for the sake of -- if we need to supplement the
24 record for the entire instruction manual, we can do that at
25 some future date.

1 A [Witness Paulk] There is more than just one
2 instruction manual for the Reliance fans, I believe.

3 Q But the B-3628 is for the containment cooler fan
4 motors, is that correct?

5 A [Witness Paulk] If you say so.

6 Q So, I do say so, and I want you to agree with me.
7 If you can't agree with me, you'll have to take my word on
8 it.

9 A [Witness Paulk] I don't know.

10 Q Okay, thank you.

11 JUDGE BOLLWERK: Let the record reflect that APCo
12 Exhibit 101 was marked for identification here.

13 [APCo Exhibit No. 101
14 was marked for identification.]

15 BY MR. HANCOCK:

16 Q One other note while we are looking at something
17 else. If you could look back at Exhibit 101, in that same
18 column about mid-way through we see the heading recommended
19 lubricant, is that correct?

20 A [Witness Paulk] Yes.

21 Q This is the vendor-recommended lubricant.

22 A [Witness Paulk] Yes.

23 Q Mr. Luehman, can you tell me what the fourth
24 recommended lubricant in that column is?

25 A [Witness Luehman] Texaco Incorporated Premium RB.

1 Q And is that the grease that Alabama Power Company
2 used in its motors?

3 A [Witness Luehman] I --

4 Q Yes or no?

5 A [Witness Luehman] I believe it is.

6 Q Thank you very much, sir.

7 MR. HANCOCK: If we can just take two minutes, I
8 think we can wrap this up.

9 [Counsel for APCo conferring off the record.]

10 MR. HANCOCK: I will now reference the panel to
11 Alabama Power Company Exhibit 75.

12 It has not been marked yet. This is from Alabama
13 Power Company's written testimony and I would ask that it be
14 identified for the purposes of identification as Alabama
15 Power Company Exhibit 75.

16 BY MR. HANCOCK:

17 Q Mr. Luehman, what is the date of this letter?

18 A [Witness Luehman] 1976, June 10.

19 Q 1976, June 10 of 1976.

20 Can you please turn to page 2.

21 JUDGE BOLLWERK: Can you identify the letter
22 quickly, Mr. Hancock?

23 MR. HANCOCK: Oh, I'm sorry. This is a letter
24 from -- actually page 2 is from Texaco. It is an
25 equivalency chart from Texaco.

1 Just a little background on it very quickly.
2 Alabama Power Company asked Texaco to provide it with an
3 equivalency chart of greases equivalent to certain other
4 greases, and Texaco wrote back and sent this chart saying
5 here is our grease that's equivalent to another grease.

6 JUDGE BOLLWERK: So it is a June 10, 1976 letter
7 with an attached equivalency chart?

8 MR. HANCOCK: Yes.

9 JUDGE BOLLWERK: From Mr. Gregory of Texaco to
10 Alabama Power Company.

11 Let the record reflect that APCo Exhibit 75 has
12 been marked for identification.

13 [APCo Exhibit No. 75
14 was marked for identification.]

15 BY MR. HANCOCK:

16 Q Can you turn to page two. And that is what I've
17 referred to as the Texaco equivalency chart; that's correct?

18 A [Witness Luehman] Yes.

19 Q And I'll ask Mr. Paul this question. Mr. Paulk,
20 can you identify, under equipment, which of these items are
21 the Joy and fan motor -- Joy and Reliance fan motors at
22 issue in this -- in this enforcement action? Can you do it
23 from the -- it may be a little bit confusing, because it
24 doesn't say -- it doesn't call it by name.

25 A [Witness Paulk] Some of these are room coolers.

1 that may have been.

2 Q All right. Can you look off in the right-hand
3 column? Actually, it's the next to the last column, in the
4 right-hand, and it's headed manufacturer's recommendation?

