

ORIGINAL  
UNITED STATES  
NUCLEAR REGULATORY COMMISSION

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IN THE MATTER OF:

SHEARON HARRIS NUCLEAR  
POWER PLANT

DOCKET NO:

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50-401-0L

LOCATION: RALEIGH, NORTH CAROLINA

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the matter of: :

CAROLINA POWER AND LIGHT COMPANY :  
and NORTH CAROLINA EASTERN MUNICIPAL: Docket Nos. 50-400 OL  
POWER AGENCY : 50-401

Shearon Harris Nuclear Power Plant :  
Units 1 and 2 :

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Bankruptcy Court  
Old Post Office Building  
Fayetteville Street Mall  
Raleigh, North Carolina

Wednesday, 17 October 1984.

The hearing in the above-entitled matter was reconvened, pursuant to adjournment, at 9:00 a.m.

BEFORE:

- JAMES L. KELLEY, Esq., Chairman,  
Atomic Safety and Licensing Board.
- DR. JAMES H. CARPENTER, Member.
- DR. GLENN O. BRIGHT, Member.

APPEARANCES:

(As heretofore noted.)

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C O N T E N T S

Applicants' Witnesses	Direct	Voir Dire	Cross
MARGARETA SERBANESCU)			
DAVID WATERS )			
By Mr. O'Neill	4248		
By Mr. Eddleman		4257	
By Mr. O'Neill	4274		
By Mr. Eddleman			4284
EXHIBITS			IDEN.  EVI.
Applicants':			
6    FSAR Section 9.5.1 and Appendix 9.5A			4245  4273
7    "Safe Shutdown Analysis"			4246  4280
Eddleman's:			
2    Exhibit 116-A			4386
3    Exhibit 116-2			4386
4    Exhibit 116-3			4386
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(Continued)

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"Applicant's Testimony of Margaret A. Serbanescu in  
Response to Eddleman Contention 116 (Fire Protection),"  
8/9/84 and 10/11/84 4256

Morning Recess: 4284; 4323

Luncheon Recess: 4365

Afternoon Recess: 4411

## P R O C E E D I N G S

1  
2 JUDGE KELLEY: Good morning, ladies and  
3 gentlemer. Welcome to the Bankruptcy Court.

4 We will be using this Court today, as I mentioned,  
5 and we have it a couple of days later in the month. I think  
6 it is the 30th and the 31st, but we will mention that again.

7 One logistical point before we get started.

8 We will point toward a lunch break around 12:30  
9 to 1:30 again, in that neighborhood. And the Clerk of the  
10 Court and the Judge's secretary were telling me that they  
11 never fail now to lock this Court up even at lunch time. They  
12 had some vandalism in here recently. Apparently thieves don't  
13 know this is a Bankruptcy Court.

14 In any case I will be notifying them when we go.  
15 Let's all try to go right about the same time, and they will  
16 want to lock up for about an hour, and then they will unlock  
17 an hour later.

18 We just have one matter, not to deal with but to  
19 advert to before we get right to the witnesses and that is  
20 that we have read over the letters that Mr. Runkle provided  
21 us yesterday and I think now we have a better picture of where  
22 matters stand with that FOIA request.

23 But I wonder, Mr. Barth or Mrs. Moore. We now  
24 have all of this indication of what final action is going to  
25 be in an informal way, but we don't have final action on the

1 FOIA request.

2 Is it your understanding that that will be  
3 forthcoming from Bethesda or from Atlanta?

4 MR. BARTH: It will come from Bethesda, your Honor

5 JUDGE KELLEY: Okay.

6 If you don't know now, could you find out today  
7 when that is going to be, and preferably could it be done by  
8 next week?

9 MR. BARTH: I will make every effort to find out  
10 today, your Honor.

11 JUDGE KELLEY: All right. It just seems to me--  
12 They said they were still looking for paper in late September,  
13 but this is now late October and I would think they've found  
14 whatever they are going to find. It would put us in a better  
15 position if they could act one way or the other and then we  
16 could see where to go from there.

17 MR. BARTH: I will try to give you a status report  
18 early this afternoon, your Honor.

19 JUDGE KELLEY: Fine. Thank you. And we can talk  
20 about it tomorrow perhaps.

21 Is there anything else to bring up before we  
22 swear in this next panel and get to the next contention?

23 MR. EDDLEMAN: I believe in energy conservation.  
24 Is this thing working?

25 I just wanted to mention on the record that I have

1 spoken with Mr. Stokes about the time that he could appear,  
2 and next week is possible for him, and he was supposed to get  
3 back to me by now about when he could come and he hasn't yet.  
4 But I am going to try and be in touch with him and find out  
5 when he can show up because he may have some schedule  
6 difficulties.

7 JUDGE KELLEY: Okay.

8 I think we will try, within reason, to accommodate  
9 witnesses in that regard. What I would suggest is that you  
10 get in touch with him and talk it over with Mr. Baxter and  
11 Mrs. Moore and Mr. Barth, and hopefully we can suit everybody's  
12 convenience to some extent.

13 Mrs. Moore, anything else?

14 MRS. MOORE: I was just going to ask if the Board  
15 had had time to consider whether or not they wished Dr. Plato  
16 to appear.

17 JUDGE KELLEY: Can you give us until tomorrow?

18 MRS. MOORE: Certainly. It is just that I need to  
19 let him know as soon as possible.

20 JUDGE KELLEY: We will fish or cut bait tomorrow.

21 MRS. MOORE: Thank you.

22 JUDGE KELLEY: Thank you.

23 Mr. O'Neill, anything else of a preliminary nature?

24 MR. O'NEILL: I think we can swear in our

25 witnesses.

1 JUDGE KELLEY: All right. Will you do the  
2 introductions?

3 MR. O'NEILL: Applicants call Margareta Serbanescu  
4 and David Waters to the stand.

5 JUDGE KELLEY: All right. Thank you.

6 Ms. Serbanescu and Mr. Waters, will you raise your  
7 right hand, please, and be sworn?

8 Whereupon,

9 MARGARETA SERBANESCU

10 and

11 DAVID WATERS

12 were called as witnesses and, having been previously duly  
13 sworn, were examined and testified further as follows:

14 MR. O'NEILL: Mr. Chairman, on October the 11th  
15 of this year, Applicants filed a motion to file supplemental  
16 testimony in response to Eddleman Contentions 9G, Type Test  
17 Reporting, and 116, Fire Protection.

18 I have talked to both Mrs. Moore and Mr. Eddleman.  
19 Neither have any objections to this motion. I would ask that  
20 you rule in our favor.

21 JUDGE KELLEY: Motion granted.

22 MR. O'NEILL: On August 9th, 1984, Applicants,  
23 in filing our prefiled testimony and exhibits, filed with  
24 the Board and the parties a copy of FSAR Section 9.5 and  
25 Appendix 9.5A on Fire Protection Systems.



1           We also indicated that we would offer into evidence  
2 as an exhibit a summary of the Safe Shutdown Analysis in case  
3 of fire. This summary and another document which describes  
4 the Safe Shutdown Analysis was previously filed with the  
5 parties by cover letters as indicated in our letter of August  
6 9th.

7           As we indicated in our motion to file supplemental  
8 testimony and in the supplemental testimony of Ms. Serbanescu,  
9 there have been some changes to the FSAR on the fire  
10 protection, and we have incorporated those changes into the  
11 exhibits we will offer this morning.

12           You should find at your desk a green volume, and  
13 I would ask the Reporter to mark as Applicants' Exhibit 6--  
14 For the record, Applicants' Exhibit 6 is the Final Safety  
15 Analysis Report, Section 9.5.1, and Appendix 9.5A.

16                               (Whereupon, FSAR Section 9.5.1  
17                               and Appendix 9.5A were marked  
18                               Applicants' Exhibit 6 for  
19                               identification.)

20           MR. O'NEILL: You also will find at your desk a  
21 stack of papers which are entitled "Safe Shutdown Analysis -  
22 Summary and Description - Fire Protection System." The first  
23 document is the "Safe Shutdown Analysis Summary" originally  
24 submitted to the Staff by letter of June 12, 1984.

25           The second document is a description of the "Safe

1 Shutdown Analysis" previously filed with the Staff on February  
2 24th, 1984.

3 The entire "Safe Shutdown Analysis" comprises some  
4 six volumes, some of which is proprietary and Applicants do  
5 not intend to offer the entire analysis for purposes of this  
6 contention.

7 I would ask that that exhibit be marked as  
8 Applicants' Exhibit 7.

9 JUDGE KELLEY: It may be so marked.

10 (Whereupon, "Safe Shutdown  
11 Analysis" was marked as  
12 Applicants' Exhibit 7 for  
13 identification.)

14 MR. EDDLEMAN: May I inquire -- I don't know if  
15 this is the appropriate time -- are all the changes that have  
16 been made in these things new information that was not available  
17 on August 9th?

18 MR. O'NEILL: That is correct.

19 MR. EDDLEMAN: Thank you.

20 MRS. MOORE: Your Honor, I would like to ask a  
21 question as well. I would like to know what amendment to the  
22 FSAR this is. Does it have an amendment number?

23 MR. O'NEILL: Section 9.5.1 and Appendix 9.5A  
24 indicate revisions on each page, but they have not been  
25 formally incorporated into an FSAR amendment. It has not gone

1 through the FSAR amendment process and been submitted to the  
2 Staff at this time. However, we wanted the exhibit that we  
3 offer into evidence today to reflect the most up-to-date  
4 information that we had at this time, so these changes will  
5 be incorporated into Amendment 17 or 18, whichever the next  
6 one is, but they have not yet been submitted formally to the  
7 Staff through that process.

8 MRS. MOORE: Thank you.

9 JUDGE KELLEY: Is that it?

10 MR. EDDLEMAN: Might I inquire one other thing?

11 In the description of the six volumes, it is  
12 Volumes 5 and 6, the security information, that are proprietary?  
13 And the other four volumes are open information?

14 MR. O'NEILL: I would ask Ms. Serbanescu if she  
15 knows which volumes are proprietary and which aren't.

16 WITNESS SERVANESCU: That's correct, Volumes 5 and  
17 6 are proprietary.

18 MR. O'NEILL: Thank you.

19 JUDGE KELLEY: I have a small problem. I ran out  
20 of my hotel room this morning and I'm afraid I left the  
21 testimony on 116 behind, the Applicants' testimony. Not  
22 wishing to discriminate, I left the Staff's, too. Would you  
23 have an extra copy?

24 (Documents handed to the Board.)

25 JUDGE KELLEY: Do you have a summary of their

1 testimony, or are they prepared to give one?

2 MR. O'NEILL: Yes, sir.

3 JUDGE KELLEY: Fine.

4 DIRECT EXAMINATION

5 BY MR. O'NEILL:

6 Q Mr. Waters, please state your full name for the  
7 record.

8 A (Witness Waters) David B. Waters.

9 Q Do you have before you a document that was prefiled  
10 as your written statement for this proceeding?

11 A I do.

12 Q Will you please identify it for the record?

13 A "Applicants' Testimony of David B. Waters in  
14 Response to Eddleman Contention 116 (Fire Protection)."

15 Q And is that document dated August 9th, 1984?

16 A Yes, it is.

17 Q And does it comprise 11 pages of questions and  
18 answers, and two attachments, the first attachment, Table  
19 13.1.3-16 from the FSAR, which is a copy of your resume, and  
20 a second attachment, 13.2.3 from the Harris FSAR, which is a  
21 section on fire brigade training?

22 A Yes, it does.

23 Q Did you prepare this testimony?

24 A Yes, I did.

25 Q Do you have any changes or corrections to make at

1 this time?

2 A Yes, I have one clarification.

3 On page 4, lines 2 through 5, I would like to  
4 clarify the use of the all-encompassing word "all." I  
5 describe:

6 "Each fire area containing safety-related  
7 equipment will be bounded on all sides by three hour  
8 rated fire barriers."

9 I would like to qualify that with the information  
10 that is contained in the response to Question 7 on page 7 of  
11 Mrs. Serbanescu's supplemental testimony. That sets forth  
12 certain technical exceptions to the word "all."

13 Q Do you have any other changes or corrections to  
14 make at this time?

15 A No, I do not.

16 Q Is this statement as clarified true and accurate  
17 to the best of your knowledge, information and belief?

18 A Yes, it is.

19 MR. O'NEILL: Mr. Chairman, I would move that  
20 Applicants' testimony of David B. Waters in response to  
21 Eddleman Contention 116 on fire protection, together with  
22 the two attachments, be bound into the record as if read,  
23 and received into evidence.

24 JUDGE KELLEY: Any objection?

25 MR. EDDLEMAN: No objection. Could I ask for a

1 clarification of Answer 7 on page 7? Is this in the supplemental  
2 testimony? It is dated October 11th.

3 WITNESS WATERS: Yes.

4 MR. EDDLEMAN: Okay.

5 JUDGE KELLEY: The testimony is admitted and bound  
6 into the record.

7 (The document follows:)

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August 9, 1984

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of )  
 )  
CAROLINA POWER & LIGHT COMPANY ) Docket No. 50-400 OL  
and NORTH CAROLINA EASTERN )  
MUNICIPAL POWER AGENCY )  
 )  
(Shearon Harris Nuclear Power )  
Plant) )

APPLICANTS' TESTIMONY OF DAVID B. WATERS  
IN RESPONSE TO EDDLEMAN CONTENTION 116  
(FIRE PROTECTION)

6-0829

1 Q.1 Please state your name, address, present occupation  
2 and employer.

3 A.1 My name is David B. Waters. My business address is  
4 Carolina Power & Light Company, P. O. Box 165, New Hill, North  
5 Carolina 27562. My present occupation is Principal Engineer -  
6 Operations for the Carolina Power & Light Company (CP&L).

7 Q.2 State your educational background and professional  
8 work experience.

9 A.2 I have a B.S. in Engineering Physics from Ohio State  
10 University, an M.S. in Nuclear Science and Engineering from  
11 Carnegie Institute of Technology and professional experience in  
12 the areas of nuclear plant reactor core analysis, licensing and  
13 regulatory compliance, nuclear plant operating requirements,  
14 and fire protection requirements. A copy of my professional  
15 experience and qualifications is affixed hereto as  
16 Attachment A.

17 Q.3 What is your present position with CP&L?

18 A.3 My present position with CP&L is Principal Engineer -  
19 Operations in the Harris Nuclear Project Department.

20 Q.4 In this position have you any responsibilities  
21 relating to the Harris Plant fire protection program?

22 A.4 Yes. In this position I am delegated the responsi-  
23 bility by the Plant General Manager for administration of the  
24 plant fire protection program during the operational phase.  
25 This involves the supervision of the plant fire protection

26



1 staff -- who carry out the development and implementation of  
2 procedures, performance of periodic tests of installed fire  
3 protection equipment, training of fire brigade members, fre-  
4 quent walkdowns of plant areas to detect fire protection con-  
5 cerns, and interface with insurance carriers, NRC inspectors,  
6 and company auditors during periodic inspections. I have de-  
7 veloped a working knowledge of nuclear plant fire protection  
8 programs, requirements and regulations through my direct in-  
9 volvement with responses to Branch Technical Position 9.5-1 for  
10 CP&L's H. B. Robinson and Brunswick Nuclear Plants during the  
11 period between May 1976 to March 1979, and during my assignment  
12 at the H. B. Robinson Plant as Principal Engineer - Operations  
13 from June 1981 to June 1982, with similar responsibilities for  
14 fire protection at an operating plant to the ones I presently  
15 hold at Harris.

16 Q.5 What is the purpose of your testimony?

17 A.5 The purpose of my testimony is to address those as-  
18 pects of Eddleman Contention 116 that question fire brigade re-  
19 sponse to a fire at the Harris Plant and allege that the Harris  
20 Plant "fire fighting capability for simultaneous fires is inad-  
21 equate, or at least unanalyzed."

22 Q.6 What provisions are made for Harris Plant response to  
23 a fire?

24 A.6 The Harris Plant response to a fire event is based on  
25 the concept of "defense-in-depth." For purposes of fire pro-  
26 tection, the Harris Plant can be viewed as consisting of

1 self-contained spaces, or fire areas. Each fire area  
2 containing safety-related equipment will be bounded on all  
3 sides by three hour rated fire barriers. All penetrations  
4 through a fire barrier will be sealed by tested assemblies  
5 having a commensurate rating as that required of the barrier.  
6 As discussed in the Fire Hazards Analysis, fire areas will be  
7 equipped with detectors to provide early warning of fires,  
8 including smouldering fires, and will be protected by suppres-  
9 sion systems actuated by thermal detectors. Fire detection and  
10 suppression systems are discussed in Applicants' Testimony of  
11 Margareta A. Serbanescu.

12 The trained fire brigade utilizes installed manual equip-  
13 ment such as fire hose stations and fire extinguishers as the  
14 primary response to a fire in each fire area. This equipment  
15 is backed up by the design features in these areas, to ensure  
16 complete extinguishment of even deep-seated fires such as those  
17 that could arise from concentrated cable tray fires. Adminis-  
18 trative controls are utilized to control activities such as  
19 welding and burning or transport and storage of combustible ma-  
20 terials, and thus minimize the opportunity for a fire to be in-  
21 itiated. Prior to commercial operation, a pre-fire plan will  
22 be prepared for each area of the plant which contains  
23 safety-related equipment. The pre-fire plan will provide the  
24 Shift Foreman in the control room and the fire brigade leader  
25 with information about a possible fire in the area including  
26 guidance for preventing a fire from spreading to adjacent areas  
27 and for notifying off-site fire companies.

1           The implementation of the Harris Plant fire protec-  
2           tion program provides assurance that fire events that could ad-  
3           versely affect safety-related equipment have a low probability  
4           of occurring, and that in the unlikely event they did occur and  
5           were not promptly detected and extinguished, the safe shutdown  
6           of the plant would not be jeopardized.

7           Q.7 What assumptions are made regarding fire brigade re-  
8           sponse time?

9           A.7 A fire brigade response time of approximately 5-15  
10          minutes is expected for most fire events within the power  
11          block. This response time is dependent on many factors,  
12          including fire location, weather conditions, and location of  
13          fire brigade members within the plant and may vary somewhat  
14          from the above numbers. Fire brigade training stresses the im-  
15          portance of prompt reaction to a fire condition, proper use of  
16          fire-fighting and protective equipment, and actions required  
17          promptly to extinguish different types of fires in a variety of  
18          plant areas. This training, supplemented by fire drills, will  
19          serve to keep the brigade response time to a minimum.

20          Q.8 What is the basis for these assumptions?

21          A.8 They are based upon the experience of the Harris  
22          Plant's fire protection staff, which includes power plant, mu-  
23          nicipal, volunteer, and industrial fire suppression experience  
24          totaling over 30 years.

25          Q.9 Please describe the training program for fire brigade  
26          members.

1           A.9 The training program for fire brigade members is de-  
2 scribed in FSAR Section 13.2.3, a copy of which is attached  
3 hereto as Attachment B.

4           Q.10 How often do members of the fire brigade participate  
5 in fire drills?

6           A.10 In accordance with Section I.3 of 10 C.F.R. Part 50,  
7 Appendix R, fire drills will be conducted at least quarterly  
8 for each shift brigade. At least one drill per year will be  
9 unannounced for each shift brigade and at least one drill per  
10 year will be conducted on a "back shift" for each shift bri-  
11 gade.

12           Once every three years an unannounced drill will be  
13 critiqued by qualified individuals independent of Applicants'  
14 staff. A copy of the critique report will be available for NRC  
15 review.

16           Q.11 What are the requirements for refresher training for  
17 the fire brigade members?

18           A.11 In accordance with Section I.1 of 10 C.F.R. Part 50,  
19 Appendix R, refresher training sessions for fire brigade mem-  
20 bers will be conducted quarterly. These sessions will be used  
21 to review changes to the fire protection program, to supplement  
22 the initial training program and to cover any other subjects as  
23 necessary. The refresher training program is designed to en-  
24 sure that each topic for fire brigade instruction is repeated  
25 at a frequency of not more than two years.

26

1           Each brigade member, additionally, will participate  
2 annually in a practice session covering fire fighting on typi-  
3 cal nuclear plant fires. These sessions will involve actual  
4 interior structural fire fighting requiring the use of breath-  
5 ing apparatus and full protective clothing.

6           Q.12 Is there any regulatory requirement or guidance  
7 requiring consideration of postulated simultaneous fires in es-  
8 tablishing nuclear plant fire fighting capability?

9           A.12 I am aware of no NRC regulations or regulatory guide  
10 and no industry code or standard which requires a commercial  
11 nuclear generating facility operator to postulate, or defend  
12 against, multiple fires. Section I of 10 C.F.R. Part 50, Ap-  
13 pendix R, contains a table establishing three levels of fire  
14 damage limits for which fire protection must be provided. For  
15 each, only a single fire must be considered.

16           Because there is no requirement to consider simulta-  
17 neous fires, Applicants have not specifically addressed this  
18 subject in the FSAR or Safe Shutdown Analysis.

19           Q.13 Have Applicants nevertheless considered how the  
20 Harris Plant would respond to two fires occurring simulta-  
21 neously?

22           A.13 The design of fire suppression and detection systems  
23 as well as fire suppression procedures which will be in place  
24 upon commercial operation of the Harris Plant provide adequate  
25 capability to react effectively to two fires occurring simulta-  
26 neously. Activation of the fire detection system in an area is

1 independent of other fire areas, so two fires occurring simul-  
2 taneously in different areas would be detected and alarm lo-  
3 cally and at the main fire detection information center. Also,  
4 each suppression system operates independently of the others,  
5 thus multiple simultaneous fires would activate multiple sup-  
6 pression systems. Fire brigade training in fire suppression  
7 techniques will allow the capability of applying personnel re-  
8 sources to control simultaneous fires.

9 Q.14 Is there an adequate supply of water to handle the  
10 activation of more than one suppression system?

11 A.14 There is an adequate water supply at the Harris Plant  
12 to control multiple fires. The Harris Plant water supply con-  
13 sists of two pumps, each with a rated capacity of 2500 gallons  
14 per minute (gpm) and each capable of supplying 100% of the sup-  
15 pression system needs. The largest suppression system to be  
16 installed in the Harris Plant will require only 2000 gpm if all  
17 of its approximately 130 sprinkler heads operate. Statistics  
18 show, however, that for fires occurring in areas protected by  
19 sprinkler systems, 95% of them are controlled by less than 15  
20 of the system's sprinkler heads and over 90% are controlled  
21 with only one sprinkler head. National Fire Protection Associ-  
22 ation, Fire Protection Handbook, (14th Edition, 1976), Figure  
23 14-1(0).

24 Q.15 What inspection requirements will be established to  
25 ensure the operation of fire protection and suppression sys-  
26 tems?

1           A.15 Applicants will test detection and suppression sys-  
2           tems on a periodic basis as dictated by the Harris Plant Tech-  
3           nical Specifications. Supply valves which are normally re-  
4           quired to be open are designed to alarm if they are placed in a  
5           closed position. Applicants will also perform routine inspec-  
6           tions monthly to verify proper valve lineups.

7           Q.16 Have Applicants established administrative controls  
8           for flammable liquids and combustible materials at the Harris  
9           Plant?

10          A.16 The Harris Plant fire protection program includes ad-  
11          ministrative controls of flammable liquids and combustible ma-  
12          terials to ensure that there is a low probability that a fire  
13          which could affect plant safety will occur. Administrative  
14          controls include the prohibiting the storage of flammable liq-  
15          uids in safety related areas, minimizing the quantities of  
16          flammable liquids in safety cans and storing fluids in fire re-  
17          sistant cabinets. In addition, Applicants will implement an  
18          aggressive housekeeping program to minimize the accumulation of  
19          combustible paper and trash. Smoking will be prohibited in all  
20          safety-related areas except those which will be continually  
21          manned.

22          Q.17 Will the fire brigade include sufficient personnel to  
23          respond to two simultaneous fires?

24          A.17 Yes. The fire brigade will consist of a minimum of  
25          five persons on each shift, as required by 10 C.F.R. Part 50,  
26          Appendix R, who will have been trained pursuant to the

1 requirements described in FSAR Section 13.2, plus at least one  
2 fire protection technical aide who will provide expert advice  
3 and assistance. In my opinion, sufficient personnel would be  
4 available to control effectively two simultaneous fires.

5 Q.18 Is there sufficient fire equipment on site to respond  
6 to two simultaneous fires?

7 A.18 Yes. Stand pipe and hose systems are installed  
8 throughout the Plant to supply hose stations. Each area of the  
9 Plant can be reached by effective hose streams from at least  
10 two hose stations. Fire extinguishers, self-contained breath-  
11 ing equipment, protective clothing and emergency lanterns are  
12 provided as described in FSAR Section 9.5.1.2.3. In addition,  
13 there will be a fire engine housed on site which will be avail-  
14 able to respond to fires in outlying areas. The engine carries  
15 1000 gallons of water, which will allow an immediate response  
16 to a fire situation for 5-10 minutes while adjacent hydrants  
17 are supplied with hoses and charged by fire brigade members.

18 Q.19 What assumptions are made respecting off-site assis-  
19 tance to fight a fire?

20 A.19 Off-site fire companies could be called to assist in  
21 responding to fires. Applicants have estimated an average re-  
22 sponse time of 30 minutes for the Apex Volunteer Fire Depart-  
23 ment and the Holly Springs Volunteer Fire Department. These  
24 fire company personnel will be given an orientation of the  
25 Harris Plant and will be familiar with the Plant's configura-  
26 tion and capabilities. They will be invited to participate in



1 drills at the Harris Plant. The 30-minute response time will  
2 vary depending upon the time of day a request for assistance is  
3 made. Response times are anticipated to be somewhat better  
4 during evening hours. The response time can be expected to be  
5 somewhat longer than 30 minutes during normal business hours.  
6 Off-site agency assistance will not be as important during  
7 those hours, however, because additional assistance will be  
8 available on site from day shift operating personnel and fire  
9 protection staff.

10 Q.20 In summary, are you confident that Applicants can  
11 fight any postulated fire at the Harris Plant including two si-  
12 multaneous fires?

13 A.20 CP&L's management has fully supported and encouraged  
14 the development of an aggressive fire protection program and a  
15 properly trained fire protection staff at the Harris Plant.  
16 The design features, administrative controls and fire protec-  
17 tion procedures which I have described are, in my judgment, en-  
18 tirely adequate to provide prompt and effective response to a  
19 single fire as required by NRC regulations, and adequate also  
20 to respond effectively to two fires occurring simultaneously.  
21  
22  
23  
24  
25  
26

TABLE 13.1.3-16

David Waters  
Principal Engineer - Operations

Education

- A. B.S. Degree in Engineering Physics - Ohio State University - 1963.
- B. M.S. Degree in Nuclear Engineering - Carnegie Institute of Technology - 1967.

Professional Societies

- A. American Nuclear Society
- B. Professional Engineer - North Carolina - 1975
- C. Society of Fire Protection Engineers

Experience

- April, 1963, to April, 1972, Senior Engineer, Westinghouse Electric Corporation, Pittsburgh, PA
- May, 1972, employed as a Senior Engineer in the Nuclear Generation Section of the Bulk Power Supply Department. Located in the General Office.
- June, 1973, employed as a Project Engineer in the Nuclear Generation Section of the Bulk Power Supply Department. Located in the General Office.
- July, 1974, employed as a Principal Engineer in the Nuclear Generation Section of the Bulk Power Supply Department. Located in the General Office.
- January, 1977, employed as a Director - Start-up and Technical in the Generation Services Section of the Generation Department. Located in the General Office.
- September, 1978, employed as a Principal Engineer - Nuclear Generation in the Nuclear Generation Section of the Generation Department. Located in the General Office.
- May, 1979, employed as a Principal Specialist - Regulatory Compliance in the Generation Services Section of the Generation Department. Located in the General Office.
- November, 1979, employed as a Principal Specialist - Special Projects in Nuclear Operations Administration Section of the Nuclear Operations Department. Located in the General Office.

## TABLE 13.1.3-16 (Cont'd)

David Waters  
Principal Engineer - Operations

Experience (Cont'd)

February, 1981, employed as a Principal Specialist - Special Projects in the Nuclear Operations Administration Section of the Technical Services Department. Located in the General Office.

June 1981 to June 1982 acting as Principal Engineer - Operations at H. B. Robinson Unit No. 2.

February, 1982, employed as Principal Engineer - Operations, at the Shearon Harris Nuclear Power Plant, located in New Hill, North Carolina.

13.2.3 FIRE BRIGADE TRAINING

13.2.3.1 Fire Brigade Members

13.2.3.1.1 Instruction

Instructions in the topics listed below will be administered to each individual prior to assignment as a fire brigade member. The instructions will include:

- a) Identification of the location and types of fire hazards that could produce fires within the plant, including identification of the areas where breathing air will be required.
- b) Identification of the location of installed and portable fire fighting equipment in each area, and familiarization with the layout of the plant, including access and regress routes to each area.
- c) Proper use of available equipment, and the correct methods of fighting the following types of fire: electrical, cable and cable trays, hydrogen, flammable liquids, waste/debris, and record file.
- d) Indoctrination to the plant fire fighting plan, with coverage of each individual's responsibilities and their changes.
- e) Proper use of breathing, communication, lighting, and portable ventilation equipment.
- f) A detailed review of procedures, with particular emphasis on what equipment must be used in particular areas.
- g) A review of the latest modifications to the facility, procedures, fire fighting equipment, and fire fighting plan.
- h) The proper method of fighting fires inside buildings and tunnels.

Refresher instructions will be provided to all fire brigade members on a regularly scheduled basis of not less than four sessions a year with sessions to be repeated at a frequency of not more than 2 years. Instructions will be provided by qualified individuals knowledgeable and experienced in fighting the fires that could occur in the plant with the equipment available at the plant. Special instructions will be provided for fire brigade leaders in directing and coordinating fire fighting activities.

13.2.3.1.2 Practice Sessions

Practice sessions will be held for fire brigade members to teach them the proper method of fighting various types of fires and to provide them with practice in extinguishing actual fires. These sessions will be conducted at facilities sufficiently remote from the nuclear plant so as not to endanger safety-related equipment, with the sessions provided at regular intervals not exceeding 1 year. These practice sessions will be conducted requiring fire

2 |

brigade members to don protective equipment, including emergency breathing apparatus.

13.2.3.1.3 Drills

Drills will be performed in the plant so that the fire brigade will remain proficient in fire fighting techniques. These drills will include:

- a) The simulated use of equipment for the various situations and types of fires which could reasonably occur in each safety-related area.
- b) Conformance, where possible, to the established plant fire fighting plans.
- c) Operation of fire fighting equipment, where practical, including self-contained breathing apparatus, communication equipment, and portable and installed ventilation equipment.

Drills will be performed at regular intervals, not to exceed three months, for each fire brigade to allow members of the brigade to train as a team. At least one drill per year for each fire brigade will be unannounced to determine the fire readiness of the plant fire brigade and plant fire protection systems and equipment. Drills will be planned to establish training objectives and will be critiqued to determine how well the training objectives were met. This critique will, as a minimum, assess: fire alarm effectiveness; response time; selection, placement and use of equipment; the fire brigade chief's direction of the fire fighting effort; and each fire brigade member's response to the emergency.

A drill will be held annually at which offsite fire department participation will be requested.

13.2.3.2 Other Station Employees

13.2.3.2.1 Instruction for All Non-Fire Brigade Members

Once a year all employees will be instructed on the fire protection plan, evacuation routes, and procedures for reporting a fire. Security personnel will be instructed in entry procedures for offsite fire departments, crowd control for people exiting the stations, and procedures for reporting potential fire hazards observed when touring the facility. Instruction will also be given to all shift personnel who will assist the fire brigade in the event of a fire. Temporary employees will be given instructions to familiarize them with the plant's evacuation signals, evacuation routes, and procedures for reporting fires.

13.2.3.2.2 Drills

A plant evacuation drill will be performed annually.

13.2.3.3 Fire Protection Staff

Fire protection staff members will be introduced to a program of specialized training. Instructions for the staff will include:

- a) Analysis of building layout and system design with respect to fire protection requirements, including consideration of potential hazards associated with postulated design basis fires.
- b) Design and maintenance of fire detection suppression and extinguishing systems.
- c) Fire protection techniques and procedures.
- d) Training in manual firefighting techniques and procedures for plant personnel and the fire brigade.

13.2.3.4 Offsite Fire Departments

In accordance with commitments for the use of offsite fire departments, the training offered these offsite fire fighting personnel will include courses in basic radiation principles and practices. Additional training will be offered to familiarize them with typical radiation hazards that may be encountered when fighting fires at a nuclear power plant.

13.2.3.5 Construction Personnel

Training for construction personnel will include instructions in reporting fires, responding to alarms, and locating evacuation routes.

13.2.3.6 Initial Training

The initial fire protection training program will be completed prior to receipt of fuel at the site. The Emergency Plan implementing procedures for fire protection will be completed at least three months prior to receipt of fuel. Sufficient fire protection drills will be performed immediately prior to fuel receipt to provide assurance that the plant staff is adequately trained to cope with fire-related emergencies.

1 BY MR. O'NEILL:

2 Q Mrs. Serbanescu, would you please state your full  
3 name for the record?

4 A (Witness Serbanescu) My name is Margareta  
5 Serbanescu, S-e-r-b-a-n-e-s-c-u.

6 Q Mrs. Serbanescu, do you have before you the  
7 document that was prefiled as your written statement in this  
8 proceeding?

9 A Yes, I do.

10 Q Will you please identify it for the record?

11 A It is "Applicants' Testimony of Margareta A.  
12 Serbanescu in Response to Eddleman Contention 116 (Fire  
13 Protection)," dated August 9, 1984.

14 Q And does this document include 31 pages of questions  
15 and answers, an attachment which is your statement of  
16 professional experience, and excerpts from ANI Bulletin Number  
17 5?

18 A Yes, it does.

19 Q Did you prepare this testimony?

20 A The testimony was prepared by a group of engineers  
21 including myself, but I read it and commented on it and I  
22 consider it as being my own.

23 Q Mrs. Serbanescu, do you have before you a written  
24 statement that was filed on October 11th, 1984, as supplemental  
25 testimony?

1 A That is correct.

2 Q Would you please identify that document for the  
3 record?

4 A This is "Applicants' Supplemental Testimony of  
5 Margareta A. Servanescu in Response to Eddleman Contention  
6 116 (Fire Protection)," dated October 11th, 1984. It consists  
7 of seven pages.

8 Q And does this supplemental testimony clarify and  
9 correct the statement that was filed on August 9th, 1984?

10 A That is correct.

11 Q And did you prepare this supplemental testimony?

12 A This supplemental testimony was prepared by a  
13 group of engineers and myself, and I endorse it as my own.

14 Q As to your statement of August 9th supplemented  
15 by your statement of August 11th, do you have any additional  
16 changes or corrections to make to either statement?

17 A Yes, I do.

18 On "Applicants' Testimony of Margareta A.  
19 Servanescu" dated August 9, 1984, I would like to make the  
20 following corrections and/or clarifications:

21 Page 1, line 14. There is a discrepancy between  
22 the testimony and my experience. I would like that line 14  
23 to read as follows:

24 "I am a principal engineer with 19 years  
25 of mechanical engineering experience."



1 Page 5, line 20. I would like line 20 to read as  
2 follows:

3 "Applicants performed a Safe Shutdown  
4 Analysis which is dated June 20, 1983, and was  
5 submitted to the NPC on July 22nd."

6 I had another marked which I cannot find right now,  
7 but please give me a few minutes.

8 (Pause.)

9 I just found it.

10 On page 9, lines 8, 9 and 11. On lines 8 and 9  
11 I would like to delete "and protective." I would like a  
12 comma added after "construction," and I would like lines 8 and  
13 9 to read as follows:

14 "....assemblies with the exception of  
15 ceiling construction, combustible framing, and  
16 combustible facing on the unexposed side of walls,  
17 partitions and floors."

18 On line 11--

19 JUDGE KELLEY: Would you read that more slowly,  
20 please?

21 WITNESS SERBANESCU: Yes.

22 JUDGE KELLEY: Just the addition.

23 WITNESS SERBANESCU: The addition occurs after  
24 "combustible framing" and it reads:

25 "....and combustible facings on the

1 unexposed side of walls, partitions and floors."

2 On line 11 I would like to delete "and protective."  
3 I would like to add a comma after "ceiling construction." I  
4 would like to add a comma after "combustible framing," and  
5 add the word "et cetera" pertaining to all the listings I  
6 added before.

7 These were my changes.

8 BY MR. O'NEILL:

9 Q Mrs. Serbanescu, now that we have made these  
10 changes, could we please turn to page 3? There is a blank at  
11 lines 14 and--

12 A (Witness Serbanescu) Page 3 of--

13 Q Of your August 9th statement.

14 A Thank you.

15 The first blank should be Applicants' Exhibit 6.  
16 The second blank is Applicants' Exhibit 7.

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WRB#2  
w b/agbl

1 Q Applicants' supplemental testimony, Mrs. Serbanescu,  
2 on page two --

3 A Just one minute, please.

4 (Pause.)

5 Yes.

6 Q The blank in answer one should be Exhibit 6,  
7 page three.

8 MR. EDDLEMAN: Excuse me, did you say the blank  
9 in answer one was on page two of the August 9 or the --

10 MR. O'NEILL: The supplemental testimony of  
11 October 11.

12 MR. EDDLEMAN: Okay.

13 6 in answer one on page two of the supplemental --

14 MR. O'NEILL: That's correct.

15 Page three, the middle of the page should also  
16 read "Applicants' Exhibit 6." Page five, the middle of

17 Page five, the middle of the page, Applicants'  
18 Exhibit 6.

19 BY MR. O'NEILL:

20 Q Mrs. Serbanescu, with the corrections you have  
21 made in the August 9, 1984 statement, as supplemented  
22 by the October 11, 1984 statement, is your testimony true  
23 and accurate to the best of your knowledge, information  
24 and belief?

25 A (Witness Serbanescu) Yes, it is.

1           MR. O'NEILL: Mr. Chairman, I would move that  
2 the prefiled testimony of Margareta A. Serbanescu dated  
3 August 9, 1984 and the supplemental testimony dated  
4 October 11, 1984, along with the attachments to the August  
5 9, 1984 statement be incorporated into the record as if  
6 read and be received into evidence.

7           JUDGE KELLEY: The attachments, can you just tell  
8 me again, we're not talking about this big green book?

9           MR. O'NEILL: Not yet, and certainly we won't  
10 ask that that be incorporated into the transcript.

11          JUDGE KELLEY: That was my point.

12          MR. O'NEILL: The attachments are the statement  
13 of professional experience of Margareta Serbanescu and  
14 excerpts from A&I Bulletin Number 5, which are stapled to  
15 her prefiled statement.

16          JUDGE KELLEY: Okay. Admitted and bound in.

17          (The documents follow.)

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October 11, 1984

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CAROLINA POWER & LIGHT COMPANY	)	Docket No. 50-400 OL
and NORTH CAROLINA EASTERN	)	
MUNICIPAL POWER AGENCY	)	
	)	
(Shearon Harris Nuclear Power	)	
Plant)	)	

APPLICANTS' SUPPLEMENTAL TESTIMONY  
 OF MARGARETA A. SERBANESCU  
 IN RESPONSE TO EDDLEMAN CONTENTION 116  
(FIRE PROTECTION)

Q.1 What is the purpose of your Supplemental Testimony?

A.1 This testimony supplements my pre-filed statement of August 9, 1984 to reflect certain changes to Applicants' Fire Hazards Analysis which have been made subsequent to August 9, 1984. The revisions to the Fire Hazards Analysis are reflected in the Shearon Harris Nuclear Power Plant (SHNPP) Final Safety Analysis Report (FSAR) Section 9.5.1 and Appendix 9.5A (Applicants' Exhibit 4).

Q.2 Why have there been changes to the SHNPP Fire Hazards Analysis since your pre-filed testimony was submitted to the Board?

A.2 Because of a change in the design criteria for cable tray loadings and the availability of more specific information on the calorific values of the cable installation used in the SHNPP, a re-evaluation of calculations for determining combustible loads in each Fire Area was performed.

Q.3 Please describe the changes in the calculation of combustible loads in the Fire Areas and the changes in assumptions which have led to the revisions to those calculations.

A.3 There have been four principal changes to the calculation of combustible loads in each Fire Area:

(1) A specific calorific value for diesel fuel oil of 140,000 BTU per gallon has been assigned. Originally diesel fuel oil was considered in the general category of combustible or flammable liquids with a calorific value of 108,000 BTU per gallon. The value of 140,000 BTU per

gallon is more specific and more conservative. See National Fire Protection Association Handbook, 14th Edition, Table 7-3B, Characteristics of Fuel Oil.

(2) The calorific value per running foot (RF) of a typical twenty-four inch wide, 40% loaded cable tray has been increased. Generic data was previously employed because the actual cables to be used at the SHNPP had not been determined. Cables specific to SHNPP have now been selected which allow the development of specific calorific values. These changes from previous calculations can be summarized as follows:

	<u>Previous (BTU/RF)</u>	<u>Current (BTU/RF)</u>
Power Cable	180,000	200,000
Control Cable	157,000	170,000
Intrumentation	95,000	155,000

These changes in assumptions and in data are reflected in the revisions now incorporated in Applicants' Exhibit 6.

(3) Adjustments have been made for maximum allowable electrical cable tray fill to reflect plant design changes. Original calculations assumed that each cable tray was filled to 40% -- then the maximum allowable by design. A re-evaluation of the strength of seismic supports has verified sufficient support to allow Control and Instrumentation Cable Trays to be filled to a maximum of 60%. On the other hand ampacity/derating requirements

have established a limit of 30% maximum fill for Power Cable Trays. These revised maximum design cable tray fills have been used in the updated calculations for combustible loadings.

(4) Adjustments have been made for actual electrical cable tray width and height. Original calculations assumed all trays had a maximum fill depth of 4 inches. More recent plant specific data indicates actual maximum fill depths of 4 and 5 1/4 inches for horizontal runs of cable trays and 6 inches for cable risers.

Q.4 What impact, if any, have these changes in the calculations of combustible load in the Fire Hazards Analysis had on the conclusions that you reached in your testimony filed on August 9, 1984?

A.4 There is no impact on the overall conclusions. The calculated values of combustible loads in most Fire Areas has increased somewhat. We first recalculated combustible loads in each Fire Area with the conservative assumption that all cable trays will be filled to a maximum of 60% capacity (except for Power Cable Trays which are limited to 30% capacity). Based on this very conservative approach, the combustible loadings of all but five of the thirty-two Fire Areas were calculated to be less than 240,000 BTUs per square foot. Two of these five Fire Areas were previously identified in my pre-filed statement of August 9, 1984. With regard to the additional three Fire Areas, these were identified as cable spreading rooms 1A and 1B



and the Auxiliary Control (Panel) Room. We then calculated a more accurate combustible loading for these three rooms, utilizing the actual cable tray fill as indicated in the more recent cable and conduit list available. This list represents the most recent information concerning quantity and routing of electrical cable available to us, and is considered to include virtually all cable trays contemplated in final plant design. We calculated an average actual cable tray fill for each cable tray within each of these three Fire Areas and added approximately 5% fill to accommodate potential future additional cables. The resultant combustible loads indicated values well below 240,000s BTUs per square foot and thus there was no impact on the conclusions reached in the Fire Hazards Analysis. The results of these revisions are set forth in Applicants' Exhibit 6.

Q.5 Have there been any other revisions to the Fire Protection Program that are reflected in the Fire Hazards Analysis?

A.5 Yes, there has been a change to the smoke removal philosophy for the SHNPP Fire Protection Program. The supply and exhaust ventilation systems are now being provided with fire dampers in ducts which pass through three hour fire-rated barriers. This is being done to maintain the integrity of the fire barriers which enclose Fire Areas. Thus these ducts, which are capable of automatically removing smoke generated by a fire, will now be subject to damper closure when the fusible

link of the damper is subjected to a pre-determined temperature. As individual dampers close, the initial smoke removal capability diminishes. In addition, air duct smoke detectors automatically stop the fans in the ventilation system.

Q.6 What impact does this change have on the ability of the plant to remove smoke from an area to permit the fire brigade to enter the area, assess fire conditions and use manual equipment to fight the fire?

A.6 None. The ventilation system can be restored to a smoke removal mode by manual actuation from the Plant Control Room. In addition, the automatic shutdown features can be overridden by the plant operator. The fire brigade has at its disposal portable smoke ejection equipment as well as self-contained breathing apparatus for negating the adverse effect of smoke on members responding to a fire condition. This change reflects a well established school of thought in fire protection which favors "bottling up" an area and removing a continuing source of available oxygen to sustain a fire. This allows the fire brigade to make a determination that smoke removal is necessary in order manually to fight the fire.

Q.7 On page 16, lines 13-16, of your August 9, 1984 pre-filed testimony, you state: "Each Fire Area is bounded by barriers with construction that provides a minimum three-hour fire rating (with the one exception of emergency diesel generator rooms, described previously)." Do you wish to clarify this statement?

A.7 Yes. Each Fire Area located inside the structure of the power block is bounded by barriers with construction that provides a minimum three-hour fire rating, with the exception of special doors, bullet resistant doors and air-tight doors which have not been fire tested. However, the design of these doors should provide equivalent protection in case of fire. In addition, the transfer air ducts from the reactor auxiliary building (HVAC equipment room) to the tank area elevation 286' do not contain fire dampers because the tank area has a negligible combustible loading. Walls and roofs forming the outside structure of the power block and remote buildings (i.e., Diesel Generator Building and Emergency Service Water Intake Structure) are constructed of reinforced concrete providing a three-hour fire rating -- again with the exception of special doors (i.e., tornado, wind and missile doors) and the air exhaust and intakes at exterior walls, stacks and roofs. Because these walls are not contiguous with Fire Areas, it was not necessary to provide fire dampers.

Q.8 Does this complete the additions or changes that you wish to make to your pre-filed testimony of August 9, 1984.

A.8 Yes

August 9, 1984

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of )  
 )  
CAROLINA POWER & LIGHT COMPANY ) Docket No. 50-400 OL  
and NORTH CAROLINA EASTERN )  
MUNICIPAL POWER AGENCY )  
 )  
(Shearon Harris Nuclear Power )  
Plant) )

APPLICANTS' TESTIMONY OF MARGARITA A. SERBANESCU  
IN RESPONSE TO EDDLEMAN CONTENTION 116  
(FIRE PROTECTION)

1 Q.1 Please state your name, address, present occupation  
2 and employer.

3 A.1 My name is Margareta A. Serbanescu. My business  
4 address is Ebasco Services Incorporated, Two World Trade Cen-  
5 ter, New York, NY 10048. I am employed by Ebasco Services In-  
6 corporated as a Principal Mechanical Engineer responsible for  
7 the supervision of the Ebasco Fire Protection Engineering  
8 Group. My responsibilities include development of the fire  
9 protection program for the Shearon Harris Nuclear Power Plant  
10 (SHNPP) project. A copy of my professional experience and  
11 qualifications is affixed hereto as Attachment A.

12 Q.2 State your educational background and professional  
13 work experience.

14 A.2 I am a Principal Engineer with <sup>19</sup>~~18~~ years of mechanical  
15 engineering experience, including 11 years of fire protection  
16 engineering for both nuclear and fossil power generating sta-  
17 tions. My work experience includes engineering and design of  
18 various fire protection systems, using diversified suppression  
19 agents such as water, carbon dioxide, halon, dry chemical, and  
20 foam. My responsibilities have included conceptual design;  
21 preparation of system design criteria, flow diagrams, procure-  
22 ment specifications, bid evaluation, and purchase recommenda-  
23 tions; vendor and Ebasco-generated drawing input, review and  
24 drawing approval; supervision of installation; field verifica-  
25 tion and support; and turnover of the systems to clients. I  
26 have also been involved in negotiations with authorities having  
27 jurisdiction over fire protection, such as governmental

1 authorities, local authorities, insurance underwriters and own-  
2 ers. Some of my responsibilities have included preparation of  
3 Safety Analysis Reports, Fire Hazards Analyses, and Safe Shut-  
4 down Analyses in Case of Fire -- all performed in accordance  
5 with various criteria issued by the Nuclear Regulatory Commis-  
6 sion (NRC), industry standards, National Fire Protection Asso-  
7 ciation (NFPA) standards and recommended practices. I have  
8 provided technical assistance to a client during an NRC "walk-  
9 down" of a nuclear power plant's fire protection systems.

10 Q.3 Describe the professional services that you have pro-  
11 vided to Applicants for the operating license for the SHNPP and  
12 the degree of involvement that you and your associates at  
13 Ebasco have had in the development of the Harris fire protec-  
14 tion program.

15 A.3 Ebasco was retained by Applicants, in conjunction  
16 with providing architect-engineering services, to develop the  
17 fire protection program for the SHNPP in accordance with NRC  
18 regulatory requirements, insurance carrier's guidelines, indus-  
19 try standards and local authorities' requirements. I was as-  
20 signed as the Fire Protection Engineer for the SHNPP in  
21 September 1978. I was involved in the preparation of the Plant  
22 Final Safety Analysis Report (FSAR) which included a detailed  
23 Fire Hazards Analysis developed from the Preliminary Safety  
24 Analysis Report. One year later I was assigned to be Fire Pro-  
25 tection Lead Engineer for the SHNPP and was placed in charge of

26

1 the Plant fire protection program within Ebasco's scope of  
2 work. In January 1981 I was promoted to Supervisor of the  
3 Ebasco Fire Protection Engineering Group, retaining responsi-  
4 bility for the SHNPP fire protection activities. In this ca-  
5 pacity I was involved in the supervision of the fire protection  
6 effort within Ebasco's designated scope of work, which included  
7 preparation of the Safe Shutdown Analysis in Case of Fire for  
8 the SHNPP (SSA), coordination of the interdisciplinary reviews  
9 and comment resolution (including Applicants' comments), provi-  
10 sion of fire protection features or justifications of devia-  
11 tions from separation criteria prescribed by the NRC, and the  
12 complete final report preparation. FSAR Section 9.5.1 and Ap-  
13 pendix 9.5A, which describe the SHNPP fire protection program,  
14 are Applicants' Exhibit 6; a summary of the SSA is Appli-  
15 cants' Exhibit 7.

16 Q.4 What is the purpose of your testimony?

17 A.4 The purpose of my testimony is to address the first  
18 five allegations of Eddleman Contention 116, which can be stat-  
19 ed as follows:

20 (1) "The fire hazard analysis of section  
21 9.5A (Appendix) in the FSAR does not  
22 address the availability of control and  
23 power to the safety equipment."

24 (2) "In establishing fire resistance rat-  
25 ings of fire barriers with respect to fires  
26 in cable trays, Applicants have not estab-  
lished that qualification tests represent  
actual plant conditions or comparable con-  
ditions."

1 (3) "Another vague statement is that barriers  
2 are used 'where practical' without  
3 defining practical or stating the criteria  
4 to decide where a fire barrier is or is not  
5 practical (and what type of fire barrier is  
6 or is not practical). 9.5.1.1.1."

7 (4) "The 'analysis' of Appendix 9.5A does  
8 not demonstrate, as 9.5.1.1.1 claims it  
9 will, the adequacy of other fire protection  
10 measures in all cases. Rather, it esti-  
11 mates the BTU of combustible material,  
12 smoke generation and removal rate from the  
13 area, gives usually a qualitative descrip-  
14 tion of some measures to mitigate or reduce  
15 fire effects, and assumes that the fire  
16 will be promptly detected (usually, no  
17 analysis of location of detection instru-  
18 ments, etc.) and the fire brigade will re-  
19 spond rapidly and put out the fire, or the  
20 automatic equipment will work. These as-  
21 sertions are made despite the time it takes  
22 to get people into the containment and to  
23 the fire (not well analyzed). Further, the  
24 'analysis;' of what happens if the fire  
25 spreads is generally a rationalization that  
26 it can't spread much, not an analysis.  
See, e.g. 'Analysis of Effects of postu-  
lated fires'."

(5) "The effect of a fire in a Fire Area or  
Fire Zone with a combustible loading  
greater than 240,000 BTU/sq. ft. doesn't  
get dealt with in realistic terms."

My testimony demonstrates that these five aspects of the fire  
protection program for the SHNPP, which have been questioned by  
Eddleman Contention 116, meet NRC regulations and are consis-  
tent with NRC regulatory guidance and NEPA and industry stan-  
dards, and, therefore, that there is no merit to any of these  
allegations.

Q.5 What NRC regulations and regulatory guidance are ap-  
plicable to the fire protection program at the SNHPP?



1           A.5 The applicable NRC regulations and regulatory guid-  
2           ance for the SHNPP fire protection program are: 10 C.F.R. Part  
3           50 Appendix A, General Design Criteria 3 "Fire Protection"; 10  
4           C.F.R. § 50.48 "Fire Protection"; 10 C.F.R. Part 50 Appendix R,  
5           "Fire Protection Program For Nuclear Power Facilities Operating  
6           Prior to January 1, 1979"; Regulatory Guide 1.70, "Standard  
7           Format and Content of Safety Analysis Reports for Nuclear Power  
8           Plants," Revision 3; NUREG-0800 "Standard Review Plan," Section  
9           9.5-1 - Fire Protection; and Branch Technical Position (BTP) -  
10          Chemical Engineering Branch (CMEB) 9.5-1, "Guidelines for Fire  
11          Protection for Nuclear Power Plants," dated July 1981.

12           Q.6 Were all of these regulations and guidance in effect  
13          at the time the Harris FSAR was filed with the NRC Staff?

14           A.6 No. On June 26, 1980 Applicants filed the SHNPP FSAR  
15          with the NRC. 10 C.F.R. § 50.48 and Appendix R to Part 50  
16          became effective in February 1981 and NUREG-0800, which includ-  
17          ed BTP CMEB 9.5-1, was issued in July 1981.

18           Q.7 What major changes have been made to the SHNPP fire  
19          protection program since the FSAR was first drafted?

20           A.7 Applicants performed an SSA which <sup>is dated June 20, 1983 and</sup> was submitted to  
21          the NRC on July 22, 1983 and was subsequently revised  
22          October 11, 1983, February 24, 1984, and June 12, 1984. Appli-  
23          cants have reviewed the SHNPP fire protection program against  
24          the requirements of Appendix R to 10 C.F.R. Part 50. As a re-  
25          sult of the SSA and Applicants' review of their program against  
26

1 Appendix R, additional changes were made to the SHNPP design,  
2 including the addition of suppression systems, fire barrier  
3 wrap of cable tray and conduit and cable rerouting.

4 Q.8 Eddleman Contention 116 first alleges that the Fire  
5 Hazard Analysis in FSAR Appendix 9.5A "does not address avail-  
6 ability of control and power to safety equipment." How do you  
7 respond to that allegation?

8 A.8 The Fire Hazards Analysis in FSAR Appendix 9.5A does  
9 not directly address availability of control and power cables  
10 to safety related equipment. This is done in FSAR Subsection  
11 9.5.1.2.2, "Fire Protection of Cables and Circuitry," FSAR Sec-  
12 tion 8.3, "Onsite Power Systems" and in Applicants' SSA.

13 Q.9 How do the above-referenced sections of the FSAR and  
14 the SSA demonstrate the availability of control and power to  
15 safety equipment necessary to shutdown the reactor in the event  
16 of a fire?

17 A.9 As stated in FSAR Subsection 9.5.1.2.2, safety relat-  
18 ed cable trays and circuits are isolated or protected from the  
19 effects of fire through the use of physical isolation, spatial  
20 separation, non-combustible covering, fire prevention through  
21 provision of automatic sprinkler systems, or any combination of  
22 these methods to ensure the integrity of essential electric  
23 circuitry needed during the fire for safe shutdown of the plant  
24 and for fire control. In this regard Applicants are complying  
25 with the guidelines found in Appendix A to BTP APCSB 9.5-1 and

26

1 10 C.F.R. Part 50, Appendix R (unless the NRC permits a devia-  
2 tion from the requirements of Appendix R for a particular situ-  
3 ation). Also, as discussed in FSAR Section 8.3, Regulatory  
4 Guide 1.75, "Physical Independence of Electrical Systems," was  
5 used in the plant design. This regulatory guide addresses  
6 methods acceptable to the NRC to ensure physical independence  
7 of circuits and electrical equipment which comprise or are as-  
8 sociated with certain safety related power and protection sys-  
9 tems.

10 Furthermore, in accordance with Section C.5.6 of BTP CMEB  
11 9.5-1, Applicants performed an SSA, which verifies that fire  
12 protection features for structures, systems and components im-  
13 portant to safe shutdown, including control and power cables,  
14 are protected so that one train of systems necessary to achieve  
15 and maintain hot standby conditions from either the Control  
16 Room or Emergency Control Station(s) is free of fire damage,  
17 and that one train of systems necessary to achieve and maintain  
18 cold shutdown within 72 hours from either the Control Room or  
19 Emergency Control Station(s) is free of fire damage or can be  
20 repaired.

21 Thus the information that Mr. Eddleman could not find in  
22 FSAR Appendix 9.5A is described in other sections of the FSAR  
23 and the SSA. It is my understanding that Mr. Eddleman has not  
24 to this date identified any specific deficiency in the FSAR and  
25 SSA analysis regarding the availability of control and power to  
26 safety equipment.

1 Q.10 The second issue raised by Eddleman Contention 116  
2 is an allegation that "in establishing fire resistance ratings  
3 of fire barriers with respect to fires in cable trays, Appli-  
4 cants have not established that qualification tests represent  
5 actual plant conditions or comparable conditions." What fire  
6 barriers are associated with a fire in a cable tray?

7 A.10 A fire barrier is a component of construction rated  
8 by testing laboratories in hours of resistance to fire which is  
9 used to prevent the spread of fire. Each Fire Area in the  
10 SHNPP is enclosed with three-hour fire resistance rated barri-  
11 ers. In addition, certain cable trays within a Fire Area are  
12 protected by three-hour or one-hour fire resistance rated en-  
13 closures (envelopes), as identified in the SSA at Table 9.5B-3.  
14 Where a cable tray penetrates a fire barrier, penetration fire  
15 seals, having a minimum fire resistance rating at least equiva-  
16 lent to the rating of the fire barrier, are installed as de-  
17 scribed in FSAR Subsection 9.5.1.2.2.

18 Q.11 What are the industry standards established for de-  
19 termining the fire resistance rating of a fire barrier?

20 A.11 The test methods established for determining the  
21 fire resistance rating of fire barriers are based on standard  
22 fire tests performed in accordance with ASTM E-119, "Standard  
23 Test Method for Fire Test of Building Construction and Materi-  
24 als"; NFPA-251, "Standard Methods of Fire Tests of Building  
25 Construction and Materials"; Nuclear Mutual Limited (NML),  
26

1 "Property Loss Prevention Standards for Nuclear Generating Sta-  
2 tions," Appendix A-14; Underwriters Laboratories (UL) 263 "Fire  
3 Tests of Building Construction and Materials"; and American Nu-  
4 clear Insurers Bulletin No. 5 "Standard Fire Endurance Test  
5 Method to Qualify a Protective Envelope for Class IE Electrical  
6 Circuits." ASTM E-119 describes methods of measuring and  
7 specifying fire resistive properties of materials and  
8 assemblies with the exception of ceiling construction and ~~pre-~~  
9 ~~tective combustible framing,~~ *and combustible framing on the unexposed side of walls, partitions & floors.* Both NFPA-251 and UL 263 are sim-  
10 ilar to ASTM E-119, but include testing and acceptance criteria  
11 for ceiling construction, ~~and protective combustible framing,~~ *etc.*  
12 NML Appendix A-14 is a modified IEEE-634 "Standard Cable Pene-  
13 tration Fire Stop Qualification Test." This standard covers  
14 tests of penetration fire seals when mounted in rated fire bar-  
15 riers. ANI Bulletin No. 5 describes methods of measuring and  
16 specifying fire resistive properties of materials and  
17 assemblies used to establish a protective envelope for safety  
18 circuits, including redundant safety circuits in the same Fire  
19 Area exposed to a fire originating either outside of the cable  
20 system or inside the protective envelope and subjected to me-  
21 chanical impact damage (such as a fire hose stream).

22 Q.12 Describe the qualification tests associated with the  
23 fire barriers with respect to fires in cable trays.

24 A.12 Tests for cable tray enclosures are described in ANI  
25 Bulletin No. 5, excerpts of which are attached to this  
26

1 testimony as Attachment B. Penetration fire seals are tested  
2 against the detailed testing requirements and acceptance  
3 criteria set forth in NFPA-251, UL 263 and ASTM E-119, de-  
4 scribed above.

5 Q.13 How has it been established that the test methods  
6 for determining the fire resistance rating represent actual  
7 conditions likely to be encountered in the maximum credible  
8 fire in any given Fire Area or Fire Zone?

9 A.13 Test methods for determining the fire resistance  
10 rating of a fire barrier are based on an exposure fire repre-  
11 sented by the "standard time-temperature curve." The points on  
12 the curve that determine its character are:

13	1000°F ( 538°C) at 5 min.
14	1300°F ( 704°C) at 10 min.
15	1550°F ( 843°C) at 30 min.
16	1700°F ( 927°C) at 1 hour
17	1850°F (1010°C) at 2 hours
18	1925°F (1053°C) at 3 hours
19	2000°F (1093°C) at 4 hours
20	2300°F (1260°C) at 8 hours or over

21 It is not the intent of the tests to simulate actual plant con-  
22 ditions likely to be encountered in the maximum credible fire  
23 in any given Fire Area or Fire Zone, but rather, by the use of  
24 the standard time-temperature curve, to exceed actual plant  
25 conditions by use of the standard common "worst case" exposure  
26 fire.

1           The standard time-temperature curve has been determined  
2 empirically to represent a common "worst case" exposure fire.  
3 Actual fire tests, conducted by the National Bureau of Stan-  
4 dards by burning to destruction a five-story and a two-story  
5 brick, wood-joisted building loaded with waste lumber, produced  
6 overall results in approximation to the standard time-  
7 temperature curve. Additional data were obtained by burning  
8 various amounts of materials in two fire resistive buildings.  
9 By analysis of the data, a relationship of fuel loading that  
10 will produce an exposure equivalent to the standard time-  
11 temperature curve for a specific duration has been approximated  
12 and reported in Table 6-8A of the National Fire Protection As-  
13 sociation's Fire Protection Handbook (14th Edition-1976). For  
14 a three-hour period, a combustible load of 240,000 BTU/sq. ft.  
15 yields a fire severity approximately equal to that indicative  
16 of the standard time-temperature curve over a corresponding pe-  
17 riod.

18           The Fire Hazards Analysis presents the combustible load  
19 for each plant Fire Area. The combustible loading in all Fire  
20 Areas in the SHNPP power block is less than 240,000 BTU/sq. ft.  
21 Thus, a fire barrier tested to withstand a fire based on the  
22 standard time-temperature curve will resist a fire from the  
23 maximum calculated combustible loading in any Fire Area in the  
24 SHNPP power block.

25  
26

1 Q.14 What independent tests are conducted to ensure that  
2 the fire resistance rating of fire barriers for cable trays for  
3 the SHNPP meets the established standards?

4 A.14 Test methods and acceptance criteria are standard-  
5 ized and are detailed in documents such as ASTM E-119, NFPA-  
6 251, UL 263, NML Appendix A-14, and ANI Bulletin No. 5 (all  
7 mentioned earlier). For each fire barrier for cable trays that  
8 will be used in the SHNPP, a qualification test -- in accor-  
9 dance with the test methods and acceptance criteria referenced  
10 above -- will be performed on a "generic assembly" of that fire  
11 barrier by an independent laboratory. Tests are conducted by  
12 independent laboratories such as Underwriters Laboratories, In-  
13 dustrial Testing Laboratories, Southwest Research Institute,  
14 and Portland Cement Association on various generic assemblies  
15 in accordance with the applicable standards to establish fire  
16 ratings. Installation of fire barriers at SHNPP will be in  
17 accordance with the testing laboratory recommendations to en-  
18 sure that the actual installed fire barrier conforms to the  
19 configuration of the tested assembly.

20 Q.15 The third issue raised by Eddleman Contention 116 is  
21 that FSAR Section 9.5.1.1.1 contains the "vague statement" that  
22 "[fire] barriers are used 'where practical' without defining  
23 'practical' or stating the criteria to decide where a fire bar-  
24 rier is or is not practical (and what type of fire barrier  
25 should be used)." How are fire barriers used in the Harris  
26 fire protection program?



1           A.15 Fire barriers are used to separate Fire Areas to re-  
2       duce the possibility of fire-related damage to redundant  
3       safety-related trains of equipment and to isolate safety-  
4       related systems from hazards in nonsafety-related areas.

5           Q.16 How is the determination made as to what the fire  
6       resistance rating of each fire barrier should be?

7           A.16 Fire Areas are bounded by barriers with construction  
8       that provide a minimum three-hour fire rating or equivalent,  
9       regardless of the combustible loading. In 95% of the Plant  
10      Fire Areas, the combustible loading is less than 240,000  
11      BTU/sq. ft. Fire Zones within Fire Areas may be bounded en-  
12      tirely or partially with barriers having a three-hour fire rat-  
13      ing or less. As a generally accepted fire protection practice,  
14      each combustible fire loading increment of 80,000 BTU's/sq.ft.  
15      indicates the need for an additional one hour of fire rating  
16      for the barrier. The use of fire barriers in the SHNPP is de-  
17      scribed in detail in FSAR Section 9.5.1.2.2 and Appendix 9.5A.

18          Q.17 Are there any circumstances where it has been deter-  
19      mined that defined Fire Areas could not "practically" be sepa-  
20      rated by properly rated fire barriers at SHNPP?

21          A.17 In one instance a Fire Area is not bounded by a fire  
22      barrier on all sides -- the emergency diesel generator rooms  
23      have large intake openings required for diesel operation. With  
24      that one exception all defined Fire Areas are separated by a  
25      properly rated fire barrier.

26

1 Q.18 The fourth issue raised by Eddleman Contention 116  
2 is a generalized criticism of Appendix 9.5A of the FSAR,  
3 claiming that Applicants have not demonstrated "the adequacy of  
4 fire protection measures in all cases." Contention 116 finds  
5 fault with the "estimates" of the BTU content of combustible  
6 material, smoke generation and removal rates, measures to re-  
7 duce or mitigate fire effects, detection capability and fire  
8 brigade response and effectiveness. In this regard, please de-  
9 scribe in general the Fire Hazards Analysis.

10 A.18 The SHNPP fire protection program has been designed  
11 to allow the plant equipment to maintain the ability to perform  
12 safe shutdown functions and to minimize radioactive releases to  
13 the environment in the event of a fire. The effectiveness of  
14 the fire protection program is verified through the Fire Haz-  
15 ards Analysis by evaluation of fire hazards, postulation of re-  
16 alistic potential fires, and assessment of effects of these  
17 fires in Fire Areas throughout the plant. The Fire Hazards  
18 Analysis is found at FSAR Appendix 9.5A.

19 The purpose of the Fire Hazards Analysis is to demonstrate  
20 that fire protection measures, suitable for control of the area  
21 hazards, have been provided. In performing the analysis, the  
22 following considerations were addressed: spread of fire;  
23 potential extent of damage to essential equipment, loss of  
24 safety function, and/or radiological release to the environ-  
25 ment; containment of the fire and its consequences within the  
26

1 considered Fire Area, and/or effect on other Fire Areas; provi-  
2 sion of detectors to sense area fire or smoke conditions for  
3 prompt fire control response; effective use of manual fire con-  
4 trol equipment and backup systems; smoke removal to permit per-  
5 sonnel to enter the Fire Area, assess the fire condition, and  
6 use manual equipment; effects of smoke and heat damage from the  
7 postulated fire on required operation of essential equipment in  
8 the area; protection of redundant systems, equipment or trains,  
9 if located in the same Fire Area, to maintain operability; and  
10 separation or isolation of redundant equipment.

11 The Fire Hazards Analysis for the SHNPP demonstrates that  
12 adequate fire protection measures are available in each Fire  
13 Area or Fire Zone analyzed. I disagree with the fourth issue  
14 raised by Eddleman Contention 116 because the combustible load-  
15 ing for each Fire Area is estimated conservatively; the smoke  
16 removal rates are based on NRC recommendations; the measures to  
17 reduce or mitigate fire effects are described in considerable  
18 detail and are of demonstrated effectiveness; and fire detec-  
19 tors to be utilized are proven designs. As discussed in Appli-  
20 cants' Testimony of David B. Waters, the fire brigade will be  
21 well-trained, adequate in numbers and well-equipped to fight  
22 fires.

23 Q.19 You have referred to Fire Areas a number of times in  
24 your testimony. How are Fire Areas defined?  
25  
26

1           A.19 The Fire Areas were established based on the nature  
2 of occupancy of the plant space, the amount and distribution of  
3 combustible materials within the area, and the location of  
4 safety-related systems and equipment. Areas important to the  
5 Plant's capability for safe shutdown, such as electrical pene-  
6 tration areas, cable spreading rooms, diesel generator areas,  
7 switchgear and battery rooms, were designated as Fire Areas.  
8 Other Plant areas were designated as Fire Zones within the Fire  
9 Areas to facilitate the Fire Hazards Analysis and to ensure  
10 adequate fire protection features are distributed within a Fire  
11 Area as required by potential hazards present in each Fire  
12 Zone.

13           Each Fire Area is bounded by barriers with construction  
14 that provide a minimum three-hour fire rating (with the one ex-  
15 ception of the emergency diesel generator rooms, described pre-  
16 viously).

17           For each designated Fire Area, the Fire Hazards Analysis  
18 evaluates separately the occupancy, boundaries, combustible  
19 loading, control of hazards, fire detection, access and initial  
20 response, fire suppression systems, Fire Area fire fighting  
21 equipment, and the effects of postulated fires.

22           Q.20 How is the combustible loading of a Fire Area deter-  
23 mined?

24           A.20 The severity of fire that may develop and the damage  
25 that may result in the most extreme case in a Fire Area is a  
26

1 function of the amount of combustibles present and the total  
2 heat of combustion generated. As combustibles in an area are  
3 not point-source concentrated, a more realistic measure of the  
4 relative fire hazard or exposure to fire damage of an area is  
5 determined by spreading this combustible loading over the floor  
6 area of the space or, in the case of a localized concentration  
7 of combustibles, over the floor area within the sphere of in-  
8 fluence of the postulated fire.

9 The configuration of fire loading varies from area to  
10 area. Some areas are devoid, or essentially so, of combustible  
11 materials; other areas contain one or more localized fuel con-  
12 centrations, spatially separated from each other. A localized  
13 concentration of combustible material is delineated by finite  
14 parameters beyond which the fire loading is sharply reduced.  
15 Examples of local fuel concentrations considered include cable  
16 insulation in Motor Control Center units or electrical cabi-  
17 nets, charcoal beds in filter housings, oil in equipment reser-  
18 voirs, waste materials in containers or on skids, and similar  
19 items. Linear concentrations of combustibles are usually asso-  
20 ciated with cable trays either solely within the Fire Area or  
21 extending through several Fire Areas by penetration of inter-  
22 vening fire barrier walls.

23 To simplify the calculation of area combustible loadings,  
24 conservative calorific values, based on the Fire Protection  
25 Handbook, were adopted for classes of combustible materials

26

1 which were representative of heat values of specific materials  
2 grouped within the class. These include:

3	Ordinary Combustibles	8,000 BTU/lb.
4	Combustible or Flammable Liquids	20,000 BTU/lb. (108,000 BTU/gal.)
5	Charcoal	10,000 BTU/lb.

6 (Combustible loading for minor amounts of grease, integral with  
7 equipment, not exceeding one pound each, was not inventoried  
8 since it does not create a significant fire hazard.) Using man-  
9 ufacturer's data on cable construction of typical cables used  
10 in SHNPP and the BTU content of the insulation materials, BTU  
11 values were derived for each running foot (RF) of 24 in. wide  
12 cable trays, as follows:

13	Power	180,000 BTU/RF
14	Control	157,000 BTU/RF
15	Instrumentation	95,000 BTU/RF

16 These values were adjusted proportionally for trays of differ-  
17 ent widths. All cable trays were considered to be 40% loaded,  
18 the maximum design loading of a cable tray.

19 The combustible loading for all cables routed in conduit,  
20 cast concrete trenches, or contained within metallic cabinets  
21 or consoles was not inventoried since they do not create a fire  
22 hazard, as recognized by good fire protection engineering prac-  
23 tice.

24 In addition to the combustibles normally present in an  
25 area, an inventory of "transient" combustibles which might  
26

1 realistically be introduced into areas as a part of planned  
2 operation was incorporated in the Fire Hazards Analysis for  
3 each Fire Area and Fire Zone. In most cases, the introduction  
4 of transient combustible materials into areas where such mate-  
5 rial may expose safety-related equipment will coincide with  
6 scheduled station maintenance. Combustible materials that may  
7 be introduced in quantities sufficient to require special at-  
8 tention include: construction materials, such as scaffolding,  
9 shoring, forms, etc (although in the power block such materials  
10 will be limited to fire retardant wood); resins in bulk quan-  
11 tities and associated packaging materials; charcoal; combusti-  
12 ble liquids, such as lubricating oils and paints; grease (oil  
13 in solid state); plastic bags and protective sheeting;  
14 packaging materials and containers, such as plastics, wood,  
15 paper, etc; flammable liquids and gases, such as solvents and  
16 volatile fuels; rags; and anti-contamination clothing.

17 The quantity, movement, use and handling of all such mate-  
18 rials as well as the provision of supplemental fire protection  
19 measures are administratively controlled in the plant through  
20 written procedures. For this reason, the fire loss exposure  
21 resulting from the addition of transient combustibles in an  
22 area during these periods of increased plant surveillance,  
23 strict procedural control and augmented area manning has been  
24 considered as being no greater than that from the inventories  
25 of nontransient combustibles normally present in each area,  
26 except for the periods of major plant outages.

1           After the conservative inventory of all combustible mate-  
2 rials in a Fire Area, total BTU and BTU per sq. ft. values were  
3 calculated and then summed to indicate the total combustible  
4 fire loading for the Fire Area. The calculated combustible  
5 fire loading of a Fire Area was then used to compare the area  
6 fire hazard relative to those of other Fire Areas, to judge the  
7 adequacy of the area boundary fire barriers, and to verify the  
8 proper selection of adequate fire control and suppression sys-  
9 tems and equipment.

10           Q.21 What conservatisms are built into this analytical  
11 process?

12           A.21 In determining the hourly rating of fire barriers in  
13 the SHNPP power block, complete combustion of all combustibles  
14 is assumed and no credit is taken for the lack of continuity of  
15 combustibles. Nor is it assumed that automatic or manual fire  
16 suppression systems will limit the extent of a fire. A fire  
17 barrier hourly rating is selected for a combustible loading in  
18 excess of that determined in the conservative calculation.

19           Q.22 Are smoke generation and removal rates "estimated"  
20 in the Fire Hazards Analysis as alledged in Contention 116?

21           A.22 No. Smoke generation rate is not estimated; there  
22 are too many variables to determine what an average or even  
23 worse case smoke generation rate should be. Nor is smoke re-  
24 moval rate "estimated." It is assumed to be 1.5 cfm/sq.ft. of  
25 floor area for the most severe combustible load j area in the

26



1 power block (cable spreading area) based on the capability of  
2 the HVAC system. This is consistent with BTP APCSB 9.5-1, Ap-  
3 pendix A. Where less than the most severe combustible loading  
4 is present, a minimum assumed smoke removal rate is obtained by  
5 dividing the combustible load of the analyzed Fire Area by that  
6 maximum loading and multiplying by 1.5 cfm/sq.ft. to obtain the  
7 proportional cfm/sq.ft. required. This may be considerably  
8 less than the actual capability of the HVAC system.

9 Q.23 What measures are incorporated into the fire protec-  
10 tion program "to reduce or mitigate fire effects?"

11 A.23 A number of defense-in-depth passive and active fire  
12 protection features/measures have been provided to reduce the  
13 fire effects on the Plant safe shutdown in case of fire and  
14 fire damage to all Plant areas. These measures include limita-  
15 tion of the amount of transient combustible materials,  
16 utilization of fire-resistive construction, provision of fire-  
17 breaks and fire penetration seals in cable trays, utilization  
18 of IEEE 383 cable (which has a low fire propagation rate), and  
19 installation of fire detection systems and automatic fire ex-  
20 tinguishing systems. These measures follow the fire protection  
21 guidelines issued by NRC and are described in the Fire Hazards  
22 Analysis and in the SSA in detail -- not just in a "qualita-  
23 tive" manner as alleged in Contention 116. The Fire Hazard  
24 Analysis constitutes a realistic and thorough assessment of the  
25 nature of fires, the effects of fires and the ability to  
26 control fire in the various Fire Areas of the SHNPP.

1 Q.24 What fire detection systems are provided for each  
2 Fire Area?

3 A.24 Three different types of fire detectors will be used  
4 in the SHNPP: ionization detectors, thermal detectors and ul-  
5 traviolet flame detectors.

6 Ionization detectors utilize a small amount of radioactive  
7 material which ionizes the air in a sensing chamber, thus ren-  
8 dering it conductive and permitting a current flow through the  
9 air between two charged electrodes. This gives the sensing  
10 chamber an effective electrical conductance. When smoke parti-  
11 cles enter the ionization area, the conductance of the air is  
12 decreased because the smoke particles attach themselves to ions  
13 causing a reduction in mobility. When the conductance is less  
14 than a predetermined level, the detector responds.

15 Thermal detectors operate on the rate of rise/fixed tem-  
16 perature principle. Thermal detectors respond when the temper-  
17 ature rises at a rate exceeding a predetermined amount or  
18 reaches a temperature set-point. Thermal detectors are an in-  
19 tegral part of the fire suppression system and actuate sprin-  
20 kler systems when a fire is detected.

21 Ultraviolet flame detectors use a Geiger-Mueller gas type  
22 cathode tube designed to detect flame radiated rays at the ex-  
23 treme low end of the radiation spectrum.

24 The Fire Hazards Analysis of each Fire Area discusses the  
25 types of fire detectors in each area.

26

1 Q.25 How were these detection systems selected?

2 A.25 The SHNPP detection systems were selected to  
3 optimize early warning of a fire condition in its incipient  
4 stage and thus to ensure timely fire brigade response. For  
5 this reason ionization type smoke detectors were selected as  
6 the principal detection system. These detectors respond to the  
7 first traces of fire in the form of visible smoke or invisible  
8 products of combustion. Heat or flame is not required to acti-  
9 vate the detector.

10 In locations additionally protected with automatic water-  
11 type suppression systems utilizing temperature actuated fusible  
12 link sprinklers and dry piping (preaction and multi-cycle)  
13 sprinkler systems, thermal detectors are used to initiate  
14 actuation of the suppression system. These detectors have a  
15 temperature set-point approximately 30°F above environmental  
16 conditions to preclude inadvertent operation, but below the  
17 temperature required to open the fusible link sprinklers.  
18 Thus, the detectors will alarm and initiate suppression system  
19 actuation, allowing water into the system piping before any  
20 sprinklers open to discharge water on the fire.

21 For several specific applications such as the diesel gen-  
22 erator building and the fuel oil pump area, ultraviolet flame  
23 detectors are utilized. These detectors are used primarily  
24 where anticipated fires will develop quickly with little or no  
25 incipient or smoldering stage and where ignition is almost  
26 instantaneous.

1 Q.26 What provisions are made for the SHNPP response to a  
2 fire?

3 A.26 A trained fire brigade will be available on each  
4 shift to respond to any fire event. A fire brigade response  
5 time of approximately 5-15 minutes is expected for most fire  
6 events within the power block. The SHNPP fire brigade, its ca-  
7 pabilities and its training are described in Applicants' Testi-  
8 mony of David B. Waters.

9 Q.27 What automatic fire suppression systems have been  
10 provided in SHNPP?

11 A.27 Wet pipe sprinkler systems are the basic industrial  
12 automatic water suppression systems. This type of system uti-  
13 lizes water-filled piping with closed sprinkler nozzles which  
14 open one at a time when subjected to a predetermined tempera-  
15 ture through the use of fusible links. Where the area  
16 protected by an automatic suppression system contains equipme t  
17 that could be damaged by inadvertent activation of sprinklers,  
18 variations in the wet pipe sprinkler system have been developed  
19 with applications in nuclear plants. The automatic suppression  
20 systems that will be installed in the SHNPP include the follow-  
21 ing:

22 1. Pre-Action Sprinkler Systems

23 The pre-action sprinkler system consists of the same pipe  
24 and sprinkler arrangement as the wet pipe system, except that  
25 normally the sprinkler pipes contain no water and an

26

1 electro-mechanical valve is inserted in the water supply pipe  
2 to the system. A two-step release mechanism is employed to  
3 preclude inadvertent operation or water discharge due to me-  
4 chanical damage to the piping system. Thus, under non-fire  
5 conditions, mechanical damage to the piping system would not  
6 result in water discharge since the electro-mechanical valve  
7 would not have opened. Under fire conditions, thermal fire de-  
8 tectors sense the condition and electrically signal the  
9 electro-mechanical valve to open. This permits water to pass  
10 into the sprinkler piping before a temperature sufficient to  
11 open the fusible link sprinklers is reached. The system, in  
12 this mode, is now the basic wet pipe sprinkler system awaiting  
13 a temperature increase from the developing fire to initiate  
14 sprinkler water discharge.

15 This system will be installed in the areas shown in FSAR  
16 Table 9.5.1-3, which are primarily cable loaded areas and ordi-  
17 nary combustible loaded areas where general sprinkler coverage  
18 on an area-wide basis is provided.

## 19 2. Multi-cycle Sprinkler Systems

20 The multi-cycle sprinkler system acts in the same fashion  
21 as the pre-action system up to the point water is discharged  
22 from sprinklers. After activation, when the thermal fire de-  
23 tector senses a sufficient reduction in ambient temperature  
24 indicating that the fire has been suppressed, a signal is  
25 transmitted to shut the electro-mechanical valve and stop the  
26

1 flow of water. The system continues to function in an on/off  
2 cyclical mode as dictated by high or reduced temperature sensed  
3 by the detectors. This added feature results in a much reduced  
4 overall discharge in volume of water as compared to the wet or  
5 pre-action systems and is used primarily in areas where consid-  
6 erations other than fire protection indicate an advantage to  
7 reducing the overall quantity of water which must be disposed  
8 of after fire suppression has occurred. Multi-cycle sprinkler  
9 systems are installed in the areas shown in FSAR Table 9.5.1-4,  
10 including containment, diesel generator day tank enclosures and  
11 diesel oil pump rooms.

### 12 3. Water Spray Systems

13 The water spray system is designed and acts in a fashion  
14 similar to the pre-action system, except that open spray noz-  
15 zles or sprinklers are utilized in lieu of closed, fusible link  
16 activated sprinklers. This provides for immediate water dis-  
17 charge on the entire protected area when the system is acti-  
18 vated by thermal detectors. This immediate deluge is  
19 advantageous in quickly suppressing fires with a potential for  
20 rapid spread or rapid development of high heat release. Water  
21 spray systems are used to protect areas in the vicinity of cer-  
22 tain equipment and transformers as detailed in FSAR Table  
23 9.5.1-5.

24 Q.28 What design considerations went into the establish-  
25 ment of the fire suppression systems?

26

1           A.28 The type, coverage, actuation and supervision of  
2 fire suppression systems provided in each Fire Area is de-  
3 scribed in the Fire Hazards Analysis. The role of automatic  
4 suppression is to ensure suppression and to extinguish a fire  
5 condition, regardless of the fire brigade response, where con-  
6 siderable combustible loading is present. The selection of the  
7 particular fire suppression system, mode of operation and per-  
8 formance criteria is based on the fire hazards found in the  
9 area, the realistic fire expected and the overall fire control  
10 approach utilized for containment of the fire.

11           Q.29 What additional fire fighting capability has been  
12 provided for use by the fire brigade?

13           A.29 Each area of the SHNPP can be reached by at least  
14 two fire hose streams. In addition, there will be a fire en-  
15 gine on site ready to respond immediately to a fire event. The  
16 capability of the fire brigade is discussed in more detail in  
17 Applicants' Testimony of David B. Waters.

18           Q.30 In summary what does the Fire Hazards Analysis dem-  
19 onstrate regarding the potential effects of a fire at the  
20 SHNPP?

21           A.30 The Fire Hazards Analysis verifies the effectiveness  
22 of the fire protection program by evaluation of fire hazards,  
23 postulation of realistic potential fires, assessment of Plant  
24 response to a fire and the effects of fires in Fire Areas  
25 throughout the Plant. The Fire Hazards Analysis provides

26

1 assurance that fire protection facilities, suitable for control  
2 of the area hazards, have been provided. In summary, the Fire  
3 Hazards Analysis demonstrates that the SHNPP can safely shut-  
4 down the reactor, maintain it in a safe shutdown mode and mini-  
5 mize radioactive releases to the environment even in the event  
6 of a fire.

7 Q.31 The fifth issue raised by Eddleman Contention 116 is  
8 an allegation that "the effect of a fire in a Fire Area or Fire  
9 Zone with a combustible loading greater than 240,000 BTU/sq.  
10 ft. doesn't get dealt with in realistic terms." Is there any  
11 Fire Area or Fire Zone in the Harris Plant with a combustible  
12 loading greater than 240,000 BTU/sq. ft?

13 A.31 Yes. Two Diesel Generator Fuel Oil Day Tank Enclo-  
14 sures (Fire Areas 1-D-DTA and 1-D-DTB), each have a combustible  
15 loading of 2,920,000 BTU/sq. ft. (assuming total combustion of  
16 3,000 gallons of diesel oil); Diesel Fuel Oil Storage Tanks A  
17 and B (Fire Areas 12-D-TA and 12-D-TB) each have a combustible  
18 loading of 17,500,000 BTU/sq. ft. (assuming total combustion of  
19 175,000 gallons of diesel oil). For this calculation No. 2  
20 diesel fuel oil with a BTU/gal. value of 140,000 is assumed.

21 Q.32 What provisions are made to deal with a postulated  
22 fire in the diesel fuel oil day tank enclosures?

23 A.32 The diesel fuel oil day tank enclosures are each  
24 isolated from other Fire Areas by three hour rated concrete  
25 fire walls. Although the calculated combustible loading of the  
26



1 enclosures are greater than 240,000 BTU/sq. ft., this calculat-  
2 ed loading is extremely conservative since it is based on the  
3 total volume of oil in the enclosure. The only realistic way  
4 to postulate combustion of the volume of oil in the fuel oil  
5 day tank is attendant to a rupture of the tank. The diesel  
6 fuel oil day tank is a safety class 3, Seismic Category I com-  
7 ponent which is designed to remain functional after a Safe  
8 Shutdown Earthquake. NRC regulatory guidance in the Standard  
9 Review Plan (NUREG-0800, Section 9.5.1 BTP CMEB 9.5-1 ¶ C.1.b)  
10 provides that "worst case" fires need not be postulated to be  
11 simultaneous with nonfire-related failures in safety systems,  
12 plant accidents, or the most severe natural phenomena. Even in  
13 the highly unlikely event of a rupture of the diesel fuel oil  
14 day tank followed by combustion, only a thin layer of oil would  
15 actually be ignited in a fire. Furthermore in the event of  
16 fire, an automatic multi-cycle sprinkler system would be actu-  
17 ated by thermal detectors to cool the oil below the ignition  
18 point. If the thermal detectors or the valve automatic release  
19 failed to operate, the sprinkler system could be actuated manu-  
20 ally. Finally, automatic fusible link fire dampers are pro-  
21 vided to the diesel fuel oil day tank enclosures to limit the  
22 amount of air available to support continued combustion. All  
23 of these design features in combination provide assurance that  
24 in the highly unlikely event of a postulated fire in the diesel  
25 fuel oil day tank enclosures, the fire will be quickly  
26 contained.

1 Q.33 What provisions are made to deal with a postulated  
2 fire in the diesel fuel oil storage tanks?

3 A.33 Diesel fuel oil storage tanks A and B are installed  
4 underground in the yard area of the SHNPP, over 175 feet from  
5 principal plant structures. The tanks are constructed of rein-  
6 forced concrete designed to Seismic Category I requirements and  
7 are lined with steel. The only access to the tanks is by a re-  
8 inforced concrete hatch. Each tank vent is supplied with a  
9 flame arrestor to prevent flash-back of a flame into the tank.  
10 Yard hydrants are located adjacent to the area to fight a fire.  
11 For the reasons discussed above with respect to the diesel fuel  
12 oil day tanks, a fire in the diesel fuel oil storage tanks is  
13 extremely remote. However, in the unlikely event of a fire,  
14 the physical location of the tanks away from plant structures  
15 preclude any potential impact to safety related systems. The  
16 emergency diesel operation would not be impacted by a fire in  
17 the diesel fuel oil storage tanks since the day tanks contain  
18 enough diesel oil to operate the emergency diesels.

19 Q.34 In your professional opinion are these measures ade-  
20 quate to protect the SHNPP in the event of a fire in the diesel  
21 fuel oil day tank enclosure or diesel fuel oil storage tanks?

22 A.34 Yes.

23 Q.35 In conclusion, is the SHNPP fire protection program  
24 adequate to protect the public health and safety?  
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A.35 Yes.

Q.36 Please summarize the principal reasons for your confidence in the efficacy of the Harris fire protection program.

A.36 I have confidence in the efficacy of the SHNPP fire protection program because of the "defense in depth" concept that has been used in the development of the program to ensure:

- a) prevention of fire initiation through the control, separation and guarding of sources of ignition;
- b) prompt detection of fires or incipient fire conditions in areas containing safety related equipment or in areas of high combustible loading which may expose safety related equipment;
- c) effective suppression of fires to limit consequent damage and to reduce exposure to safety related equipment;
- d) confinement of fires to their areas of initiation by provision of fire barriers, spatial separation and segregation of combustibles; and
- e) separation of redundant safety related equipment to maintain operational capability under postulated fire conditions.

A rigorous Fire Hazards Analysis was conducted to verify the efficacy of the fire protection program. A SSA was subsequently performed using even more stringent criteria than the Fire Hazards Analysis. The results of the Fire Hazards Analysis and the SSA demonstrate that safe shutdown of the Plant is assured even in the event of a fire. Applicants have adopted administrative controls, fire fighting procedures, fire brigade training and measures for fire protection that supplement the fire protection design features and provide added confidence in the SHNPP fire protection program.