5 A [Witness Paulk] Yes.

6 Q And what does it say there?

7 A [Witness Paulk] Chevron SRI #2.

8 Q All right.

9 A [Witness Paulk]" Or, whatever it -- I can't --

10 Q Or BRB No. 2, I think, is what that says. And
11 what did Texaco, on June 10, 1976 say was its equivalent?

12 A [Witness Paulk] It said its equivalent was
13 Premium RB.

14 Q Thank you very much, sir.

15 MR. HANCOCK: I have no further questions.

16 JUDGE BOLLWERK: Redirect?

17 MR. BACHMANN: Yes, Your Honor. We'd like to
18 request 10 minutes to decide if we need redirect.

19 JUDGE BOLLWERK: All right. We'll take a 10-
20 minute recess.

21 [Brief recess.]

22 JUDGE BOLLWERK: Let's go back into session.

23 MR. BACHMANN: I just have one or two redirect
24 questions, Your Honor.

25

REDIRECT EXAMINATION

1 BY MR. BACHMANN:

2 Q Mr. Paulk, making reference to APCo's Exhibits 97,
3 98, 99, 100 and 101, the various installation, maintenance
4 manuals. Is there any indication or can you find any
5 indication in any of those exhibits that says that --
6 insofar as the grease is concerned, that says that this
7 grease is -- these particular greases are used to maintain
8 qualification or anything to do with qualification, or
9 anything to do with the harsh environment that you'd expect
10 during a design basis event?

11 A [Witness Paulk] No, sir.

12 MR. BACHMANN: That's all I have.

13 MR. HANCOCK: I have no recross.

14 JUDGE BOLLWERK: Judge Carpenter, do you have some
15 questions?

16 EXAMINATION BY THE BOARD

17 JUDGE CARPENTER: To continue in that same vein, I
18 was going to ask if you had during your visit to the Farley
19 plant, examined a file that included these Exhibits 97-101?
20 Would you have been satisfied with regard to the questions
21 that were in your mind with respect to lubrication of these
22 motors? Would these documents have been sufficient?

23 WITNESS PAULK: If they were available, which some
24 of them clearly appeared to be issued afterwards. But, if
25 they were --

1 JUDGE CARPENTER: My question was if the file had
2 contained these documents, would they have been sufficient?

3 WITNESS PAULK: No, sir, they would not have been
4 sufficient.

5 JUDGE CARPENTER: In what way wouldn't they have
6 been sufficient?

7 WITNESS PAULK: These documents, first of all, do
8 not address any radiation aging in there -- you know, does
9 not discuss that with the equivalency is one area. The
10 other area -- if all the recommendations on the replacements
11 and all were not followed, that would also raise a question,
12 due to possible mixing of incompatible greases. They may be
13 equivalent, but it does not necessarily make them
14 compatible.

15 JUDGE CARPENTER: Well, with respect to the
16 equivalency, let's go back to the parent, if you will. How
17 are you comfortable with any of greases that we've talked
18 about are qualified?

19 WITNESS PAULK: We've seen -- for example,
20 Westinghouse, on their motors, they did not age the
21 lubricants in their bearings. They aged their stators and
22 rotors, then assembled the motor with its bearing, brand new
23 grease, put it in and ran the test. And this is one of the
24 maintenance things that misled people.

25 Westinghouse told the people no additional

1 preventative maintenance is required. And later on in that
2 same paragraph it says, however, to ensure environmental
3 qualification, it is assumed you are doing the recommended
4 preventative maintenance program outlined in this book. If
5 a person read the first sentence, they would stop right
6 there. But, the recommended maintenance alone says hey,
7 you've got to relubricate this thing every six months, and
8 the reason is we didn't age it. You've got to maintain it
9 in an as-new condition.

10 JUDGE CARPENTER: What document are you referring
11 to?

12 WITNESS PAULK: It's a document that I've seen at
13 many sites for Westinghouse large motors. It's not part of
14 this case. But it was an example to bear out that sometimes
15 the maintenance instructions are confusing.

16 JUDGE CARPENTER: Well, I'll accept that
17 perspective. But, coming back to the particular motors at
18 Farley that are at issue here, have you seen a document in
19 which qualified a sample motor, in the sense that it was put
20 in the chamber where that motor has been run and where that
21 motor's environment was protected from radiation -- where
22 the radiation was elevated way above normal operating
23 temperature transient, et cetera, et cetera, just like for
24 most equipment?

25 I ask that out of ignorance. Is that an

1 expectable thing? Is that something one might look for?