## Principal Engineer

## EXPERIENCE SUMMARY

Principal Mechanical Engineer with 19 years diversified experience in engineering and design of fire protection, plumbing, HVAC and waste treatment/water pollution control systems of fossil and nuclear fueled electric generating stations and industrial projects including administrative and/or technical supervision of fire protection engineers, mechanical and/or buildings engineering designers. Responsibilities included developing fire protection, plumbing and other mechanical water system designs and basic design criteria. Prepared system flow diagrams, calculations, input criteria for physical design drawings, economic analysis of equipment options, procurement specifications, purchase requisitions, bid evaluations, equipment selection studies and purchase recommendations. Supervised equipment installation, engineering coordination with other engineering disciplines, clients and authorities having jurisdiction. As senior engineer, was assigned as Lead Fire Protection Engineer and was responsible for the design of an entire nuclear power plant fire protection system/program including licensing support, manpower planning and coordination with other project areas. Prepared preliminary, final and special safety analysis reports for nuclear fueled electric generation stations.

As Principal Engineer continued as Lead Fire Protection Engineer responsible for nuclear plant fire protection systems and programs, and prepared company fire protection standards. In January of 1981 was assigned to supervise the Fire Protection Engineering group and was responsible for technical and administrative fire protection engineering operations. Supervised engineering, design and other activities on fire protection systems for all nuclear and fossil projects in Ebasco's corporate offices, responsible for the development of company fire protection technical standards and standard specifications. Ensured these activities were performed in an efficient and timely manner, in accordance with company procedures/guides to provide a high quality product.

## REPRESENTATIVE EXPERIENCE

Client	Project	Size	Fuel
Carolina Power & Light Company	Shearon Harris Nuclear Power Plant Westinghouse Pressurized Water Reactor Unit	900 MW	Nuclear
Louisiana Power & Light Company	Waterford SES Unit No. 3 Combustion Engineering Pressurized Water Reactor Unit	1165 MW	Nuclear

MARGARETA A. SERBANESCU

REPRESENTATIVE EXPERIENCE (Cont'd)

Client	Project	Size	Fuel
Washington Public Power Supply System	WPPSS Unit No. 3 Combustion Engineering Pressurized Water Reactor	1300 MW	Nuclear
Taiwan Power Company	Chin-Shan Unit Nos. 1 & 2 GE Boiling Water Reactor Units	600 MW ea	Nuclear
Carolina Power & Light Company	Shearon Harris Nuclear Power Plant Units 1 & 2 Westinghouse Pressurized Water Reactor Units	900 MW ea	Nuclear
Iowa Public Service Company	G Neal Unit No. 4	576 MW	Coal
Houston Lighting & Power Company	Allens Creek Nuclear Generating No. 1 General Electric Boiling Water Reactor Unit	1200 MW	Nuclear
	Limestone Electric Generating Station Unit Nos. 1 & 2	750 MW ea	Lignite
Orange and Rockland Utilities Inc.	Lovett Station Coal Conversion Unit Nos. 4 & 5	200 MW ea	Coal
Florida Power & Light Co.	St Lucie Power Plant Unit No. 1 and St Lucie Power Plant Unit No. 2 Combustion Engineering Pressurized Water Reactors	890 MW  890 MW	Nuclear  Nuclear

## MARGARETA A SERBANESCU

## REPRESENTATIVE EXPERIENCE (Cont'd)

Client	Project	Size	Fuel
Comision Federal de Electricidad de Mexico	Laguna Verde Power Plant Unit Nos. 1 & 2 General Electric Boiling Water Reactor Reactor	675 MW ea	Nuclear
Consolidated Edison Company of New York	Arthur Kill Unit Nos. 2 & 3	200 MW/ 300 MW Respectively	Oil to Coal Re- conversion
Knolls Atomic Power Laboratory	Knolls Facilities Modification Program	-	Nuclear
Clark Oil and Refining Corp.	Feasibility Study of Producing Gasoline from Coal	-	Synthetic
Arkansas Power & Light Co.	Coal to Medium Btu Gas	-	Synthetic
HNG Synfuels Company, Texas Inc.	The River Plant Coal to Methanol	-	Synthetic
Virginia Electric and Power Co.	Surry Unit Nos. 3 & 4 Babcock & Wilcox Pressurized Water Reactor Units	950 MW ea	Nuclear
Power Authority of the State of New York	Astoria Unit No. 6	830 MW	Oil
	Greene County Nuclear Power Plant Babcock & Wilcox Pressurized Water Reactor Unit	1300 MW	Nuclear
Electra de Viesgo, SA Spain	Santillan Nuclear Power Plant	1100 MW	Nuclear

MARGARETA A. SERBANESCU

REPRESENTATIVE EXPERIENCE (Cont'd)

Client	Project	Size	Fuel
People's Republic of China	Shiheng Power Plant	300 MW	Coal
	Huai-Nan Power Plant	600 MW	Coal
Ebasco	Nuclear Standardization Programs GE Boiling Water Reactor Unit, Combustion Engineering Pressurized Water Reactor Unit, Westinghouse Pressurized Water Reactor Unit	1200 MW	Nuclear
Ebasco	Coal-Fired Reference Plants	400 MW	Coal
		600 MW	Coal
		800 MW	Coal

EMPLOYMENT HISTORY

Ebasco Services Incorporated, New York, NY; 1978-Present

- o Principal Engineer - Supervisory Function, 1/81-Present
  - Lead Engineer 7/80-1/81
- o Senior Engineer - Lead Engineer 1/79-7/80
  - Support Engineer 7/78-12/78

Stone and Webster Engineering Corporation, New York, NY; 1973-1978

- o Engineer in Power

Hydrotechnic Corporation, New York, NY; 1969-1973

- o Mechanical Design Engineer

Spotnails, Incorporated, New York, NY; 1966-1969

- o Mechanical Draftsman - Designer

Interzoo, Caserta, Italy; 1965-1966

MARGARETA A. SERBANESCU

EDUCATION

Polytechnic Institute of Bucharest, Master of Mechanical Engineering - 1965  
Trane Educational Division, Trane Air Conditioning Clinic - Completed Course

PROFESSIONAL AFFILIATIONS

National Fire Protection Association - Member



## 2.1 SCOPE & PURPOSE

- 2.1 The purpose of this test is to qualify for insurance purposes a Protective Envelope for Redundant Class 1E Cables in Nuclear Power Plants when located in the same fire area. (A fire area is defined as that portion of a building that is encompassed by rated fire walls, ceilings and floors.) The maintenance of circuit integrity in these Class 1E safety circuits during a postulated fire is of prime importance.
- 2.2 The intent of this Test Method is to establish a protective envelope that maintains circuit integrity for safety circuits when:
- Redundant safety circuits, located in the same fire area, are exposed to a fire outside of the cable system, or
  - Redundant safety circuits, located in the same fire area, are exposed by a fire originating in an adjacent "protected-in-place" cable system, or
  - Redundant safety circuits, located in the same fire area, are subjected to mechanical impact damage as simulated by a hose stream, or other impact test.

## 3.0 ACCEPTANCE CRITERIA

ANI/MAERP Acceptance will be based on the completion and review of all of the following:

- 3.1 Successful passage of fire tests, as outlined in Section 3.4 of this test method, and submittal of necessary test documentation as prepared by a recognized testing laboratory or consultant.
- 3.2 A Quality Control/Quality Assurance Program for the system/design should be submitted for review. Complete details covering installation procedures, physical characteristics, identification methods, sample forms for third party sign-off, etc. should be included.

The QC/QA Program is considered an integral part of the acceptance process and variations between the QC/QA Program for the test and the program developed for the actual installation will not be acceptable.

- 3.3 All materials and components in the completed system, with the exception of the cable, shall be rated as non-combustible i.e., Flame Spread, Fuel Contributed, and Smoke Developed ratings of 25 or less.

Materials or components that are combustible or hazardous during the installation phase, should have a material hazard analysis performed with procedures developed for quantities on hand, storage practices, and precautions to be taken during installation.

3.4 The Cable Protective Envelope shall be exposed to the following fire endurance and hose stream tests. Test configuration and details should be submitted for review and comment prior to test.

3.4.1 Test I - Exposure Fire - The Protective Envelope shall be exposed to the standard temperature-time curve found in ASTM E-119-76 (ANSI A2.1) for a minimum of one hour. Sketch # 1 outlines a suggested test configuration.

3.4.2 Hose Stream Test - Immediately following Test I, accessible surfaces of the Protective Envelope shall be subjected to one of the following hose stream tests. The hose stream shall be applied for a minimum of 2 1/2 minutes, without de-energizing the circuits. PROPER SAFETY PRECAUTIONS SHALL BE EXERCISED. One of the following tests shall be used:

1. The stream shall be delivered through a 2 1/2 inch national standard playpipe equipped with 1 1/8 inch tip, nozzle pressure of 30 psi, located 20 feet from the system.

or

2. The stream shall be delivered through a 1 1/2 inch nozzle set at a discharge angle of 30° with a nozzle pressure of 75 psi and a minimum discharge of 75 gpm with the tip of the nozzle a maximum of 5 ft. from the system.

or

3. The stream shall be delivered through a 1 1/2 inch nozzle set at a discharge angle of 15° with a nozzle pressure of 75 psi and a minimum discharge of 75 gpm with the tip of the nozzle a maximum of 10 ft. from the system.

NOTE: #1 is the preferred test.

3.4.3 Test II - Internal Fire - For systems/designs that require heat to activate the Protective Envelope, the system shall also be subjected to Test II - Internal Fire. Sketch #2 outlines a suggested test configuration.

3.4.4 Cable Construction & Test Details

3.4.4.1 Cables shall be energized for circuit monitoring during Test Method I. For the purpose of this test method, "energized" means sufficient current to monitor failure.

- 3.4.4.2 Cable constructions shall be representative of cable used at the site. Cable tray loadings shall be in accordance with suggested test layouts.
- 3.4.4.3 In both test methods, cable tray construction shall be representative of actual site conditions, where applicable.
- 3.4.4.4 Cable system supports shall be those currently found in nuclear power plants and follow accepted installation procedures. Care should be exercised in using only supports that are necessary for the test. Supports that are used for the Protective Envelope shall be part of the final installed design.
- 3.4.4.5 Thermocouples shall be located strategically on the surface and at one foot intervals in the cable system and temperatures recorded throughout the test.
- 3.4.4.6 Fire stops or breaks, if used, shall be acceptable to American Nuclear Insurers. Failure of the fire stop or break shall not necessarily constitute a failure of the the Protective Envelope.

3.5 The tests shall be constituted a failure if any of the following occur:

- 1. Circuits fail or fault during the fire test as required in Test I or fail during the hose stream test.
- 2. Cotton waste in Test II ignites during the test period.

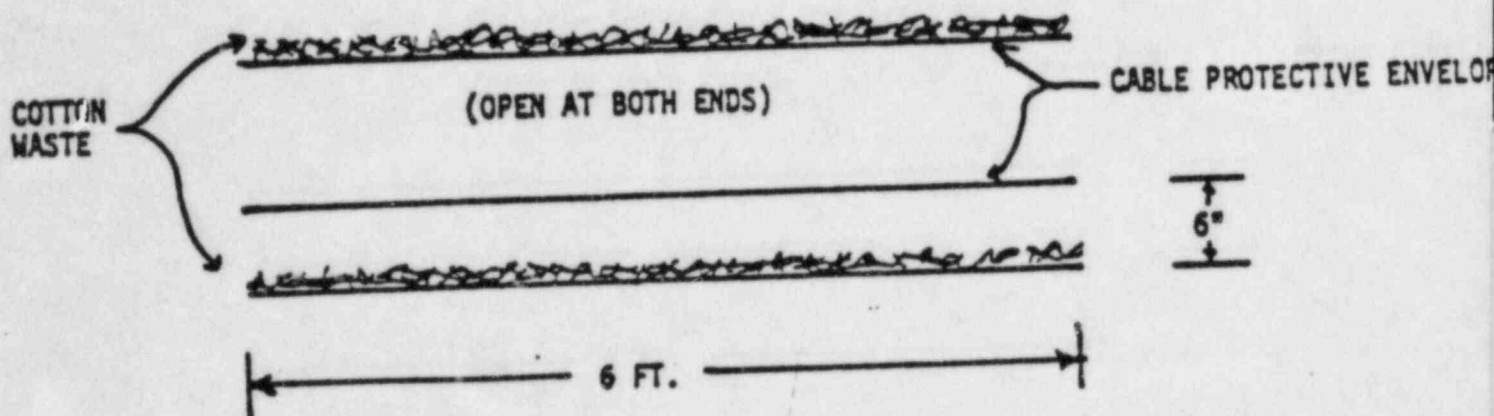
3.6 The minimum fire endurance rating acceptable for Test I shall be one hour. If longer ratings are desired, they shall be in one hour increments, such as 2 hr. and 3 hr. ratings.

#### 4.0 FINAL ACCEPTANCE

Prior to any installation at plants insured by American Nuclear Insurers, or Mutual Atomic Energy Reinsurance Pool, complete plans outlining system to be installed, location, etc. shall be submitted for review and acceptance.

JULY, 1979

SUGGESTED TEST LAYOUT - TEST METHOD 2  
INTERNAL FIRE TEST



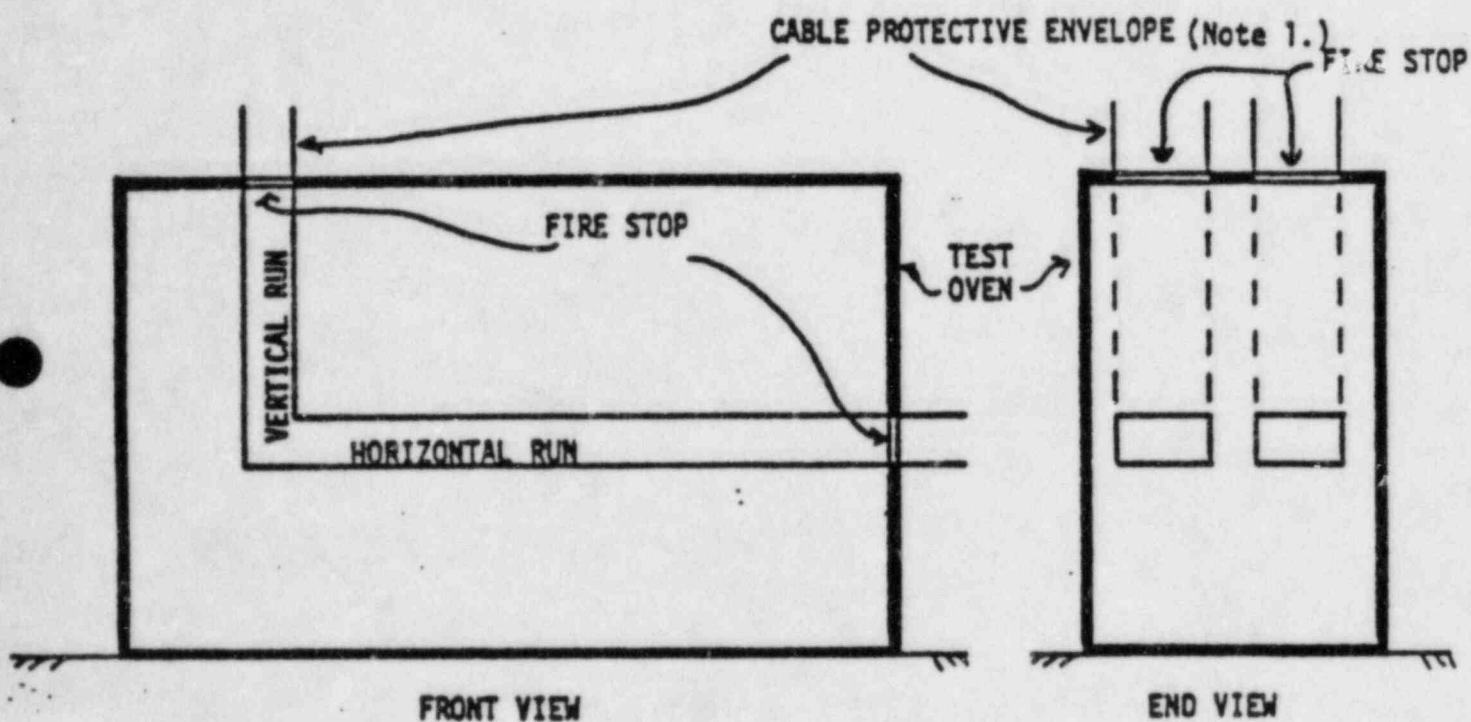
NOTE 1: COTTON WASTE SHALL BE PLACED OVER THE ENTIRE TOP SURFACE OF THE TEST SYSTEM AND A SAMPLE SYSTEM 6 INCHES BELOW THE TEST SYSTEM.

NOTE 2: THE CABLES USED IN THE TEST SHALL BE REPRESENTATIVE OF THE CABLE USED AT THE SITE. LOADINGS SHOULD BE 20% FILL WITH RANDOM LAY.

THE CABLES IN THE TRAY SHALL BE IGNITED USING THE "OIL SOAKED BURLAP" METHOD AS OUTLINED IN IEEE/ICC/WG 12-32, DATED 6/27/73, OR OTHER ACCEPTABLE "FLAME SOURCE", DEPENDING ON DESIGN AND OPERATING CONDITIONS OF THE COATING. THE FLAME SOURCE SHALL BE LOCATED AT THE MID-POINT OF THE CABLE SYSTEM. THE INTENT BEING TO PROVIDE AN IGNITION/FLAME SOURCE THAT IS DESIGNED TO LAST APPROXIMATELY 20 MINUTES AND ACTIVATE THE PROTECTIVE ENVELOPE.

OBSERVATIONS AND THERMOCOUPLE READINGS SHALL BE MAINTAINED FOR ONE HOUR FROM THE POINT OF IGNITION OF THE "FLAME SOURCE".

SUGGESTED TEST LAYOUT - TEST METHOD 1  
EXPOSURE FIRE TEST



(NO SCALE)

NOTE 1: TWO PROTECTIVE ENVELOPES TO BE TESTED. ONE LOADED TO MAXIMUM (40% DESIGN AND ONE LIGHTLY LOADED. (ONE LAYER).

SUFFICIENT CIRCUITS TO BE MONITORED TO DETECT FAILURE; CIRCUIT TO CIRCUIT, CIRCUIT TO SYSTEM, OR CIRCUIT TO GROUND.

VARIOUS TYPES OF CABLE; SUCH AS POWER, CONTROL AND INSTRUMENTATION.

CABLE SHOULD NOT EXTEND MORE THAN THREE FEET OUTSIDE THE TEST OVEN.

NOTE 2: DUE TO FURNACE DESIGN, IT MAY BE NECESSARY TO ENTER AND EXIT THE FURNACE ON THE TOP OR THE SIDE.

1 BY MR. O'NEILL:

2 Q Mrs. Serbanescu, do you have before you the  
3 document which has been identified as Applicants' Exhibit  
4 6?

5 A (Witness Serbanescu) Yes, I do.

6 Q Can you identify this document?

7 A This document is the Final Safety Analysis Report  
8 Section 951 and Appendix 95-A, Fire Protection System,  
9 with revisions of 10/10/1984 for the Shearon Harris  
10 Nuclear Power Plant.

11 Q And this is the document that is referenced in  
12 a number of places in your prefiled statement?

13 A That's correct.

14 MR. O'NEILL: Mr. Chairman, I would move that  
15 Applicant's Exhibit 6 be received into evidence.

16 MR. EDDLEMAN: I think I am going to have to ask  
17 a couple of questions before I say okay.

18 JUDGE KELLEY: All right. Go ahead.

19 VOIR DIRE EXAMINATION

20 BY MR. EDDLEMAN:

21 Q In the supplemental testimony, Mrs. Serbanescu,  
22 you describe, in answer three on pages two and three,  
23 some changes, I believe they may go over to -- Yes,  
24 they go over to page four.

25 Do you have that before you?

wrb/agb2

1 A. (Witness Serbanescu) Yes, I do.

2 Which exactly questions are you referring to?

3 Q I refer to answer three which begins toward  
4 the bottom of page two and continues to the top part of  
5 page four.

6 A. Yes.

7 Q Did Carolina Power and Light Company or you  
8 have available to you the calorific value of diesel fuel  
9 oil of 140,000 Btu's per gallon before August 9th of  
10 this year?

11 A. Would you please repeat the question?

12 Q Let me rephrase it a little bit.

13 A. Okay.

14 Q Did you know that diesel fuel had a calorific  
15 value of 140,000 Btu's per gallon or thereabouts before  
16 August 9th of this year?

17 A. Are you asking me if I have personal knowledge  
18 of this?

19 Q Did you have personal knowledge of it?

20 A. Yes, I did.

21 Q You obtained that from the standard reference  
22 that you mentioned in your testimony, did you not?

23 A. That's correct.

24 Q And do you know what the date of that reference  
25 is, when it was published?

1 A. From the top of my head I would not know.

2 Q. Okay.

3 As to the second item on page three, the calorific  
4 values per running foot of a typical loaded cable tray,  
5 the statement is made here:

6 "Generic data was previously employed  
7 because the actual cables to be used at the  
8 Shearon Harris Nuclear Power Plant had not  
9 been determined."

10 Are you aware of interrogatory responses to some  
11 of my interrogatories specifically concerning the type  
12 cable qualification for the Shearon Harris Nuclear Power  
13 Plant, have you ever seen those in connection with your  
14 work on this contention?

15 A. To be honest with you, I do not recall if I saw  
16 that. But if they are in my witness book, I could take  
17 a look at them.

18 Q. Could you look, please, to see if you have some  
19 responses that were included in a document dated April 17,  
20 1984? It concerns quite a number of contentions  
21 and I don't know if they would have given you the whole  
22 document or broken out the part that concerns -- the part  
23 concerning Contention 116 --.

24 A. "Applicants' Responses to Webls Eddleman  
25 General Interrogatories," yes, I have it in my



1 witness book.

2 Q Could you please look up the part related to  
3 the responses dated April 17, 1984?

4 A Pertaining to Contention 116, is that correct?

5 Q Yes, Ma'am.

6 A If you could refer to the interrogatory number  
7 it would help me.

8 Q All right.

9 These begin with 116-1 which has a page number 50  
10 down at the bottom on my copy. I would be willing to  
11 show you my copy if it would help, if your counsel does  
12 not object.

13 A All right. I have found on page 50 answers  
14 to interrogatories on Eddleman 116, yes.

15 It is item....?

16 Q All right.

17 What I would like you to do now, please, on page  
18 52, in approximately the middle of the page -- Do you have  
19 that page?

20 A 116-1. I have page 50.

21 Q 116-1 -- pardon me, 116-2, Item H.

22 A On page 52 I have 116-5 in the middle of the  
23 page.

24 Q I am wondering if we have the same date.

25 Do you have 116-1 on page 50?

1 A I have 116-1 on page 50.

2 Q Do you then have 116-2 on page 51?

3 A Yes, I do, 116-2 on page 51.

4 Q And then on page 52 does your copy have a  
5 continuation of the subletters e, f, g and h of 116-2?

6 A Yes.

7 Q Okay.

8 Could you please read Item H as it appears in  
9 the middle of that page?

10 A "Please identify all tests of flame  
11 spread in-between cables of type used in any  
12 of the areas referenced in your interrogatory  
13 115-F...."

14 Q Is that 116 --

15 A I beg your pardon, it is 116-5F -- "...and  
16 all other tests involving fires in such cables  
17 that have been done, to your knowledge. Please  
18 identify all documents referring to such tests  
19 for giving the methods or the results, if any,  
20 of such tests."

21 Q Okay.

22 A The Applicants' response is right here.

23 Q Right.

24 A "The Shearon Harris fire protection  
25 system, as discussed in FSAR 95-1 and 95-8 and

1 the safe shutdown analysis is designed..."

2 Q Excuse me, are you reading Answer A?

3 A I'm sorry.

4 Q I wanted to refer you to Answer H, which in my  
5 copy appears at the bottom of page 53 and continues over  
6 to page 54.

7 A Yes.

8 Q Okay.

9 A I have it.

10 Q All right.

11 A What is your question?

12 Q The second sentence that just takes up the  
13 last four words on page 53 and then continues on page 54  
14 as I read it is:

15 "It should be noted that CP&L provides  
16 specifications for Class 1E cable for the  
17 manufacturer/supplier..." and then the next sentence  
18 continues:

19 "Based on these specifications, the  
20 manufacturer/supplier provides an acceptable  
21 cable..." and it then goes on to list specifications  
22 for cable.

23 A That is correct.

24 Q Okay.

25 Now my question is -- well two questions:

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1           Did you participate in the preparation of answers  
2 to these interrogatories?

3           A     Yes, I did.

4           But you realize that the type of cable, the  
5 actual specific type of cable used at the plant -- or the  
6 calorific value for the expected type of cable used in  
7 plant was not available to us until recently.

8           Q     When was it available?

9           A     I am aware that we.... Ebasco is an organization  
10 consisting of a number of disciplines. And on a nuclear  
11 power plant you have a large number of disciplines.

12           Fire protection gets involved and coordinates  
13 information coming from various disciplines. At the time  
14 when the FSAR was written up until recently fire protection  
15 was not aware of the specific values for the -- calorific  
16 values for the actual cables used at the plant. And  
17 to the best of my knowledge the electrical departments  
18 did not have the specific information pertaining to the  
19 Shearon Harris Power Plant until recently.

20           Q     Did you state a date -- Do you know a date when  
21 that information became available to fire protection or  
22 to electrical engineering?

23           A     I would not recall it from the top of my head.

24           Q     Was it before August 9, to your recollection?

25           A     To my recollection I don't think so because

1 if it would have been we would have incorporated it or it  
2 might have been in that time frame. But the information  
3 available was not sufficient for us to perform the calculations  
4 and re-do it.

5 Q Is the calorific value per running foot of a  
6 cable for nuclear applications one of the specifications  
7 that is made for it?

8 A Could you please repeat the question?

9 Q Is the calorific value per running foot of one  
10 of these cables for nuclear applications a required value  
11 or something that is specified for the cable in the cable  
12 specification?

13 A I do not believe that in the electrical department  
14 specification they have the calorific value specified.

15 What they specify in their specifications are the  
16 cables to be in accordance with IEEE 383, which is  
17 special tests which the cables pass.

18 But the cable installation is a different subject,  
19 and only after you get the actual cable for the plant do  
20 you really know what calorific value you get for the  
21 expected cable.

22 Q I can understand that.

23 Do you know if cable was installed on-site before  
24 August 9th at the Harris plant?

25 A I believe it was, but I would like to ask

1 A (Witness Waters) Yes, there was certain cable  
2 installed on-site.

3 Q And were you with the Board and the parties on  
4 the tour that we took to the plant last May?

5 A No, I was not.

6 Q Are you familiar with the cable spreading room at  
7 the plant?

8 A To a general degree, yes.

9 Q Were you in it at any time that you could observe  
10 whether cable was installed there prior to August 9th of  
11 this year?

12 A I don't remember specifically.

13 Q Okay.

14 MR. O'NEILL: Mr. Chairman, I am going to object  
15 to this line of questioning as being somewhat frivolous.  
16 I think Mrs. Serbanescu has testified that some time this  
17 summer she received from the departments in Ebasco more  
18 specific information on the cable that is to be installed  
19 and is installed in the Harris plant, and that we updated  
20 the exhibit -- the FSAR section based on the new information.

21 Whether or not there was more specific information  
22 possibly available before August 9 is really irrelevant  
23 to anything before us now.

24 We have made an effort to make sure that this  
25 Board has the most up to date information available to us

1 at this time. And whether or not we could have made some  
2 changes on August 9 when we filed the exhibit previously  
3 is really a meaningless exercise.

4 Similarly we will concede that we did have the  
5 calorific value of diesel fuel oil on August 9 and included  
6 that in the prepared written statement of August 9 and  
7 did not make the change in the FSAR. Again, that fact  
8 is really meaningless to this testimony and I think we  
9 could move on to something more productive.

10 MR. EDDLEMAN: What I am trying to get at is  
11 whether the Applicants had the information available. I  
12 explored it with Mrs. Serbanescu and then I wanted to  
13 explore it with Mr. Waters, did they know at the site what  
14 these calorific values of these cables were. I mean those  
15 of us that saw them know there were quite a number installed.

16 I don't know what their practice is but I think  
17 it is certainly relevant to whether they could have  
18 filed information on August the 9th whether they knew  
19 those values in advance. And if they failed to communicate  
20 them to their own fire protection people it seems to me  
21 that is Applicants' problem and certainly not mine.

22 JUDGE KELLEY: How do you respond to Mr. O'Neill's  
23 point that whatever the values -- whatever the knowledge  
24 of the values may have been earlier they have been disclosed  
25 now, as I understand it?

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1 MR. EDDLEMAN: Well, I certainly am not surprised  
2 by the calorific value of diesel fuel, I know that myself.

3 JUDGE KELLEY: Okay.

4 MR. EDDLEMAN: But as to the cables, I think it  
5 is new information to me. I got -- I only received the  
6 revised Exhibits 6 and 7 this morning. They were sitting  
7 here waiting for me when I came in. I am not even sure  
8 whether I was told by Applicants' counsel that they were  
9 going to revise them; they may have but I am not certain.

10 MR. O'NEILL: Mr. Eddleman, you may recall that in  
11 the motion -- in the supplemental testimony all of this was  
12 discussed and indeed we referenced a letter of October 10  
13 where a draft form of all of these changes was submitted  
14 to the Staff and to all of the parties and you can see  
15 specifically in that draft where values were marked out  
16 and new values were inserted, and we have now retyped that  
17 information for the convenience of the parties and the  
18 Board for a clean record.

19 MR. EDDLEMAN: Mr. O'Neill, I am not sure I  
20 have received that information in the mail yet.

21 MR. O'NEILL: I could say that it was mailed  
22 on the 10th of October from Raleigh and it was referenced  
23 in the motion that we filed.

24 And certainly when I called you we discussed the  
25 fact that we were going to file this as a courtesy to make



1 sure you were aware of it.

2 JUDGE KELLEY: Let me ask a somewhat different  
3 point, Mr. Eddleman:

4 Even assuming that the information as to specific  
5 values is new to you -- or relatively new to you, is it  
6 startling, is it surprising in some sense? Or is it  
7 within the bounds of what you would have expected to see  
8 there anyway?

9 MR. EDDLEMAN: Judge, I didn't have any bounds  
10 in mind. The large jump in the instrumentation cable  
11 value is surprising. The offsetting trays of the tray  
12 filling end zone, which are Items 3 and 4, are I think  
13 significant variations from what was there before.

14 It is basically like you look at a structure and  
15 then all of a sudden all parts of it are juggled and it  
16 is put back together --

17 JUDGE KELLEY: I guess what I was expecting was  
18 -- and I don't frankly know the answer to this, but what I  
19 was expecting was that these values would be within certain  
20 NRC-prescribed parameters. Isn't that the case?

21 And if they are, so what, if they are high, low  
22 or medium?

23 MR. EDDLEMAN: Well the thing I am getting at is  
24 that if, and to the extent they had this information and  
25 didn't prefile it on August 9th, I am not going to object

1 because I think it is, you know, updating of information. But  
2 I think that the Intervenors would be entitled to the same  
3 consideration to the extent that we come up with new  
4 information, or any of us do, in updating exhibits or  
5 testimony. That's the point I am trying to nail down  
6 here.

7 JUDGE KELLEY: Well do you feel, on the basis  
8 of what we have heard -- is it your contention that we  
9 really have information here which apparently was available  
10 months and months ago that has just now surfaced?

11 MR. EDDLEMAN: Well I think I need to ask about  
12 Items 3 and 4 to find that out.

13 JUDGE KELLEY: Do it briefly and then we'll get  
14 on with it.

15 WRB#3 flws

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Take 3

1 BY MR. EDDLEMAN:

2 Q Do either of you, Mrs. Serbanescu or Mr. Waters,  
3 know when the AE regulation of the strength of seismic  
4 supports referred to in answer -- in Item 3 on the bottom of  
5 page 3 of answer of the Supplemental Serbanescu testimony,  
6 when that reevaluation was performed?

7 A (Witness Waters) I do not.

8 A (Witness Serbanescu) Mr. Eddleman, could you  
9 please give me, once more, the page number?

10 Q Yes. It's item 3 at the bottom of page 3 of  
11 your supplemental testimony, dated October 11. It states:  
12 "A reevaluation of the strength of seismic supports is  
13 verified sufficient support to allow control and  
14 instrumentation cable trays to be filled to a maximum of  
15 60 percent."

16 A No, I do not know the date.

17 Q Do you have any knowledge of whether that date was  
18 before August 9?

19 A I do not have any knowledge to that effect.

20 Q Okay. It then goes on to say, "on the other hand  
21 capacity derating requirements have established a limit of  
22 30 percent maximum fill for power cable trays." Do you know  
23 when those capacity derating requirements were first established?

24 A I'm sorry, but I do not know.

25 Q And you just don't know at all; is that right?

1 A I do not know when they were established.

2 Q Do you know when you received them?

3 A It was sometime between my prefiled testimony and  
4 the additional testimony.

5 Q All right.

6 A -- to the best of my recollection.

7 Q Okay.

8 In Item 4 -- either of you that knows the answer  
9 please answer. It says, "Adjustments have been made for  
10 actual electrical cable tray width and height. Was the width  
11 and height of the actual installed cable trays in the plant  
12 unknown before August 9 of this year?

13 A I could answer that question, Mr. Eddleman.

14 Before August 9, the consideration was that we  
15 took a calorific value for a running foot of cable tray 24  
16 inches wide filled to a depth of 4 inches. There have been  
17 adjustments made in the calorific value calculations for  
18 cables narrower or larger than 24 inches.

19 What this statement means, however, is that the  
20 new calorific value, as you can see on page 3, were calculated  
21 on a 40 percent load of all the trays, including the power  
22 cable -- even though the power cable tray in actuality is  
23 filled only to 30 percent now. Therefore, we had to make  
24 adjustments to that.

25 An equivalent of 24 inch cable tray was considered

1 and variations from that have occurred. So that's what the  
2 6 means.

3 We have found now, that there are additional cables  
4 which have been filled to the five and a quarter inch depth  
5 and that the risers have been filled to six inches. And we  
6 adjusted for this accordingly.

7 Q Okay. Now, I'm not quite sure that's the answer or  
8 an answer to the question I asked.

9 Were the actual maximum fill depths measured at  
10 the plant, those that are referred to in item 4 of that answer?

11 A These numbers were given to us by the electrical  
12 department.

13 Q Of Ebasco?

14 A Well I am Ebasco but I assume that our Ebasco people  
15 have been in contact with CP&L because we don't work by  
16 ourselves. We work together with CP&L.

17 Q Mr. Waters, let me ask you were the horizontal  
18 runs in the cable trays and the cable risers available to  
19 measured as to their depth of fill with cable before August 9,  
20 to your knowledge?

21 A (Witness Waters) Not to my knowledge. I am not  
22 aware of any measurements that were specifically done or if it  
23 was related back to this at all.

24 Q Do you know of any reason why those things couldn't  
25 have been measured before August 9 at the plant?

1 A No, except for the fact that in some areas all  
2 cables have not been installed.

3 Q Is it true that all cables have been installed now?

4 A No.

5 Q Well, I'm not going to object to the admission of  
6 the Exhibit, I just wanted to pin down that some of that  
7 information had been available.

8 JUDGE KELLEY: Okay. We have a motion to admit and  
9 I guess I would just observe that in general. It seems to  
10 me that to some extent you could pursue that sort of thing  
11 on cross. You can do it now or earlier, and it really  
12 doesn't make much difference. You've got answers to some  
13 questions along that line. But Staff has no objection to  
14 the admission of the testimony?

15 MRS. MOORE: The Staff has no objection.

16 JUDGE KELLEY: All right, the testimony is  
17 admitted.

18 MR. O'NEILL: Exhibit 6 is admitted, Mr. Chairman?

19 JUDGE KELLEY: Was that within the motion?

20 MR. O'NEILL: That's what the motion was and the  
21 admission that that be received in evidence Exhibit 6.

22 JUDGE KELLEY: Okay; yes.

23 Whereupon, FSAR, Section 5.9.1  
24 and Appendix 9.5A, were received  
25 as Exhibit 6.)

## 1 DIRECT EXAMINATION (Resumed)

2 BY MR. O'NEILL:  
XXXXXXXXXXXX3 Q Mrs. Serbanescu, do you have before you the  
4 document that has been previously identified and marked and  
5 identified as Applicant's Exhibit 7?

6 A (Witness Serbanescu) One moment please.

7 Yes, I do. It is the Safe Shutdown Analysis  
8 Summary and description of fire prevention system.9 Q Is this the same document that is referenced on  
10 a number of occasions in your testimony?

11 A Yes, it is.

12 MR. O'NEILL: Mr.Chairman, I would alert the  
13 parties that again in the interest of clarity we have gone  
14 through this document which was previously filed with the  
15 Staff. The first one on June 12, 1984. The second one on  
16 February 24, 1984. And have penned in the new --17 JUDGE KELLEY: How can that be. The first one  
18 is June and the second one is February?19 MR. O'NEILL: In the order, then, which they are  
20 before you. The top one --21 JUDGE KELLEY: All right. They are two different  
22 documents?23 MR. O'NEILL: Two different documents under this  
24 cover sheet. One is entitled Safe Shutdown Analysis Summary.  
25 On that cover page is indicated it was previously filed with

1 a letter of June 12, 1984. The second one is entitled  
2 Safe Shutdown Analysis Description. The document was  
3 previously filed with Staff on February 24, 1984.

4 These documents have been checked to insure that  
5 the combustible load now reflects new values that are in the  
6 FSAR. And so you will find, periodically, a penned-in  
7 revision which reflects those new values to be consistent  
8 with Exhibit 6.

9 JUDGE KELLEY: And these new values were first  
10 provided a week or so ago, is that right?

11 MR. O'NEILL: They were provided in the marked-up  
12 pages of the FSAR. We did not provide the values in this  
13 document until this morning but they simply are to be  
14 consistent with the values that are in the FSAR.

15 JUDGE KELLEY: But the marked-up version was when?

16 MR. O'NEILL: Was provided to everyone this morning.

17 JUDGE KELLEY: I'm not sure I'm with you. You  
18 provided this document this morning; I understand that.

19 MR. O'NEILL: That is correct.

20 JUDGE KELLEY: And when you say "marked-up FSAR"  
21 that's what you're talking about?

22 MR. O'NEILL: No, the marked-up FSAR was provided  
23 on October 10.

24 JUDGE KELLEY: That's what I wanted to know.

25 MR. O'NEILL: Correct. And I just want to make



1 sure that the record and the parties are aware that these  
2 changes were made to be consistent with the FSAR.

3 JUDGE KELLEY: Okay.

4 MR. O'NEILL: With that I would move that  
5 Applicant's Exhibit 7 be received into evidence.

6 MRS. MOORE: Excuse me, your Honor. Could I have  
7 some clarification, please? Could Mr. O'Neill repeat the  
8 title of the document which he says was admitted to the Staff  
9 on June 12, '84?

10 MR. O'NEILL: Excuse me, on what?

11 MRS. MOORE: On June 12, '84.

12 MR. O'NEILL: On June 12 we submitted a Safe  
13 Shutdown Analysis Summary by cover of letter to Mr. H. R.  
14 Denton, Director NRR by letter from Mr. A. B. Cutter, Vice-  
15 President Nuclear Licensing and Engineering Serial NLS 84-245.

16 MRS. MOORE: Thank you.

17 JUDGE KELLEY: Mr. Eddleman?

18 MR. EDDLEMAN: May I ask for clarification? Are  
19 all the revisions that have been made in these documents  
20 since they were distributed to the Staff, are they all the  
21 ones that are penned-in?

22 MR. O'NEILL: That's correct. Any revision that  
23 has been made since the documents were distributed to the  
24 Staff are penned in simply to make sure that the numbers are  
25 consistent with the changes and the revised FSAR.

1 MR. EDDLEMAN: And the revised FSAR is the Exhibit  
2 6, you mean?

3 MR. O'NEILL: That is correct.

4 MR. EDDLEMAN: Which hasn't actually been put  
5 into FSAR form, as I understand it. It's going to be; is  
6 that right?

7 MR. O'NEILL: I think we've been through this a  
8 couple times, Mr. Eddleman; that is true.

9 MR. EDDLEMAN: Well, yes, but you were referring  
10 to it as the FSAR. I just wanted to make sure that I wasn't  
11 missing something.

12 MR. O'NEILL: All right. That is correct. FSAR  
13 with revisions that have not been formally incorporated into  
14 amendments.

15 MR. EDDLEMAN: Okay.

16 No objection.

17 JUDGE KELLEY: Okay. When you say it was provided  
18 on the 10th, was that by service in the mail, or how?

19 MR. O'NEILL: It was provided by service in the  
20 mail from Raleigh to Mr. Eddleman on that date and was  
21 served in the mail to the Board, I believe.

22 MR. EDDLEMAN: Mr. O'Neill, by "it" do you mean a  
23 document dated October 10 to Mr. Denton -- if I can find the  
24 signature. From Mr. Zimmerman, serial Nos. -84-440, or do  
25 you mean another document?

1 MR. O'NEILL: The document that's referenced in  
2 our motion of October 11 and, indeed, that's the one we've  
3 been talking about. And Attachment 3 to that document  
4 contains FSAR pages that have been marked up to reflect changes.  
5 Those changes are now incorporated into Applicant's Exhibit 6.

6 MR. EDDLEMAN: Okay. I have actually received that  
7 cover letter. I'm not sure I have received the motion.

8 MR. O'NEILL: We tried to avoid this by calling the  
9 parties and let them know this was coming. But I guess it  
10 was still confusing.

11 MR. EDDLEMAN: Well, I just don't recall this  
12 particular document having been mentioned. It may have been.

13 JUDGE KELLEY: And if I were to look through this  
14 as I am now doing with my thumb, where there are changes, they  
15 are literally marked in with a pen?

16 MR. O'NEILL: That's correct.

17 JUDGE KELLEY: So that it wouldn't be too hard for  
18 me to find them the week before the hearing if I desired to?

19 MR. O'NEILL: Now, if we are talking about Applicant's  
20 Exhibit 7 --

21 JUDGE KELLEY: That's right.

22 MR. O'NEILL: -- these changes that you have marked  
23 in with a pen you now see for the first time this morning.

24 JUDGE KELLEY: I'm confused. I must say I am lost.  
25 What did you serve on the 10th of October?

1 MR. O'NEILL: On the 10th of October, it was a letter  
2 which included marked up pages of the FSAR which are now  
3 incorporated in Exhibit 6.

4 JUDGE KELLEY: Are those marked up pages the same  
5 ones that have been inserted at the appropriate place in what  
6 I hold in my hand as Exhibit 7?

7 MR. O'NEILL: What you hold in your hand as Exhibit  
8 7 is the Safe Shutdown Analysis. The Safe Shutdown Analysis  
9 refers to some combustible loads.

10 JUDGE KELLEY: Right.

11 MR. O'NEILL: Those combustible loads are found in  
12 the FSAR. So we have simply, for consistency -- I don't  
13 necessarily need to refer to those combustible loads for  
14 purposes of which we offer this exhibit. But for consistency  
15 we have made the changes in the Safe Shutdown Analysis Summary.  
16 You have not, however, seen pages with those marked-up changes  
17 before today.

18 JUDGE KELLEY: But Exhibit 6 has those changes so  
19 that if I were interested in these changes in combustible  
20 loads, and if I got my papers in the mail, I would be able to  
21 look through number 6 and I would find marked-in changes with  
22 a pen or pencil?

23 MR. O'NEILL: That is correct. If you were  
24 interested in the actual numbers, you could have looked at  
25 all of them in the document that was filed on October 10th

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1 and they were explained in the supplement testimony that was  
2 filed on October 11. And that was filed by Express mail to  
3 Mr. Eddleman and hand-served on the Board and the Staff.

4 JUDGE KELLEY: And you simply conformed those  
5 changes by putting some more -- putting the same numbers in  
6 this document number 7?

7 MR. O'NEILL: That is correct.

8 JUDGE KELLEY: For the first time this morning,  
9 but it's the same numbers?

10 MR. O'NEILL: That is correct.

11 JUDGE KELLEY: Okay. I think I understand; thank  
12 you.

13 Number 7 has been moved for admission and motion  
14 is granted.

15 (Whereupon, "Safe Shutdown  
16 Analysis Summary and Desc. Fire  
17 Protection System, was received  
18 as Applicant's Exhibit No. 7.)

19 BY MR. O'NEILL:

20 Q Mr. Waters, would you please briefly summarize your  
21 testimony for the benefit of anyone who has not had an  
22 opportunity to read it?

23 A (Witness Waters) Gladly.

24 My testimony addresses those aspects of Mr. Eddleman's  
25 Contention 116. The question of rapid response of a fire

1 brigade to a fire at the Harris plant, and the allegation that  
2 the Harris plant "fire-fighting capability for simultaneous  
3 fires is inadequate or at least unanalyzed."

4 Carolina Power and Light Power's management has  
5 fully supported and encouraged the development of an aggressive  
6 fire protection program and a properly trained fire protection  
7 staff at the Harris plant. My testimony establishes that  
8 the fire brigade is an integral part of the defense in depth  
9 approach of the Harris fire protection program. And that  
10 sufficient training, equipment, plans and procedures are  
11 provided to maximize the effectiveness of the brigade in  
12 case a fire occurs in the plant. The design features,  
13 administrative control, and fire protection procedures,  
14 which I described in my testimony, are, in my judgment,  
15 entirely adequate to provide prompt and effective response  
16 to a single fire as required by NRC regulations. And adequate,  
17 also, to respond effectively to two fires occurring simultaneously.

18 Q Mrs. Serbanescu, would you please summarize your  
19 statement?

20 A. (Witness Serbanescu) Yes. Eddleman Contention 116  
21 identifies seven allegations related to Applicant's fire  
22 protection program at the Shearon-Harris nuclear power plant.  
23 I will address the five -- the first five allegations on the  
24 following: One, availability of control and power cables for  
25 safety related equipment.

1           Two, qualification of fire values with respect to  
2 cable tray fires in establishing their fire resistance  
3 rating.

4           Three, use of fire barriers where practical.

5           Four, the adequacy of fire protection measures  
6 based on the plant's fire hazard analysis.

7           Five, the effect of a fire in a fire area or fire  
8 zone where the combustible loading is greater than 240,000  
9 btu per square foot.

10           In my testimony I provide information attesting to  
11 the adequacy of the Shearon-Harris fire protection program.  
12 The program is based on the defense indepth concept, which  
13 insures prevention of potential fire initiation from prompt  
14 protection or insipient fire conditions, effective fire  
15 suppression, confinable fires to the areas of initiation,  
16 and physical separation which insures the availability of  
17 equipment required for plant safe shutdown in case of a fire.

18           My testimony includes discussion of the fire hazards  
19 analysis and the safe shutdown analysis in case of fire.  
20 These analyses were performed in order to verify the adequacy  
21 of the fire protection program in maintaining the capability  
22 to safely shutdown the reactor and minimize the radioactive  
23 releases to the environment.

24           Q     Thank you, Mrs. Serbanescu.

25           MR. O'NEILL: Mr. Chairman, the witnesses are

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1 available for cross examination.

2 For clarity of the record, when the witnesses refer  
3 to the FSAR, they will be referring to Exhibit 6 which  
4 includes some pages that have been revised and are not yet  
5 officially FSAR amendments.

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End 3



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1 JUDGE KELLEY: Thank you.

2 It is five after ten. Why don't we break until  
3 10:15 and have a cup of coffee before we start the cross.

4 (Brief recess.)

5 JUDGE KELLEY: Back on the record.

6 At this point Mr. Eddleman will begin his  
7 cross-examination.

8 MR. EDDLEMAN: Thank you, your Honor.

9 CROSS-EXAMINATION

10 BY MR. EDDLEMAN:

11 Q I haven't said "Good morning" yet. Good morning.

12 A (Witness Serbanescu) Good morning.

13 A (Witness Waters) Good morning.

14 Q The document that was filed on October 10th  
15 that Mr. O'Neill mentioned before, that contains as its third  
16 attachment the marked-up copy of the FSAR. Does that include  
17 a couple of blueprints, to your knowledge?

18 A (Witness Servanescu) Yes, it does.

19 Q With your Counsel's supervision I would like to  
20 show you a blueprint with the number CAR-2168G-115, entitled  
21 "Fuel Handling Building - Miscellaneous Steel, Sheet Two,  
22 Unit 1 and 2."

23 JUDGE KELLEY: About where are we going to find  
24 that, Mr. Eddleman?

25 MR. EDDLEMAN: Judge, it is right in front of

1 Enclosure 3 in the NLS-34-440 stack.

2 BY MR. EDDLEMAN:

3 Q Does this also appear in Exhibit 6 or not?

4 A (Witness Serbanescu) The drawings do not appear  
5 in Exhibit 6. The package consists of more than just the  
6 FSAR.

7 WITNESS SERVANESCU: I would like to ask your  
8 Honor to defer this subject until after the first break because  
9 the package with the letter I personally left it at the hotel.  
10 I did not bring it with me since I had the updated copy of  
11 the Exhibit 6 and I know that it contains some discussions to  
12 the fire doors which have not been fire rated.

13 It enclosed two specifications pertaining to the  
14 fire doors, these drawings, and the marked-up portion of the  
15 FSAR, and I do not have that package with me. I asked that it  
16 be brought to me.

17 JUDGE KELLEY: Well, we can certainly arrange that.

18 MR. EDDLEMAN: I am perfectly agreeable to that.

19 JUDGE KELLEY: Okay.

20 MRS. MOORE: Your Honor, the Staff doesn't appear  
21 to have the drawings that Mr. Eddleman is asking questions on,  
22 and doesn't appear to have gotten them as part of the package  
23 that was submitted to us on October 10th.

24 JUDGE KELLEY: Well, let's determine that.

25 I had begun with the green book. I gather that is

1 the wrong place to begin.

2           Could Applicants' Counsel assist us in finding this  
3 material? I'm sure we have it but I don't know where it is.

4           MR. O'NEILL: Can we go off the record for a second?

5           JUDGE KELLEY: Yes.

6           Off the record.

7           (Discussion off the record.)

8           JUDGE KELLEY: Back on the record.

9           We are simply deferring some questioning until after  
10 lunch so we can have a chance to look at some documents.

11           Go ahead, Mr. Eddleman.

12           MR. EDDLEMAN: So what we have agreed to do is to  
13 defer this line of questions until after lunch, and the  
14 Applicants are going to supply everybody who doesn't have the  
15 documents with the documents, including the blueprints before  
16 lunch. And Mrs. Serbanescu, you will have a chance to get the  
17 document, too.

18           BY MR. EDDLEMAN:

19           Q           Let me refer to the descriptions of the testimony  
20 and the supplemental testimony that you gave, Mrs. Servanescu.  
21 In both cases you stated it was prepared by a group of  
22 engineers including yourself.

23           MR. O'NEILL: Excuse me, Mr. Chairman. I cannot  
24 hear Mr. Eddleman.

25           MRS. MOORE: I was just going to say the same thing.

1 MR. EDDLEMAN: I'm sorry, let me see if I can make  
2 this operate a little better.

3 How is that?

4 JUDGE KELLEY: Better.

5 BY MR. EDDLEMAN:

6 Q You described both the supplemental and the August  
7 9th testimony as having been prepared by a group of  
8 engineers including yourself. Correct?

9 A (Witness Serbanescu) That's correct.

10 Q Were the engineers working under your supervision  
11 who prepared this testimony?

12 A Some of them were under my direct supervision.  
13 Some of them were working in other departments and submitted  
14 the information to us. I looked it over and I accepted it as  
15 such.

16 Q Okay.

17 So you have reviewed everything in this?

18 A Absolutely.

19 Q Okay.

20 Now let's see....

21 MR. EDDLEMAN: Let me ask Mr. O'Neill to clarify  
22 this if he can.

23 Is the Attachment 3 of the October 10th letter, the  
24 marked-up FSAR section there, is that identical to what is in  
25 Exhibit 6?

1 WITNESS SERBANESCU: I can answer that question.

2 Yes, it is, Mr. Eddleman.

3 MR. EDDLEMAN: Okay.

4 BY MR. EDDLEMAN:

5 Q And you have Exhibit 6 with you, do you not?

6 A (Witness Serbanescu) Let me check, please.

7 Q I believe it is the green document.

8 A Yes, I do.

9 Q Okay.

10 Can you please refer to that? Unfortunately I  
11 already seem to have found a difference in it.

12 On the cover sheet of Applicants' Exhibit 6 it  
13 gives the docket number and it says "FSAR Section 9.5.1 and  
14 Appendix 9.5A (Fire Protection System)," and then down at  
15 the bottom it says in parentheses "(with Revisions of  
16 10/10/84)." Correct?

17 A That's correct.

18 Q Okay.

19 And then it starts in on the next page with  
20 Section 9.5 from the FSAR, does it not?

21 A No, it does not. Section 9.5 of the FSAR is just  
22 a heading.

23 Q I see.

24 A And Section 9.5 of the FSAR includes a number of  
25 systems. The first one referred to is Fire Protection System

1 which is FSAR Section 9.5.1. So it is a matter of heading, not  
2 a matter of discrepancy.

3 Q I was not saying there was a discrepancy.

4 But what you're saying, if I take it correctly, is  
5 that that page begins with the heading 9.5 but then immediately  
6 under that is 9.5.1, Fire Protection System, and only 9.5.1  
7 is included in this document.

8 A That is correct.

9 Q Okay.

10 A Or at least that is supposed to be.

11 Q 9.5.1?

12 A Yes.

13 Q And 9.5A?

14 A That's correct.

15 Q But no other parts of 9.5?

16 A That's correct.

17 Q Now what I'm trying to do here-- The copy that I  
18 received after the enclosure 3 cover page which says "Draft  
19 FSAR SECTION 9.5.1," the next page after that that I have  
20 is a marked-up page 9.5.1-5.

21 Will you turn in Exhibit 6 to page 9.5.1-5, please?

22 A Yes, sir, I have it.

23 Q All right.

24 MR. EDDLEMAN: I don't know how to handle this,

25 Mr. O'Neill. These pages are not identical.

1 Can we go off the record again?

2 JUDGE KELLEY: Yes. Why don't we? Let's see if we  
3 can't straighten it out.

4 Off the record.

5 (Discussion off the record.)

6 JUDGE KELLEY: Back on the record.

7 Go ahead, Mr. Eddleman.

8 BY MR. EDDLEMAN:

9 Q Mr. Waters, may I refer to your resume, please?

10 A (Witness Waters) Yes.

11 Q That is Attachment A to your testimony?

12 A It is an attachment to my testimony, yes.

13 Q Is it in fact labeled Attachment A up in the top  
14 right? It's a little faded on my copy.

15 A It is quite faded on mine, but I will accept that,  
16 yes.

17 Q Okay.

18 And this is a table from the FSAR which gives your  
19 resume, does it not?

20 A That is correct.

21 Q Okay.

22 Under professional societies you list the Society  
23 of Fire Protection Engineers. When did you become a member  
24 of that society?

25 A I believe it was in 1978.

1 Q What are the requirements for admission to the  
2 Society of Fire Protection Engineers, do you know?

3 A I don't recall them off the top of my head.

4 Q Is there any test you have to take to get into the  
5 society?

6 A No, there is not.

7 Q Okay.

8 Now let's see.... On page 3 of your prefiled  
9 testimony at-- Pardon me. Let's start on the bottom of page  
10 2, with your Answer 3.

11 You are Principal Engineer - Operations in the  
12 Harris Nuclear Operations Department. Are you stationed at  
13 the site or in the general office?

14 A I'm stationed at the site.

15 Q Okay.

16 Do your responsibilities include other things  
17 beside fire protection?

18 A Yes, they do.

19 Q Could you say about how much of your time you spend  
20 on fire protection?

21 A Approximately 50 percent.

22 Q In your Answer 4 you describe the administration  
23 of the fire protection program during the operational phase.

24 Do I take it that means you don't have anything  
25 to do with the construction of fire protection systems or



1 their quality assurance or anything like that?

2 A That is correct.

3 Q Okay.

4 And you don't address those matters in your  
5 testimony?

6 A That is correct.

7 Q Then you began at line 25 of page 2 that your  
8 position involves the supervision of the plant fire protection  
9 staff. And then you--

10 A I'm sorry, line 26 of which page?

11 Q Pardon me. Line 25 of page 2. I may have  
12 misspoken. At the very bottom of page 2.

13 A Thank you.

14 Q Do you have that?

15 A Yes.

16 Q The sentence begins describing your position,  
17 that it involves supervision of plant fire protection staff  
18 as it turns over to page 3, and then it goes on to describe  
19 what the staff do under your supervision. Correct?

20 A That is correct.

21 Q Okay.

22 Now, for example, it says they carry out the  
23 development and implementation of procedures.

24 Are the fire-fighting procedures for Harris  
25 complete?

1 A No, they are not.

2 Q Okay.

3 Have you begun work on them?

4 A Yes, we have.

5 Q When did you begin that work?

6 A We began that work approximately two years ago.

7 Q And when do you anticipate completion, or do you  
8 know?

9 A We anticipate completion prior to loading fuel and  
10 licensing of the plant.

11 Q Do you have a date for that completion?

12 A No, I do not.

13 Q Okay.

14 Do you know what the-- Well, you say loading fuel  
15 and licensing. Do you know what the fuel load date is?

16 A The projected fuel load date at this moment is  
17 June of 1985.

18 Q To your knowledge that has not been revised yet?

19 A To my knowledge it has not been revised.

20 Q Okay.

21 Then the next item that your staff performs is  
22 periodic tests of installed fire protection equipment.

23 Is testing going on now?

24 A It is.

25 Q And are the tests described in the FSAR, are they

1 in Exhibit 6?

2 A I believe the type of tests that are required to  
3 be performed are in the FSAR, also as required in the plant  
4 technical specifications.

5 Q Are the plant tech specs complete?

6 A They have been submitted as proposed technical  
7 specifications.

8 Q Okay.

9 And these have not yet been approved by the NRC?

10 A That is correct.

11 Q Okay.

12 Are you responsible for verifying that the tests  
13 are performed at the proper periods?

14 A That is correct.

15 Q Have you had any problems with it so far?

16 A No, we have not.

17 Q Okay.

18 Approximately how many tests have been performed,  
19 if you know?

20 A I don't know an exact number. I cannot give you  
21 an exact number.

22 Q How many people are assigned to doing these tests?  
23 Is it a large number of people?

24 A Our Fire Protection staff consists of a Senior  
25 Specialist, a Specialist, and six Technical Aides.

1 Q And is that the whole staff that carries out all  
2 these duties, or is that just the testing staff?

3 A That is the whole staff that carries out these  
4 duties.

5 Q That is eight persons other than yourself?

6 A That is correct.

7 Q Okay.

8 Do you know how much time your staff spends on  
9 these tests? I mean, you know, is it one person full-time  
10 equivalent or two people, or half a person? Do you have any  
11 idea?

12 A At this time the testing load is not as heavy as  
13 it will be when the plant goes into operation. The tests that  
14 we are performing are on the areas that have been turned over  
15 to the Operations Department.

16 At the time that we go into operation it will  
17 involve all of the six people, specifically the Technical  
18 Aides with supervision from the Specialist and the Senior  
19 Specialist.

20 Q Okay.

21 The next area is training of fire brigade members.  
22 Is that training on-going now?

23 A Training has begun on the fire brigade training.

24 Q When did it begin?

25 A I began -- I believe it was June of 1984.

1 Q And I take it that that will have to continue as  
2 long as there is a plant. There will always be training?

3 A Yes.

4 Q And you are in charge of supervising this training?

5 A Supervising the individuals who are performing  
6 the training, yes.

7 Q Okay.

8 Which individuals on your staff actually carry out  
9 this training?

10 A The Fire Protection staff.

End 4

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wrb/agbl

1 Q All of them do?

2 A All of them except for now the specialists fire  
3 protection.

4 Q Are these people all trained in instructional  
5 techniques?

6 A Yes they are.

7 Q The next area is frequent walkdowns of plant  
8 areas.

9 Is there a required frequency for these walkdowns,  
10 something specified in your procedures or rules?

11 A Nothing specific except for specific administrative  
12 instructions which I would give to the individuals to walk  
13 the plant areas down as necessary during their shifts.

14 Q And you would determine that on a daily basis,  
15 a weekly basis?

16 A I would say periodic. I would not say whether  
17 it would be daily or weekly.

18 Q Well what sort of frequency of walkdowns are we  
19 talking about?

20 A At least twice per shift.

21 Q And do these people have specific checklists  
22 of things they are supposed to look at when they walkdown  
23 the plant?

24 A They will have, yes.

25 Q They don't have now or --

1 A Not specifically at this point in time because  
2 of the construction status of the plant.

3 Q Okay.

4 And do you have a schedule for when those would  
5 be prepared?

6 A Yes, they will be prepared toward the time that  
7 sufficient numbers of systems are turned over to us that  
8 we will be engaged in that full-time activity.

9 Q Would that mean before the time that you would be  
10 engaged in full-time activity you will prepare these  
11 check lists?

12 A Yes.

13 Q Okay.

14 What sort of fire protection concerns are these  
15 walkdowns intended to detect at present?

16 A At present we are doing housekeeping inspections  
17 and we are calling out areas where we find that the  
18 housekeeping does not meet with the standards for  
19 housekeeping that we have established.

20 You are asking at the present time --

21 Q Yes, sir.

22 A -- what are we doing?

23 Q Yes.

24 A Housekeeping inspections, as I mentioned. We are  
25 also doing testing on installed fire protection equipment

1 such as detection systems, water suppression systems in  
2 plant buildings that have been turned over to us.

3 We are also engaged in working with the startup  
4 and construction organization in testing equipment as it  
5 is prepared to be turned over to our organization for  
6 testing.

7 Q Do the latter two things: testing equipment and  
8 working with the startup organization, do they come under  
9 performance of tests or are they really part of the walkdown  
10 section of your responsibilities?

11 A I would say they are part of the transitional  
12 aspect between the construction status of the plant and the  
13 operational status.

14 Q Okay.

15 The last area is interface with insurance carriers,  
16 NRC inspectors and company auditors during inspections.

17 Do you ever have unannounced inspections of  
18 your fire protection?

19 A I do not believe that we have had an unannounced  
20 inspection to date at the Harris plant on the operations  
21 fire protection program. I am not aware of any.

22 Q Okay.

23 Are any unannounced inspections part of the  
24 inspection program that you would be subject to if the  
25 plant were to go into operations?



wrb/agb4

1 A It is my understanding that we would be subject  
2 to unannounced inspections, yes.

3 Q Are those specified in the rules of the NRC or  
4 the insurance carriers or the company auditors?

5 A I believe that is in the NRC's charter, yes.

6 Q Okay.

7 Do you know if the company auditors might carry  
8 out unannounced inspections on fire protection?

9 A I do not know.

10 Q Okay.

11 Now you then describe your experience in nuclear  
12 plant fire protection programs, do you not?

13 A Yes, I do.

14 Q Okay.

15 A You are referring to page three still?

16 Q Yes, sir, right after the description of your  
17 Staff's work.

18 Was your work on both the Robinson and Brunswick  
19 plants at the same time, or did you shift back and forth  
20 between the two plants?

21 A That was concurrently.

22 Q Concurrently.

23 Were you visiting the sites in most of this work  
24 or did you do it from Raleigh?

25 A It was a combination of work in the Raleigh office

1 and visiting the Brunswick and the Robinson sites.

2 Q Okay.

3 And this is concerned with responses to Branch  
4 Technical Position 9.5-1. Now that is also known as ETP  
5 9.5-1, is it not?

6 A Yes and specifically Appendix A.

7 Q Now Mrs. Serbanescu, if I may ask you at this  
8 point, your answer six on page five, do you have that with  
9 you?

10 A (Witness Serbanescu) My original --

11 Q Your original testimony of August 9.

12 A Page five.

13 Yes.

14 Q This says that 10 CFR Section 50.48 and Appendix  
15 R to Part 50 became effective in February 1981 and NUREG  
16 0800, which included BTP CMEB 9.5-1, was issued in July  
17 1981, does it not?

18 A That's correct.

19 Q Okay.

20 Is this BTP CMEB 9.5-1 the same one that you are  
21 referring to, Mr. Waters?

22 A (Witness Waters) Yes, with the update of July  
23 1981. I believe that is an update to the earlier position.  
24 APCSB 9.5-1, Appendix A, that was promulgated in 1976.

25 Q Now was that also a Branch Technical Position?

1 MR. O'NEILL: Is that your question, Mr. Eddleman?

2 MR. EDDLEMAN: Yes.

3 MR. O'NEILL: What is the antecedent for "was  
4 that?"

5 MR. EDDLEMAN: I didn't catch the letters he gave  
6 but he mentioned some letters that are different than CMEB  
7 9.5-1.

8 WITNESS WATERS: I believe that is Auxiliary  
9 Power and Control Systems Branch, pardon me if I have that  
10 wrong; APCSB, if I remember correctly. That was the branch  
11 that generated the Branch Technical Position in the 1976  
12 time frame. Later the branch was changed to CMEB, Chemical  
13 Engineering Branch in a later time frame.

14 BY MR. EDDLEMAN:

15 Q Okay.

16 A (Witness Waters) As I understand it, they  
17 reissues the Branch Technical Position.

18 I would have to ask for help from the NRC if  
19 my memory does not serve me correctly.

20 Q The CMEB of -- Branch Technical Position CMEB  
21 9.5-1 of 1981 is a revision to the earlier one, is that  
22 correct?

23 A I do not know.

24 Q Do you know, Mrs. Serbanescu?

25 A (Witness Serbanescu) Yes, I do. NRC Branch

1 Technical Position CMEB 9.5-1, Guidelines on Fire Protection  
2 for Nuclear Power Plants dated July '81 is a revision and  
3 it is more stringent than all the previous ones.

4 Q Okay. But it is a revision of that APCSB 9.5-1?

5 A Yes, it is.

6 Q Okay.

7 So I take it, Mr. Waters, that you were working  
8 with the Robinson and Brunswick nuclear plants under APCSB  
9 Branch Technical Position 9.5-1, is that correct?

10 A (Witness Waters) Yes, that is correct.

11 Q Okay.

12 And then at the H.B. Robinson plant from June of  
13 '81 to June of '82 from July when the CMEB 9.5-1 was  
14 issued you would have been working with that, would you not?

15 A We would have been working with that as we had  
16 committed to in any correspondence between Carolina Power  
17 and Light Company and the Nuclear Regulatory Commission,  
18 that or Appendix R or similar fire protection matters. I  
19 don't remember the specific commitments at this point in  
20 time that were made as to which documents.

21 Q Didn't CP&L seek a large number of exceptions  
22 or exemptions or deviations from the requirements of  
23 fire protection for the Brunswick plant in the period from  
24 '76 to '79?

25 MR. O'NEILL: Objection. The question goes to

1 the fire protection program at Brunswick and Robinson and  
2 is not relevant to the testimony offered here today.

3 If Mr. Eddleman desires to ask some questions about  
4 Mr. Waters' qualifications, that's one thing. But these  
5 questions have gone beyond his qualifications to the fire  
6 protection systems at other CP&L plants and do not have  
7 anything to do with the issues before the Board with respect  
8 to the Harris plant.

9 MR. EDDLEMAN: Mr. Chairman, he says that this is  
10 how he gained his familiarity with working knowledge of  
11 nuclear plant fire protection programs in responding to  
12 these things. I think if the responses were requests for  
13 exemptions, that's relevant.

14 JUDGE KELLEY: The Board disagrees, The specifics  
15 of the programs at those plants are not sufficiently  
16 relevant to be pursued in this case. We sustain the  
17 objection.

18 MR. EDDLEMAN: You do not have to note exceptions  
19 on the record here, do you?

20 JUDGE KELLEY: No.

21 MR. EDDLEMAN: Okay.

22 BY MR. EDDLEMAN:

23 Q You say your responsibilities were similiar at  
24 Robinson to those that you presently hold at Harris --  
25 I'm talking about Robinson from June of '81 to June of '83

1 there on page three of your testimony, Mr. Waters.

2 A (Witness Waters) That is correct.

3 Q Okay.

4 In your work with the Brunswick and Robinson  
5 plants earlier had you been familiar with fire protection  
6 engineering before you took up that position?

7 A No.

8 Q So you basically learned that on the job, can we  
9 say?

10 A Yes.

11 Q Okay.

12 And through the responses to Branch Technical  
13 Position APCSB 9.5-1?

14 A Is that your question?

15 Q Yes.

16 A Yes.

17 Q Okay.

18 You stated in your summary that your testimony  
19 addresses the question of rapid response to a fire.

20 Where does it address that?

21 A That is covered on page 10.

22 Q Yes, sir.

23 Are you referring to answer 19 there?

24 A I'm sorry. Let me back up one moment.

25 Let me refer you to page five.

1 Q Yes, sir.

2 A Line nine, starting with the response to question  
3 seven.

4 Q All right.

5 It says:

6 "A fire brigade response time of  
7 approximately five to 15 minutes is expected  
8 for most fire events within the power block."

9 Who expects that, sir?

10 A I expect that.

11 Q Anybody else?

12 A And my staff.

13 Q Okay.

14 Now what do you mean by "most fire events" there?

15 A This is done on -- it is hard to quantify that  
16 number specifically, depending upon the position of people  
17 going about their normal duties in the plant that serve  
18 on the fire brigade. Because of the size of the power block  
19 that we are talking about, we would expect that they would  
20 not be so far away that they could not respond to a fire  
21 alarm being sounded and be able to get dressed out in their  
22 protective equipment and get to the fire in a longer time  
23 than 15 minutes.

24 But I have to allow for the fact that in some condition  
25 at some point in time it may exceed that time frame.

1 Q Okay. But your testimony is that that is what  
2 you expect and your staff expects for most fire events  
3 within the power block?

4 A That is correct.

5 Q And the process, as I understand it, is that  
6 first people have to be aware that there is an alarm. Then  
7 they need to go get dressed out in their equipment and then  
8 they need to get to the area where the fire is, is that  
9 correct?

10 A That is correct.

11 Q Now you describe in the next sentence some factors  
12 including those and others that the response time is  
13 dependent on and you say it may vary somewhat from the  
14 above numbers, correct?

15 A That is correct.

16 Q So even for most of the fire events for which  
17 you expect five to 15 minute response, you say there may  
18 be some variations from those numbers?

19 A That is correct. It is difficult to quantify.

20 Q All right.

21 You state at the end of that answer that the  
22 training supplemented by fire drills would serve to keep  
23 the -- will serve to keep the brigade response time to  
24 a minimum.

25 How does the training serve to keep the response



1 time lower?

2 A Training -- Let me give an example.

3 Training of the fire brigade member as to how to  
4 quickly don his protective equipment, to don his full face  
5 breathing apparatus and to do that in such a manner that he  
6 does not waste any motion or any time in doing that part  
7 of what he needs to do to respond and get to the fire.

8 Q So it is actually practice at rapidly and  
9 efficiently putting on the equipment?

10 A That is part of it, yes.

11 Q Okay.

12 A -- as an example.

13 Q All right.

14 The fire drills themselves would assess the  
15 effective response time?

16 A That is correct.

17 Q What proportion of those fire drills are  
18 unannounced?

19 A I believe it is once per quarter we have an  
20 unannounced fire drill.

21 Q That is contained somewhere else?

22 A I would have to verify that. I don't believe I  
23 cover that in my testimony specifically.

24  
25

WRB/pp 1

Take 6

1 Q Perhaps answer 10 on page 6?

2 A All right, here we are. Answer 10 on page 6. "At  
3 least one drill per year will be unannounced for each shift  
4 brigade and at least one drill per year will be conducted on  
5 the backshift for each shift brigade.

6 Q So it is one a year instead of one a quarter?

7 A For each shift brigade.

8 Q Okay. And how many shift brigades are there?

9 A There are six.

10 Q One for each shift?

11 A Yes. That was my reference for at least once per  
12 quarter.

13 Q Okay.

14 So in other words, each shift would get one once  
15 per year?

16 A That is correct.

17 Q And since there are six shifts that would be more --  
18 it would be six drills per year which is more than one a quarter?

19 A That is correct.

20 Q As long as we're on this topic, what does "backshift"  
21 mean in that answer 10?

22 A That means that at some time other than on a shift  
23 that is present during the daytime 8 o'clock to 4 o'clock,  
24 approximate timeframe, this would be midnight to 8, for example.

25 Q Okay. So it would be on one of the other shifts

1 instead of the kind of normal business hour shift?

2 A That is correct.

3 Q It's true, isn't it, that virtually all fires are  
4 unannounced?

5 A Yes.

6 Q And do you have any idea from experience of power  
7 plants, to your knowledge, what proportion of fires occur on  
8 the day shift?

9 A No, I do not. I don't have a specific number for  
10 that.

11 Q Let me continue just a little bit with your answer  
12 10 here. It goes on to the next paragraph that says, "Once  
13 every three years an unannounced drill will be critiqued by  
14 qualified individuals independent of Applicant and Staff."  
15 Does that mean just one of the drills in three years, or  
16 does it mean one per shift?

17 A No, that is one drill in that three-year timeframe.  
18 That is an independent review.

19 Q Would any such review be required before startup,  
20 assuming the plant were to operate?

21 A I'm not aware of any specific requirement for that.

22 Q And if it's not required would it probably not be  
23 done?

24 A An unannounced drill within the context of this  
25 program?

1 Q Right. Being produced by independent outsiders.

2 A I don't have a specific answer for that.

3 Q Okay. Who chooses these individuals, or who would  
4 choose the individuals who performed the critique?

5 A That would be up to me and the fire protection  
6 staff in consultation with our plant management and others  
7 within the company that perform fire protection reviews.

8 Q Would the others include anybody from QA?

9 A Yes, it could.

10 Q But you would basically choose the independent  
11 critiquer?

12 A We could, yes.

13 Q May we turn back to page 5, please, and your  
14 response to question 8 as to the basis for your assumptions  
15 on response time is that they're based on the experience of  
16 the Harris plant's fire protection staff; correct?

17 A That is correct.

18 Q Is that the only basis?

19 A Yes, it is.

20 Q Okay. When you describe the fire suppression  
21 experience as totalling 30 years, is that 30 person years?

22 A Yes, it is.

23 Q Of that 30 person years, how much is power plant  
24 experience?

25 A I would say that it is approximately -- an it's an

1 approximate number -- about one-third.

2 Q Okay.

3 And is all the power plant experience nuclear?

4 A I believe it is, yes.

5 Q Do you perform any of the training for fire brigade  
6 yourself?

7 A Myself, personally?

8 Q Yes.

9 A No, I do not.

10 Q How do you supervise this training?

11 A I supervise the staff and I'm responsible for  
12 hiring staff. I'm responsible for reviewing the qualifications  
13 and on a continuing basis of the staff that I have.

14 Q And did you complete that sentence?

15 A Yes.

16 Q Okay.

17 Now, I want to turn to another area here in a  
18 moment.

19 You describe in your answer 6 on pages 3 and 4 the  
20 concept of "defense indepth" in which you say the Harris  
21 plant response to fire events is based, do you not?

22 A Yes, on page 3925.

23 Q And then that answer continues over on page 4,  
24 doesn't it?

25 A That is correct.

1 Q Okay.

2 Now, when you describe the fire areas as "self-  
3 contained spaces" all of these spaces have some manner of  
4 entryway to them, do they not?

5 A Yes, they do.

6 Q Okay.

7 Are all of them totally enclosed by fire barriers?

8 A The definition of a fire area is it is enclosed  
9 with a fire barrier, yes.

10 Q Well, isn't it true that the specifications allow  
11 for deviations when the company requests a deviation from  
12 having to have a fire barrier around an entire and make  
13 some demonstration which the staff might accept, but you  
14 don't have to have a fire barrier there?

15 A I believe there is an exception and exemption  
16 process that is allowed for discussions of that purpose, yes.

17 Q Do you have anything to do with deciding where  
18 exemptions might be solved or preparing arguments about  
19 exemptions or documents concerning exemptions for the NRC's  
20 review?

21 A Not as a lead responsibility, no.

22 Q Would perhaps Mrs. Serbanescu or her staff ask your  
23 staff or you for information to support these requests?

24 A They could.

25 Q Have they?

1           A.    I can't remember any specific instances.  I believe  
2 they have but I can't draw out a specific time at which they  
3 might have.

4           Q    Can you remember any specific instances of that?

5           A.    No.

6           Q    Okay.

7                    You then go on to say that "all penetrations through  
8 a fire barrier will be sealed by tested assemblies having  
9 a commensurate rating as that required of the barrier."

10                   Does that mean that the assembly has to pass a  
11 test that would give it the same fire rating as the barrier?

12           A.    It would have to pass a test that would give it  
13 the same fire rating as required by the barrier.

14           Q    Okay.

15                   Are you aware of any deviations or exemptions from  
16 that in the plant at this time?

17           A.    As I stated in my correction to my testimony as I have  
18 introduced it earlier with the technical exceptions outlined  
19 by Mrs. Serbanescu and her supplemental testimony of October  
20 11, there are some exceptions, yes.

21           Q    Okay.  And that's in her testimony?

22           A.    Yes.

23           Q    You then -- well it says, "will be sealed."  I take  
24 it that those seals are not all in place yet; is that correct?

25           A.    That is correct.

1 Q Do you have any idea when all those seals will be  
2 completed, is there a schedule for it?

3 A I do not know that schedule.

4 Q Okay. It then says, "Fire areas will be equipped  
5 with detectors." I take it that also means the detectors  
6 aren't all in place yet?

7 A I believe that's correct, yes.

8 Q Okay. Do you know of any schedule for completing  
9 the installation of the detectors?

10 A I do not.

11 Q Okay. It then says, "To provide early warning of  
12 fires." How fast a warning do you assume in your analysis  
13 of response to a fire?

14 A I don't give you a specific number. I believe it  
15 might be covered to some degree in Mrs. Serbanescu's  
16 testimony of August 9 in which she discusses the various types  
17 of detection systems and detectors that are used. If I  
18 might make a generalization, I would say in a matter of a  
19 minute or less. That's a general number that I would refer to  
20 as early detection.

21 Q That's what you think it is?

22 A That is a general number I would not refer to that --  
23 I would refer to technical details that would discuss all of  
24 the various things that have to happen such as temperature rise  
25 getting up to a certain point, how long that would take under



1 certain fire conditions, whether it was a large fire --you  
2 would expect a more rapid temperature rise-- products of  
3 combustion, things of this nature. Given that there was a  
4 fire sufficient to set off a detector, I think in terms of  
5 a minute. But this is without going into any technical  
6 detail or quantification of all of the things that might go  
7 into that actual time at which a detector would go off.

8 Q Okay, but the areas that you just discussed would  
9 be things that you need to check to know what the actual time  
10 is, wouldn't they?

11 A That would be one part of it, yes.

12 Q And there would be other things beyond those then?

13 A Yes, consideration of the fire itself.

14 Q Now, where do the detectors provide warning?

15 A They provide warning in the main control room.

16 Q Okay. Do they actually have alarms, sirens, or bells,  
17 something in the area where the fire is too?

18 A Yes. In many instances you have the local alarm bell,  
19 you have the local panel, which shows that there is a fire in  
20 the area the detector has gone off.

21 Q Let me ask you -- because I may want to come back to  
22 this later -- are you familiar with the markup of Section 9.5.1  
23 and 9.5A of the FSAR that was contained in the October 10, 1984  
24 filing from CP&L?

25 A Are you speaking of Exhibit 6?

1 Q Well, I understand that Exhibit 6 is a typed version  
2 of the markup. I'm asking you, did you have anything to do  
3 with that markup that was filed on October 10th?

4 A I did not specifically have anything to do with the  
5 information that was contained in the markup. I reviewed the  
6 markup from an operations perspective but I did not generate  
7 any of the information that went in there.

8 Q You reviewed it from an operations perspective.  
9 When did you do that?

10 A I believe it was several days prior to the filing.

11 Q Okay. Sometime a few days before October 10?

12 A Yes.

13 Q And how much time did it take, do you recall?

14 A I don't recall.

15 Q Was it more than a day?

16 A No, it was not.

17 Q Okay. Could you get access to a copy of that filing  
18 right after lunch, do you think?

19 A Yes.

20 Q Okay. Please do so, if you can.

21 Now then, in your discussion of "defense indepth",  
22 after you talk about the detectors and the warning, and then  
23 you mention suppression systems and you say that, the detection  
24 and suppression systems are discussed in Mrs. Serbanescu's  
25 testimony, correct?

1 A. That is correct.

2 Q. Okay. And then you go on to discuss in a good deal  
3 more detail the fire brigade, which is your responsibility,  
4 correct?

5 A. That is correct.

6 Q. Okay.

7 It says that the brigade utilized installed manual  
8 equipment such as fire hose stations and fire extinguishers  
9 as the primary response to a fire in each fire area.

10 Are the locations of the fire extinguishers always  
11 close to the access to an area or would they have to go into  
12 an area to get ahold of them?

13 A. There are a number of fire extinguishers located  
14 throughout the plant and fire extinguishers that would be  
15 required in the area could be accessible from areas outside  
16 the area in which a fire might be contained close by.

17 Q. So in other words, even if they could not get to  
18 the extinguisher within the area, they could get one from  
19 somewhere else nearby, is that the idea?

20 A. Yes.

21 Q. Now if they had to go somewhere else to get it  
22 they'd have to first show up at the area and determine they  
23 couldn't get to the extinguisher there and then go back to  
24 get the other one, would they not?

25 A. Not necessarily.

1 Q Will you explain?

2 A They would know from their training in the area  
3 they would not expect to go inside the area to get a fire  
4 extinguisher necessarily, first off.

5 Q Okay.

6 A As they come, they might carry a fire extinguisher  
7 with them as they are proceeding to the scene of the fire.

8 Q Okay.

9 A Part of these types of things are covered in the  
10 training and drills that we would conduct for the fire  
11 brigade members.

12 Q Now, the fire hose stations, are they located in  
13 each fire area?

14 A There are numerous fire hose stations located  
15 throughout the plant. And I believe I say in another portion  
16 of my testimony that we can reach each fire area with two  
17 effective hose streams.

18 Q Would both of those come from within the fire area  
19 or would both be from outside or would it vary?

20 A It would vary.

21 Q Okay.

22 When the hose stream had to be directed in from  
23 outside you would have to have access through the fire  
24 barriers around the area, wouldn't you?

25 A Yes.

WRB/pp 12

1 Q Okay.

2 You then mentioned design features to insure complete  
3 extinguishment of even deep-seated fire such as those that  
4 can arise from concentrated cable tray fires.

5 I don't recall in your testimony if you described  
6 these design features in any more detail, what design  
7 features are used in the plant or are intended to insure  
8 extinguishment of cable fires?

9 A Could I clarify your question? Are you questioning  
10 the design features only?

11 Q I'm asking you what they are. Does that clarify it?

12 A To extinguish cable fires?

13 Q Yes, sir. That's the example you give there, isn't  
14 it?

15 A Yes. Fire suppression systems, sprinkler systems.

16 End 6

17 7 fls.

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1 Q Those are the design features?

2 A Yes.

3 Q There is not any special cable design to extinguish  
4 the fire?

5 A To extinguish a fire?

6 Q Yes.

7 A A special cable design?

8 Q Yes.

9 A No.

10 Q Those design features simply refer to the other  
11 fire protection systems in the area?

12 A That's correct.

13 Q The administrative controls that you mention after  
14 that, are these controls that your staff puts together?

15 A That is correct.

16 Q Are you-all in charge of enforcing them?

17 A We are in charge of establishing the programs and  
18 reviewing the adequacy of the programs.

19 There are other procedures which certain other  
20 plant groups may have which implement those requirements.

21 Q Okay.

22 Would your staff or you review the implementation  
23 by these other people, or check on it?

24 A Yes, we would.

25 Q And would that be continuous or periodic checking?

1           A           It would be a continuous checking, as these a.e  
2 promulgated and as they are changed.

3           Q           Okay.

4                       And the success of that activity would depend on  
5 the operations management of the plant, would it not?

6           A           Yes.

7           Q           Okay.

8                       Then you mentioned that prior to commercial  
9 operation you will prepare a-- Well, a fire plan will be  
10 prepared for each area. Who will prepare those plans?

11          A           Toward the bottom of the page?

12          Q           Yes, continuing down the next sentence.

13          A           All right.

14                       My staff is preparing those plans at the present  
15 time.

16          Q           Again I gather that they have not been all  
17 completed.

18          A           That's correct.

19          Q           And you just plan to get them done some time prior  
20 to commercial operation. Is that it?

21          A           We plan to have them done as expeditiously as  
22 possible, and it requires design information that we are in  
23 the process of gathering. It takes a certain amount of time  
24 to write those. We are in the process of doing that, yes.

25          Q           But you don't have a specific date by which you

1 plan to have all these completed, do you?

2 A I do not have the specific date at this time, no.

3 Q Okay.

4 JUDGE KELLEY: Can we take ten minutes at this  
5 point?

6 MR. EDDLEMAN: Sure.

7 JUDGE KELLEY: All right, let's take ten minutes.

8 (Brief recess.)

9 JUDGE KELLEY: Back on the record.

10 Mr. Eddleman, you may resume your  
11 cross-examination.

12 MR. EDDLEMAN: Thank you.

13 BY MR. EDDLEMAN:

14 Q - Mr. Waters, I believe we were on page 4 of your  
15 prefiled testimony.

16 A (Witness Waters) Yes.

17 Q At the last sentence on the bottom of that page  
18 it says some things that a pre-fire plan should provide for  
19 the shift foreman in the control room.

20 Will the shift foreman have copies of all those  
21 plans?

22 A Yes, he will.

23 Q Okay.

24 How would they be identified? Would they be  
25 identified by area?

xzxzx



1           A       Yes, they will.

2           Q       In other words, if an alarm happens-- Does the  
3 alarm in the control room indicate which fire area?

4           A       Not in the control room, no, not the specific  
5 alarm on the enunciator panel.

6                    We will have an information system in the control  
7 room that will provide the location of the fire, the fire  
8 area, and other such pertinent information that is gained from  
9 the detection system that is out in the plant area.

10                   Once he receives the fire alarm enunciator, he will  
11 go to that and call up the necessary information to tell him  
12 exactly where the fire is located.

13          Q       Okay.

14                   That information system is a computer?

15          A       It is a computerized system, yes.

16          Q       Is it redundant Class 1-E?

17          A       No, it is not.

18                   I might clarify that there is a panel right outside  
19 the control room that the operator can go to to verify what  
20 kind of fire conditions he has, which is a main fire detection  
21 control panel, and he can find the information on that in  
22 case -- in the unlikely event the computer system would be  
23 down.

24          Q       Would the operator have to go through some kind  
25 of security checkpoint to get out of the control room to look

1 at that panel?

2 A I cannot answer that for sure. I don't believe so.

3 Q So that the operator could go out without going  
4 through security.

5 Do you know if people are allowed to get into the  
6 control room without going past the security checkpoint?

7 A They are not allowed to get into the control room  
8 without going through a security door.

9 Q Well, is the panel that we're talking about here,  
10 that main fire control panel, is it outside that security  
11 door, do you know?

12 A I am not familiar enough with the security doors  
13 and their location in there to answer that specifically at  
14 this point in time. I would have to refer to other material.

15 Q Okay.

16 Finally, it states that this plan should provide  
17 some guidance for preventing a fire from spreading to adjacent  
18 areas. Does that mean adjacent fire areas?

19 A Certainly that would be part of the consideration  
20 that we would work into the pre-fire plan even though we do  
21 not anticipate that that would occur.

22 Q Okay.

23 Fighting a fire in a given area, one might have to  
24 open access to a nearby area, might one not?

25 A Definitely. Or to gain access to the fire area in

1 question.

2 Q And would that be one possible path of spread for  
3 a fire, the opened access?

4 A It's possible but not likely, depending on the  
5 knowledge that we would have through the pre-fire plans and  
6 the protection system information. That would give us an  
7 idea of the location of the fire within the fire area.

8 Q Is that detection system information about where  
9 the fire is within the fire area, is it displayed in some way  
10 or relayed to the fire brigade when they are on their way to  
11 fight the fire?

12 A Yes.

13 Q How is that done?

14 A It is done through communications between the  
15 fire brigade team leader and the control room shift  
16 supervisor, shift foreman, by looking at the panel information,  
17 seeing which detector went off, and relaying that information  
18 to the fire brigade team leader so he can assess the situation.

19 Q Now is that communication by radio?

20 A If they had already departed the control room and  
21 headed for the fire area, yes, it would be by radio.

22 Q But the team leader would be in the control room  
23 at the start?

24 A He could be in the control room. He could be out  
25 in the plant area.

1 Q Okay.

2 So if the team leader is not in the control room,  
3 this communication would be by radio?

4 A It could be. Most likely it would be by radio as  
5 they are on their way to the fire scene.

6 Q Okay.

7 Now by the information on the panel are you  
8 referring to the panel that is outside the control room, or  
9 information that actually shows up in the control room?

10 A The panel outside the control room as displayed on  
11 the computerized system that we would have, and the  
12 information system in the control room, and also on the local  
13 fire detection panels.

14 Q Okay.

15 Now does the information as to the location of the  
16 fire within a fire area show up inside the control room or  
17 outside it?

18 A I'm sorry, the information on the location?

19 Q On the location within a fire area?

20 A That would show up on the information system that  
21 I described that would be available to the control room shift  
22 foreman.

23 Q They would normally call that up from the computer  
24 and if they couldn't get it from that--

25 A Yes.

1 Q -- then they would have to go out to this other  
2 panel outside the control room to get the information?

3 A Yes.

4 Q Okay.

5 Are the wiring systems or cables from the  
6 individual detectors to the control room and the display panel  
7 and so on, are those all independent?

8 A I am not sure of the design, the exact design  
9 details. They would meet the requirements that have been set  
10 forth by NRC for detection systems and the code requirements  
11 that we have committed to meet for the Shearon Harris fire  
12 protection program.

13 I am not sure of the details.

14 Q On the next page, on page 5, you continue with  
15 that answer, talking about the implementation of the fire  
16 protection program.

17 Is it fair to say that the various things that  
18 you've discussed above in that answer need to be implemented  
19 to the standards specified in order for this system to work  
20 the way you say it should?

21 A I'm sorry, I don't quite understand what the  
22 question is. Could you rephrase it?

23 Q Sure, I'll try.

24 Back on pages 3 and 4 you describe various parts  
25 of the defense against fire at the Shearon Harris plant. And

1 then on page 5 you talk about the implementation. Let me ask  
2 you a little different question.