2 WITNESS PAULK: Yes, it is. And I believe they
3 did have a document there for the test of the Joy Reliance
4 motors.

5 JUDGE CARPENTER: My memory fails me. Perhaps
6 there will be a document that we'll be exposed to when
7 Alabama Power gets a chance, as part of their testimony.
8 But, given that and these documents that you see today, you
9 would be comfortable that the motors are, with the presently
10 used grease, are qualified?

11 WITNESS PAULK: I think I lost you on that one,
12 sir.

13 JUDGE CARPENTER: I'm trying to find out if this
14 is a documentation problem or a real-world question in your
15 mind about the qualification of those motors with the grease
16 that Alabama Power is using.

17 WITNESS PAULK: This is my opinion: if the premium
18 RB was the only grease use in the bearings, data that I have
19 seen subsequent to the Farley inspection would lead me to
20 believe that the premium RB would be qualified in a harsh
21 environment in the motors.

22 JUDGE CARPENTER: This question of mixing, is that
23 more of an historical issue -- and I presume these motors
24 have been there for some years now, and they've had grease
25 put in them over and over. So, do you think any of the

1 original grease is left?

2 WITNESS PAULK: It's hard to tell. We don't know.

3 JUDGE CARPENTER: Well, is it probable?

4 WITNESS PAULK: It's possible.

5 JUDGE CARPENTER: Yes?

6 WITNESS LUEHMAN: I would just point out that
7 there have been examples of -- in the past -- problems of --
8 where mixing of greases, of dissimilar greases, although
9 equivalent, not compatible, have caused problems. I think
10 specifically that issue came up between the Staff and
11 another licensee in the licensing of a plant some time ago
12 where actual grease mixing where two incompatible greases
13 were actually mixed and caused a problem.

14 So that this case is not -- I mean, this is --
15 though, I guess, you know, it did not present a problem
16 here, there is historical precedent to say that there have
17 been occasions where mixing grease has caused problems in
18 various pieces of equipment.

19 JUDGE BOLLWERK: Are they lubrication problems or
20 qualification problems? I'm sorry, I don't mean to jump in.

21 JUDGE CARPENTER: No problem.

22 WITNESS LUEHMAN: Again, I think there's a couple
23 -- there's a number of factors at work. Obviously, the
24 greases can be a problem, just mixing -- from my
25 understanding of it, just mixing the greases together can

1 cause a problem or mixing the greases and putting them in a
2 particular environment may be the issue causing the problem.
3 The whole thing is, I don't know that you can necessarily
4 rule out one or the other.

5 The whole thing is, you have to take the
6 precautions to ensure it doesn't occur, is the only point
7 I'm trying to make.

8 J DGE CARPENTER: Could you help us a little bit?
9 "A problem," is kind of a broad, nebulous statement to
10 make. Can you tell me what kind of problem?

11 WITNESS LUEHMAN: Hardening.

12 WITNESS PAULK: Dissociation.

13 WITNESS LUEHMAN: And dissociation, I think, are
14 the two problems.

15 WITNESS PAULK: Loss of lubricating capabilities.

16 JUDGE CARPENTER: I am trying to grope with the
17 severity, if not the significance of this issue. And from
18 this recross examination, I'm going to ask the question: Is
19 this something that, while there's a question in your mind,
20 that was -- where there was a problem, whether there was
21 hardening, whether there was a tendency to become less
22 viscous, as one of these pieces of paper called "soupy?"

23 It probably happened a decade or more ago. Is
24 that right; is this a transient?

25 WITNESS LUEHMAN: In response to your question,

1 did it actually occur here?

2 JUDGE CARPENTER: Yes.

3 WITNESS LUEHMAN: In this plant? The answer is,
4 we have --

5 WITNESS PAULK: No.

6 WITNESS LUEHMAN: We have no indication of that.
7 We cannot say that there was any resultant problem from any
8 mixing of these two greases because of the improper change-
9 out, or the use of premium RB grease. That is not the
10 position we're -- that we take. We can't show that.

11 JUDGE CARPENTER: So it is a concern that you can
12 state, but not one that you think is -- that would require
13 immediate attention; that somebody needs to do something
14 about it?