3 The program is not entirely implemented yet, is it?

4 A That is correct.

5 Q Okay.

6 Are doors used as fire barriers in the plant?

7 A Fire doors? Rated fire doors are used as fire  
8 barriers.

9 Q Okay.

10 And that is covered by Mrs. Serbanescu's testimony?

11 A Yes.

12 Q Okay.

13 Did you have anything to do with the preparation --  
14 I think you already said you did not, but I just want to  
15 check -- with the preparation of this October 10th update on  
16 fire doors?

17 A With the preparation? No, I did not.

18 Q Okay.

19 Let me flip through here a second.

20 (Pause.)

21 On page 7 at the top it says:

22 "Each brigade member additionally will  
23 participate annually in a practice session covering  
24 fire fighting on typical nuclear plant fires."

25 Does that mean each member would be in one practice

1 session a year?

2 A That is correct.

3 Q Okay.

4 What are considered "typical" nuclear plant fires  
5 for the purpose of this training?

6 A "Typical nuclear plant fire" would refer to the  
7 next sentence in my testimony, interior structural fire  
8 fighting. Because of the fire areas in a nuclear power plant  
9 there are many interior rooms to be considered, and that is a  
10 specific part of the training that we emphasize.

11 Q So it could be fires occurring indoors in closed  
12 rooms, that sort of thing?

13 A Yes, as opposed to outside fires, burn pits, et  
14 cetera.

15 Q Would these typical fires ever include cable fires?

16 A Yes.

17 Q And would those involve an actual fire or just a  
18 simulation?

19 A It would be an actual fire, complete with all the  
20 massive amounts of flame and large quantities of dense smoke.

21 Q Have any of these practice sessions taken place yet  
22 at the Harris plant?

23 A At the Harris plant itself?

24 Q Yes, sir.

25 A Not at the plant itself.

1 Q Is there another training facility where you do  
2 this sort of thing?

3 A We have had a practice session at the Durham  
4 Fire Training Facility.

5 Q What did that involve, sir?

6 A That involved fire ground training, both exterior  
7 and interior, by the fire brigade crew that was involved.

8 Q What sort of a structure does this Durham facility  
9 maintain?

10 A I cannot give you the specific details. I believe  
11 it is a room -- a several-room interior area that does not have  
12 cable trays in it. It does not have the types of things that  
13 are representative of a power plant there.

14 We are in the process of working with the Wake  
15 County fire training people to provide a facility located close  
16 to our site. And then it is our plan to have an area where  
17 we can set up an actual simulation of a plant area and do  
18 our fire training in an area that is more representative of  
19 the actual plant conditions.

20 Q Have you established a schedule for making that  
21 facility available, sir?

22 A No, we have not.

23 Q Okay.

24 Have you yourself participated in any training  
25 sessions involving cable fires for any other nuclear power



1 plant?

2 A I personally?

3 Q Yes, sir.

4 A No, I have not.

5 Q Okay.

6 Let's turn back to page 6 if we may.

7 The last sentence refers to insuring that each  
8 topic for fire brigade instruction is repeated at a frequency  
9 of not more than two years.

10 What are the topics that are involved here?

11 Q The topics are included in the attachment to my  
12 testimony which is from Section 13.2.3, Fire Brigade Training,  
13 Fire Brigade Members, 13.2.3.1, Instruction, Section  
14 13.2.3.1.1.

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End 7

wrb/agbl

1                   This reads:

2                   "Instructions in the topics listed  
3                   below will be administered to each individual  
4                   prior to assignment as a fire brigade member...", and  
5 I list topics A through H.

6           Q       And this is the first page of Attachment B to your  
7 testimony. is it not?

8           A       Yes, it is.

9           Q       Okay.

10                   Now about how long does it take a person to go  
11 through this instruction initially?

12           A       40 hours.

13           Q       And how long do the refresher sessions last?

14           A       They would last on a schedule commensurate with  
15 trying to cover that amount of instruction and the topics  
16 over a two year period, approximately for three to four  
17 hours each session.

18           Q       Three to four hours on each topic?

19           A       Three or four hours in each training session  
20 over a two year period.

21           Q       And how many training sessions would be required  
22 over a year or a two year period?

23           A       Approximately ten for each individual.

24           Q       Okay.

25                   I take it from this that that could vary if there

1 were more changes in the program there might be more refresher  
2 training, is that right?

3 A We set this as a standard. Certainly if more is  
4 required we will do the responsible thing and increase  
5 training where it is necessary if it is necessary.

6 Q Okay.

7 The training program attached as Attachment B,  
8 as you mention in your answer at the top of page six, that's  
9 the whole program?

10 A For training?

11 Q Yes, sir.

12 A Yes. That covers the general training requirements.

13 Q All right.

14 A Instruction, drills and practice sessions.

15 Q Now may we turn to page eight of your testimony.

16 On line three there you mention a main fire detection center,  
17 is that the control room?

18 A I am speaking of the panel that we spoke of  
19 before outside the control room and with that information  
20 conveyed into the control room through a computerized system.

21 Q The alarm occurs locally and at that main  
22 information center. Do you know if that main information  
23 center is a security post?

24 A I believe it is located within the security station  
25 area.

1 Q What if a fire occurred there?

2 A A fire?

3 Q Yes, sir.

4 A That is a continuously manned post, I think we  
5 would know about it.

6 Q Well could it damage the ability to receive alarms  
7 for the computer in the control room if a fire occurred  
8 there?

9 A I don't know the exact design details, I can't  
10 answer that.

11 Q Are the alarm signals brought into this area by  
12 cables, do you know that?

13 A I can't answer that specifically. That is a design  
14 detail that I am not fully cognizant of.

15 Q Are you aware of how the alarm signals are carried  
16 in general from detectors?

17 A From detectors?

18 Q Yes, sir.

19 A From detectors they are carried from cables by  
20 wires.

21 Q How many people are in the Harris fire brigade?

22 A The Harris fire brigade consists of a minimum  
23 of five individuals. I refer you to page nine, at the  
24 bottom of the page, the answer to question 17.

25 Q All right.

1           Now at least five plus at least one. Now is  
2 there anything in the tech specs for Harris or any other  
3 operating procedure that requires you to have on a given  
4 shift more than five persons on the fire brigade?

5           A.    No, there is not.

6           Q.    Is there anything in any similar specification  
7 or procedure that requires you to have more than one technical  
8 aid on any shift for the fire brigade?

9           A.    No, there is not.

10          Q.    Okay.

11                    So the practical operating minimum would be six  
12 people?

13          A.    That is correct.

14          Q.    Do you have firm plans to have more than six on  
15 every shift?

16          A.    I cannot say that that would be the case under  
17 all circumstances.

18          Q.    Well what are your plans as to the number of the  
19 people in the fire brigade on each shift at present, if  
20 you have any?

21          A.    Our plans for the fire brigade on each shift is  
22 to have the minimum of five plus one technical aid.

23          Q.    Okay.

24                    So you would have a total of six people available  
25 to fight however many fires might occur?

1           A.     We would have six people available to fight the  
2 one fire that we would expect to occur.

3           Q.     Or a simultaneous fire, as I believe you discuss  
4 in that answer -- simultaneous fires?

5           A.     That presumes there would be simultaneous fires.  
6 I do not presume that. But if you grant the point, I will  
7 grant you the point that if, indeed, there might be more  
8 than one fire, that I would have six people available.

9           Q.     And however many fires might have occurred  
10 simultaneously or concurrently, the fire brigade would still  
11 consist of those six people?

12          A.     To respond to a fire situation, yes, I would have  
13 six people available.

14           JUDGE KELLEY: Could you just direct me to the  
15 testimony that speaks of simultaneous fires? Where is  
16 that?

17           WITNESS WATERS: We are talking about simultaneous  
18 fires at page nine, the bottom of the page, question 17  
19 and answer 17. This is where we are specifically at at  
20 the moment discussing the number of fire brigade members,  
21 the technical aid that is available and the number of  
22 personnel that we feel are available in sufficient quantities  
23 to fight simultaneous fires.

24           JUDGE KELLEY: This two simultaneous fire concept,  
25 is that an NRC requirement that you address that hazard?

1                   WITNESS WATERS: Absolutely not. I state that  
2 earlier in my testimony. On page seven, question 12, and  
3 my response that addresses it. To my knowledge, there are  
4 no NRC regulations or regulatory guides, no industry code  
5 which requires us to postulate or defend against multiple  
6 fires.

7                   WITNESS SERBANESCU: Your Honor, may I add that  
8 simultaneous fires need not be postulated in accordance  
9 with the guidelines.

10                  JUDGE KELLEY: Well I sort of perked up when we  
11 got on this point.

12                  By that I take it you would mean two fires of  
13 independent origin, not just a fire spreading someplace but  
14 two fires popping up at the same time? I take it that's  
15 what you're talking about when you say simultaneous fires?

16                  WITNESS WATERS: That is what I think of when  
17 I think of simultaneous fires, yes, sir.

18                  JUDGE KELLEY: Boards don't normally interpose  
19 objections but I don't understand why we are talking about  
20 this if it is so far out that it is not required to be  
21 addressed.

22                  Excuse me a minute.

23                  (The Board conferring.)

24                  JUDGE KELLEY: The Board just doesn't see the  
25 reason to pursue the point of simultaneous fires unless

1 there is something we are missing.

2 Do you want to speak to that, Mr. Eddleman?

3 MR. EDDLEMAN: Judge, I was going to ask him to  
4 read the part of the contention that refers to this from  
5 his answer five next, and you may want to look at that down  
6 at the bottom of page three.

7 On page three, lines 19 through 21 I believe is  
8 the allegation about simultaneous fires that is part of  
9 this contention.

10 JUDGE KELLEY: Page three of what, if I may --

11 MR. EDDLEMAN: Mr. Waters' testimony, Judge.

12 JUDGE KELLEY: All right. I'm at page three.

13 Lines which --

14 MR. EDDLEMAN: 19 through 21.

15 JUDGE KELLEY: And the whole of 116 is quoted,  
16 is it not in -- this is Mrs. Serbanescu's testimony?

17 MR. EDDLEMAN: I believe Mrs. Serbanescu quotes  
18 the other five parts that she addresses and Mr. Waters  
19 quotes -- or partly quotes that one part and mentions  
20 another part that he addresses. Ms. Serbanescu's pages  
21 three and four I think are where she quotes.

22 JUDGE KELLEY: Well 116 is a multiple-part  
23 contention. Speaking for myself, I don't recall ever having  
24 focused precisely on the simultaneous fire concept. It is  
25 the very last sentence of the contention. Maybe the parties



1 can help us out.

2 Did the Board speak to that specific point one  
3 way or another in admitting this contention?

4 MR. EDDLEMAN: The Board admitted a text of the  
5 contention which was not divided up into points. After  
6 some negotiations with the Applicants I think we divided  
7 it up this way and moved jointly that -- I believe it was  
8 a joint motion -- to have it revised and I believe the Board  
9 granted that motion.

10 MR. O'NEILL: Mr. Chairman.

11 JUDGE KELLEY: Yes.

12 MR. O'NEILL: Mr. Eddleman is correct. The  
13 original contention, as admitted, did have as the last  
14 sentence:

15 "The plant fire fighting capability  
16 for simultaneous fires is inadequate or at  
17 least unanalyzed."

18 JUDGE KELLEY: Right.

19 MR. O'NEILL: We are simply addressing that point  
20 because it was part of the admitted contention.

21 JUDGE KELLEY: Fair enough, I am not faulting you  
22 at all. It looks to me like....

23 When you say "broken up," you mean in recasting  
24 the January '84 recast, is that what you are referring to?

25 MR. EDDLEMAN: We revised parts of it and eliminated

1 some, I think, and we actually gave numbers to the various  
2 parts.

3 MR. O'NEILL: Well Mr. Chairman, in the filing  
4 of July 16, 1984--which was an Applicant motion to abandon  
5 Eddleman Contention 116, which Mr. Eddleman concurred with--  
6 we did not break it up into points. That was done for  
7 purposes of this testimony to try to carve it up into its  
8 various subparts. We simply restated the contention as  
9 Mr. Eddleman had agreed he would drop some points and  
10 clarify other points. We were not able to convince him  
11 that he should drop the simultaneous fire part of it so  
12 that was included with the contention as amended.

13 We would certainly entertain the Board at this  
14 time ruling that we need not further address this issue  
15 since it is not an NRC requirement. But the only reason  
16 we did it was because it was part of the contention.

17 JUDGE KELLEY: Well that makes sense, that's  
18 the way we let it in.

19 Speaking for myself, I am for the first time  
20 focusing on that particular piece of it and my reaction is  
21 what's that doing here and you told me. Now I know why  
22 it's here.

23 Mr. Eddleman, can you explain why you think we  
24 should pursue the concept of simultaneous fires?

25 MR. EDDLEMAN: Well although the regulations may

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1 not specifically require that simultaneous fires be addressed,  
2 the general criteria under which a plant has to be licensed  
3 requires that it be able to be operated safely.

4 And if a simultane : fire -- what you normally  
5 do in these analyses is you look at say a fire plus another  
6 single failure, or whatever it is plus another single  
7 failure. This would be the case where another single  
8 failure is another fire. And I think it needs to be  
9 addressed. And I think the contention itself is pretty  
10 simple on that point.

11 JUDGE KELLEY: Maybe so.

12 Does the Staff want to say anything on this? I  
13 mean, as long as we are where we are should we go ahead  
14 and address it?

15 MRS. MOORE: Your Honor, in addressing this  
16 contention I believe you will find that the sum and substance  
17 of our testimony said it is not required to be addressed  
18 and that is how we responded to the contention. It is not  
19 part of our regulations that simultaneous fires be  
20 considered.

21 JUDGE KELLEY: You don't take a position on the  
22 likelihood of that event?

23 MRS. MOORE: No, I don't believe we do.

24 JUDGE KELLEY: Isn't that what underlies your  
25 position though?

1 MRS. MOORE: I am afraid that beyond what we  
2 actually said in our testimony that you would have to ask  
3 our witnesses that question why we don't require them.  
4 I believe there is an explanation in the testimony  
5 a brief one but we do not require it.

6 JUDGE KELLEY: What do you think we should do  
7 at this point? The Board is belatedly focusing on this  
8 particular subpart of the contention. We have some doubts.  
9 Should we go ahead and hear it on the merits?

10 I think you have already answered that by saying  
11 what your position is.

12 MRS. MOORE: That is our merits is that it is not  
13 required, that is the most we think --

14 JUDGE KELLEY: As a matter of law is what you  
15 are saying really.

16 MRS. MOORE: Yes.

17 JUDGE KELLEY: Applicants, what do you think we  
18 should do?

19 MR. O'NEILL: We certainly would entertain the  
20 Board agreeing with our position and the Staff's position  
21 that since it is not required we are wasting some time here.  
22 We have already spent about a half-hour on it.

23 Our testimony first makes the point: not required,  
24 is not done, will not be done in the FSAR. But in any  
25 event Applicants -- and in the professional opinion of

1 Mr. Waters -- would be able to address two fires with the  
2 existing fire brigade, with the existing fire equipment,  
3 particularly in light of the suppression systems, detection  
4 systems, defense and depth. So our testimony is on the  
5 record.

6 We think either way we would come out that way  
7 but we would be happy not to spend any more time on it.

8 JUDGE KELLEY: Your position, if I can just  
9 get that clear, the NRC regs on fire protection don't  
10 really speak to this in so many words one way or the other  
11 I take it but you're arguing that it is not required as  
12 a matter of law, right?

13 MR. O'NEILL: If there is no regulation requiring  
14 it it is not required, that's correct. And that is our  
15 position.

16 JUDGE KELLEY: Well you are not arguing, are you,  
17 across the Board that every single thing that might be  
18 required in a nuclear power plant can be found explicitly  
19 in some regulation, are you?

20 MR. O'NEILL: No, I will limit my discussion to  
21 the particular issue here.

22 JUDGE KELLEY: And you fix on this issue just  
23 because you think that the likelihood of two independently  
24 caused fires springing up at once is too unlikely to look  
25 at?

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1 MR. O'NEILL: In the professional judgment of our  
2 expert, that is correct. Fire protection engineers' codes  
3 have not required this to be part of the design of fire  
4 protection systems because experience shows it is not  
5 terribly likely.

6 MR. EDDLEMAN: Judge, I would like to quote you  
7 from the Staff's testimony. It is general design criterion  
8 3 from 10 CFR Part 50 Appendix A, which is the NRC's rules  
9 and it says that this part requires -- and I'm quoting:

10 "...that structures, systems and  
11 components important to safety be designed  
12 and located to minimize, consistent with other  
13 safety requirements, the probability and  
14 effect of fires and explosions..." it uses the plural.  
15 So I think the rule requires it.

16 MR. O'NEILL: Mr. Chairman, for a little bit more  
17 clarification, the Standard Review Plan NUREG 0800, on page  
18 9.5.1-18, Revision 2, July 1981 states, the third paragraph:

19 "...worst case fires need not be  
20 postulated to be simultaneous with non-fire  
21 related failures in safety systems, plant  
22 accidents or the most severe and natural  
23 phenomenon."

24 JUDGE KELLEY: That is not directly on point  
25 for the simultaneous fire concept, is it?

1 MRS. MOORE: Your Honor, I would request that  
2 Mr. O'Neill read the next paragraph, I think that is also  
3 on point.

4 MR. O'NEILL: This goes to multiple reactor sites:

5 "But on multiple reactor sites,  
6 unrelated fires in two or more units need  
7 not be postulated to occur simultaneously.  
8 Fires involving facilities shared between  
9 units and fires due to man-made site related  
10 events that have a reasonable probability  
11 of occurring and affecting more than one  
12 reactor unit such as an aircraft crash  
13 should be considered."

14 JUDGE KELLEY: Where is that again?

15 MR. O'NEILL: Excuse me?

16 JUDGE KELLEY: What you just read, where is that  
17 again?

18 MR. O'NEILL: It is in NUREG 0800, the Standard  
19 Review Plan, at page 9.5.1-18.

20 JUDGE KELLEY: Hold on a minute.

21 (Pause.)

22 JUDGE KELLEY: In any event the Standard Review  
23 Plan is not a regulation, is it, Mr. O'Neill or Mrs. Moore?  
24 It's a Staff position.

25 MRS. MOORE: That's correct.

1 MR. O'NEILL: That is certainly correct.

2 JUDGE KELLEY: All right.

3 Excuse us for a moment.

4 (The Board conferring.)

5 MR. O'NEILL: Mr. Chairman, may I interrupt for  
6 a second?

7 We did find one place in the regulations that we  
8 relied on in our testimony and it might be worth pointing  
9 that out to you.

10 JUDGE KELLEY: Okay.

11 MR. O'NEILL: At 10 CFR 50 Appendix R, Section 1,  
12 which begins "Introduction and Scope."

13 JUDGE KELLEY: What page is that on?

14 MR. O'NEILL: I don't have your version of it,  
15 I'm afraid.

16 JUDGE KELLEY: All right.

17 Appendix R, what?

18 MR. O'NEILL: Turn to the first page which has  
19 "Introduction and Scope." It has a table.

20 JUDGE KELLEY: Fire protection, okay.

21 MR. O'NEILL: The table says:

22 "Three levels of fire damage limits

23 are established according to safety functions

24 of a structure, system or component..." and then the

25 table indicates that the event that one must protect against



1 in each case as a "single fire."

2 I would assume that the technical position in  
3 NUREG 0800 perhaps relied on that table in Appendix R  
4 in establishing a position.

5 JUDGE KELLEY: Do you know if this particular  
6 appendix has been adopted by the Commission; whether it  
7 is a rule in effect?

8 MR. O'NEILL: Oh yes.

9 MRS. MOORE: Yes.

10 JUDGE KELLEY: Thank you.

11 (The Board conferring.)

12 JUDGE KELLEY: Back on the record.

13 As I think I indicated earlier, it is a multiple  
14 part contention that the Board quite frankly didn't focus  
15 on in this particular part earlier and that is unfortunate.  
16 But we are focusing on it now and our question was why  
17 should we be looking at simultaneous fires of independent  
18 causes.

19 The portions of the general design criteria,  
20 Appendix R, Part 50, the Standard Review Plan can be read  
21 to point in different directions. They seem to point a  
22 little more strongly toward not considering simultaneous  
23 fires.

24 But we are going to exclude this particular topic  
25 from consideration under this contention on the ground that

1 as a matter of law it does not have to be addressed and  
2 therefore a contention seeking to raise it is not valid  
3 in that particular part.

4 Our rationale simply is two things: one, there  
5 is nothing in the rule that says it has to be required  
6 and, that being so, one falls back on whether what is being  
7 adverted to is sufficiently common and in human experience  
8 so that it ought to be addressed, you could say it is a  
9 gap in the rules, you could say it flows out of requirements  
10 for a finding of a reasonable probability without there  
11 being a particular requirement; but on that basis we don't  
12 find that to be the case.

13 We don't have here to cite this morning any  
14 particular statistics on how likely it is that two fires  
15 of independent origin would crop up at the same time in a  
16 nuclear power plant but it is our perception based on our  
17 own experience that it would be extremely unlikely and  
18 therefore we think it is something that needs to be  
19 addressed specifically in an FSAR or needs to be litigated  
20 in this case. So we are going to exclude that particular  
21 topic from this contention.

22 MR. EDDLEMAN: Judge, if I may, I would like to  
23 get my position on that on the record.

24 I think that both cites from NUREG 0800 are  
25 inapplicable: the first one on its face and the second one

1 because it applies to multi-unit plants and Harris had all  
2 the other units cancelled and it is a single-unit plant. I  
3 don't believe that Appendix R would override the requirement  
4 to meet general design criterion 3 which explicitly refers  
5 to fires and explosions in the plural.

6 I would also like to enter an offer of proof  
7 that as to a cause that if I had been allowed to ask  
8 these witnesses could sabotage lead to simultaneous fires  
9 that they would have said yes.

10 JUDGE KELLEY: Well isn't that a little different  
11 now? The example that you find in the -- one of the last  
12 things we looked at, I think the Standard Review Plan talks  
13 about an airplane crash and different pieces fall different  
14 places and set two, three, seven fires all at once. That  
15 can be done I suppose

16 And we have already been talking about simultaneous  
17 fires of independent origin where some guy drops a cigarette  
18 in one room and somebody else does something dumb in another  
19 room and the first thing you know there are two fires going.  
20 And that is what we say is not sufficiently likely to worry  
21 about, at least in the FSAR analysis sense of the word.

22 If you want to postulate some other situation  
23 that analytically is not really independent causes, that  
24 may be another consideration. Whether we've got to get  
25 into that or not may be arguable also for different reasons.

1 But we are just talking about truly independent  
2 causes and we are saying No, we don't have to address that.

3 Now go ahead if you want to posit some different  
4 approach.

5 MR. EDDLEMAN: Okay.

6 Now do I understand correctly that.... You see  
7 in the wording of the contention it says "simultaneous  
8 fires," it doesn't actually use the words "independent  
9 cause" --

10 JUDGE KELLEY: That's how we read it. And insofar  
11 as that's what it means, we are ruling it out.

12 MR. EDDLEMAN: Okay.

13 And general design criterion 3 does not speak of  
14 independent cause either, as I read it.

15 JUDGE KELLEY: Well....

16 MR. EDDLEMAN: I am just trying to get that on  
17 the record, make sure what it is I am allowed to do and  
18 what I'm not.

19 JUDGE KELLEY: We think the use of the plural  
20 in the general design criteria 3 does not indicate advertent  
21 Commission intention to talk about simultaneous independent  
22 fires. And we say yes, we read that but we don't think  
23 that's what it says.

24 Obviously if that's what it does say then we would  
25 be wrong or we wouldn't throw out this part of the contention.

1 But that's not the way we read it.

2 MR. EDDLEMAN: Okay, Judge. Let me just get this  
3 on the record, too. I think if they meant that they could  
4 have said "a fire" or "an explosion" rather than "fires and  
5 explosions."

6 JUDGE KELLEY: Okay.

7 MR. EDDLEMAN: I just want to say that and get  
8 it in the record.

9 BY MR. EDDLEMAN:

10 Q Let me ask the panel, is it true that you could  
11 have a fire or fires caused by sabotage at a nuclear power  
12 plant?

13 A (Witness Waters) That would take the assumption  
14 that you have sabotage at a nuclear power plant, and there  
15 are many many reasons why we do not feel that is likely.

16 Q Well but you haven't answered the question. Is  
17 it possible?

18 A I don't want to grant the possibility of sabotage  
19 because of the provisions that we take to guard against  
20 sabotage.

21 JUDGE KELLEY: You mean the possibility of  
22 successful sabotage?

23 WITNESS WATERS: The possibility of successful  
24 sabotage.

25 JUDGE KELLEY: To the point of doing that kind of

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1 damage, is that what you mean? I take it that's what you  
2 mean.

3 BY MR. EDDLEMAN:

4 Q Don't the Commission's regulations on sabotage  
5 require that sabotage by an insider or a group working with  
6 an insider be considered?

7 A (Witness Waters) I am not a security expert so  
8 I cannot speak to that specifically.

9 In general terms there is the, as I understand it,  
10 the so-called insider rule and you are to set up certain  
11 provisions in your security measures to deter such threats.

12 Q Does that complete your answer?

13 A Yes.

14 Q Are you a security expert for the purpose of  
15 assessing the likelihood of successful sabotage, sir?

16 A No, I am not.

17 Q All right. Well let me ask you again: Is it  
18 possible?

19 MR. O'NEILL: I object to the question. This  
20 line of questioning should go no further since the witness  
21 has just indicated he is not a security expert and this is  
22 not a security contention.

23 JUDGE KELLEY: Let me get clear in my mind the  
24 scope of your objection.

25 It is one thing to sustain an objection so the

1 particular question is not proper because the gentleman has  
2 said in effect I can't answer it. Obviously -- to me  
3 anyway it is obvious that the thrust of the line of  
4 questioning is what about the saboteur who gets in and  
5 sets two or more fires; that's really where it is going to  
6 go, isn't that right?

7 MR. EDDLEMAN: Yes. Or a saboteur or saboteurs  
8 working with an insider so that --

9 JUDGE KELLEY: Okay. But it is a sabotage  
10 scenario, if I can use that term?

11 MR. EDDLEMAN: Yes, sir.

12 JUDGE KELLEY: Now does the objection go to that  
13 or just to the particular question?

14 MR. O'NEILL: My objection goes to the line of  
15 questioning as to whether this witness has the expertise  
16 to answer any questions about the probability of success  
17 of a saboteur. He has just indicated he is not an expert  
18 in this area. Nor do I believe this inquiry is within the  
19 scope of this contention.

20 JUDGE KELLEY: That is what I was interested in,  
21 more so.

22 Will you elaborate on that somewhat?

23 MR. O'NEILL: This contention, as it has now been  
24 modified, deals with a series of allegations concerning  
25 the adequacy of the fire hazards analysis. It does not go

1 the security aspects of the plant. And I think the -- as  
2 modified, the contention does not allow this line of  
3 questioning on security plans. Indeed, security issues  
4 have been settled in this proceeding.

5 JUDGE KELLEY: I understand the point you are  
6 making, I am just wondering where exactly does one draw  
7 the line? You have a nice, neat box called Security and  
8 another called Fire Protection and the two never meet,  
9 or do they overlap or do they stop one against the other?  
10 That's what is unclear to me. Saboteurs set fires commonly  
11 I understand.

12 I mean are you arguing that anything having to  
13 do with the security threat is a security contention in  
14 quotes and therefore should have been over in the security  
15 part of the case?

16 MR. O'NEILL: I am arguing that the scope of  
17 this contention goes to the adequacy of the plant's  
18 ability to deal with a fire or to prevent fires and that  
19 the contention -- the scope, as I understood it, in no way  
20 goes to the source of fires. There is nothing in the  
21 background of this contention that argues how a fire might  
22 start. We are dealing with how we prevent fires through  
23 the different programs that the plant has, how we can  
24 suppress fires and how we insure that fires don't spread  
25 and how the plant can shut down safely even in the event



1 of a fire. Nothing in this contention has gone to means of  
2 preventing fires from saboteurs, nor do we have witnesses  
3 who are in a position to deal with the security systems that  
4 might be set up to insure saboteurs don't do things among  
5 setting fires to plants.

6 And I would argue that, yes, I would create a  
7 category of issues: one is fire protection and the other  
8 one is sabotage and all the ramifications that might flow  
9 from sabotage. And this falls into the first box.

10 JUDGE KELLEY: Okay.

11 MR. EDDLEMAN: Judge, I actually agree with  
12 Mr. O'Neill on one point and that is that the contention  
13 doesn't say anything one way or another about the cause of  
14 fires. So I think that a fire, however caused, or simultaneous  
15 fires, however caused, would fall within the scope of the  
16 contention.

17 Now the Board has ruled that simultaneous fires  
18 of independent causes, as I understand it, are not part  
19 of it.

20 JUDGE KELLEY: Right. We have so ruled.

21 MR. EDDLEMAN: But then allowed me to pursue the  
22 question of sabotage. And first I asked Well, could it  
23 happen and --

24 JUDGE KELLEY: I don't think you could fairly  
25 say the Board has ruled on that one way or the other. We

1 made our ruling, you started to ask questions and Mr. O'Neill  
2 made an objection. I don't think we have reached the point  
3 yet --

4 MR. EDDLEMAN: I am not trying to characterize  
5 that the Board had ruled that it was proper.

6 But to go through what happened here I asked  
7 Mr. Waters the question and he said I don't want to concede  
8 the premise because it's security and then later on he said  
9 he wasn't a security expert from the point of assessing  
10 another matter. And I asked Well are you a security expert  
11 for the purpose of assessing the premise of that question  
12 and he said he wasn't. So then I tried to ask him the  
13 question again and that was when the objection came and  
14 I think I ought to be able to go ahead and ask the question;  
15 his basis for not answering it has gone away.

16 JUDGE KELLEY: Well whatever may have been said  
17 back and forth between you and the witness in three or  
18 four questions, his lawyer can come forward and say Stop  
19 you are off in an area that is outside the contention and  
20 be heard on that I would think. And he is really speaking  
21 to the direction and thrust of the questions as well as  
22 the particular pending question.

23 I mean beyond -- We have ruled out simultaneous  
24 indepently caused fires, so now you are trying a line of  
25 questioning based on the security threat and there is an

1 objection to that.

2 At some point I assume we will address the  
3 various ways this can be got at but he is not late, it  
4 seems to me in making his security objection, that's what  
5 we've got to rule on. We are going to go to lunch here in  
6 a few minutes, maybe we should hear out the parties and  
7 go to lunch and we will rule on it after lunch.

8 Do you have anything else that you wanted to say  
9 with regard to the general proposition from Mr. O'Neill  
10 that security-related fires are really security problems  
11 and are outside the scope of this contention?

12 MR. EDDLEMAN: I don't think the Applicants ever  
13 raised the argument before. The objected to the contention's  
14 admission and so on but I don't think they ever spoke to  
15 the possible causes of fires previously.

16 What I have been going on was that the contention  
17 was in as to fires of any cause. I mean, I have in my  
18 notes before this ever came up I asked about sabotage.  
19 It to me is one of the most obvious possible causes of  
20 simultaneous fires that there could be under the old  
21 dispensation. Now if after the Board rules out what  
22 appears to be the majority for the causes, then that is  
23 the only thing I have left. I think it is still part of  
24 the contention and I ought to be able to ask about it.

25 JUDGE KELLEY: Well again insofar as the Board's

1 intervention on the point is late, you're right about that.  
2 So your notice of where you can question is short to non-  
3 existent and that is unfortunate. But it just really seems  
4 to us that if we really think a certain contention ought  
5 to be ruled out in a certain respect that it is certainly  
6 sort of -- I won't say it is never too late but we might  
7 as well go ahead and make the ruling I think.

8 MR. EDDLEMAN: I understand that I can take it  
9 up on appeal if I want to but the matter is, as I understand  
10 it, there was never any specification in any part of this  
11 contention as to the causes of fires and so I don't think  
12 that ruling out a simultaneous fire of independent causes  
13 applies to sabotage, I don't think the Board's ruling  
14 applies to this.

15 JUDGE KELLEY: The Board's ruling doesn't apply,  
16 I agree with you. And then the further question is should  
17 we be talking about two or three or seven or more simultaneous  
18 fires set by a saboteur running down the hall and throwing  
19 bombs in rooms.

20 You could say they are several fires but you know  
21 it is Tom Terrorist who did it all at the same time and  
22 should we be getting into that? And that's the point  
23 that is now before us as I understand it.

24 MR. EDDLEMAN: Well I think my basic point on that  
25 -- and I will just leave it at this -- is that their general

1 design criterion and the Atomic Energy Act for that matter  
2 require that the plant be able to be safely shut down in  
3 the event of fires. And if a saboteur can cause fires --  
4 and I think we are all but conceding that the premise is  
5 possible -- then they have to be able to protect against  
6 that.

end #9

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1 JUDGE KELLEY: I don't really doubt your abstract  
2 proposition. Did you give any thought to raging fires set  
3 by saboteurs in the context of our security proceeding that  
4 we started a long time ago and finished some time ago?

5 MR. EDDLEMAN: Judge, I don't recall. I think I  
6 postulated a whole lot of things that saboteurs could do.

7 JUDGE KELLEY: In the original set that's true.  
8 And then we said we were just going to wait on all those until  
9 after you have had some discussion and you've seen the plant.  
10 And you did all of those things and had about six contentions  
11 as a result.

12 MR. EDDLEMAN: I didn't, Judge, and that's the  
13 point I have to make. All the review of security plans had  
14 to be done by experts. I wasn't allowed to look at any of it.  
15 Okay?

16 JUDGE KELLEY: All right.

17 MR. EDDLEMAN: So I don't even have any idea what  
18 the six contentions were, you know. It was not my place.

19 We hired the experts, and the experts and our  
20 Counsel, Mr. Runkle, carried all that out, and I don't know  
21 anything about it.

22 JUDGE KELLEY: Okay. They did it on your behalf.  
23 That's the way it has to be done.

24 MR. EDDLEMAN: Yes. But what I'm saying is I did  
25 not come in and instruct them, "Make sure you do fires," and

1 "Make sure you do this-and-that." They were given the  
2 instructions to review the plans and find any inadequacies  
3 they could find with respect to -- I think it is Part 73.

4 They were not instructed to review this for fire  
5 protection or anything like that. In fact, I don't even know  
6 if these people were qualified in fire protection that we hired.

7 JUDGE KELLEY: Well, apart from their qualification,  
8 was there anything to prevent your saying to Mr. Runkle and  
9 their experts, "Make sure you look out for fire hazards, fires  
10 that might get started by saboteurs." You could do that,  
11 couldn't you?

12 MR. EDDLEMAN: Sure, you could, but I don't think  
13 it would have been Part 73, the security part of making  
14 contentions that that would have logically fallen under. I  
15 think it would have fallen under the fire part.

16 In other words, the question that you're asking  
17 there as I see it is are their methods to guard against the  
18 saboteurs starting the fires adequate? That's the question  
19 for the security people.

20 Now the question on fire protection is if the  
21 saboteurs do start simultaneous fires, are their fire  
22 protection systems and shutdown capability and so on adequate  
23 in that case?

24 And considering that you've got redundant trains  
25 and you are only assuring that there will be one there, a

1 simultaneous fire threatens the very viability of the concept.

2 JUDGE KELLEY: Okay, that's a fair enough point I  
3 think.

4 Does Staff want to argue to this?

5 MRS. MOORE: Your Honor, what I would like to do,  
6 if this would be permissible, I think the question really goes  
7 to the scope of the security regulations at this point and  
8 what they consider in terms of sabotage as opposed to what is  
9 considered under Part 50.

10 And I would rather take a break if we could and  
11 look at those regulations and see if in fact I am correct.  
12 If that's the question you're asking, I would prefer to be  
13 able to look at those regulations before I make my argument.

14 JUDGE KELLEY: I don't think it is the sole  
15 consideration but I think it has a bearing on it.

16 We're about to go to lunch. I think maybe we could  
17 do it over lunch.

18 Mr. O'Neill?

19 MR. O'NEILL: I think I disagree with Mrs. Moore.  
20 I don't think that is really a very important consideration.  
21 The issue is really whether the regulations -- and I think  
22 Appendix R makes it clear that the fire protection program  
23 which this contention addresses is to address a single fire.  
24 And a frolic and detour into possible causes of simultaneous  
25 fires I don't believe is fruitful.



1 I would suggest that your ruling that two fires of  
2 independent means need not be considered quite frankly should be  
3 expanded to two fires, simultaneous fires, need not be  
4 considered as part of the fire protection program and should  
5 not be considered further in this proceeding.

6 JUDGE KELLEY: Didn't we see in the Standard Review  
7 Plans some discussion of airplanes crashing and causing more  
8 than one fire? That's not the law again but....

9 MR. EDDLEMAN: If I might point out here the  
10 contention itself doesn't address Appendix R, one way or the  
11 other. It doesn't say they are out of compliance with Appendix  
12 R.

13 JUDGE KELLEY: Well, they are not supposed to really.  
14 At least they are not required to. But they have to stand or  
15 fall against that background.

16 MRS. MOORE: Your Honor, I believe you're looking  
17 for page 18.

18 JUDGE KELLEY: What I was thinking of was the  
19 second sentence, the second long sentence in the fourth  
20 paragraph on page 9.5.1-18 where it says:

21 "Fires due to man-made site-related  
22 events that have a reasonable probability of  
23 occurring, such as an airplane crash...."

24 I guess --

25 "...and affecting more than one reactor unit, such

1 as a crash, should be considered."

2 I guess it only applies literally to multi-reactor  
3 sites.

4 I think we understand the problem. We are just  
5 going to have to make a ruling on it. We can hear from  
6 Mrs. Moore after the break, if you want to take a look at the  
7 security regulations, Part 73, somewhat further, and then  
8 anybody else who wants to respond briefly to that, and we'll  
9 make a ruling. And then we'll go ahead after that.

10 It is about a quarter of one. Shall we stop for  
11 lunch, and go to a quarter of two.

12 But with regard to the lockup of this facility,  
13 it just happens that the Law Clerk and the Judge's secretary  
14 are gone for lunch. They want us to turn off all the lights,  
15 close the doors, and they will be back and check in on it a  
16 little after one. They think our belongings are safe in the  
17 meantime.

18 So if we could do that, and come back in an hour.

19 MR. O'NEILL: Mr. Chairman, I will hand out  
20 copies of the letter of October 10th to the parties at this  
21 time.

22 JUDGE KELLEY: Thank you.

23 (Whereupon, at 12:45 p.m., the hearing in the  
24 above-entitled matter was recessed to reconvene at  
25 1:45 p.m. the same day.)

## 1 AFTERNOON SESSION

2 (1:54 p.m.)

3 JUDGE KELLEY: We'll be on the record.

4 Whereupon,

5 MARGARETA SERBANESCU

6 and

7 DAVID WATERS

8 resumed the stand and, having been previously duly sworn, were  
9 examined and testified further as follows:10 JUDGE KELLEY: Mrs. Moore wanted to address the  
11 applicability of portions of Part 73 to the question of whether  
12 fires started by a saboteur ought to be considered to be  
13 within the scope of Contention 116.

14 Do you want to speak to that, Mrs. Moore?

15 MRS. MOORE: Yes.

16 First I would like to point out that there are two  
17 reasons. I believe your Honor's question was whether the  
18 simultaneous fires started by a saboteur should be considered  
19 in this proceeding. I believe that was the broader question.20 JUDGE KELLEY: Under the admitted contention which  
21 is 116.22 MRS. MOORE: That's right. And I have two points  
23 to make with regard to that question.24 The first is that radiological sabotage is  
25 defined in 73.2P of the Commission's regulations as any act

1 against a facility, and under 73.1A1, sabotage is encompassed  
2 in the regulations under Part 73.

3 Also in Part 50, in Section 50.13, the regulation  
4 says that:

5 "An applicant for a license...."

6 I am leaving out some words which concern for a  
7 production and utilization facility --

8 "....is not required to provide for design features  
9 or other measures for the specific purpose of  
10 protection against the effects of attacks and  
11 destructive acts, including sabotage, directed against  
12 the facility by enemies of the United States, whether  
13 from a foreign government or other person."

14 I think this can fairly be read to say that they  
15 should not be included in the analyses conducted under Part  
16 50, and that is that the protection against sabotage, in  
17 terms of planning for sabotage, is governed by Part 73.  
18 Therefore, any contention on fires produced by saboteurs should  
19 have been directed towards the security portion of this  
20 proceeding, and therefore is specifically included -- excluded,  
21 pardon me, by Section 50.13 and so should not be addressed in  
22 this proceeding.

23 JUDGE KELLEY: Doesn't 50.13 speak of attacks  
24 directed against the facility "by an enemy of the United  
25 States, whether a foreign government or other person"? You

1 equate that with a terrorist act?

2 MRS. MOORE: Well, I would in the sense that an  
3 act against a nuclear facility which could cause a release of  
4 radiation is certainly not a friendly act toward the country.

5 JUDGE KELLEY: Are you familiar with the legislative  
6 history of -- or we'll put that in quotes -- "legislative  
7 history" background?

8 I agree with you it is not a very friendly thing  
9 to do, but when I see the phrase, "enemy of the United States,"  
10 it suggests to me in context certainly someone with whom we  
11 have a declared war is the easiest one, I suppose.

12 But why should it be some sort of a self-styled  
13 domestic terrorist group?

14 MRS. MOORE: Your Honor, unfortunately I do not  
15 have with me the statements of consideration that apply with  
16 this rule, but I think that the important thing is that we  
17 specifically covered sabotage, that this excluded it and yet  
18 it is specifically covered in another portion of the  
19 Commission's regulations which require planning to protect  
20 against it rather than design features.

21 JUDGE KELLEY: I don't think your argument stands  
22 or falls on 50.13 anyway. I just wanted to raise the point.

23 Why don't we hear from the Applicants if they  
24 have anything else?

25 Is there anything else, Mr. O'Neill?

1 MR. O'NEILL: We would endorse Mrs. Moore's  
2 argument with respect to Part 73. I'm not sure 50.13 addresses  
3 this issue, but to the extent that radiological sabotage is  
4 defined, if Mr. Eddleman meant to raise an issue with respect  
5 to fires that are caused by saboteurs, it should have been  
6 raised in the context of the security proceeding.

7 But setting that aside, I don't believe the scope  
8 of this contention has ever been limited to causes of fires.  
9 It is always with respect to the program for protection from  
10 fires and the ability of the plant to shut down in the event  
11 of fires, and within that limitation, only with respect to  
12 certain allegations with respect to the adequacy of that  
13 plant.

14 I think we have moved very far afield from the  
15 narrow issues that were raised by this contention.

16 JUDGE KELLEY: Okay.

17 Mr. Eddleman, anything else?

18 MR. EDDLEMAN: Well, as to 50.13, I believe that  
19 on its face it speaks to design, and there is more to fire  
20 protection than design. In fact, fire fighting, as I  
21 understand it, is not a designed thing.

22 As to Part 73, I don't question that Counsel for  
23 the Staff, reading it, that it says that any act directed  
24 against the facility is radiological sabotage. But I go back  
25 to my earlier position and that is that while Part 73 covers

1 measures to prevent such acts from taking place, the question  
2 here is if it does take place, what do you do about it? Is  
3 the fire protection adequate to defend against simultaneous  
4 fires if they result from sabotage?

5 JUDGE KELLEY: Okay.

6 The Board will adjourn for about one minute. We  
7 have already talked about this some, and we'll come back.

8 (Brief adjournment.)

9 JUDGE KELLEY: The Board has the ruling that it  
10 will exclude the topic of simultaneous fires from Contention  
11 116 and from the case. We are reaffirming our earlier ruling  
12 that the notion of fires, simultaneous fires springing out of  
13 independent causes is sufficiently remote that the rules don't  
14 require any such demonstration.

15 We would like to just add that Criterion 3, to  
16 which Mr. Eddleman pointed us talks about fires in the  
17 plural, is explicitly referred to in Appendix R in the very  
18 first paragraph -- the second paragraph, rather. And then  
19 it goes on-- The Appendix goes on to say how people are  
20 supposed to comply with that Appendix.

21 And it uses, carefully and advertently, the  
22 phrase "single fire" in all three classes of fires that they  
23 are talking about.

24 So we think that fire protection with respect to  
25 accidental fires generally requires planning only with respect

1 to a single fire.

2 That arguably leaves open the terrorist scenario.  
3 But we also believe that, persuaded in part by the reference  
4 Mrs. Moore made to 10 CFR 73.2(p), defining radiological  
5 sabotage to include any deliberate act directed against a  
6 plant, and we draw from that the inference that sabotage  
7 really is in a separate area to be considered under separate  
8 procedures, which has been done previously in this case.

9 This is not the time or the place. This contention  
10 is not the occasion for getting into terrorist-type tactics  
11 and damage. And so we are unwilling to read the contention  
12 that we intended to admit at least to include that scenario.

13 So that brings us, as we read the contention, to  
14 a consideration of single-fire problems.

15 Mr. Eddleman does not agree with our rulings and  
16 he will have his automatic exception with respect to them.

17 MR. EDDLEMAN: Thank you, Judge.

18 If I might just note for the record a further  
19 offer of proof just in case this ever got reversed, and that  
20 is if I had been allowed to ask that the answer would have  
21 been that there was no analysis as such, as opposed to a  
22 judgment by their witnesses as to the adequacy of their  
23 ability to fight simultaneous fires.

24 JUDGE KELLEY: Well, in that regard let me say  
25 that the discussion at pages 7 and 8 of the witness'



1 testimony which does go to their ability to fight simultaneous  
2 fires, consistent with our ruling, it seems appropriate to  
3 consider that particular material as an offer-of-proof  
4 material. And it will be in the record but not in as evidence  
5 should some appellate reviewer decide to consider it.

6 Is my reference precise enough, Mr. O'Neill? I  
7 was really starting with line 6 on page 7, and going through  
8 line 23 on page 8 which, in light of our rulings, we would  
9 consider to be offer-of-proof material.

10 MR. O'NEILL: I understand that you are talking  
11 about the answers to questions 12, 13 and 14.

12 JUDGE KELLEY: Right.

13 MR. O'NEILL: And I understand your reference.

14 JUDGE KELLEY: Okay.

15 MR. EDDLEMAN: Judge, I believe questions and  
16 answers 17 and 18 on pages 9 and 10 may also be addressed to  
17 simultaneous fires.

18 JUDGE KELLEY: Yes, that appears to be an  
19 appropriate observation. We do add to our prior description  
20 of the offer of proof page 9, line 22.

21 MR. O'NEILL: Mr. Chairman, there is some  
22 information with respect to the fire brigade and fire  
23 equipment in those answers that do also apply to some of the --  
24 one of the other issues in this case, so I don't believe it is  
25 necessary certainly to strike that.

WRB 1 JUDGE KELLEY: Perhaps at the break you and  
2 Mr. Eddleman could parse that and tell me what you can agree  
3 to, and if not, we will rule on it.

4 Our intent is simply to take out material bearing  
5 primarily or exclusively on the simultaneous-fire concept.

6 Mr. Eddleman.

7 CROSS-EXAMINATION (Continued)

8 BY MR. EDDLEMAN:

9 Q Mr. Waters, with regard to your Answer 16 on page  
10 9 of your prefiled testimony, in the last sentence it says:

11 "Smoking will be prohibited in all  
12 safety-related areas except those which will be  
13 continually manned."

14 Which areas continuously have people in them?

15 A (Witness Waters) The plant control room.

16 Q Is that the only one?

17 A It is basically the only one under consideration  
18 here that is continually manned.

19 I believe the secondary security system location  
20 is also continually manned.

21 Q So in all other areas of the plant there will be  
22 no smoking?

23 A That is correct.

24 Q And you think that can be enforced?

25 A It is our intention to enforce it.

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Q Do you know if any of the other CP&L nuclear plants have a similar no-smoking regulation?

A Yes, they do.

Encl 10

WRB/pp 1

Take 11

1 Q Is it ever violated?

2 MR. O'NEILL: Objection. The objection goes to the  
3 question with respect to the implementation of regulations  
4 of other plants is outside the scope of this issue.

5 MR. EDDLEMAN: Well, I think if he says they intend  
6 to implement it at Harris, how they actually implement it  
7 at someplace else is relevant to their nuclear plant.

8 JUDGE KELLEY: Your question was whether they had  
9 such rules at other places and it was a separate question of  
10 whether it was implemented. Do you mean by that enforced?

11 MR. EDDLEMAN: What I asked was, was the rule ever  
12 broken at those plants?

13 JUDGE KELLEY: I'll sustain an objection to that.  
14 I think that is too far away from our area of concern.

15 BY MR. EDDLEMAN:

16 Q Let's refer to your answer 15 above on that page,  
17 when you say Applicant's will test the detection and  
18 suppression systems. Does that mean your group, the people  
19 under your supervision?

20 A (Witness Waters) That's right.

21 Q Okay.

22 Is your group going to be expanded any if the  
23 plant went into commercial operation? Do you have more  
24 personnel?

25 A We would have to assess the need for additional

1 personnel and add those personnel if the duties required it.

2 Q Do you have any firm plans in that direction at  
3 this point?

4 A I do not.

5 Q Are the periods for testing of these detection  
6 and suppression systems established in the regulations?

7 A They are established by the plant technical  
8 specifications.

9 Q The proposed tech specs?

10 A That is right. And the technical specifications  
11 when they are approved.

12 Q You mean approved by the NRC staff, correct?

13 A That's right.

14 Q Now, which supply valves which are normally or  
15 required to be open have alarms on them in the fire  
16 protection system?

17 A Which ones specifically?

18 Q Yes, or which kind, if you can characterize them.

19 A The kinds are, in general, deluge valves, supply  
20 valves to sprinkler systems, valves which are normally  
21 required to be open in order to supply fire suppression water  
22 to each required area.

23 Q Would that include all such valves?

24 A All such that fall under the category of supply  
25 valves, yes.

1 Q All supply valves period, not just those that are  
2 normally required to be open?

3 A Those that are required to be open, yes.

4 Q Okay. What sort of alarm is that? Is that a  
5 local area alarm or is it an alarm back to the control room?

6 A I believe that goes back to the main fire and  
7 detection information center.

8 Q Would it alarm in the control room, to your knowledge?

9 A Yes.

10 Q That main fire detection center, I think you said,  
11 was outside the control room, itself. So, if there's an  
12 additional alarm in the control room, is that what you're  
13 saying?

14 A Yes.

15 Q Okay.

16 You say also that Applicant's will perform routine  
17 inspections monthly to verify proper valve lineups.

18 Again, is that your group that will perform those inspections?

19 A Yes, it is.

20 Q Okay.

21 Are these valves all close enough for somebody to  
22 look at at close range just walking by, or are there some  
23 of them that are up in the ceiling?

24 A I can't speak specifically where they are at.

25 Q In order to verify that a valve is lined up properly,

1 would you have to look at the valve?

2 A. Yes.

3 Q. But you haven't made any review of how visible  
4 these things are from a normal walkway or the floor of a  
5 room?

6 A. I have not. But if we have an inspection that  
7 requires confirming those valves to be in their correct  
8 position, we would do whatever is necessary to make a  
9 positive identification of those valves being in a correct  
10 position, whether it be standing at the valves at floor  
11 level, or having to get in such a position within an overhead  
12 area in order to determine the status of that valve.

13 Q. All right.

14 Now, the administrative controls that you refer to,  
15 in your insert 16, the success of those really depends on the  
16 operation and management of the plant, doesn't it?

17 A. Yes, it does.

18 Q. Okay.

19 Bear with me a minute, please.

20 (Pause.)

21 You refer in your answer 19 on pages 10 and 11, to  
22 off-site fire company response times for the plant.

23 Do you have any data on the average response time  
24 for either the Apex volunteer fire department or the Holly  
25 Springs volunteer fire department to fires at locations that

1 are approximately as far from their engine houses as the  
2 Harris plant is?

3 A. No, we do not.

4 Q. Okay.

5 Will you please take a look over on page 11 to the  
6 statement there, the response time will vary depending upon  
7 the time of day request for assistance is made. You say  
8 it's somewhat better during evening hours. It can be  
9 expected to be somewhat longer than 30 minutes during normal  
10 business hours.

11 What is the anticipated response time for one of  
12 those volunteer fire departments in normal sleeping hours, say,  
13 from something after midnight until about 6 a.m.?

14 A. I would not expect it to be substantially longer  
15 if as long as the 30 minutes that I have been discussing in  
16 my testimony.

17 Q. All right.

18 Are you also in charge of your department, also in  
19 charge of the instruction for non-fire brigade members in  
20 Section 13.2.3.2.1 of the FSAR in your attachment B?

21 A. No, we are not specifically in charge of that  
22 training. We act as an advisory role to that training.

23 Q. All right.

24 Have both of you panelists received the October 10  
25 document and blueprints that we were talking about before lunch?



1 A Yes, we have.

2 A (Witness Serbanescu) Yes.

3 Q MR. WATERS: Judge Kelley, could I clarify one  
4 thing on the continuously manned areas of the plant. I was  
5 thinking in the main power block itself, I forgot to mention  
6 the radwaste control room and the waste processing building,  
7 which is also within the power block and, considering the  
8 power block, that is also a continually manned area as well.

9 JUDGE KELLEY: So you can smoke there?

10 MR. WATERS: Yes.

11 BY MR. EDDLEMAN:

12 Q Mrs. Serbanescu, let me ask you on another topic,  
13 could you refer to an attachment 3, or enclosure 3 -- pardon  
14 me -- to the October 10th document.

15 A (Witness Serbanescu) Yes, I have it in front of me.

16 Q Could you refer to what, in my copy, is the first  
17 page of that enclosure?

18 A Mr. Eddleman, I'm sorry, I do not hear you well.

19 Q I'm sorry.

20 Could you refer to what, in my copy, is the first  
21 page of that enclosure after the front sheet that says  
22 "Enclosure 3"? It's numbered 9.5.1-5.

23 A That's correct. This is the FSAR page number 9.5.1-5.

24 Q Okay.

25 The top part of that page is a listing of standards.

1 A The entire part is a listing of NFPA standards.

2 Now, if you will refer to your green book, which  
3 is Applicant's Exhibit 6, which has the complete FSAR, you  
4 can see that page 9.5.1.4, item 9.5.1.2.1E reads, "National  
5 Fire Protection Association (NFPA)"

6 Q Right.

7 A So on page 9.5.1.5, you have a continuation of  
8 these standards.

9 Q Right.

10 A Plus a bar toward one-third of the page.

11 Q And that bar is for the insert item 11, which is  
12 handwritten on the October 10th enclosure; is that right?

13 A That is correct.

14 Q And that is standard number 37 of 1979 for stationary  
15 combustion engines and gas turbines, is it not?

16 A Yes, that's correct.

17 Q That document was issued in 1979?

18 A The respective code was updated in 1979.

19 Q Does that complete your answer?

20 A I'm sorry?

21 Q Does that complete your answer? I thought you  
22 might have been starting to say something else?

23 A No.

24 Q Okay.

25 And that is the version that you used in this update?

1 A. That is correct.

2 Q. Okay.

3 Now, as updated, does this list all the standards  
4 which are referenced in this Section 9.5.1?

5 A. I don't understand the question.

6 Q. Let me take a look at Exhibit 6 here and see if  
7 I can rephrase it or ask it in a clearer form.

8 Pages 9.5.1-4 and -5 in Exhibit 6, cover the  
9 beginning of a section 9.5.1.2.1 entitled, "Applicable  
10 fire protection code standards and guidelines"?

11 A. That is correct.

12 Q. Okay.

13 Is this intended to be a comprehensive listing of  
14 all the applicable codes, standards, and guidelines for the  
15 Harris plant?

16 A. As it is stated in the FSAR on page 9.5.1-4, "The  
17 code standards and guidelines used for the design and  
18 installation of the fire protection systems are installed,"  
19 and this is the list.

20 Q. Right. And those are the ones that were used?

21 A. That's correct.

22 Q. Now, I'm trying to ask you a slightly different  
23 question. Are these all the ones that are applicable to  
24 the plant?

25 A. To the best of my knowledge, yes.

1 Q All right.

2 Have you had a chance to see the exhibits filed by  
3 me on August 9 on Contention 116?

4 A I'm sure I've seen them. I just do not remember  
5 them by heart.

6 Q Do you have a copy available to you?

7 A I believe I do. Just give me a chance to get them  
8 out, please.

9 Q Sure.

10 (Pause.)

11 What was the date of your interrogatories?

12 I'm sorry, they are not interrogatories, they are  
13 exhibits dated --

14 A Oh, yes, I'm sorry. You're talking about NFPA 30  
15 and 31?

16 Q Yes.

17 A Okay.

18 Q Do you have copies of those with you?

19 A Yes, I do.

20 MR. O'NEILL: Mr. Eddleman, would you, for the  
21 record, identify the document you are referring to?

22 MR. EDDLEMAN: All right. What I'm referring to  
23 are exhibits numbered 116-1 through, I think it is, 8, which  
24 were served on the parties accompanied by a cover letter  
25 dated August 9, 1984.

1 MR. O'NEILL: And these are proposed exhibits?

2 MR. EDDLEMAN: Yes.

3 MR. O'NEILL: You have not marked these for  
4 identification?

5 MR. EDDLEMAN: No, in fact I just realized I don't  
6 have enough copies to give to the court reporter. So I  
7 think I'd better hold it off until tomorrow.

8 JUDGE KELLEY: I think we have at least one.  
9 Yes, we have a set.

10 MR. EDDLEMAN: Well, I think I'm still going to  
11 have to produce three copies for the reporter.

12 JUDGE KELLEY: Right.

13 MR. EDDLEMAN: Okay.

14 BY MR. EDDLEMAN:

15 Q But you do have those?

16 A (Witness Serbanescu) Yes, I do.

17 Q Well, let's just leave this at this point.

18 MR. O'NEILL: We have no objection, Mr. Chairman,  
19 to Mr. Eddleman asking questions about these documents.  
20 I just wanted the record to be clear that there was no such  
21 exhibit thus far. He certainly can ask questions about it  
22 and we probably will object to admission in any event.

23 JUDGE KELLEY: Were you going to offer these as  
24 evidentiary exhibits?

25 MR. EDDLEMAN: Yes, that's why they were prefiled.

1 JUDGE KELLEY: That's what I thought. So, should  
2 we get some numbers put on them or do you want to wait until  
3 you get to them for questioning?

4 MR. EDDLEMAN: Let me see. There is only  
5 Eddleman Exhibit 1 under me, is that correct?

6 JUDGE KELLEY: And you had number one in the  
7 environmental hearing?

8 MR. EDDLEMAN: I think the most logical thing to  
9 do, since there are 8 of these, is to propose that each one  
10 be marked with a number higher than the dashed number on it.  
11 116-1 will be Eddleman 2, and 116-2 will be Eddleman 3, and  
12 so on through 116-8, which would be Eddleman 9.

13 JUDGE KELLEY: I wonder what is least confusing. I  
14 don't think we really care as long as it is --

15 MRS. MOORE: Your Honor, might I make a suggestion?

16 JUDGE KELLEY: Surely.

17 MRS. MOORE: I would suggest, for the clarity of  
18 the record, that they do be marked as Eddleman 2 through 9,  
19 but that each one be separately identified so that we're  
20 very clear on exactly which document is marked in case we  
21 mismark our exhibits or something. It would be nice to have  
22 each title read into the record.

23 MR. EDDLEMAN: I'll be glad to go through that.

24 JUDGE KELLEY: Let's go ahead with our process then.

25 MR. EDDLEMAN: Eddleman 2 is pages from NFPA 31, oil

1 burning equipment. And begins with a listing of contents and  
2 then continues with chapter 1, General Provisions; chapter 2,  
3 Tank Storage. And ends with -- actually if I'm going to  
4 identify it comprehensively, I notice that not all the pages  
5 are here. So, I have to say it ends with pages 24 through 31  
6 of NFPA 31 and begins with pages 2 through 5, also of NFPA 31.  
7 It comprises the start of chapter 1 and sections of chapter 2  
8 as shown in the context, pages 25 through 31.

9 (Whereupon, Exhibit 116-1 was  
10 identified and marked as  
11 Eddleman 2.)

12 MR. EDDLEMAN: Eddleman 3 is marked 116-2 from NFPA 30  
13 and consists of two sheets. One, a table of contents comprising  
14 pages 30-4 and 30-5 and the other pages 30-6 and 30-7,  
15 including the first part of the Flammable and Combustible  
16 Liquids Code Section.

17 (Whereupon, Exhibit 116-2 was  
18 identified and marked as  
19 Eddleman 3.)

20 MR. EDDLEMAN: Eddleman 4, which is labeled 116-3  
21 consists of, from NFPA pages 30-8 and 9; 30-12 and through  
22 30-15. These consist primarily of definitions and certain  
23 exceptions to the applicability of this code.

24 (Whereupon, Exhibit 116-3 was  
25 identified and marked as  
Eddleman 4.)

1 MR. EDDLEMAN: Eddleman 5 is marked 116-4 from  
2 NFPA 30, pages 30-16 through 19. It might have been copied  
3 on front. I can supply you with a good copy.

4 A I do not know if we have ever been in possession  
5 of this exhibit.

6 MR. EDDLEMAN: I think I served it on your Counsel.

7 MR. O'NEILL: The copy I have is just 16 and 17.

8 MR. EDDLEMAN: It's possible that's a printing error.  
9 In any rate, I can take care of it. Let me ask you to check  
10 your copies and see if you also have pages 30-30 and 31?

11 MRS. SERBANESCU: Yes, I do.

12 BY MR. EDDLEMAN:

13 Q And the next pages you all have are 30-34 and 35?

14 A Yes.

15 Q So on mine again, this 30-32 and 33?

16 I didn't pick out a special copy of this to be my  
17 copy, that's why I'm a little perplexed but it appears to  
18 have been an error in printing them. And the next page that  
19 you all have is that 30-40 and 41?

20 A (Witness Serbanescu) Yes.

21 MR. EDDLEMAN: Right, Mr. O'Neill?

22 MR. O'NEILL: That's correct.

23 MR. EDDLEMAN: In mine, before that you have 30-38  
24 and 39.

25 MRS. SERBANESCU: No, I don't have it.



1 MR. EDDLEMAN: I'm sorry, I have it. I have it,  
2 you all don't.

3 Okay. Now, is the next page that you all have  
4 showing 30-44 and 30-45?

5 A. (Witness Serbanescu) That's correct.

6 MR. O'NEILL: Perhaps, Mr. Eddleman, you should  
7 identify for the record what you want these exhibits to  
8 reflect, and then you could provide copies of missing pages  
9 that are not in our copies.

10 MR. EDDLEMAN: Well, let me just say that my  
11 copy includes, which you-all's does not -- 30-42 and 30-43.  
12 And this has to do with tank storage design and construction,  
13 fabrication, emergency relief venting, in various kinds of  
14 atmospheric tanks. There is a great deal of information in  
15 here as to, basically, the design and standards for tanks  
16 storing flammable and combustible liquids. And I can supply  
17 you-all with updated -- with complete copies of this. It is  
18 a front and back copy and that was Eddleman 5.

19 (Whereupon, the document previously  
20 referred to was marked as Eddleman  
21 Exhibit 5 for identification.)

22 End 11  
23 12 fls.

24  
25

1 MR. EDDLEMAN: Now let me look at the others that  
2 I have already gone through and make sure there aren't  
3 any fronts and backs in them. I don't believe there are  
4 but I just want to doublecheck that.

5 BY MR. EDDLEMAN:

6 Q When I was reading the pages, did you check to  
7 see that your copies corresponded to the previous documents  
8 I read off?

9 A (Witness Serbanescu) The previous exhibits  
10 corresponded to the pages which you mentioned.  
11 Exhibit 5 is the one which is missing pages.

12 Q Okay.

13 Exhibit 5 which is 116-4.

14 A That's correct.

15 Q Okay.

16 Now Exhibit 6, which is 116-5, pages 30-68  
17 and 30-69 are my front page --

18 A 68 and 69, yes.

19 Q Then 30-70 and 71.

20 A That's correct.

21 Q Then 30-72 and 73, and then 30-74 and 75.

22 A Yes.

23 Q Okay.

24 MR. EDDLEMAN: And this is from Chapter 5 in

25 NFPA 30 on industrial plants with just a little bit of

1 Chapter Four picked up on page 30-63. That will be Eddleman  
2 6 there.

3 (Whereupon, the document previously  
4 referred to was marked as  
5 Eddleman Exhibit 6 for  
6 identification.)

7 MR. EDDLEMAN: Eddleman 7, Number 116-6, consists  
8 of a single page comprising pages 30-78 and 30-79 from  
9 NFPA 30, Chapter 6, Bulk Plants and Terminals.

10 (Whereupon, the document previously  
11 referred to was marked as  
12 Eddleman Exhibit 7 for  
13 identification.)

14 MR. EDDLEMAN: Eddleman 8 -- I thought that was  
15 Eddleman 7 I was just reading about, it is labeled 116-6,  
16 so that would be Eddleman 7.

17 In case there has been any misspeaking by me,  
18 the exhibit number would always be one more than the number  
19 after 116. So I am going to now refer to the one that  
20 is labeled 116-7 and that will be Eddleman 8 from NFPA 30  
21 and it consists of pages 30-88 and 89 and 30-106 and 107  
22 and these comprise some fire control requirements in  
23 Section 6-8 and part of Chapter 7 on service stations  
24 giving some general provisions and then the second sheet  
25 is from Chapter 8, processing plants.

1 (Whereupon, the document  
2 previously referred to was  
3 marked as Eddleman Exhibit 8  
4 for identification.)

5 MR. EDDLEMAN: Now the last one is Eddleman 9  
6 labeled 116-8, from NFPA 30, it consists of pages 30-126  
7 and 127 and then 30-128 and 129 and then 30-130 and 131  
8 and then 30-132 and 133, comprising Appendix C and some  
9 tables. That is from NFPA 30.

10 (Whereupon, the document  
11 previously referred to was  
12 marked as Eddleman Exhibit 9  
13 for identification.)

14 MR. EDDLEMAN: I believe that completes the  
15 identification of all of these proposed exhibits.

16 JUDGE KELLEY: And your last number again is?

17 MR. EDDLEMAN: The last number is 9, Judge --

18 JUDGE KELLEY: Right.

19 MR. EDDLEMAN: -- corresponding to the one  
20 labeled 116-8.

21 JUDGE KELLEY: Thank you.

22 MR. EDDLEMAN: Does the Staff also need another  
23 copy of 116-4? Do you have backs on your copy?

24 MRS. MOORE: We will need another copy.

25 MR. EDDLEMAN: Okay. I will endeavor to supply

1 BY MR. EDDLEMAN:

2 Q Now let me ask:

3 Do our panel of witnesses have the blueprints  
4 that were in the October 10 submission from CP&L to NRC  
5 with the cover letter Serial NLS 84-440?

6 A (Witness Serbanescu) One minute, please. Let me  
7 get reorganized here.

8 Q Okay.

9 JUDGE KELLEY: Are you identifying the blueprint  
10 now?

11 MR. EDDLEMAN: I will read them off as soon as  
12 they get them out as to what they are.

13 WITNESS SERBANESCU: I have them.

14 JUDGE KELLEY: All right.

15 BY MR. EDDLEMAN:

16 Q Mrs. Serbanescu, do you have in your hand two  
17 blueprints?

18 A (Witness Serbanescu) Yes, I do.

19 Q Is one of them labeled in its identification section  
20 down in the lower right-hand corner "CAR-2168 G-115?"

21 A Yes, it is.

22 Q And is the title of this "Fuel Handling Building,  
23 Miscellaneous Steel Sheet Tube, Unit 1 and 2?"

24 A That is correct.

25 Q And this is for the Shearon Harris Nuclear Power

1 Plant, isn't it?

2 A Yes, it is.

3 Q Now over to the -- immediately to the left of the  
4 block that identifies the document, is there a block where  
5 some revisions are listed?

6 A That is correct.

7 Q And are there on your copy five revisions listed?

8 A Yes, I have revision five.

9 Q All right. And that lists 5, 4, 3, 2 and 1 as  
10 the revision numbers there, does it not?

11 A That's correct.

12 Q Okay.

13 And Revision Five is dated February 21, 1984 on  
14 this blueprint, is it not?

15 A Yes.

16 Q Okay.

17 And the last previous revision to that,  
18 Number Four, is dated May 21, 1980, is it not?

19 A Yes.

20 Q Okay.

21 Now the February 21, '84 revision has a description  
22 of adding M-14 note and L-19 reference drawing and revising  
23 N-19 title, does it not?

24 A One second.

25 Revision Three, you said?

1 Q Revision Five.

2 A Oh, Five.

3 Please repeat that.

4 Q Does Revision Five show, as the content of the  
5 revision in the middle of that revision block set there,  
6 that it consists of adding M-14 note and an L-19 reference  
7 drawing and revising an N-19 title?

8 A Yes.

9 Q Okay.

10 L-19 is a location on this blueprint, is it not?

11 A That's correct.

12 Q And in that location appears a list of reference  
13 drawings, correct?

14 A That's correct.

15 Q Okay.

16 And the line that has been drawn on here appears  
17 to remove Unit 2 from those references, does it not?

18 A The line which is usually drawn indicates the  
19 changes and primarily it was the intention -- I would assume  
20 that was the intention.

21 Q Okay.

22 The note at M-14, can you find that?

23 A Yes. It says: "The following 'as built'  
24 FCR's, PWS, DCN and RCI's have not been incorporated  
25 as per Ebasco procedure 'E-11.' DCN 650-859/PW-AS-2689,

wrb/agb7

1 FCR-AS-2601."

2 Q Okay.

3 Now the revision of N-19 in the title, there is  
4 a little circle around N-2 where it says Unit 1 and 2, is  
5 there not?

6 A Yes.

7 Q Now the notes for the door that appear along  
8 about the 18 and 19 sections of this blueprint on the  
9 right-hand side --

10 A You have to give me two coordinates to find it.

11 Q Well let's look at 18 and 19 up at the top. Do  
12 you see a section there entitled "notes?"

13 A Yes.

14 Q And directly under that another rather larger  
15 section entitled "notes for door?"

16 A Yes.

17 Q Okay.

18 There are not any changes to this section on the  
19 notes for the door indicated on the revisions of this  
20 drawing, are there?

21 A In accordance with the Revision Five title block,  
22 there are none.

23 Q Okay.

24 In fact the only revisions that show in the 18 and  
25 19 sections in the previous revisions are, in addition, at



wrb/agb8

1 A-18 and L-18 in Revision --

2 A I would appreciate it if you would tell me the  
3 revision number and give me complete information as to what  
4 exactly you --

5 Q I'm sorry, I was just about to say Revision Four.

6 A It is very difficult for me to follow.

7 Q Let me refer you to Revision Four, if I may.

8 A Okay.

9 Have you finished with Revision Five?

10 Q Yes, I am finished with Revision Five.

11 A A point of information: all the Revision Five  
12 changes have been circled with this line which you see  
13 just to highlight the changes and you see them in three  
14 places therefore the three revisions made under rev. five  
15 have been circled.

16 Q I see.

17 A Now we are finished with rev. five, is that  
18 correct?

19 Q I have finished asking you about it, yes.

20 A Thank you.

21 Q Okay.

22 Now if I may refer to Revision Four --

23 A Yes.

24 Q -- this refers to an addition at A-18 for a note  
25 and L-18 for a reference drawing. But what those are is not

1 circled on this print, is that correct?

2 A That's correct. They were circled on the rev. four  
3 issue.

4 MR. O'NEILL: Mr. Chairman, I would like to  
5 interpose an objection at this point as follows:

6 This is not a document that Applicants are  
7 offering as an exhibit. The first 15 minutes of questioning  
8 has been to ask the witness to identify what a reader of  
9 this document could clearly see for him- or herself. If  
10 it will save time, Applicants would have no objection, if  
11 this is going anywhere to having this -- three copies  
12 of these blueprints marked for identification, given a  
13 number, and available as an exhibit.

14 So that if he wants to ask questions about the  
15 document, rather than going through and describing each  
16 block of it, we might save some time.

17 But in addition I would ask that Mr. Eddleman  
18 be required to give an offer of where this line is going  
19 so that we don't spend a considerable amount of time  
20 wandering through a document which we don't see the relevance  
21 of to the issues that are before this Board on this contention.

22 JUDGE KELLEY: Will you, just for context, and to  
23 remind me, at least, where did this blueprint and its  
24 companion come from?

25 MR. O'NEILL: This blueprint was included in a

1 package that was sent to the Staff with a cover letter of  
2 October 10, 1984. Included in that package for the Staff's  
3 information and by way of reference for anyone else were the  
4 marked-up versions of FSAR sections.

5           The marked-up versions of the FSAR sections are  
6 now included in Exhibit 6. We are not offering this blue-  
7 print for evidence, it is not part of Exhibit 6. It was  
8 submitted to the staff for information with respect to one  
9 of the open items on the fire protection program, not the  
10 subject of this contention.

11           JUDGE KELLEY: So no party put forward this  
12 blueprint as a proposed exhibit; rather it surfaced in  
13 your mailing of the 10th of October, at least surfaced in  
14 front of us?

15           MR. O'NEILL: That's correct.

16           JUDGE KELLEY: Okay.

17           Mr. Eddleman, do you have any comments?

18           MR. EDDLEMAN: Well I am about done with that  
19 other one. I think I have established what I wanted to  
20 establish, that there are no changes on that blueprint  
21 to the specification for the doors.

22           JUDGE KELLEY: As long as we have had as much  
23 discussion as we have had, we had from Mr. O'Neill an  
24 offer to put it in evidence just so we will have it there.

25           Do you concur in that?

1 MR. EDDLEMAN: I have no objection.

2 JUDGE KELLEY: Well let's do that.

3 MRS. MOORE: Your Honor, maybe I misunderstood.

4 I did not hear Mr. O'Neill say he was offering it into  
5 evidence, I thought he said we would mark it for identification  
6 only.

7 JUDGE KELLEY: Then I misheard.

8 MR. O'NEILL: That was my offer, Mr. Chairman.

9 Mrs. Moore is correct, I did not offer it as an exhibit  
10 because it is not relevant to our case. I simply said that  
11 if we are going to have discussion on the record that talks  
12 about L-18, it is going to be incomprehensible without  
13 the document.

14 JUDGE KELLEY: That was my only thought. I misstated  
15 what you had said. We are really treating it then under  
16 your proposal as a cross-examination document.

17 MR. O'NEILL: Marked for identification but not  
18 an exhibit.

19 JUDGE KELLEY: For the purpose of understanding  
20 what was said.

21 MR. O'NEILL: That's correct.

22 JUDGE KELLEY: Okay.

23 MR. EDDLEMAN: No objection to that either.

24 JUDGE KELLEY: Okay. Let's do that then. Let's  
25 mark it as Exhibit Number blank -- Board Exhibit Number 1?

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I don't want to confuse things. Is that all right?

MR. O'NEILL: That's fine.

JUDGE KELLEY: Board Exhibit Number 1 for the sake of clarity.

(Whereupon, the document previously referred to was marked as Board Exhibit Number 1 for identification.)

JUDGE KELLEY: It is not in as evidence, it is only in to illustrate the discussion that has already taken place.

MR. EDDLEMAN: May I ask that we mark the other one Board 2 then?

JUDGE KELLEY: No, I think separately from that Mr. O'Neill has an objection as to the relevance of the line of questioning to the contention, and maybe you could respond to that.

MR. EDDLEMAN: Well in the updated testimony which is provided, there is a discussion of -- well let me refer to it:

The supplemental testimony of Mrs. Serbanescu.

1 MR. EDDLEMAN: Question 7 and Answer 7 on pages  
2 6 and 7 of that supplemental testimony dated October 11th,  
3 1984, --

4 JUDGE KELLEY: Okay.

5 MR. EDDLEMAN: -- states that or asks:

6 "Do you wish to clarify a statement made  
7 in the August 9th testimony about the bounding of  
8 fire areas by barriers to provide a minimum three  
9 hour fire rating with a single exception?"

10 And it then describes in the answer the exceptions  
11 to that, special doors, bullet-resistant doors and air-tight  
12 doors, which have not been fire tested. It says:

13 "However, the design of these doors  
14 should provide equivalent protection in case of fire."

15 Now as I understand these blueprints, they are  
16 the specifications of these kinds of doors.

17 JUDGE KELLEY: The exceptional doors, the three  
18 categories?

19 MR. EDDLEMAN: Yes, sir.

20 JUDGE KELLEY: Okay.

21 MR. O'NEILL: Applicants are not agreeing to that  
22 characterization.

23 JUDGE KELLEY: Well, should I get the Applicants'  
24 comment at this point?

25 MR. EDDLEMAN: Sure.

1 JUDGE KELLEY: Mr. O'Neill.

2 MR. O'NEILL: The blueprint Mr. Eddleman is  
3 referring to only describes I believe one particular door.

4 Mrs. Serbanescu can certainly address this more  
5 specifically.

6 MR. EDDLEMAN: Well, the other one supplies the  
7 others.

8 WITNESS SERBANESCU: I think it would help if we  
9 discuss print number by print number.

10 MR. O'NEILL: Mr. Chairman, I still have an  
11 objection as to where all of this is going, whether or not--  
12 And certainly these blueprints have something to do with  
13 certain doors.

14 JUDGE KELLEY: Do they have anything to do with  
15 the three categories of doors referred to on page 7, special  
16 doors, bullet-resistant doors, air-tight doors?

17 MR. O'NEILL: They do.

18 JUDGE KELLEY: Okay. So that was Mr. Eddleman's  
19 point, as I understood him, that demonstrated the relevance  
20 of these documents. If you say they are not relevant, why is  
21 that?

22 MR. O'NEILL: My response to Mr. Eddleman is that  
23 these blueprints do not include all such doors. This blueprint  
24 we already identified does talk about one of the doors, and I  
25 wanted to make that clear.

1           The second blueprint simply doesn't-- If you look  
2 at it, it is not a blueprint of a door, it's a listing or a  
3 schedule and lists that doors that are exceptions to fire  
4 rated doors.

5           Setting that side, the question is what is the  
6 relevance of going through these blueprints one by one to  
7 where this contention is going?

8           JUDGE KELLEY: Mr. Eddleman?

9           MR. EDDLEMAN: I think these blueprints establish  
10 that the door specifications and listings were available  
11 well before August the 9th, 1984, and would lay grounds for  
12 objection to the supplemental testimony.

13           MR. O'NEILL: We concede that this information  
14 was available prior to August 9, 1984. This is a clarification  
15 to a statement to make sure the record was clear what  
16 Mrs. Serbanescu was talking about. This is not additional  
17 information in Answer 7. The question talks about a  
18 clarification.

19           MR. EDDLEMAN: I think it basically clarifies,  
20 if it does, by making a correction.

21           JUDGE KELLEY: Can I get clear the nature of your  
22 objection, Mr. Eddleman? How are you prejudiced by this?  
23 I'm not sure that's clear to me.

24           MR. EDDLEMAN: Judge, I did not think I had an  
25 objection pending.



1 MRS. MOORE: Your Honor, might I say something?

2 I believe Mr. Eddleman said that he was using this  
3 as a basis for objecting to the supplemental testimony, and  
4 that testimony has already been received into evidence. I  
5 don't know if he misspoke or--

6 MR. EDDLEMAN: Thank you, Mrs. Moore. I did make  
7 a mistake. I don't know if it was misspeaking or if my mind  
8 was out of phase.

9 But what I meant to get at was that I think the  
10 existence of this information, its availability, goes to the  
11 credibility of the witnesses.

12 JUDGE KELLEY: You mean testimony was filed at one  
13 point and then a week before the hearing, some corrective  
14 testimony was filed? Is that the premise?

15 MR. EDDLEMAN: No, that the original testimony --  
16 that this information was available well in advance of that  
17 original testimony.

18 JUDGE KELLEY: So --?

19 MR. EDDLEMAN: So to make a statement about  
20 "all" and "every" and this information contradicts it, and  
21 it is part of the plant design. It has Ebasco's name on it.

22 JUDGE KELLEY: Well, but isn't it the fact that  
23 the clarifying or correcting information -- call it what you  
24 want -- was put on the table here at least a week or so ago?  
25 Isn't that right?

1 MR. EDDLEMAN: I believe I first received the  
2 testimony on Friday or Saturday of last week, and I observe  
3 that I have not written the date received on the October 10  
4 dated submission. I believe I received it on Monday, but it  
5 might have been earlier, so I have had that maybe four days.

6 JUDGE KELLEY: Well, you are not arguing, or are  
7 you arguing that that goes to -- that it is a fairness problem  
8 as far as you're concerned? I will give you an example.

9 I have seen parties come in with testimony, 20  
10 pages of testimony. Then the lawyer says, "Have you got any  
11 corrections?"

12 And the witness says "Yes," and proceeds to  
13 rewrite the entire thing right on the spot.

14 Whereupon, I said, "No, come back next week,"  
15 after they have had enough of a chance to look it over.

16 You don't have that kind of a problem, do you?

17 MR. EDDLEMAN: Not to that extent. I have a sort  
18 of a problem about this. I could perhaps take care of it in  
19 other ways. I would rather ask a few questions about this  
20 blueprint and get that out of the way, and then go back to the  
21 testimony, but if I have to do it without the blueprint, I can  
22 sure try.

23 JUDGE KELLEY: Okay. But where will the line go?  
24 I mean that was the objection. Mr. O'Neill is saying what is  
25 this all about? What is this going to show?

1           And if you are showing-- If you are then saying,  
2 "Well, I didn't have this clarified information until last  
3 week," then maybe the Board will say "Well, so what? That is  
4 plenty of time to look it over."

5           What is the point of proving that? Apart from a  
6 claim of surprise on the ground that you didn't have it long  
7 enough in advance of the hearing, what other kind of a  
8 complication does this introduce?

9           MR. EDDLEMAN: Let me have a moment, please.

10          (Pause.)

11          I think what the problem is is that-- Let me refer  
12 back to my interrogatories at one point.

13          This is the one we went over this morning, and  
14 there is a response to it-- Pardon me. It is not the same  
15 one. It is.... I'm trying to locate it.

16          (Pause.)

17          It is Interrogatory 116-2-- I'm sorry, it looks  
18 like I misidentified it. Oh, yes, it's -2-E.

19          It asked for all copies of all actual test  
20 results re: fire-resistant or fire-resisted materials used  
21 at Harris.

22          Now at this date last week I received something  
23 that says Oh, by the way, some of these doors hadn't been  
24 tested to this, whereas the earlier responses indicated they  
25 all had. And now I've got this huge list of doors here in

1 this blueprint, and some statement of belief as to, you know,  
2 what they would do in a fire.

3 And I frankly haven't had time to get this stuff  
4 checked and, you know, trying to get the details of it as to  
5 what are these doors, are there any tests of how these things  
6 perform in fires?

7 JUDGE KELLEY: Where is the list of doors? I'm  
8 sorry.

9 MR. EDDLEMAN: It is in the blueprint. I think it  
10 may be in some of these other filings, too. But there's a  
11 listing of special doors in the second blueprint.

12 JUDGE KELLEY: Well, we surely aren't going to go  
13 into questioning on this door by door. Don't we have a  
14 pretty clear statement that for the most part, the doors in the  
15 power building are fire-tested and some of them aren't, and  
16 we have some categories, and now we have a list?

17 Can't we ask some questions over what has been  
18 done to these doors that are within the exceptions?

19 Are you suggesting the exceptions are swallowing  
20 the rule and now most of the doors in the power building are  
21 not "fire-tested," I guess is the term? We can find that out  
22 pretty quickly by just asking the witness, I would think.

23 MR. EDDLEMAN: Well, I can ask the witnesses their  
24 opinion of it for sure. But what I don't have is the kind of  
25 preparation. On the other stuff I've had months to look at

1 the information and to get pieces of it here to ask about.

2 This I have had, at an arguable maximum, five days  
3 to even try to assemble the stuff, and it is not enough time.  
4 And really the--

5 JUDGE KELLEY: What do you have to assemble? I  
6 mean if we're looking at page 7 of the supplemental testimony  
7 from Mrs. Serbanescu, she states:

8 "Each fire area located inside the  
9 structure of the power block is bounded by barriers  
10 with construction that provides a minimum three hour  
11 fire rating with the exception of some special doors,  
12 bullet-resistant doors, air-tight doors, which have  
13 not been fire-tested."

14 Isn't that something you can go into with the  
15 witness satisfactorily? Maybe it will turn out that you  
16 can't, but on the face of it, that doesn't strike me as all  
17 that complicated.

18 MR. EDDLEMAN: Well, none of the specifications  
19 of these doors-- What I'm saying is on discovery I had the  
20 understanding that all the doors had been tested and that  
21 Applicants had provided the data, the tests. They had their  
22 position on those doors and the other fire-resisting or  
23 fire-resistant materials that they used for fire barriers,  
24 period. Okay?

25 JUDGE KELLEY: Okay.

1 MR. EDDLEMAN: Now we have this whole new class of  
2 things that haven't been tested. See, if it had been tested  
3 it is easier to go at in a lot of ways. They haven't been  
4 tested.

5 JUDGE KELLEY: That is part of the testimony,  
6 though. You can ask questions to determine.... I gather  
7 these doors are in some sense equivalent to fire-tested doors.

8 MR. EDDLEMAN: I don't know.

9 JUDGE KELLEY: Well, let's find out. You can ask  
10 that.

11 I mean the idea of going over these blueprints  
12 line by line I think is not very promising.

13 MRS. MOORE: Your Honor, might I interject a  
14 moment, please? It is relevant to these doors.

15 JUDGE KELLEY: All right.

16 MRS. MOORE: What I would like to say is that the  
17 issue of whether the Applicant has had UL-tested firedoors  
18 in place or some tested firedoors is listed in the SER dated  
19 November 1983 as an open item. That was before Mr. Eddleman's  
20 discovery of 1984. So that the fact that certain of the doors  
21 were not tested was available to him since the issuance of  
22 the SER in 1983.

23 I can give you a page reference if you would like  
24 it.

25 JUDGE KELLEY: Is that consistent with the

1 following statement:

2 "Each fire area....is bounded by barriers  
3 with construction that provides a minimum three hour  
4 fire rating....with one exception of emergency diesel  
5 generator rooms described previously."

6 That's what got clarified by the later statement.

7 MRS. MOORE: That's right.

8 I think whether the existence of the open item is  
9 consistent with their testimony is something maybe they can  
10 address, but I am just pointing out that the question of the  
11 testing of doors was raised in the SER and is in there as an  
12 open item.

13 JUDGE KELLEY: Okay.

14 I think the Board has enough information to set  
15 a course, but let's take a ten-minute break and then we will  
16 resume.

17 MR. EDDLEMAN: May I note for the record, since  
18 Mrs. Moore raised that point, that I did actually ask in  
19 Interrogatory 166-4 about the responses to the NRC's questions.

20 JUDGE KELLEY: I'm not entirely sure I'm-- You  
21 are referring to your interrogatories--

22 MR. EDDLEMAN: She said I had time to do discovery  
23 on this, and I'm pointing out that I did.

24 JUDGE KELLEY: Okay.

25 MR. BARTH: Before we adjourn, your Honor, for a

1 moment may I answer one of your questions this morning?

2 I have checked with the office in Washington that  
3 issues the FOIA requests and denials. I am informed by them  
4 that on Monday, October 22nd, they expect to confirm the  
5 September 25th, 1984 note to John Runkle signed by Nina  
6 Toms which set forth a list of some 84 items which would be  
7 withheld which pertained to the SALP FOIA request.

8 Thank you, your Honor.

9 JUDGE KELLEY: Thank you. That is helpful,  
10 Mr. Barth.

11 We will take ten minutes.

12 (Recess.)

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End 13



Take 14

1 JUDGE KELLEY: Back on the record.

2 During our adjournment, we have been discussing the  
3 general question of fire testing of doors in the power block  
4 and, more specifically, the clarification and the correction,  
5 if you will, of the Applicant's testimony that have been  
6 offered in the supplemental testimony, pages 6 and 7,  
7 concerning a statement in the initial testimony about the  
8 extent to which doors would be fire rated and then a  
9 modification to note specifically three categories of  
10 exceptions.

11 Operationally, the question was whether it would  
12 be appropriate, under the circumstances, to probe into these  
13 questions via the two blueprints that the Applicants had  
14 provided to the NRC Staff. And we think that, under all the  
15 circumstances, that's not appropriate. It seems to us that  
16 the testimony itself speaks directly to this point and that  
17 Mr. Eddleman is free to probe into the fire protection that's  
18 afforded by these various exceptions with the witnesses to  
19 the extent they can answer it.

20 We don't, at this juncture, see any need to become  
21 enmeshed in these rather confusing blueprints, which, incidentally  
22 nobody had offered as an exhibit in the past.

23 So we're going to ask Mr. Eddleman to proceed down  
24 that road and ask such questions as he wishes to put about the  
25 testimony in this area without at least direct regard to the

1 blueprints.

2 MR. EDDLEMAN: I think, if I may just state for  
3 the record, that if enclosure 1 to the October 10 document  
4 is as described and has all the doors listed on it so that  
5 that blueprint, which is listed in enclosure 2 as item E is  
6 just an addition to it, then I don't think I'm prejudiced  
7 by that. But if there turns out to be some overlap, then  
8 I might ask for some reconsideration of the ruling if it  
9 comes out on questions.

10 JUDGE KELLEY: Let's see where it takes us. It  
11 can be that your questioning will indicate that some other  
12 line is appropriate and we can consider it then.

13 But based on what we know now, we're asking you to  
14 proceed as indicated.

15 MR. EDDLEMAN: Fine, Judge. I just wanted to state  
16 that on record.

17 JUDGE KELLEY: Okay.

18 MR. EDDLEMAN: Thank you.

19 BY MR. EDDLEMAN:

20 Q Mrs. Serbanescu, do you have with you the cover  
21 letter of the October 10, 1984 CP&L submission to the NRC  
22 concerning open item 8, the qualification of the Shearon-Harris  
23 plant fire doors?

24 A (Witness Serbanescu) Are you talking about CP&L  
25 letter, serial number NLS-84-440?

1 Q Yes, I am.

2 A Yes, I do.

3 Q Okay. In the first paragraph after the salutation  
4 in that letter, it says, "In response to SER open item number  
5 8, concerning the qualification of the SHNPP fire doors,  
6 Carolina Power & Light Company (CP&L) makes the following  
7 commitments:" does it not?