15 WITNESS PAULK: We felt it was of such concern
16 that we had discussions with the licensee and they informed
17 us that they were in the process of starting a qualification
18 program for the lubricants. And we agreed that their
19 operability call that they had made would suffice in the
20 interim until they could do the additional testing. They
21 did not qualify the equipment, but said that they would be
22 able to run with a reasonable assurance, and that if they did
23 lose them, they had these other systems, et cetera.

24 JUDGE CARPENTER: Thank you. I guess I'll ask the
25 licensee about that in a week or so.

1 JUDGE BOLLWERK: Judge Morris?

2 JUDGE MORRIS: I just have a couple of brief
3 questions. In APCo Exhibit 98 which deals with Reliance
4 Motors, it states the acceptance of the grease for ambient
5 temperatures up to 100 degrees Fahrenheit. My question is,
6 what temperature range do the Reliance motors need to
7 operate in?

8 WITNESS PAULK: What page are we on, sir? Page 9?

9 JUDGE MORRIS: It is the page we were looking at.

10 WITNESS LUEHMAN: Is it under recommended
11 lubricants? Lubrication of bearings, recommended
12 lubricants? You said 98, Exhibit 98, is that correct?

13 JUDGE MORRIS: It's the one that has the hard to
14 read "009" at the upper right-hand corner.

15 WITNESS PAULK: Yes, sir.

16 JUDGE MORRIS: And in the left-hand column, under
17 recommended lubricant -- operating temperature minus 15
18 degrees fahrenheit, to 120 degrees fahrenheit.

19 And my question is: What temperature range do the
20 Reliance motors have to operate at?

21 WITNESS PAULK: I am not positive of Farley's tech
22 specs. But most tech specs have a limit of 120 degrees for
23 their containment atmosphere, while operating. That's
24 average temperature.

25 JUDGE MORRIS: So --

1 WITNESS PAULK: That would be up at the upper
2 limit of the recommended lubricants.

3 JUDGE MORRIS: So that would not be a problem?
4 The temperature environment would not be a problem for this
5 lubricant?

6 WITNESS PAULK: For normal operation. For
7 accident operation would be -- I'm not sure exactly how high
8 they go. I don't have the graph in front of me -- 200 and
9 some odd degrees.

10 JUDGE MORRIS: Would these motors see the accident
11 environment?

12 WITNESS PAULK: Yes, sir.

13 JUDGE MORRIS: And would qualification require --

14 WITNESS PAULK: Not all of it. The ones inside of
15 containment would, if the accident were inside.

16 JUDGE MORRIS: Some of them would?

17 WITNESS PAULK: Yes, sir. And those that are
18 outside room coolers, may or may not, depending on where
19 they are located.

20 JUDGE MORRIS: Would adequate qualification
21 testing require operation for some period of time at the
22 elevated temperature?

23 WITNESS PAULK: Yes, sir. They would go through
24 the qualification testing, and I believe go through two
25 accident peaks at the elevated temperatures, and then

1 maintain temperature steady for a period of time, for
2 however long they are trying to qualify for.

3 JUDGE MORRIS: Was such testing done for these
4 motors?

5 WITNESS PAULK: Yes, sir. With the Chevron grease
6 in it.

7 JUDGE MORRIS: With the Chevron grease?

8 WITNESS PAULK: Yes, sir.

9 JUDGE MORRIS: So the temperature range for the
10 recommended lubricants here includes both the Chev n and
11 the Premium RB, correct?

12 WITNESS PAULK: Yes, sir.

13 JUDGE MORRIS: Is it fair to assume that if the,
14 if they are equivalent for this temperature range, they
15 would be equivalent for the accident environment?

16 WITNESS PAULK: Not necessarily, but it's
17 possible.

18 JUDGE MORRIS: I have the same sort of question
19 from Exhibit 99 for the Joy motors, where the ambient range
20 there goes to 250 degrees.

21 WITNESS PAULK: Was there a question on that, sir?

22 JUDGE MORRIS: Well, I'm trying to find the right
23 reference.

24 WITNESS PAULK: Would it be on page 0034207, at
25 the bottom, ambient temperature is minus 20 fahrenheit to

1 250 fahrenheit?