8 A That's what the letter reads.

9 Q All right.

10 And it then says, "Carolina Power & Light Company  
11 will provide doors with a one-and-a-half or three-hour rating  
12 having been tested by a nationally recognized testing  
13 laboratory except in those areas where design requirements  
14 specify the use of special doors, i. e.," this is in  
15 parentheses, "(tornado, missile, air-tight, tornado, wind, etc.)  
16 In order to identify these doors CP&L has developed a list  
17 which reflects the fire doors being used at SHNPP and their  
18 design requirements." This list is attached as enclosure 1.

19 Did you play any role in formulating this commitment?

20 A You mean formulating the letter?

21 Q The commitment that I just read there, that Carolina  
22 Power & Light made with respect to those fire doors to the  
23 NRC Staff. Did you help formulate that commitment, itself,  
24 as to what the company was going to commit to do?

25 A No, I don't think so.

1 Q Have you, in your responsibilities for fire protection  
2 at the Harris plant, been involved in responding to open item  
3 number 8 on the fire doors?

4 A Indirectly, yes, but not directly.

5 Q All right.

6 Did you know that this open item existed?

7 A Yes, I did.

8 Q Did you know that before you prefiled testimony on  
9 August 9?

10 A Yes, I did.

11 Q Okay.

12 Were you informed back in 1983, when the safety  
13 evaluation report came out with the open item in it; do you  
14 recall?

15 A Well, I have a copy of the safety evaluation report.

16 Q So you had it available to you when it was issued?

17 A Yes.

18 Q Okay.

19 Now, Mr. Waters, did you play any role in the  
20 formulation of this commitment?

21 A (Witness Waters) No, I did not.

22 Q All right.

23 MR. EDDLEMAN: Here's where I begin to get into  
24 my problem, Judge. I don't know what the proper procedure is,  
25 but these witnesses don't seem to know what this commitment is

1 and yet it appears to directly impact on the fireproof nature  
2 of the fire areas because these doors are access into various  
3 fire areas.

4 Where I want to go with this is to ask them what  
5 this commitment means as far as -- well, for example, whether  
6 all the exception doors are listed in enclosure 1, but  
7 with them saying they haven't played any role in formulating  
8 the commitment, I don't know if they'd have a basis to know.

9 JUDGE KELLEY: Well, what about Mrs. Serbanescu's  
10 testimony on page 7 is what I was principally focusing on.  
11 She has some things to say there.

12 MR. EDDLEMAN: I can ask about that with respect to  
13 this document. I can do that.

14 JUDGE KELLEY: Yes, see where that goes.

15 MR. EDDLEMAN: All right.

16 BY MR. EDDLEMAN:

17 Q Mrs. Serbanescu, in preparing your answer 7 that  
18 appears on page 7 of your supplemental testimony dated  
19 October 11, did you have access to the October 10 letter and  
20 attachments when you prepared that answer?

21 A (Witness Serbanescu) I have knowledge about that.

22 Q Did you have a copy available to you at that time,  
23 at the time that you prepared this testimony?

24 A I do not recall, I have so much paperwork.

25 Q I can understand.

1                   Let me ask you this.

2           A.     But I had knowledge about CP&L's commitment.

3           Q.     I see.

4                   Did you have the actual text of the commitment,  
5 was that part of your knowledge?

6           A.     I do not remember if I had the exact text of the  
7 CP & L commitment.

8                   But let me volunteer this information.

9                   In a nuclear power plant the fire protection system  
10 is not a safety system. As a matter of fact, it is a non-  
11 safety related system. Therefore, all the more important  
12 requirements, like tornado protection or missile protection  
13 or bullet-proof or combination thereof, a water-type door  
14 that will take pressure then over the fire protection  
15 department.

16                   In many instances these doors are oversized, are  
17 in excess of usually size door tested by a nationally  
18 recognized laboratory.

19                   However, the construction is so stringent that it  
20 does meet the requirements, or would withstand the requirements  
21 of a fire door.

22                   Secondly, I'd like --

23                   JUDGE KELLEY: Could I ask a question.

24                   When you say one of these kinds of doors, and I'm  
25 quoting you, would take precedence over a fire door, are you

1 saying that it is more important that that door be tornado  
2 proof or bullet proof than it is that the door meet fire  
3 requirements?

4 MRS. SERBANESCU: Yes, your Honor.

5 On top of this, I would like to say that I have a  
6 list of doors and, to be honest with you, at the time when I  
7 prepared my testimony I had knowledge about the number of  
8 doors, not necessarily being tested, but it just slipped my  
9 mind. Because in fire protection it is acceptable to have  
10 equivalents and it's considered of equivalent construction.  
11 Further, I have knowledge that at other nuclear power plants  
12 similar construction-type doors have been accepted as  
13 equivalent to three-hour rated doors.

14 Another item is a fact that these doors are toward the  
15 outside of the building. And as such, if there is a fire  
16 inside, let's assume that they might burn out -- which I do  
17 not think they will -- because of their construction. The  
18 fire will just get out; there is no radioactivity released  
19 from them. And there is no problem in them burning out from  
20 within. In most instances, we don't even have such  
21 combustible loading to burn.

22 However, if there is a tornado wind or if there is  
23 a missile or a bullet, the damage which can occur to the  
24 safety-related systems would be a lot greater, and would  
25 jeopardize the plant a lot more.

1 JUDGE KELLEY: When you say it is outside the  
2 building, you mean outside containment?

3 MRS. SERBANESCU: We are not talking about  
4 containment hatches. We are talking about -- if you want, I  
5 have here a breakdown of these doors, the types of doors and  
6 the number. We have tornado-wind doors, 7. Five in the  
7 reactor and the reactor auxiliary building, and two in  
8 the fuel handling building. Tornado-missile-wind doors, 4,  
9 all of them in the reactor auxiliary building. Tornado-wind  
10 door, airtight doors. We have two. One in the fuel handling  
11 building, one in the waste processing building. Tornado-wind,  
12 bullet-resistant, three of them in the reactor auxiliary  
13 building. Tornado-missile-wind-airtight, one door in the  
14 reactor auxiliary building. Tornado-missile-wind/airtight/  
15 bullet resistance, one door in REB. Pressure door, steam  
16 pressure due to pipe rupture, two doors in the reactor  
17 auxiliary building. Tornado-wind/airtight, four each thick  
18 steel shield door, two in the waste processing building and  
19 one special door in the fuel handling building. The unloading  
20 bay door, which is a special door, which is extremely large,  
21 16 foot by 20.

22 Most of these doors I read are larger sized than  
23 usual fire doors.

24 JUDGE KELLEY: I think that's helpful.

25 Mr. Eddleman, I will give it back to you.



1 BY MR. EDDLEMAN:

2 Q In the listing you just made, correct me if I'm  
3 wrong, did I hear you mention water tight doors?

4 A (Witness Serbanescu) I mentioned airtight, missile,  
5 tornado-wind, airtight, pressure door/steam pressure due to  
6 pipe rupture.

7 Q Are those the only water tight doors between fire  
8 areas in the plant?

9 A The water tight doors are seven -- I'm sorry, no,  
10 I take that back. Those are the water tight doors special  
11 which have dual role, a water tight door and equivalent to  
12 rated fire door.

13 Q Is the list that you have there the same list that  
14 is enclosure 1 to the October 10 letter?

15 MR. O'NEILL: I'm sorry, I didn't hear that  
16 question.

17 MR. EDDLEMAN:

18 Is the list that the witness is reading from the  
19 same as the enclosure 1 list to the October 10 letter from  
20 CP&L to the NRC?

21 MRS. SERBANESCU: It is the same type list, your  
22 Honor, with the difference that I took my letters marked  
23 and interpreted what each letter means for the function of  
24 the doors. The count I took from the following five pages,  
25 which are attached. And as such, I don't know if you wish,

1 but I could list the door numbers which I was talking about.  
2 But that would be too much detail and I don't think it's  
3 necessary.

4 JUDGE KELLEY: I don't think that's necessary, thank  
5 you.

6 BY MR. EDDLEMAN:

7 Q Referring to page 16 of your August 9 testimony at  
8 lines 13 to 16?

9 A (Witness Serbanescu) Please, give me a chance to  
10 get myself organized.

11 Q Certainly.

12 A Are you talking about my prefiled testimony?

13 Q Yes, of August 9.

14 A Yes.

15 Q Page 16. Lines 13 through 16.

16 A Yes.

17 Q Now, that is the statement that answer -- question  
18 and answer 7 of your supplemental testimony proports to  
19 correct?

20 A That is correct.

21 Q Now, it says, "Each fire area is bounded by barriers  
22 with construction at providing minimum three-hour fire rating  
23 with the one exception of the emergency diesel generator engine  
24 that you described previously."

25 A That's correct.

1           Then in your answer 7, you provide another exception  
2 reading, "Special doors, bullet resistant doors, and airtight  
3 doors, which have not been fire tested." Now, are all of  
4 these doors in the plant, the Harris plant, to your knowledge,  
5 listed in that five-page listing, enclosure 1 to the October 10  
6 letter?

7           A. To the best of my knowledge -- to the best of  
8 my recollection today -- I would say yes.

9           Q. Now, can you refer to that listing?

10          A. Which one of them?

11          Q. Enclosure 1, that listing?

12          A. The five-page listing or the breakdown which I  
13 gave you?

14          Q. The five-page listing, if you will?

15                 Just looking at page 1 of 5.

16          A. Yes.

17          Q. The doors on there, some of them are one-and-a-half  
18 hour rating; are they not?

19          A. Yes, they are.

20          Q. Okay.

21                 And are any of these doors part of the boundary of  
22 a fire area; to your knowledge?

23          A. The one-and-a-half hours?

24          Q. Yes.

25          A. From the top of my head I could not answer the

1 question. I would have to go and look exactly on the drawing  
2 where they are. But as a general comment, I would like to  
3 offer that usually the one-and-a-half hour rated doors are  
4 provided for the stairways, which are two-hour rated  
5 enclosures that require a one-and-a-half hour rating.

6 Q Okay.

7 If you would please refer to the third page of  
8 that listing?

9 A Page 3 of 5?

10 Q Yes.

11 Did you look at door number 656, which is about --

12 A Yes. I saw it.

13 Q Okay.

14 It's labeled AB/NSD; is it not?

15 A That's correct.

16 Q Okay.

17 From the door type legend, A is control hinge,  
18 security controls only; correct?

19 A Yes.

20 Q And D is fire hinge certified fire rated three-hour

21 A label-type construction; is it not?

22 A Yes.

23 Q NSD is non-seismicly designed?

24 A That's correct.

25 Q Even though this door has a B designation, it's

1           rated one-and-a-half?

2           A.     Well, the B designation in the door type does not  
3 stand for a B fire rating. On the legend, if you look, on  
4 item B tells you it's a certified fire rated three-hour  
5 A label type. Just as A above does not stand for three-hour  
6 rating. It stands for control hinge security controls only.  
7 The door type on this list refers to the legend describing  
8 the door type.

9           Q.     Right. And according to that legend, this should  
10 be a three-hour door; should it not?

11          A.     Where does it say that?

12          Q.     In B in the legend. B is a three-hour fire rating,  
13 is it not; didn't you just tell me that?

14          A.     It should be.

End 14

15 fls.

1 Q But on the fire door qualification listing --

2 A I would have to look into that. I do not know the  
3 answer from the top of my head. It might be a typo or it  
4 might not.

5 Q It might, but it says one and a half for Door  
6 Number 656.

7 A Yes.

8 Q But it says "AB/NSD" for the type, doesn't it?

9 A It does.

10 Q Okay.

11 If we could look at Numbers 740 and 743 down  
12 toward the bottom of that same page, is it not true that  
13 both of those are given a rating of one and a half hours  
14 and a type of "B/NSD?"

15 A That is correct.

16 Q And on the fourth page, Number 838 near the top,  
17 that is a rating of one and a half hours, type listed  
18 "B/NSD," is it not?

19 A Yes, it is.

20 Q Okay. Bear with me a minute.

21 A Sure.

22 (Pause.)

23 Q Now this listing says "Fire Door Qualification."

24 Do you know whether these doors were actually  
25 qualified; that is, by a test to the hour ratings that are

1 given in this table?

2 A Some of them might have been. I would assume that  
3 they were.

4 Q But you don't know for a fact one way or another,  
5 you have not reviewed the documentation on these doors?

6 A Not door-by-door.

7 Q Okay.

8 When you say in your testimony that various  
9 fire ratings of doors are provided in the plant, are you  
10 relying on CP&L's quality assurance or some other function  
11 within CP&L to verify that those doors actually have those  
12 fire ratings?

13 A That's correct. Ebasco has prepared the specifi-  
14 cations for these doors and in the specification we have  
15 indicated one or multi-function required of the door as  
16 well as the fire resistance rating which is or might be  
17 required.

18 The doors are not being delivered to Ebasco,  
19 they are delivered to the site, and I am sure that  
20 quality assurance is looking at them.

21 Q You have not, however, audited the quality  
22 assurance either, have you?

23 A I'm sorry, please repeat the question.

24 Q You have not audited the quality assurance on  
25 that receiving, have you?

1 A It is not my function to do that.

2 Q Okay.

3 Let me now refer to enclosure two in the  
4 specifications and drawings for fire doors.

5 A There are two specifications. Which are you  
6 talking about?

7 Q Yes. Enclosure two --

8 A Oh, enclosure two --

9 Q -- to October 10, '84 is simply labeled  
10 "Specifications and Drawings for Fire Doors."

11 A One minute.

12 Q Certainly.

13 A Yes, I see enclosure two.

14 Q All right.

15 JUDGE CARPENTER: May I interrupt a moment? Before  
16 you leave this enclosure one, I had a question that  
17 perhaps I could put in.

18 I would like to ask, of these doors that you  
19 refer to in Answer 7 on page seven of the supplemental  
20 testimony of October the 11th, we have had a lot of questions  
21 about those. Are those included on this list that is shown  
22 as enclosure one?

23 WITNESS SERBANESCU: Yes, they are.

24 JUDGE CARPENTER: I believe you testified earlier  
25 that they are.



1 WITNESS SERBANESCU: Yes, they are.

2 JUDGE CARPENTER: If they have not been fire  
3 tested or if they don't have a rating, why do I see a rate  
4 in this table then?

5 WITNESS SERBANESCU: It is a rate required of that  
6 door or a rate which would be anticipated or can be expected  
7 to be equivalent of.

8 JUDGE CARPENTER: So this listing makes no --  
9 there is no way to identify which one is which, is that  
10 correct?

11 WITNESS SERBANESCU: That's correct. I could  
12 identify them -- well there is a.... If you look at the  
13 design specification number on these five pages, you will  
14 see that there are a number of them. One is AS-48, another  
15 one is AS-54; and we have two very special doors, AS-7  
16 and AS-14 about two-thirds down the page which are marked  
17 "Fuel Handling Building, Unloading Bay Door, 2168G115."

18 Basically, or primarily, all of the doors covered  
19 by Specification AS-48 are non-tested.

20 JUDGE CARPENTER: So back on the legend page  
21 you are telling me that all AS-48 doors are non-tested?

22 WITNESS SERBANESCU: And also AS-7 and AS-14,  
23 which is Door 134.

24 JUDGE CARPENTER: Thank you very much. That  
25 makes it much clearer for me.

1 WITNESS SERBANESCU: If you would like I can give  
2 you the title of the Specification AS-48.

3 MR. EDDLEMAN: Go ahead.

4 WITNESS SERBANESCU: Would you like that?

5 MR. EDDLEMAN: Please go ahead.

6 WITNESS SERBANESCU: It is in this enclosure

7 number two, specification number CAR-SH-AS-48. Ebasco  
8 Services Incorporated specification, Ebasco special doors,  
9 Seismic Category 1 and non-seismic includes fire protection  
10 equipment, prepared for Shearon Harris Nuclear Power Plant.

11 This document is primarily a civil specification.

12 JUDGE CARPENTER: Thank you.

13 BY MR. EDDLEMAN:

14 Q Mrs. Serbanescu, are the AS-7 and AS-14  
15 specifications also part of enclosure two to the letter  
16 from CP&L to the NRC dated October 10, serial NLS-84-440?

17 A (Witness Serbanescu) I see here Specification  
18 CAR-SH-AS-7. It is part of it.

19 Q That is entitled what, please?

20 A Ebasco Services Incorporated, Ebasco Specification  
21 Structural Steel Seismic Category 1 and Non-Seismic  
22 Category 1.

23 Q Okay.

24 My copy appears to say "class 1" where you said  
25 "category 1," but otherwise it is identical to that.

1 A I'm sorry, it is "Seismic Class 1 and Non-seismic  
2 Class 1."

3 Q The date of the document's receipt at the Shearon  
4 Harris plant is stamped as April 14, 1980 -- is that 1981  
5 or 1984?

6 A That is a good question. It looks like '81, but....

7 Q It states "Copyright 1981" at the bottom of that  
8 sheet, does it not?

9 A Yes, it does.

10 Q And on the second page of that specification,  
11 Revision 11 is dated April 6, 1981, is it not?

12 A Yes, it is.

13 Q And the CP&L approval date given on the right-  
14 hand side of that same line is March 25, 1981, is it not?

15 A Yes.

16 Q Okay.

17 Now the next part of enclosure two is the  
18 specification CAR-SH-AS-14, is it not?

19 A Let me find it, please.

20 Q Sure.

21 (Pause.)

22 A Yes, it is.

23 Q All right.

24 And that is entitled Ebasco Services Incorporated  
25 Specification, Ebasco Miscellaneous Hoists and Trolleys

1 Non-safety related Equipment, is it not?

2 A Yes, it is.

3 Q It appears to be stamped Preliminary right below  
4 that title, is it not?

5 JUDGE KELLEY: Mr. Eddleman, we need to catch  
6 up with you. Where is this material exactly that you are  
7 reading from now?

8 MR. EDDLEMAN: It is about 50 pages down in  
9 enclosure two and since these pages are not numbered all  
10 I can say is it is behind a number of drawings and steel  
11 bolting details. When you get through the very end of  
12 that structural steel spec, then it is the next identifying  
13 sheet.

14 JUDGE KELLEY: Does it have to do with fire  
15 control doors and --

16 MR. EDDLEMAN: No, sir. It is probably deeper  
17 than that. It is probably back up toward the front from  
18 there.

19 JUDGE KELLEY: "Hoists and Trolleys?"

20 MR. EDDLEMAN: Yes, sir, that's it. CAR-SH-AS-14.

21 JUDGE KELLEY: All right. Thank you.

22 BY MR. EDDLEMAN:

23 Q Mrs. Serbanescu, I forget if I have already asked  
24 you: Is this document stamped Preliminary under its title?

25 A (Witness Serbanescu) I see a Preliminary stamp

1 on it.

2 Q Okay.

3 Can you read the document control received date  
4 from the Shearon Harris plant that is stamped on this thing?

5 A No, I cannot.

6 Q It appears to be upside-down, does it not?

7 A I cannot read it, I'm sorry.

8 Q The words "received in document control" in my  
9 copy are upside-down. Are they upside-down on yours?

10 A Oh yes. They are upside-down but I cannot read  
11 the date.

12 Q You can't read it from either direction.

13 If we looked at the second page of that cover  
14 sheet for CAR-SH-AS-14, it shows a handwritten date of  
15 Revision Four of 12/27/78 as I read it, is that correct?

16 A I read it "28," but...

17 Q 12/27/28.

18 A No, I really cannot make out that number.

19 Q You can read the 12/27 though?

20 A Yes.

21 Q Okay.

22 The date for Revision Three above that is  
23 typewritten, 11-20-28, is it not?

24 A Yes.

25 Q Okay.

1                   For Revision Four there is no CP&L approval date  
2 shown, is there?

3           A.     That's correct.

4           Q.     Okay.

5                   I believe you said that -- Well number 7 and  
6 number 14 only apply to one or a few doors in the Harris  
7 plant, is that correct?

8           A.     That's correct.

9           Q.     Okay.

10                   Now if we can move down a little from that,  
11 the specification CAR-SH-AS-48 that you referred to earlier,  
12 do you have that with you?

13          A.     Just a minute.

14                   Yes, I do.

15          Q.     This has a received date at the Shearon Harris  
16 plant of August 1, 1984 stamped on it, does it not?

17          A.     That's the way it looks to me.

18          Q.     Okay.

19                   If we refer to what appears to be the second  
20 part of the cover sheet to that and read a heading "Ebasco  
21 Specification Special Doors, Project Identification Number  
22 CAR-SH-AS-48," and then a set of revisions and a listing  
23 of matters about those revisions.

24                   Do you have that?

25          A.     Yes, I do.

1 Q Okay.

2 Revision Number Six is the last revision listed,  
3 is it not?

4 A Yes, it is.

5 Q Now in the date column next to the Revision  
6 Number 6 it lists the date as 7/26/84, doesn't it?

7 A Yes, it does.

8 Q In the far-right column CP&L Approval Date, it  
9 has listed by that in parentheses "DCN-650 - 852" and  
10 then underneath that "6/22/83 Telecon," does it not?

11 A Yes.

12 Q Do you think that "83" there might be a typo in  
13 light of the information on this page?

14 A I don't know.

15 Q Okay.

16 Directly above it the approval date for CP&L  
17 for Revision Five they show there as 1/11/83, is it not?

18 A Yes, it is.

19 Q And the revision date for Revision Five over  
20 toward the left side is April 5, '83, isn't it?

21 A Yes, it is.

22 Q Okay.

23 When did you first receive a copy of this  
24 specification Revision Six, do you know?

25 A Personally I received a copy of this specification

1 with a package.

2 Q In the last few days in other words?

3 A Just like you.

4 Q Okay.

5 This specification for special doors has a contents  
6 listing on the next page after these cover sheets, does  
7 it not?

8 A Yes.

9 Q And the listing of contents down toward the bottom  
10 has a statement: "Fire door rated" -- Pardon me: "Fire  
11 rated door criteria."

12 A Yes.

13 Q -- paragraph 21, page 25, doesn't it?

14 A Yes.

15 Q It has a line beside that marking Revision Two --

16 A Yes.

17 Q -- does it not?

18 A Yes.

19 Q Are there any other revisions marked for that  
20 fire rated door criteria on that page that you see?

21 A It might be Revision Three but I am not certain  
22 because of its location.

23 Q The R-3 is out to the right of the line that is  
24 labeled R-2?

25 A Yes, but it is on the right side of that bar.



Take 16

1 Q On the right side of a bar running from --

2 A R-2.

3 Q Running from paragraph 19 down to paragraph 21, --

4 A Yes.

5 Q But the R-3 itself appears opposite paragraph 20,  
6 but still to the right of that whole bar.

7 A That's correct.

8 Q Okay.

9 Could you please turn in this, to page 25?

10 (Pause.)

11 A Yes.

12 Q Do you have that before you?

13 A Yes, I do.

14 Q Okay.

15 It has two paragraphs on that page; does it not?

16 A Yes, it does.

17 Q And they're rather short, less than about 10 lines  
18 in total; aren't they?

19 A Eight lines, to be precise.

20 Q You're a very careful checker, aren't you?

21 A I don't want you to put words in my mouth.

22 Q Okay.

23 But you did check that. Okay, eight lines.

24 Now, all those lines and the title Fire Rated

25 Door Criteria, are beside a bar to the right of them labeled

1 R-2; are they not?

2 A. Yes, they are.

3 Q. Now, it states, "For those special doors and  
4 related hardware called for in this specification, and/or  
5 shown on the Ebasco design drawings, 'door schedule' which  
6 require a fire rating, shall be designed and constructed to  
7 comply with NFPA-80 'Standard for Fire Doors and Windows'  
8 to achieve a rated door equal to the 'A-label' -3 (three) our  
9 fire rating." That's the entire first paragraph, isn't it?

10 A. Yes.

11 Q. Okay.

12 And the second paragraph labeled .01, states,  
13 "These doors upon delivery shall be accompanied by a 'letter  
14 of certification'." It states, "The door is guaranteed to  
15 be equivalent to a 'certified three-hour A-label type fire  
16 rated door'," doesn't it?

17 A. That is correct.

18 Q. Do you know, yourself, whether these doors, when  
19 they're delivered on the site at the Harris plant, are  
20 accompanied by such letters of certification?

21 A. I do not know when these doors have been delivered  
22 at the site.

23 Q. Okay. And so you don't know what comes with them,  
24 either, do you?

25 A. That's correct. I would assume that the quality

1 assurance of the plant is checking on it.

2 Q Okay. But that depends on quality assurance being  
3 aware of this requirement, doesn't it?

4 A I'm sorry?

5 Q That depends on quality assurance being aware of  
6 this requirement, does it not?

7 A There is a quality -- a fire protection quality  
8 assurance program that's published at the Harris plant.  
9 And that covers fire protection equipment.

10 Q Well, my question was: In order for quality  
11 assurance to check that this letter of certification comes  
12 in with these doors, when they come in, they have to be aware  
13 of that requirement, don't they?

14 A (Witness Waters) Let me answer that. Yes, they do.

15 Q Okay.

16 Mr. Waters, does your group have anything to do with  
17 the quality assurance of these doors coming in?

18 A No, they do not.

19 Q But you just know that they would have to be aware  
20 of that requirement to check on it?

21 A We have many, many specifications for the Shearon  
22 Harris plant. This is one of them. And material which is  
23 received on site has to be checked against the specifications,  
24 any requirements, and this would be a specification and  
25 requirement that those doors would be checked against when they

1 are received on site.

2 Q All right.

3 Do you know whether any of these doors have been  
4 received on site?

5 A I do not.

6 Q Okay.

7 All of these -- let me ask you this for clarity.

8 I did read the entire text of the second paragraph  
9 there, too, didn't I?

10 A (Witness Serbanescu) Yes, you did.

11 Q Okay. And both of those being revision 2, if  
12 we can turn back to the front identification page of this  
13 specification, the date of revision 2 shown there, down at  
14 the bottom of the page is May 9, 1980; is it not?

15 A That's correct.

16 Q Okay. And the CP&L approval date on the righthand  
17 side of that same line is May 6, 1980, isn't it?

18 A Yes, that's correct.

19 Q And it states that one of the affected pages is  
20 number 25, doesn't it? The pages affected next to it?

21 A Yes.

22 Q Okay.

23 MR. EDDLEMAN: Excuse me a moment.

24 (Pause.)

25 BY MR. EDDLEMAN:

1 Q Does the NFPA code or any other code of which either  
2 of you are aware establish requirements for doors to receive  
3 a letter of certification guaranteeing them to be equivalent to  
4 certified three-hour A-label type fire rated doors?

5 A (Witness Serbanescu) Your question is not clear.  
6 You are referring to a number of things. Please clarify your  
7 question.

8 Q I'll try.

9 Now, let me back up a second. Mrs. Serbanescu,  
10 I believe you testified that the specification AS-48, if I can  
11 just refer to it by it's last few letters and numbers, doors --

12 A Yes, that's fine with me.

13 Q -- had not been tested?

14 A That is correct.

15 Q Now, in section 2101 of this specification, that  
16 second paragraph on page 25, it says, "The doors upon  
17 delivery shall be accompanied by a letter of certification  
18 that states the door is guaranteed to be equivalent to a  
19 certified three-hour A-label type fire rated door."

20 A It doesn't say anything about testing.

21 Q That's right.

22 A The vendor was requested to give a letter of  
23 certification stating that the construction of the door would  
24 be equivalent to a certified three-hour A-label type fire  
25 rated door.

1           Now, A-label type, in accordance with NFPA, a UL A-label  
2 proves that the door has been tested for UL standards, to  
3 achieve the respected rating. We have requested the vendor  
4 to give us certification to the effect that the door will  
5 withstand of an exposure.

6           Q     All right. The criteria for the A-label certification  
7 are part of the NFPA code; is that correct?

8           A     The certification comes from the vendor. The  
9 NFPA criteria is for the testing, I believe.

10          Q     Okay.

11                   Does the NFPA establish any criteria for  
12 establishing equivalency to a certified three-hour A-label  
13 type fire rated door?

14          A     I would not remember from the top of my head.  
15 I would have to refer to the code.

16          Q     All right.

17                   On the face of it, it just says that each of these  
18 doors will have a letter that says, states, that the door is  
19 guaranteed to be equivalent to this three-hour A-label fire  
20 rated door, doesn't it?

21          A     Each type of the door.

22          Q     Did you say which type?

23          A     I said each type of the door. In other words, not  
24 each door, per se. For example, the tornado-wind doors will  
25 have same construction. And I would assume that one letter

1 for the respective type of door with the door numbers listed,  
2 would suffice. I have not seen the letter of that certification  
3 so I do not know if an individual letter for individual door  
4 is given.

5 A Okay.

6 And I believe you also said you didn't know whether  
7 there were criteria for the equivalency?

8 A I said I do not know from the top of my head

9 Q Right, okay.

10 Well, the revision 2 that gives the specification  
11 was dated in 1980, wasn't it?

12 A Yes, it was.

13 Q Well, did you have this specification available  
14 to you at Ebasco when you were doing your work on the Shearon  
15 Harris plant?

16 A Probably, I did.

17 Q You've been working on the Shearon Harris plant  
18 fire protection for some time, haven't you?

19 A Yes, I was.

20 Q If we may refer to your August 9 prefilled testimony --

21 On page 2, I believe, you describe your professional  
22 services provided to Applicants for the operating license  
23 for the Shearon Harris nuclear power plant, do you not?

24 A Yes, I do.

25 Q And it says there you were assigned as fire

1 protection engineer for the Shearon Harris plant in September,  
2 1978, correct?

3 A. Yes, that's correct.

4 Q. And have you been continuously involved with the  
5 Harris plant ever since?

6 A. In various capacities, yes.

7 Q. Okay. And are those capacities those listed in  
8 the rest of your answer?

9 A. Yes, they are.

10 Q. Okay.

11 How did you go about determining the -- let me start  
12 over again, if I may.

13 How did you go about determining the fire ratings  
14 for the -- strike that again, please.

15 For fire areas at Harris and your review of them,  
16 how would you have checked the fire rating of the materials  
17 to be installed as fire barriers or fire boundaries that had  
18 to be fire barriers around that area? Would you have looked  
19 at the specifications for all the items shown on the blueprint  
20 for that area, for example?

21 MR. O'NEILL: That question got somewhat lengthy,  
22 Mr. Eddleman, could you break it up and restate it, please?  
23 I lost it.

24 MR. EDDLEMAN: I can try.

25 WITNESS SERBANESCU: I would appreciate it if you



1 would break it down into smaller fragments.

2 MR. EDDLEMAN: Okay.

3 BY MR. EDDLEMAN:

4 Q In order to make a statement like the one that is  
5 given in your answer 7 in your supplemental testimony, "Each  
6 fire area located inside the structure of the power block is  
7 bounded by barriers with construction that provides a  
8 minimum of three-hour fire rating" and then you list some  
9 exceptions.

10 Okay. What I'm concerned now is not the exceptions,  
11 themselves, but the first statement, the first part of the  
12 statement that each area is bounded by barriers with this  
13 three-hour fire rating.

14 How do you determine that each fire area is in fact  
15 bounded by barriers with a minimum three-hour fire rating?  
16 How do you do that?

17 A (Witness Serbanescu) A fire protection engineer  
18 establishes the boundaries of the fire barriers, then the  
19 respective boundaries are sent to the architectural  
20 department which in turn places them on their drawings and  
21 then the civil department picks up respective specifications  
22 and provides construction equivalent to a three-hour rating  
23 requirement.

24 Then the drawings and the specifications are being  
25 circulated for comments by all the involved disciplines. And

WRB/pp 10

1 the fire protection engineer does review them.

2 We did mark boundaries of fire areas, to be of the  
3 three-hour rated construction or equivalent. And here is  
4 where the statement "where practical" comes into the picture.  
5 It is impractical to provide a three-hour rated barrier by  
6 fire rating or by testing when you need a tornado door.  
7 And then you look at the justification -- the functional  
8 justification -- the combustible loading, where does it  
9 open to, and so on.

10 Q Okay. In the beginning of your answer where you  
11 said you established a fire barrier areas, did you mean  
12 fire areas?

13 A I meant fire areas as well as boundaries or route  
14 of escape like stairwells, and so on.

15 Q Okay.

16 So you establish boundaries for these fire  
17 areas and routes of escape and then you go through civil  
18 engineering picking them up and through the process you  
19 described for it, correct?

End 16

20 A Usually, that's the way.

17 fls.

21

22

23

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WRB#17

1 Q And are there exceptions to that, too?

2 A Yes, there are.

3 Q What are they, please?

4 A In the case of the Harris plant, the fire areas  
5 have been established in an already existing design because  
6 the requirements for the fire hazards analysis did not  
7 come into the picture until after the Browns Ferry fire  
8 and they were not transmitted to the Applicant until 1976,  
9 if I am not mistaken or 1977. Therefore the Shearon Harris  
10 plant design was already in place.

11 So what we did, we used the already existing walls,  
12 which by construction would have qualified to a three-hour  
13 fire resistance rating, went back and verified that the  
14 respective constructions would meet a three-hour rated  
15 construction.

16 However in a case like these doors we are  
17 talking about, it was impossible to meet a tested assembly.  
18 Therefore we asked the vendors to give us a guarantee  
19 that these doors would withstand such an effect as a fire.

20 Q When did you make that request of the vendor?

21 When you said "we" did you mean your department?

22 A I meant Ebasco and CP&L.

23 Q Ebasco and CP&L.

24 Did you play any role in asking the vendors to do  
25 that yourself?

1           A     I don't remember going to the vendors. But by  
2 being in the specification obviously it was from within  
3 my department or from myself. I do not really recall  
4 what happened six years ago exactly on this specification.

5           Q     All right.

6                     But to the best of your knowledge you did not  
7 write this or recommend this revision to the specification,  
8 did you?

9           A     Honestly I don't remember.

10          Q     All right.

11                     Now you said "we" again I think inspected the --

12          A     Maybe I should say Ebasco and CP&L because,  
13 although Ebasco is the architect-engineer for the plant,  
14 CP&L is the construction manager and we are -- and Ebasco  
15 is working for CP&L and therefore Ebasco and CP&L are a  
16 team and I represent the Applicants.

17          Q     Okay.

18                     The confusion that arises with me is that sometimes  
19 "we" might mean, you know, you and your department or you  
20 and your co-authors of this testimony or co-preparers.  
21 And sometimes "we" might mean Ebasco and sometimes "we"  
22 means Ebasco and CP&L as you say there. And I am just  
23 trying to get clear which is which.

24                     When you described the plant having already been  
25 designed and then you said "we" went back and placed the

1 fire barriers or fire area boundaries in some cases along  
2 walls that were already designed, I believe you said "we"  
3 checked the -- I can't remember if you said construction  
4 or specification of those walls.

5 A The type of construction.

6 Q The type of construction. Okay.

7 -- to verify that that would be a three-hour  
8 fire rating.

9 Was that a physical inspection of the construction  
10 in place or was it an inspection of the type of construction  
11 that was laid out in the plans?

12 A I would like to clarify the statement.

13 The Ebasco fire protection engineering has  
14 designated at the PSAR stage the fire barrier. And the PSAR  
15 stage was before the construction permit was obtained.  
16 Therefore the rated fire barrier indicated in the PSAR  
17 figures have been transferred under the design drawings,  
18 the design drawings have been changed to reflect the  
19 requirements of rated fire barrier and obviously whatever  
20 was installed was in accordance with the design drawings.

21 Therefore it is my belief that construction  
22 equivalent to a three-hour rated requirement was installed.

23 Q In regard to that, at the time those PSAR  
24 drawings were drawn up, were three-hour rated fire barriers  
25 between fire areas required?

1 A Yes.

2 Q Okay.

3 And that was a pre-existing code requirement even  
4 before the Browns Ferry fire?

5 A Please define that.

6 Q Well let me ask you this:

7 Do you know the approximate date at which the  
8 fire barrier boundaries were put onto the PSAR drawings  
9 of the plant?

10 A That was before I joined Ebasco.

11 Q Okay.

12 A That means it was before September of '78.

13 But the PSAR I'm sure is a public document.

14 MR. EDDLEMAN: Excuse me a moment.

15 (Pause.)

16 BY MR. EDDLEMAN:

17 Q When were you first aware that you could not  
18 actually have a three-hour rated fire barrier in the  
19 area of these various special doors at the Harris plant?

20 A (Witness Serbanescu) I think I was aware five  
21 or six years ago, it just slipped my mind to put it in  
22 my testimony because it is so usual not to have them  
23 tested.

24 Q Well were you involved in any way in the  
25 preparation of the FSAR or answering the questions about

1 fire protection that the NRC Staff posed about the fire  
2 area boundaries?

3 A Yes, I was.

4 Q Well the Staff made those doors an open item, did  
5 they not?

6 A Yes.

7 Q Was there anything included in the FSAR as you  
8 helped prepare it that stated that the doors would not  
9 provide a three-hour fire rating, those special doors?

10 A The FSAR is talking about a Type A or Type B  
11 construction. The Type A and Type B construction do not  
12 necessarily mean labeled doors and, as such, do not  
13 necessarily mean tested doors.

14 Q So when the FSAR says This is Type A construction  
15 door, it does not necessarily mean at all that that thing  
16 has ever been tested?

17 A That's correct.

18 Q Okay.

19 Well doesn't it seem to you, for someone who  
20 is careful enough to count the number of lines in a  
21 paragraph when I am asking approximately how many lines  
22 it is that it is unusual to have this skip your mind so  
23 often over a period of years like this?

24 A No, because I have a tremendous amount of work,  
25 I have a tremendous amount of specifications, drawings,

1 FSAR's, PSAR's to look at, not only from the Harris plant  
2 but from other plants as well.

3 Q About how much of your time is spent on the Harris  
4 plant, could you estimate?

5 A The question is when?

6 Q Well in the percentages of time that -- in other  
7 words, your job includes work for the Harris plant and  
8 other plants you said.

9 A Since 1981 until now, yes.

10 Q Okay.

11 Were you full-time working on the Harris plant  
12 before that?

13 A Since September '78 through January '81, I would  
14 say 90 to 95 percent of my time, yes.

15 Q Was on the Harris plant?

16 A Yes.

17 Q Okay.

18 And since January of '81 has that percentage  
19 decreased?

20 A Yes. Since that time the percentage has  
21 decreased.

22 Q And what would you say it is, oh, say, in the  
23 year 1984 to date, if you know?

24 A Today I would say between 25 to 30 percent.

25 Q Okay.



1 All of these statements in the FSAR in Exhibit 6,  
2 which is prepared additions for the FSAR and in your  
3 testimony, has some kind of phrase that each fire area is  
4 bounded by barriers with construction that provides a  
5 minimum three-hour fire rating with certain exceptions,  
6 correct?

7 A. You are talking about my supplementary testimony?

8 Q. What I am saying is in all these documents there  
9 is some kind of a statement to the effect that each fire  
10 area is bounded by barriers that provide a minimum three-  
11 hour fire rating and then list off one or more exceptions.

12 A. Yes.

13 Q. Now is it possible in all this large amount of  
14 paper that you have to deal with that you have had some  
15 other things slip your mind having to do with these fire  
16 barriers?

17 A. Anything is possible but I do not believe so.

18 Q. Okay.

19 Unless you see it you don't believe it?

20 A. That's correct.

21 Q. Okay.

22 You had the Staff Safety Evaluation Report available  
23 to you, I believe you said, since it was mailed out some  
24 time ago?

25 A. Yes, I have.

1 Q Did you review that to see what open items  
2 related to fire protection?

3 A Yes, I did.

4 Q When did you do that?

5 A As soon as it was published, probably within a  
6 month since that time.

7 Q Okay.

8 Did you discuss open item eight with people at  
9 Carolina Power and Light?

10 A Which open item, number eight?

11 Q Number eight.

12 A Let me see which one that is.

13 Q I represent to you that it is the fire doors,  
14 although you are welcome to check it.

15 A If it represents the fire doors, I did discuss it  
16 and I was aware of it.

17 Q Okay.

18 Did your group at Ebasco have anything to do  
19 with the compilation of lists of fire doors or the group  
20 of procedures that were provided in this October 10  
21 submission serial MLS-84 --

22 A I am sorry, I do not hear what you are saying.

23 Q I beg your pardon.

24 Did you or your group at Ebasco have any role  
25 in putting together the list of fire doors that are in

1 Attachment 1 to this October 10 letter, serial NLS-84-440?

2 A I personally was not and I do not know if anybody  
3 else at Ebasco had anything to do with it.

4 Q In particular then you don't know if somebody  
5 working in your group that you supervise had anything to  
6 do with it?

7 A I would assume not --anybody from the group I  
8 supervise, because all the letters which go out are  
9 countersigned by me or my designee.

10 Q So it would have to have come across your desk  
11 or be brought to the attention of you designee?

12 A That's right.

13 Q And it didn't?

14 A Not to my knowledge.

15 Q Okay.

16 JUDGE KELLEY: Let's take 10 minutes.

17 (Recess.)

18

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endWRB#17

#18 WRBwb

1 JUDGE KELLEY: Back on the record.

2 Mr. Eddleman, I was going to ask you for a gross  
3 estimate of where you are with this panel.

4 MR. EDDLEMAN: I think I'm probably a little bit  
5 more than half way. I don't anticipate finishing with them  
6 today.

7 JUDGE KELLEY: Okay. We'll have something more  
8 to say maybe later. But for now that's useful information.

9 Go ahead.

10 BY MR. EDDLEMAN:

11 Q Mr. Waters, in your answer 18 on page 10 of your  
12 prefiled testimony--

13 A (Witness Waters) Yes.

14 Q Do you have page 10 in front of you now?

15 A I have page 10.

16 Q Okay.

17 The standpipe and hose systems you mention in  
18 your answer, are those all supplied off the same water system?

19 A They are furnished off the main fire protection  
20 loop that is supplied by pumps at the intake structure.

21 Q How many pumps are dedicated to that loop?

22 A We have three pumps. We have two main fire  
23 pumps, one electric-driven, or motor-driven, one diesel  
24 engine drive, and a pump called a jockey pump which maintains  
25 the system pressure during normal periods when the fire

WRBwb2

1 protection systems are not called upon to operate at high  
2 volume.

3 Q So you have two main pumps, and this jockey  
4 pump is sort of an auxiliary?

5 A Yes.

6 Q Okay.

7 All these pumps feed the same piping loop?

8 A Yes, they do.

9 Q Okay.

10 I seem to have mislaid something.

11 (Pause.)

12 Mrs. Serbanescu, do you have with you the  
13 Inclosure 3 to the October 10, 1984, letter that we have  
14 been discussing, NLS-84-440?

15 A (Witness Serbanescu) One second, please. I  
16 just put it away.

17 Yes, I do.

18 Q Okay.

19 At page 9.5.1-10, I believe it is about the fourth  
20 or fifth page in from the front.

21 A Yes.

22 Q Under "Limitation of Fire Effects," Item A  
23 toward the bottom there, there is a change, an addition, I  
24 take it, handwritten in. And the statement is, "Smoke and  
25 heat concentrations in fire areas are reduced by the use of

WRBwb3

1 building ventilating systems." And then the handwritten  
2 addition reads, " Should sufficient heat be generated by a  
3 fire to close automatic fire dampers, smoke removal capacity  
4 will be reduced."

5 Did I read that as it is stated here?

6 A. Yes.

7 Q. Did you or your staff at Ebasco play any role  
8 in putting in these corrections?

9 A. Yes.

10 Q. Did you review the corrections after they were  
11 put in?

12 A. Yes.

13 Q. Did you write this correction?

14 A. No, I did not.

15 Q. Okay.

16 Now, a similar correction occurs numerous times  
17 in this, does it not?

18 A. Yes.

19 Q. And let me just check with you: If you go a few  
20 pages on in the Inclosure 3, to page 9.5.1-33...

21 A. Please repeat the number.

22 Q. 9.5.1-33.

23 A. Yes.

24 Q. (Continuing) ---the same correction appears in  
25 the middle of that page, does it not?

WRBwb4

1 A. Yes.

2 Q. And again on page 9.5.1-35, toward the bottom,  
3 the same correction?

4 A. Please repeat the page number.

5 Q. 9.5.1-35.

6 A. Yes.

7 Q. And, in fact, if we go back to Appendix 9.5-A, on  
8 page 9.5-A-166, that's about twenty pages from the back, I  
9 guess, just approximately--

10 A. Yes.

11 Q. --there is a correction on a similar topic, but  
12 a little bit different, in the lower middle of that page.

13 A. Yes.

14 Q. And it deletes a statement as follows -- does it  
15 not? --"Based on the smoke removal rate recommended for the  
16 cable spreading room, 1.5 cfm per square foot, comparable  
17 smoke removal will be achieved for these areas at a  
18 rate of approximately 0.18 cfm per square foot."

19 That is deleted, is it not?

20 A. Yes.

21 Q. Then it says, "Smoke, heat and products of  
22 incomplete combustion are removed by the ventilation  
23 system for this area." And then there's a colon, and  
24 the handwritten addition says,

25 "Should sufficient heat be generated by a

WRBwb5 1 fire to close the automatic fire dampers, smoke  
2 removal capacity will be reduced."

3 Correct?

4 A. Yes.

5 Q. Okay.

6 And likewise on page 9.5-A-185, which is a few  
7 pages back from there, up toward the top of that page is, I  
8 believe, an identical change, except that the equivalent rate  
9 is 0.5 cfm per square foot, and that is deleted here; is  
10 that correct?

11 A. Yes.

12 Q. Okay.

13 Now, if we just come back to page 9.5.1-10 for  
14 the moment, one of the things that all of these statements--

15 A. Please let me find the page.

16 Q. I beg your pardon.

17 (Pause.)

18 A. Yes.

19 Q. Okay.

20 Now, these statements all concern enough heat  
21 being generated by a fire to close the automatic fire  
22 dampers.

23 A. That is correct.

24 Q. What is the condition, or heat that triggers  
25 the closing of those automatic dampers?



WRBwb6

1           A.     To the best of my recollection, the fusible  
2 link temperature at which the fusible link fuses is 165  
3 Fahrenheit.

4           Q.     Okay.

5                     So if the temperature in the duct or ventilating  
6 system where that fire damper is located reaches that  
7 temperature, the fusible link would then release and close  
8 the damper?

9           A.     Yes.

10          Q.     Okay.

11                    Now, would that reduce the heat removal capacity  
12 as well as the smoke removal capacity of the ventilating  
13 system?

14          A.     Yes.

15          Q.     Do the automatic fire dampers complet cut off  
16 the flow? Are they designed to do that?

17          A.     Yes, they are.

18          Q.     So there will be no ventilation once those dampers  
19 close?

20          A.     Yes.

21          Q.     If you will bear with me for a moment. I seem  
22 to have mislaid a page here.

23                    Would you please turn to page 9.5.1-28, which is  
24 just a little bit farther back, I believe, in this Inclosure 3?

25          A.     Yes.

WRBwb7

1 Q Now, up a little above the middle of that page  
2 there's a change of--

3 A Please give me the page number.

4 Q It is 9.5.1-28.

5 A Yes.

6 Q You have that?

7 A Yes.

8 Q Slightly above the middle of the page there is a  
9 handwritten correction, "up to eight flame detectors."

10 A Yes.

11 Q Okay.

12 Now, is that new information that has come in  
13 recently as to how many a controller can operate?

14 A I believe that's true.

15 Q Okay.

16 And what is an LFD~~CP~~, as used in the next line?

17 A If you would refer to Applicant Exhibit 6, which  
18 has all the pages, you could find that in the description  
19 of the detection system. We have provided the description  
20 for these abbreviations. It stands for Local Fire Detection  
21 Control Panel, and it is explained in one of the previous  
22 pages which is not part of this submittal to the NRC.

23 Q All right.

24 Now, down at the bottom of that page there's a  
25 good bit of scratching-out, including some marginal notes.

WRBwb8

1 Can you read the scratched-out part to the left of the  
2 paragraph headed by the words "Air duct detectors?"

3 A No.

4 Q Okay.

5 Whatever that note was, it was deleted; correct?

6 A I do not know what the note was. It might have  
7 been an internal note from one engineer to another, that  
8 or another thing.

9 Q Okay.

10 At any rate, in the--

11 A I'm sorry; I didn't hear what you said.

12 Q At any rate-- Pardon me; I'm just beginning a  
13 new question.

14 A Could you turn the microphone so that I can hear  
15 you?

16 Q Apparently-- I'm not even sure what it is. When  
17 I turn my head sometimes it seems to like the field of this  
18 thing is pretty narrow, and I have to talk directly into it.  
19 And when I turn my head to look at a piece of paper-- Let  
20 me try to hold the paper in front of me for this purpose.

21 In the paragraph at the bottom of that same page,  
22 beginning "Air duct detectors," the part of it that is still  
23 there says, "Air duct detectors are provided within HVAC--"  
24 which, I take it, is heating, ventilating and air condition-  
25 ing "--duct systems to indicate the presence of smoke."

WRBwb9

1 Correct?

2 A Yes.

3 Q Okay.

4 Now, in the deleted part, it appears to have  
5 read, "--and guide the control room operator to initiate  
6 from the control room the remote manual control of the  
7 system dampers as required for the selection of clean air  
8 intake of the operation of smoke removal systems (Refer..."  
9 and then the part that is struck on the next page I can't  
10 even read under it.

11 Does that appear to be what was struck?

12 A I do not-- I am not capable of reading what was  
13 struck. You are doing better than me.

14 I don't know whether that is what was in there.

15 Q Okay.

16 On page 9.5.1-29, which is the next page--

17 A Yes.

18 Q --the unstruck part continues, "These detectors--"  
19 and then a handwritten addition over a struck part is,  
20 "automatic trip of ventilating system."

21 Does that mean the detectors cause an automatic  
22 trip of ventilating systems?

23 A That's correct.

24 Q Okay.

25 And that automatic trip does what?

WRBwb10

1 A. The automatic-- Once the air duct detectors  
2 sense smoke within the HVAC ductwork they shut off the fans  
3 and they shut off the HVAC system.

4 Q. Okay.

5 So whatever is moving air through that duct is  
6 shut off by this automatic trip?

7 A. Yes.

8 Q. Okay. And that will happen if smoke is detected  
9 even before the fire dampers might close?

10 A. Yes.

11 Q. Okay.

12 What is the minimum smoke concentration that  
13 these sensors pick up? Do you know?

14 A. I don't a number. But these detectors are  
15 capable of picking up invisible products of combustion.

16 Q. Are they ionization detectors?

17 A. Yes, sir.

18 Q. Okay. And they're actually present in the ducts?

19 A. Yes, sir.

20 Q. Okay.

21 Now, I gather that once the signal comes from the  
22 detector that smoke has been detected, it goes by some  
23 electrical pathway to automatically disconnect the fans or  
24 whatever is moving air through that duct system?

25 A. Yes.

B19

wrb/agbl

1 Q Okay.

2 And whatever the change is here did not appear  
3 to change the statement that they are in compliance with  
4 NFP A90A recommended practices?

5 A Could you please qualify the question?

6 Q That sentence has been changed, that first  
7 sentence on 9.5.1-29, hasn't it?

8 A Yes.

9 JUDGE KELLEY: Mr. Eddleman, excuse me, the Board  
10 is uncertain as to where you have been going since we came  
11 back from the break. Could you give us an indication?

12 MR. EDDLEMAN: Well I think in respect of these --  
13 This is a change that is discussed in the supplemental  
14 testimony, I believe, about the smoke removal philosophy.

15 JUDGE KELLEY: Where is that?

16 MR. EDDLEMAN: It is answer five on pages five  
17 and six and I believe also answer six addresses it.

18 JUDGE KELLEY: Okay.

19 Well given the fact that there have been some  
20 recent changes in their program that in and of itself  
21 is not really cause for surprise. I am wondering why we  
22 need to go through all these pages of markups and speculate  
23 about things marked in and marked out.

24 What is to be gained by that in a substantive  
25 way as to information about Shearon Harris?

1 MR. EDDLEMAN: Well I may have been going into it  
2 in a little bit too much detail, but the thing that I am  
3 trying to get at is that this changes the conditions under  
4 which fires will have to be fought in these areas and --  
5 in fact I was about ready to move on to this question of  
6 smoke ejection and so on.

7 JUDGE KELLEY: Well that sounds straightforward  
8 enough but I am just noting you have spent about 15 minutes  
9 looking at this old markup and I didn't quite see what  
10 the point of that was which is why I asked you.

11 Can you just get to the substance of the change,  
12 if a change it is, and see what that means?

13 MR. EDDLEMAN: All right.

14 BY MR. EDDLEMAN:

15 Q Now these changes that we have been discussion,  
16 Mrs. Serbanescu, these are examples of the change in  
17 philosophy that is discussed in answer five of your  
18 supplemental testimony dated October 11, are they not?

19 A (Witness Serbanescu) They are results of that  
20 change, yes.

21 Q All right.

22 When was that change made in philosophy?

23 A The change in philosophy was made some time  
24 between the two testimonies.

25 Q All right.

1            Now once those fusible links close the fire  
2 dampers they won't automatically re-open, will they?

3            A.    No.

4            Q.    In other words they close and they stay closed?

5            A.    Yes.

6            Q.    Okay.

7            And you say on page six, still in your answer  
8 five that initial smoke removal capability diminishes.  
9 But I believe you have stated earlier that the fire dampers  
10 were designed to totally cut off circulation in the HVAC  
11 ducts?

12           A.    Yes.

13           Q.    What other methods of smoke removal are there  
14 for fire areas?

15           A.    Under normal fire conditions as soon as products  
16 of combustion would be detected in the HVAC ductwork  
17 the automatic systems stops.

18           However that does not mean that the fire was  
19 of such magnitude as to develop a temperature at the  
20 fusible link to warrant the closure of the fire damper  
21 or of all fire dampers in the fire area at the same time.

22           Therefore should the fire brigade have to  
23 respond to a fire in that area, if they find it necessary  
24 that the manual override of these automatic systems might  
25 help them should not all the fire dampers have been closed,



1 that can be achieved.

2 Q Okay.

3 Does the control room have a direct indication  
4 of which fire dampers are closed?

5 A No.

6 Q So if this happened they would just -- if the  
7 fire brigade was on the scene of the fire and decided that  
8 ventilation might help them, they would communicate by  
9 radio or other means with the control room and ask them  
10 to start it up, is that correct?

11 A I would defer this question to Mr. Waters.

12 A (Witness Waters) Yes.

13 Q Okay.

14 And the only way to see if it works is to see  
15 if the smoke starts to be removed, right? I mean, there  
16 is no indication to the fire brigade or to the control  
17 room that the fusible links are closed -- I mean, have  
18 closed the fire dampers?

19 A That is correct.

20 Q All right.

21 Now it says the "...automatic shutdown  
22 features" -- this is in answer six:

23 "The automatic shutdown features  
24 can be overridden by the plant operator."

25 Doesn't that mean the automatic shutdown of the

1 ventilation fans or blowers?

2 A. (Witness Serbanescu) Yes.

3 Q. Okay.

4 And does the control room have a direct indication  
5 of which fans or blowers are off?

6 A. (Witness Waters) Yes, they do.

7 Q. All right.

8 What is the capability of this portable smoke  
9 ejection equipment that is discussed in this answer?

10 A. The capability?

11 Q. How many CFM does it move, or is it rated in  
12 those terms?

13 A. 5200 CFM for the portable smoke ejector which we  
14 have presently at the Shearon Harris site.

15 Q. Is there one such fan? Is that the equipment?

16 A. We have one presently.

17 Q. All right.

18 Where would it eject smoke to?

19 A. It would eject smoke to an adjacent area of the  
20 plant.

21 Q. Is it just something like a blower with a hose or  
22 a flexible vent attached to it?

23 A. Exactly.

24 Q. And how long is the flexible vent?

25 A. I don't know exactly. On the order -- this is an

1 approximation from the top of my head -- of 20 to 25 feet.

2 Q Now when it ejects smoke into the adjacent area,  
3 will the detectors in the ventilating system in that area  
4 tend to shut down the ventilation flow to that area?

5 A Potentially, yes. I would have to defer to  
6 Mrs. Serbanescu.

7 A (Witness Serbanescu) I would say potentially yes.

8 Q All right.

9 The fire brigade members, would they all have  
10 their own independent oxygen or air supplies?

11 A (Witness Waters) Absolutely. We require that  
12 they bring that with them, put it on and get dressed out  
13 in protective clothing. They have the self-contained  
14 breathing apparatus with them. They would be wearing  
15 that and would not be subject to smoke inhalation.

16 Q All right.

17 It is a positive pressure type of system that  
18 they use?

19 A Yes, it is.

20 Q Okay.

21 Do they have any aids for seeing through smoke  
22 in their equipment?

23 A I don't understand.

24 Q I mean is there anything that -- well let me  
25 ask you this:

1                   Do they have, as part of their outfits, eye  
2 protection from smoke?

3           A.     Eye protection?

4           Q.     Yes.

5           A.     That is part of the breathing apparatus.

6           Q.     It is a full face mask?

7           A.     Yes.

8           Q.     In the conditions described here if you had a  
9 hot fire develop in a fire area and it closed some or all  
10 of the fire dampers in the HVAC system serving that area,  
11 could you not have a substantial buildup of smoke that will  
12 make seeing in that area difficult?

13          A.     Potentially that is true.

14          Q.     Okay.

15                   And is the idea that that is one of the conditions  
16 where smoke removal will be necessary in order to manually  
17 fight the fire?

18          A.     That would have to be assessed by the fire brigade  
19 team leader as he assesses the area in which he is fighting  
20 the fire: the situation that he needs to bring under  
21 control, the size of the fire and many many other factors.

22                   This is part of why, in our fire brigade training,  
23 we stress the training of going into a room filled with  
24 dense smoke -- and the conditions are different, you could  
25 have to fight a fire in that type of situation. We give

1 them the hands-on experience so that whatever the condition  
2 might be that he can work effectively and carry out his  
3 duties effectively in that type of situation.

4 Q Mr. Waters, did you play a role in the decision  
5 to switch to this philosophy?

6 A To which philosophy?

7 Q To the philosophy of bottling up the fire in an  
8 area, shutting off the ventilation?

9 A I did not play a specific role and I support it.

10 Q Okay.

11 Mrs. Serbanescu, was it your group at Ebasco  
12 that initiated this change in the Harris fire protection  
13 philosophy?

14 A (Witness Serbanescu) It was a joint Ebasco/CP&L  
15 decision.

16 Q Did you know as of August 9 that a change like  
17 that was --

18 A I'm sorry, I didn't hear what you said.

19 Q I beg your pardon. I have gone away from the  
20 mike again.

21 Did you know as of August 9 that such a change  
22 was under consideration?

23 A I had some knowledge, but the final decision  
24 had not been made.

25 Q Okay.

1                   This is not referred to in your August 9 testimony,  
2 is it?

3           A.     It is not because a decision had not been made  
4 at that time.

5           Q.     Okay.

6                   Are there any other changes in fire barrier  
7 design philosophy or fire fighting philosophy that are  
8 under consideration now that have not been described in  
9 your testimony?

10          A.     Not that I know of.

11          Q.     Okay.

end#19

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1                   In your prefiled testimony of August 9th,  
2 Mrs. Serbanescu, on--

3           A           Can I put aside this marked-up copy now?

4           Q           Yes.

5                   On what I believe is page 1 of your August 9th  
6 prefiled directly behind the cover sheet, in your Answer 2,  
7 among the responsibilities you have had are bid evaluations. Is  
8 that not correct?

9           A           Yes, that is correct.

10          Q           What does this entail?

11          A           A bid evaluation entails a comparison between the  
12 technical specification which has been prepared, the vendor's  
13 submittal, an evaluation of the technical requirements, an  
14 evaluation of the cost, and selection of the equipment or  
15 systems.

16          Q           All right.

17                   So basically it is looking at getting the  
18 specifications met at the minimum cost?

19          A           That's correct, the technical specification.

20          Q           Okay.

21                   Now these technical specifications would be things  
22 like these, Specifications CAR-SH-AH -- AS48 for special doors,  
23 and other such specifications?

24          A           I don't think I understand your question.

25          Q           What I'm saying is the specifications for the

1 special doors that we were talking about, such as CAR-SH-AS48  
2 for the special doors, --

3 A Yes?

4 Q -- those are technical specifications, for example,  
5 of the type of technical specifications you would be doing  
6 bid evaluations for?

7 A No.

8 Q Okay.

9 What are the technical-- What kind of technical  
10 specifications would you be using in bid evaluations?

11 A All right. I would use specific technical  
12 specifications-- I would use specifications related to fire  
13 protection systems such as various water suppression systems,  
14 carbon dioxide, Halon, dry chemical and foam systems, fire  
15 pumps evaluations, standpipe and hose systems, various  
16 equipment to fight fires in the yard, but fire doors would not  
17 be within my responsibility. Penetration fire stop assemblies,  
18 fire seals--

19 Q Are those within or without your responsibility,  
20 those last two?

21 A The fire door bid evaluations are not within my  
22 responsibility. The penetration fire seals are within my  
23 responsibility.

24 Q And the other one you said, penetration fire stops?

25 A Penetration fire stop assemblies or penetration



1 seals are the same thing.

2 Q Okay.

3 And those are within your responsibility?

4 A Yes.

5 Q Okay.

6 Now purchase recommendations, are they the result  
7 of these bid evaluations?

8 A Yes.

9 Q Okay.

10 So on the Harris plant did you do a bid evaluation  
11 on the penetration fire seals?

12 A No.

13 Q Okay.

14 Did you do bid evaluations on any of the fire  
15 protection or fire fighting equipment for the Harris plant?

16 A I personally did not.

17 Q Okay.

18 You also mentioned drawing input, review, and  
19 drawing approval. Did you do any of that for the Harris plant?

20 A I have reviewed Ebasco internally-generated flow  
21 diagrams and drawings, not vendor drawings for Shearon Harris.

22 Q So Ebasco's drawings, not vendor drawings?

23 A That is correct.

24 Q Have you done any supervision of installation of  
25 such systems at the Harris plant?

1 A No.

2 Q How about field verification and support for  
3 Harris?

4 A Not for Shearon Harris.

5 Q Okay.

6 Have you done any negotiations with authorities  
7 having jurisdiction over fire protection?

8 A Yes, I have.

9 Q What did those negotiations involve?

10 A Discussions about the fire protection systems  
11 provided, their adequacy, the design requirements, where to  
12 provide them and so on.

13 Q Would this include any of the exceptions or  
14 deviations from the requirements for fire barriers around fire  
15 areas?

16 A I'm not sure what you mean.

17 Q Let me see if I can locate the-- I might not be  
18 able to locate this right now-- Oh, yes.

19 Would you please turn to page 7 of your August 9th  
20 prefiled testimony?

21 A Yes.

22 Q At the top in parentheses are the words "(unless  
23 the NRC permits a deviation from the requirements of Appendix  
24 R for a particular situation)."

25 A Yes.

1 Q Okay.

2 Would negotiations over whether such deviations  
3 would be permitted be the kind of thing that you might have  
4 done for Shearon Harris?

5 A Yes, I did.

6 Q How many such deviations has the Harris plant  
7 applied for, do you know?

8 A I do not recall from the top of my head.

9 Q Do you have a rough idea? Is it ten? Is it one?

10 A It is between 20 or 30. It could be 23; it could  
11 be 26; in that ballpark figure.

12 Q Okay.

13 About 20 or 30.

14 How many of those were granted by the NRC?

15 A I have not seen any deviation being granted by the  
16 NRC in writing.

17 Q So none of them have been approved yet in writing,  
18 to your knowledge?

19 A From the Safe Shutdown Analysis, no. There are  
20 some deviations which were approved from the NUREG 0800 which  
21 were approved by the NRC in the Safety Evaluation Report of  
22 November 1983.

23 Q Okay.

24 Those are the only ones that you know that have  
25 been approved?

1           A           Yes, that I have seen in writing to have been  
2 approved.

3           Q           I see. Okay.

4                        You described this process as negotiation. Can you  
5 explain to us how that works?

6           A           What are you referring to?

7           Q           If I go back to pages 1 and 2 of your prefiled of  
8 August 9th, you say you have also been involved in negotiations  
9 with authorities having jurisdiction over fire protection such  
10 as governmental authorities. The NRC is one of those  
11 authorities that you've been involved in negotiations with.  
12 Right?

13          A           Yes.

14                        JUDGE KELLEY: Where is this?

15                        MR. EDDLEMAN: Pages 1 and 2. Page 1 doesn't have  
16 a number on it but it is right behind the cover sheet.

17                        JUDGE KELLEY: Okay.

18                        BY MR. EDDLEMAN:

19          Q           You described that as a negotiating process. How  
20 does that work? Do you make a proposal and they make  
21 counterproposals?

22          A           (Witness Serbanescu) I think you are reading this  
23 a little differently than what is meant.

24          Q           All right.

25          A           The sentence states that the negotiations were

1 with the authorities having jurisdiction, including  
2 governmental, local authorities, insurance underwriters, and  
3 owners. We did not negotiate with the NRC. We had discussions  
4 with the NRC.

5           Negotiations occur mostly with the insurance  
6 company, with the local authorities, and with the owners. That  
7 is where one measure of fire protection is being proposed over  
8 another one, and which are known to be equally acceptable in  
9 the fire protection field.

10           In the fire protection field there is no such  
11 thing like a square, single approach. You can have a number  
12 of approaches which could be equally acceptable to both  
13 parties, and maybe one authority prefers one versus the other,  
14 and then you sit down and discuss and agree upon what is best  
15 suited for both.

16           Q           So you would work out either an agreement to use  
17 one or the other approaches or some different approach  
18 acceptable to both groups?

19           A           Correct.

20           Q           Okay.

21                       Is that process with the NRC still on-going with  
22 respect to some of these deviations?

23           A           To the best of my knowledge, all the deviations  
24 were submitted to the NRC on February 24th. They have been --  
25 February 24th, '84. They have been summarized in the Safe

1 Shutdown Summary of June '84. And we have not heard from the  
2 NRC officially as to what happened.

3 MR. O'NEILL: Excuse me, Mr. Chairman and  
4 Mr. Eddleman. That question had an antecedent, "those  
5 negotiations." I believe Mrs. Serbanescu testified that she  
6 had not been negotiating with the NRC. Her answer stands on  
7 its own, but I would like the record to reflect that that  
8 negotiation does not refer back to the NRC.

9 BY MR. EDDLEMAN:

10 Q Mrs. Serbanescu, would it have been more correct  
11 for me to have asked you were these discussions still  
12 on-going, and would your answer have been the same if I had  
13 asked you about discussions instead of negotiations?

14 A (Witness Serbanescu) They are not going any more.

15 Q Okay.

16 The discussions are not on-going any more?

17 A No. Everything is on paper and in the NRC's hands.

18 Q And you haven't heard anything back subsequent  
19 to those discussions?

20 A That's correct.

21 Q Okay.

22 MR. EDDLEMAN: Is that satisfactory?

23 MR. O'NEILL: I just want the record to be clear.

24 Thank you.

25 MR. EDDLEMAN: Okay.

1 BY MR. EDDLEMAN:

2 Q The statement you make at the top of page 2,  
3 preparation of Safety Analysis Reports, are those FSARs and  
4 PSARs?

5 A (Witness Serbanescu) That is correct.

6 Q Okay.

7 Did you have any responsibility for preparation of  
8 the Harris FSAR--

9 A Yes, I have.

10 Q -- on fire protection?

11 A Yes, I have.

12 Q In particular, did you or your group at Ebasco  
13 have responsibility for preparing Section 9.5.1 and Appendix  
14 9.5A of the Harris FSAR?

15 A Ebasco and CP&L have prepared it, yes.

16 Q You and your group worked jointly with CP&L in  
17 preparing that?

18 A Yes.

19 Q And also on the amendments?

20 A Yes.

21 Q Okay.

22 You state that these.... Well, let me put it this  
23 way:

24 In your sentence there you say your responsibilities  
25 included preparation of various kinds of reports and analyses,

1 and then you say all performed in accordance with various  
2 criteria issued by....and then you list some people who  
3 issued criteria.

4 Now I take it that means that all the analyses you  
5 have performed are, in your opinion, performed in accordance  
6 with the criteria issued by the bodies that set the standards.  
7 Is that right?

8 A Yes.

9 Q Okay.

10 Do you maintain that these are performed in  
11 accordance with all such criteria that apply?

12 A With those applicable for each power plant I worked  
13 for.

14 Q You then go on to state that you provided  
15 technical assistance to a client during NRC walkdown. I  
16 presume-- Well, let me ask you:

17 Is this client a nuclear utility?

18 A Yes.

19 Q Okay.

20 What sort of technical assistance do you provide  
21 to a client during an NRC walkdown?

22  
23  
24  
25  
End 20



Take 21

1           A     The client may not know all the design details  
2 behind the analysis or behind the design and has to go to  
3 the engineer for assistance.

4           Q     All right. So you would be there during the walk-  
5 down to provide those details and assistance?

6           A     That's correct.

7           Q     Is that right?

8           A     To the client. Because the client is responsible  
9 to the NRC, not the architect-engineer.

10          Q     Okay. So you would be right there with the client's  
11 people during the walkdown?

12          A     With the client's people and the NRC.

13          Q     Okay.

14                   And you would answer questions and provide  
15 information?

16          A     That's correct.

17          Q     Are you contracted to do the same thing for Harris  
18 when NRC does a walkdown?

19          A     I do not know.

20          Q     Okay.

21          A     Now then, you describe your work for the Applicants  
22 on the Harris plant and you describe some criteria in that  
23 first sentence that are requirements, guidelines, that  
24 were used in preparing the fire protection programs for  
25 the Harris plant, correct?

1 A I do not see where you refer to the criteria?

2 Q Well, I misspoke. Let me ask that again. In  
3 your answer 3, first sentence --

4 A Yes.

5 Q It says, Ebasco was retained by CP&L to develop  
6 the fire protection program for the Harris plant in  
7 accordance with NRC regulatory requirements, insurance  
8 carrier regulations, industry standards and local authorities  
9 requirements. Now, was that the job to which you were  
10 assigned?

11 A Part of it.

12 Q Okay. So your job included that.

13 Now, the question I want to ask is, do -- have the  
14 requirements of the NRC, the insurance carriers of the  
15 industry, or the local authorities, conflicted in any way?  
16 Have you run into any situations where the insurance carrier  
17 says you got to do it this way and NRC regulations says you  
18 ought to do it that way -- a different way -- or something  
19 like that, conflict between the regulations or requirements?

20 MR. O'NEILL: Mr. Chairman, objection to the  
21 question. It has gotten out of hand. If we read that  
22 question back I think it would be unintelligible.

23 Can the same question be stated, please?

24 JUDGE KELLEY: I understood the question to be whether  
25 there had been conflicts between requirements for the NRC and

1 insurance carriers or local people or anyone else.

2 MR. EDDLEMAN: I'll accept that wording.

3 JUDGE KELLEY: Okay.

4 MRS. MOORE: Your Honor, I object to the question  
5 on the grounds of relevance. This is an NRC licensing  
6 proceeding and our requirements have to be met.

7 JUDGE KELLEY: It seems like another way of asking  
8 do NRC requirements come first in your mind. I assume that's  
9 what Mr. Eddleman is after.

10 MR. EDDLEMAN: That's one of the places I'm going.

11 JUDGE KELLEY: So there.

12 WITNESS SERBANESCU: Mr. Chairman, the answer is  
13 yes.

14 JUDGE KELLEY: Thank you.

15 MR. EDDLEMAN: Okay.

16 BY MR. EDDLEMAN:

17 Q What are some of those conflicts?

18 A (Witness Serbanescu) The question didn't say  
19 anything about conflicts.

20 JUDGE KELLEY: I don't believe she said that. She  
21 said yes, NRC requirements come first, I thought.

22 WITNESS SERBANESCU: Yes, Mr. Chairman.

23 JUDGE KELLEY: It sounded like "Does the sun rise  
24 in the morning?"

25 Pick it up from there, Mr. Eddleman.

1 MR. EDDLEMAN: All right.

2 BY MR. EDDLEMAN:

3 Q So whenever any NRC requirement has conflicted  
4 with any of these other requirements, you have complied  
5 with the NRC requirements?

6 A (Witness Serbanescu) The plant safety requirements  
7 come first. A good example of this is the multi-function  
8 doors where the safety of the plant and the safety of the  
9 people take priority over a non-safety factor.

10 Q Well, now, you're describing safety as in the  
11 NRC's regulations that is, safety grade equipment, safety  
12 considerations?

13 JUDGE KELLEY: Off the record.

14 (Discussion off the record.)

15 JUDGE KELLEY: Back on the record.

16 BY MR. EDDLEMAN:

17 Q I'm trying to recall the question. It's not an  
18 electronic failure, it's a brain failure. I believe I had  
19 a question pending when the power went out.

20 A (Witness Serbanescu) Please repeat the question?

21 MR. EDDLEMAN: That's what I'm trying to recall.

22 BY MR. EDDLEMAN:

23 Q When you were referring to safety in your last  
24 answer, safety requirements took precedence over fire protection  
25 that's in the NRC rules defined certain things as safety and

1 certain others as non-safety and that was the sense you were  
2 using safety in, wasn't it?

3 A. (Witness Serbanescu) Yes.

4 MR. EDDLEMAN: I have a little problem here in  
5 talking. I will try to do as best I can.

6 WITNESS SERBANESCU: Maybe if you keep your hand  
7 down.

8 MR. EDDLEMAN: My hand is not in the way of my  
9 eyes.

10 Let me get the mike out of the way.

11 BY MR. EDDLEMAN:

12 Q You're not meaning to suggest, are you, that fire  
13 protection at the plant is not really a function of keeping  
14 the plant safe?

15 A. (Witness Serbanescu) I'm not sure I understand  
16 the question.

17 Q Well, when you say that, say tornado protection of  
18 the door take precedence over the fire protection requirements,  
19 because the tornado doors are a safety requirement. You  
20 don't mean to say, do you, that fire protection isn't important  
21 in keeping the plant safe?

22 A. I did not mean to say that fire protection is not  
23 important to keep the plant safe. But I meant to say that  
24 the tornado occurring could damage the safety related  
25 equipment present in the plant.

1 Q Okay.

2 Now, that addresses a conflict, as it were,  
3 between fire protection and another NRC regulation. Have  
4 there been cases where you have a conflict between the NRC  
5 regulation and some requirement or guideline of an insurance  
6 carrier or industry standard or local requirement?

7 A Usually, the local requirement could be convinced  
8 about the need to go with the NRC regulation even if some  
9 penalty had to be paid to the insurance.

10 Q Okay. That covers the local authorities and  
11 the insurance carriers?

12 A Yes.

13 Q Okay.

14 What about a conflict between NRC regulatory  
15 requirements and industry standards?

16 MRS. MOORE: Your Honor, I'm going to object again  
17 on relevance grounds. The NRC requirements have to be --  
18 and I don't see the relationship of this line of questioning  
19 to the contention.

20 JUDGE KELLEY: Well, don't you have to concede,  
21 though, that NRC regulations sometimes get violated not  
22 withstanding that they have to be met. And isn't it a fair  
23 question to a reviewer then which one they put first?

24 MRS. MOORE: But I thought she had already answered  
25 that question, your Honor. She had already said NRC

1 requirements come first.

2 JUDGE KELLEY: Well, but now we have a specific  
3 question. It's industry standards versus NRC standards.

4 I realize that a lot of NRC standards are industry standards,  
5 they just incorporate them. But it seems fair enough to ask.

6 Go ahead. Objection overruled.

7 WITNESS SERBANESCU: In most of the cases, the  
8 NRC requirements are directing the fire protection system  
9 to follow either the NRPA guidelines standards and codes,  
10 or the recommended practices. However, there are situations  
11 when a safety system takes precedence over fire protection  
12 because there is a minor detail which can be covered in a  
13 different way than by NFPA codes through another standard  
14 industry accepted practice and yet maintain the requirements  
15 for the safety system.

16 JUDGE KELLEY: You mean -- if I may just interject --  
17 you might have an NRC system and the NRC rule says do it  
18 a certain way or meet a certain standard and there might be  
19 an industry standard which conflicts in some fashion with  
20 that. But then there might be some other industry standard  
21 providing an alternative approach which would not conflict  
22 and therefore, you take the alternative approach; is that  
23 a fair paraphrase of what you said?

24 WITNESS SERBANESCU: Yes, your Honor.

25 JUDGE KELLEY: Thank you.

1 WITNESS SERBANESCU: We never got called on a  
2 conflict.

3 JUDGE KELLEY: Okay.

4 BY MR. EDDLEMAN:

5 Q In that case, what you're doing is basically  
6 choosing the industry standards which does not conflict with  
7 the NRC requirement, correct?

8 A (Witness Serbanescu) Generally speaking, yes.

9 Q Now, by industry standard here, are you referring  
10 to nuclear industry practice as with these tomado resistant  
11 doors that you talked about earlier, or to guidelines or  
12 requirements?

13 A I'm speaking about both.

14 Q Now, you say in the next sentence -- pardon me.  
15 The second sentence after that--

16 A Could you please give me the line number?

17 Q Yes. Line 21, page 2.

18 A Yes.

19 JUDGE KELLEY: Can we break for a second? I think  
20 there may be a gentleman in the hall who wants to disconnect  
21 these things and take them to Apex. And if I'm right, maybe  
22 we should just tell him that we're not going to Apex tonight.  
23 I may be all wrong, but --

24 If you wouldn't mind checking, I'd appreciate it.

25 All right, go ahead, Mr. Eddleman.



WRB/pp 10

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MR. EDDLEMAN: We're on page 2, line 21.

BY MR. EDDLEMAN:

Q You say you were involved in the preparation of the Plant Final Safety Analysis report which included the detailed fire hazards analysis?

A (Witness Serbanescu) Yes.

Q When was that detailed fire hazards analysis prepared?

A To the best of my recollection, in 1979.

Q Okay. And was that part of the FSAR submitted to the NRC originally?

A Yes.

Q Okay.

Have you actually visited the Harris plant site in connection with your work on fire protection?

A Yes.

Q Okay.

A I may add, several times.

Q Okay.

End 21

#22 WRBwb 1                    On page 3, if we could look at, beginning at  
2 about line 6, talking about your responsibilities after  
3 January of 1981, you say,

4                    "It included preparation of the safe  
5 shutdown analysis in case of fire for the Harris  
6 plant, and coordination of the interdisciplinary  
7 reviews and comment resolution, including applicans'  
8 comments."

9                    Now, were those interdisciplinary reviews  
10 carried out with Ebasco and CP&L people? Is that what you're  
11 doing there?

12                    A.        Both. If we have a revision within Ebasco, it  
13 goes to CP&L, it goes to all the disciplines involved in  
14 CP&L, and the comments come back and are resolved to mutual  
15 agreement.

16                    Q.        Okay.

17                    So your job was to coordinate this process?

18                    A.        That had been done under my supervision, yes.

19                    Q.        Okay.

20                    And what would be your role in resolution of the  
21 comments?

22                    A.        Final approval.

23                    Q.        Okay.

24                    A.        From the Ebasco point of view.

25                    Q.        All right.

WRBwh2

1 A And agreement with the client.

2 Q Did you have some sort of counterpart within CP&L  
3 who also had to give final approval to these resolutions?

4 A Yes.

5 Q Who was that?

6 A For the safe shutdown analysis our counterpart  
7 in the beginning was Mr. --- It slips my memory. I'll tell  
8 you tomorrow.

9 Q Okay.

10 A And secondly was Mr. Steve Hardy.

11 Q Is he still in that capacity, or that role?  
12 Or is this all done?

13 A I'm sorry...?

14 Q Is he still in that capacity as the final approver  
15 for CP&L's resolving comments, or is this process over now?

16 A This process is over now. I mean, it's filed  
17 with the NRC.

18 Q Okay.

19 Were the comments of the applicants on this SSA  
20 filed with the NRC, or just the resolutions?

21 A Please repeat the question.

22 Q Were the comments of the applicants on this SSA,  
23 the safe shutdown analysis, filed with the NRC, or were just  
24 the resolutions of the comments filed?

25 A Prior to submittal to the NRC the comments have

WRBwb3

1 been resolved, and then they are being submitted to the NRC.

2 Q So what is submitted is the resolutions?

3 A That's correct.

4 Q Okay.

5 WITNESS SERBANESCU: Mr. Chairman, I remember  
6 the name of the gentleman I dealt with first in CP&L. It  
7 was Mr. Prunty.

8 JUDGE KELLEY: Thank you.

9 BY MR. EDDLEMAN:

10 Q Mr. Bob Prunty?

11 A (Witness Serbanescu) Yes.

12 Q Did any of the comments on the safe shutdown  
13 analysis address additional costs that would be incurred  
14 by--

15 A I'm sorry; I cannot hear you.

16 Q I'm sorry; I'm getting myself off the point of  
17 this microphone.

18 Did any of the comments on this safe shutdown  
19 analysis address the cost of providing this shutdown pathway  
20 to guarantee the plant could be shut down safely in the event  
21 of fire?

22 MR. O'NEILL: Objection, your Honor. There is  
23 no relevance of this question, as perhaps the previous  
24 dozens of questions, to this contention, or the issues that  
25 are before this Board for litigation.

WRBwb4

1 JUDGE KELLEY: What's your point on cost, other  
2 than relevance? That's just the objection?

3 MR. O'NEILL: The objection is relevance.  
4 Quite frankly, I could have objected on relevance to perhaps  
5 seventy-five percent of the questions. But this is just  
6 getting too far afield, and it's too late.

7 MR. EDDLEMAN: You allowed questions whether  
8 NRC requirements come first as to other requirements. Now  
9 I'm asking the same kind of thing as to cost.

10 MRS. MOORE: Mr. Chairman, I would like to  
11 say: over objection those questions were allowed.

12 JUDGE KELLEY: True.

13 MRS. MOORE: At this point I would join in  
14 Applicants' objection to the cost line of questioning as  
15 well.

16 JUDGE KELLEY: Could you elaborate on that a  
17 little bit?

18 MRS. MOORE: The contention has certain specific  
19 allegations, and I believe that at this point it is incumbent  
20 upon Mr. Eddleman to show what the relevance of these questions  
21 is to any of the specific allegations in the contention.

22 JUDGE KELLEY: What is the subpart, or the subset  
23 of 116 that comes into play when we start talking about cost  
24 of the fire protection system?

25 MR. EDDLEMAN: I think Items 3 and 4, and perhaps

WRBwb5

End-22

#23

1 Item 5 would be involved, your Honor. Those are on page 4  
2 of the August 9th testimony of Mrs. Serbanescu, I believe.

3 MR. O'NEILL: Mr. Chairman, --

4 JUDGE KELLEY: May I raise-- We have a pending  
5 objection on relevance grounds from applicants and the Staff.  
6 I'm going to raise a Board objection to your last question,  
7 and maybe you can answer it.

8 That is simply this: As I understand NRC  
9 requirements in hearings on adequacy we don't normally get  
10 into costs. If there happen to be an NRC requirement saying  
11 you must spend at least 10 million dollars on this system,  
12 I suppose one would litigate whether that was done. But  
13 normally-- I don't know of any such requirement. And  
14 normally what you've got are acceptance criteria, sometimes  
15 fairly elaborate, and then we litigate whether whatever  
16 the applicant proposes meets those criteria. We don't care  
17 how much it costs, as long as it does. And, if it doesn't,  
18 then it doesn't pass. But it doesn't get us off into a sort  
19 of collateral inquiry of how many dollars go into the systems.

20 I've sustained objections along those lines.

21 Can you explain why we ought to get into a cost  
22 discussion of alternative? I assume when you say were there  
23 comments about cost, did you mean somebody writes a comment  
24 saying we really ought to get something else: it costs more  
25 but it's better. Is that the kind of thing that you're after?

WRBwb6

1 MR. EDDLEMAN: Or this costs too much, let's find  
2 another way to do it.

3 JUDGE KELLEY: Okay.

4 I have a sort of so-what reaction to the question  
5 about cost.

6 MR. EDDLEMAN: Okay. Let me try to respond to  
7 that.

8 I'm not trying to get into it costs so many  
9 dollars -- you know, how many dollars it costs. I'm not  
10 trying to get them to add up, you know, how many dollars  
11 they spend on this, that and the other. But what I'm saying  
12 is, at least in the bid evaluation cost is one of the  
13 criteria: you want to meet the criteria at least cost.

14 What I'm trying to explore is, is there a conflict  
15 between meeting the criteria and cost. I think the potential  
16 is that-- In other words, if you could get by a little bit  
17 on one criteria or another, or, you know, perhaps bend the  
18 NRC's position a little, it might save you a good bit of  
19 money. And that's something an organization building a power  
20 plant might very well do. And the question is, Is there a  
21 conflict between this attempt to reduce costs, which you'd  
22 logically expect them to be doing, and the actual meeting of  
23 the requirements; does it weaken it?

24 JUDGE KELLEY: Okay.

25 Do you want to comment on the cost point,

WRBwb7 1 Mr. O'Neill?

2 MR. O'NEILL: The point that you made was  
3 precisely my point, the first one I was going to make.

4 The second point is, he has asked his question  
5 with respect to the safe shutdown analysis. The safe  
6 shutdown analysis is not an exhibit, it is a reference -- the  
7 summary is, but the whole analysis isn't. It is referenced  
8 only to respond to the allegation that the fire hazards  
9 analysis does not address the availability of control and power  
10 to the safety equipment. That's No. 1.

11 The simple answer to that one is, as  
12 Mrs. Serbanescu's testimony demonstrates, is that power and  
13 control is addressed in the safe shutdown analysis, period.

14 The other four issues all have to do with the  
15 fire hazards analysis, and the safe shutdown analysis is not  
16 addressed there.

17 So even if cost were a consideration, the safe  
18 shutdown analysis is only tangentially involved in this  
19 whole contention. That's my second reason for objection.

20 JUDGE KELLEY: Okay.

21 Anything else from the Staff?

22 What we're going to do is hear comments on these  
23 points, go to dinner, and we'll tell you the first thing in  
24 the morning what our answer is. It's six o'clock anyway. It's  
25 a good enough point to quit on.



WRBwb8

1 MRS. MOORE: I'd just like to restate that  
2 regardless of what the cost is, there are certain minimum  
3 acceptance criteria that have to be met. I think that what  
4 it costs to meet them is irrelevant.

5 JUDGE KELLEY: Okay.

6 Well, Mr. Eddleman, anything further?

7 MR. EDDLEMAN: May I inquire: Is the Staff  
8 taking the position that their requirements have to be met  
9 regardless of cost in all cases?

10 MRS. MOORE: Mr. Chairman, I just restate what I  
11 said, that there are minimum acceptance criteria set forth  
12 in our standard review plans, our regulations, that have to  
13 be met.

14 MR. EDDLEMAN: Well, what I'm trying to get at is,  
15 aren't there exceptions and deviations and things like that  
16 are routinely discussed, if not negotiated, between the  
17 Staff and applicants building power plants?

18 MRS. MOORE: Mr. Chairman, it's my understanding  
19 that there would still have to be a minimum level of safety  
20 provided, regardless of whether you get a deviation from a  
21 specific acceptance criteria.

22 JUDGE KELLEY: Okay. The Board will address  
23 these points first thing in the morning so that we can  
24 move on.

25 Let me just make another point or two, and that

WRBwb9

1 is this: We wanted to get some kind of fix on how far along  
2 we were.

3 Mr. Eddleman, I asked you before we took up this  
4 last segment -- or, rather, after the last break, about where  
5 you were. And I have some numbers here which I won't go into,  
6 but my bottom line is that it seems to us you ought to be  
7 prepared to finish this panel by about eleven tomorrow,  
8 assuming we start at nine.

9 I think that's consistent with what you indicated  
10 to me before.

11 MR. EDDLEMAN: That was a very rough estimate.  
12 But I can try. I'd feel more confident in finishing by the  
13 lunch break. But that's in that range.

14 JUDGE KELLEY: I think our view would be that  
15 lunch at twelve-thirty would be more time for cross than we  
16 ought to devote to it.

17 I'll put it differently: Finish by eleven,  
18 Mr. Eddleman.

19 MR. EDDLEMAN: Yes, sir.

20 JUDGE KELLEY: Okay. And we'll plan to finish  
21 the panel by lunch, approximately, in that range.

22 As I said before, we're going to come back here.  
23 Is there anything else that we need to mention?  
24 Seeing no hands--

25 MR. EDDLEMAN: There's something I want to do on

WRBwb10 1 the record, if I might.

2 JUDGE KELLEY: Okay. Go ahead.

3 MR. EDDLEMAN: In your instruction to finish by  
4 eleven, I just realized and, not being a lawyer, I didn't  
5 think of it quick enough, but what I'm worried about is,  
6 since I'm under an unambiguous order to be finished by  
7 eleven, what if some objections get raised and we spend all  
8 our time arguing about that; and I don't--

9 JUDGE KELLEY: We take that into account. And  
10 I have taken that into account, indeed, in figuring out  
11 eleven.

12 I'll tell you, if you're interested: We had  
13 about nine hours of work here today. We took an hour for  
14 lunch: that makes eight. I knocked off an hour for breaks:  
15 that makes seven. I knocked off an hour for lawyer argument:  
16 that makes six. At the five hour, though, you said you  
17 were half through. So I tack on that hour and two in the  
18 morning, and you've got a little bit more than what you  
19 asked for.

20 Now, similarly, if we come in tomorrow and,  
21 as things develop, we spend half our time arguing legal  
22 points, we'll give you some more time.

23 MR. EDDLEMAN: Judge, I'm not sure I could follow  
24 that calculation, but I guess I won't argue with it.

25 JUDGE KELLEY: It'll all be there in the record.

WRBwb11 1 All right. I guess that's it, then. We have an  
2 off-the-record point, but we'll go off the record and adjourn.

3 (Whereupon, at 6:04 p.m., the hearing in the  
4 above-entitled matter was recessed, to reconvene at  
5 9:00 a.m. the following day in Raleigh, North Carolina.)  
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CERTIFICATE OF OFFICIAL REPORTER

This is to certify that the attached proceedings before the  
UNITED STATES NUCLEAR REGULATORY COMMISSION in the matter of:

NAME OF PROCEEDING:

CAROLINA POWER AND LIGHT COMPANY  
and NORTH CAROLINA EASTERN MUNICIPAL  
POWER AGENCY

(Shearon Harris Nuclear Power Plant,  
Units 1 and 2)

DOCKET NO.: 50-400 OL  
50-401 OL

PLACE: Raleigh, North Carolina

DATE: Wednesday, 17 October 1984.

were held as herein appears, and that this is the original  
transcript thereof for the file of the United States Nuclear  
Regulatory Commission.

(Sigt) William R. Bloom  
(TYPED) William R. Bloom

Official Reporter

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