2 JUDGE MORRIS: Correct.

3 JUDGE BOLLWERK: We're using what exhibit, just to
4 clarify it for the record?

5 WITNESS PAULK: Exhibit APCO 99.

6 JUDGE MORRIS: So, here, the question would be:
7 For proper qualification, the motors would have to be tested
8 at temperatures for the accident environment, which would be
9 higher than 250?

10 WITNESS PAULK: Possibly, yes, sir.

11 JUDGE MORRIS: Possibly.

12 And that's all. Thank you.

13 JUDGE BOLLWERK: I have a couple of questions.

14 And maybe Alabama Power counsel can help me if I
15 misrepresent something. I want to make sure -- my notes
16 aren't as good as they should have been. But my
17 understanding was that you indicated that APCO 97, 99 and
18 100 were in the environmental qualification files at the
19 time, is that correct?

20 MR. HANCOCK: That's correct.

21 JUDGE BOLLWERK: Okay. I guess my question for
22 Mr. Paulk: You reviewed those files, is that correct?

23 WITNESS PAULK: Yes, sir.

24 JUDGE BOLLWERK: Did you see those documents?

25 WITNESS PAULK: I probably did. Like I said

1 earlier, there were several Joy/Reliance manuals. Only one
2 of these appears right off to be for nuclear application,
3 from the number NP403. The other ones talk about standard
4 motors, standard applications.

5 JUDGE BOLLWERK: And this question is for either
6 of you: I take it the clearly should have known argument
7 that the staff has put forth in this case, is basically that
8 there was a specified lubricant that was qualified in the
9 documentation. Nothing else was provided for. Therefore,
10 they should have known that anything else was not going to
11 be available, is that correct? As being qualified?

12 WITNESS LUEHMAN: I would only add the word
13 "clearly" to what you just said. They clearly should have
14 known.

15 JUDGE BOLLWERK: Your argument is that it's as
16 simple as that. There is nothing else to it, if I can --

17 WITNESS LUEHMAN: I think that that's the bulk of
18 the argument, yes, sir.

19 JUDGE BOLLWERK: Okay. All right. At this point
20 we can take an afternoon break if you want to get another
21 panel. Or do we have --

22 MR. HANCOCK: I think that's all the panels we
23 have.

24 JUDGE BOLLWERK: You're out of panels, all right.

25 MR. HANCOCK: We have a witness who is not in town

1 yet. He'll be here first thing in the morning.

2 JUDGE BOLLWERK: All right.

3 MR. HANCOCK: If I may, right now, for Alabama
4 Power Company Exhibits 97, 98, 99, 100, and 101 ask that
5 they be admitted into evidence.

6 JUDGE BOLLWERK: Any objection from the staff?

7 MR. HANCOCK: Oh, excuse me. And Alabama Power
8 Company Exhibit 75.

9 MR. BACHMANN: No objection.

10 JUDGE BOLLWERK: No objection, all right. Then
11 APCO Exhibits 75, 97, 98, 99, 100 and 101 are admitted into
12 evidence.

13 [APCO Exhibits 75, 97, 98,
14 99, 100 and 101 were
15 received into evidence.]

16 MR. MILLER: It may be in order to go off the
17 record and have a discussion about our scheduling. I think
18 all of us will agree, we are ahead of schedule. And we may
19 want to revisit how much longer this proceeding is going to
20 take.

21 JUDGE BOLLWERK: All right, we can do that.

22 If there is nothing else for these witnesses on
23 this panel, we'll excuse them subject to being recalled. I
24 think both of them are due back on other issues.

25 Thank you gentlemen for this afternoon.

1 And we'll adjourn at this point until 9:00
2 tomorrow morning? Okay, until 9:00 tomorrow morning.

3 [Whereupon, at 3:05 p.m. the hearing was recessed
4 to reconvene the following day, Friday, February 14, 1992,
5 at 9:00 a.m.]

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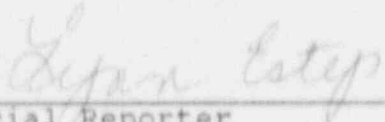
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NAME OF PROCEEDING: Alabama Power

DOCKET NUMBER: 50-348-CivP

PLACE OF PROCEEDING: Bethesda, Maryland

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