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Advisory Committee On Reactor Safeguards

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Water Reactors

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PUBLIC NOTICE BY THE
UNITED STATES NUCLEAR REGULATORY COMMISSION'S
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

DATE: Thursday, September 20, 1990

The contents of this transcript of the proceedings of the United States Nuclear Regulatory Commission's Advisory Committee on Reactor Safeguards, (date) Thursday, September 20, 1990, as reported herein, are a record of the discussions recorded at the meeting held on the above date.

This transcript has not been reviewed, corrected or edited, and it may contain inaccuracies.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
SUBCOMMITTEE ON ADVANCED PRESSURIZED WATER REACTORS

Nuclear Regulatory Commission
Room 442
7920 Norfolk Avenue
Bethesda, Maryland

Thursday, September 20, 1990

The Subcommittee met, pursuant to notice, at 8:30
O'clock a.m., J. Carroll, ACRS Subcommittee Chairman,
presiding.

1 PARTICIPANTS:

2

3

J. CARROLL, ACRS Subcommittee Chairman

4

I. CATTON, ACRS Member

5

W. KERR, ACRS Member

6

C. MICHELSON, ACRS Member

7

P. SHEWMON, ACRS Member

8

E. WILKINS, ACRS Member

9

C. WYLIE, ACRS Member

10

M. EL-ZEFTAWY, ACRS Staff Member

11

T. ROTELLA, ACRS Staff Member

12

L. DONATELL, NRC/NRR

13

C. MILLER, NRC/NRR

14

T. VAN DE VENNE, Westinghouse

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E. BURNS, Westinghouse

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P R O C E E D I N G S

[8:30 a.m.]

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3 MR. CARROLL: The meeting will now come to order.
4 This is a meeting of the Advisory Committee on Reactor
5 Safeguards Subcommittee on Advanced Pressurized Water
6 Reactors.

7 I am J. Carroll, Subcommittee Chairman.

8 The ACRS Members in attendance are: Bill Kerr,
9 Charlie Wylie, Carl Michelson, Ernest Wilkins, and I
10 understand Paul Shewmon is here and will join us shortly;
11 and I don't know where Ivan Catton is, but he is supposed to
12 be here.

13 The purpose of today's meeting is to review the
14 draft Safety Evaluation Report prepared by the NRC staff
15 regarding the Westinghouse (SP/90) design.

16 Dr. Med El-Zeftawy is the Cognizant ACRS staff
17 Member for this meeting.

18 I would also like to introduce Tom Rotella, to my
19 right, who will be taking over from Med on the two
20 evolutionary plants, the SP/90 and the CE System 80-Plus, or
21 two of the evolutionary plants, I should say. Tom comes to
22 us from NRR, and part of that time had a background in
23 industry. He was a shift technical advisor at St. Lucie.

24 The rules for participation in today's meeting
25 have been announced as part of the notice of this meeting

1 previously published in the Federal Register of September 6,
2 1990.

3 A transcript of the meeting is being kept and will
4 be made available as stated in the Federal Register Notice.
5 It is requested that each speaker first identify himself or
6 herself, and speak with sufficient clarity and volume so
7 that he or she can be readily heard.

8 Let's see. I guess we have a mike at the podium.
9 And that is it.

10 Med?

11 MR. EL-ZEFTAWY: Yes. That goes directly to the
12 Reporter.

13 MR. CARROLL: Okay. Lynn, will you be able to
14 take down people that want to say something?

15 THE REPORTER: If they stand up and say their name
16 first, and speak very loudly.

17 MR. CARROLL: Speak very loudly. Okay.

18 THE REPORTER: Stand close to one of the mikes
19 that are on the table, and just aim your voice.

20 MR. CARROLL: All right.

21 We have received no written comments or requests
22 to make oral statements from members of the public.

23 I have a number of matters I guess that would best
24 be taken up when we get -- are you going to start off,
25 Lauren, or Charlie?

1 MR. MILLER: I am going to start off.

2 MR. CARROLL: All right. Maybe we will let you
3 get into your introduction.

4 MR. MILLER: Okay.

5 MR. CARROLL: And we will ask you a few
6 preliminary questions.

7 Do other Committee members have some generic sort
8 of things they want to bring up at this time before we begin
9 the staff's presentation?

10 MR. WILKINS: Do you really expect to adjourn at
11 quarter after 3:00?

12 MR. CARROLL: I don't know when we're going to
13 adjourn.

14 MR. WILKINS: That's what I thought.

15 [Laughter.]

16 MR. CARROLL: Lauren told me earlier that he
17 certainly didn't expect it would take that long.

18 MR. DONATELL: I think we'll be done at 12:00.

19 MR. CARROLL: Okay.

20 Go ahead, Charlie.

21 MR. MILLER: Thank you, Mr. Chairman.

22 My name is Charles Miller, and I'm the Project
23 Director for Standardization in NRR.

24 I wanted to make a few opening remarks this
25 morning to kind of set the stage of where the staff has been

1 with the SP/90 review over the recent past.

2 Lauren is going to be doing the bulk of the
3 presentation today, and the coordination of the
4 presentation.

5 We are also going to be bringing the staff
6 reviewers in over the course of the day and have them
7 available to answer any specific questions concerning
8 various areas of the review.

9 The SP/90 review is what I call kind of a hybrid-
10 type review. It spanned two generations of thinking at the
11 NRC with regard to standardization.

12 At the time the review was initiated at about
13 1983, it was well before any real strong thoughts had been
14 given towards actually proceeding with a rule that
15 culminated in 10 CFR Part 52. And at that time, we were
16 still I guess engrossed in the licensing process in the
17 traditional sense. And that's the two-step process where
18 first an applicant that would want to build and operate a
19 plant would ask for a construction permit, and then
20 ultimately an operating license as a second stage.

21 And as PDAs were initially envisioned, the idea
22 was that a preliminary design approval would be used and
23 could be referenced in a CP application.

24 Then over the course of time, as everyone here
25 knows, Part 52 --

1 MR. CARROLL: So, Charlie, just to say it my way,
2 an SP/90 PDA, if it were approved, a utility could take
3 that, add to it the balance-of-plant kind of stuff, the
4 site-specific stuff, and have in effect an application for a
5 construction permit? Was that the concept?

6 MR. MILLER: I would say that with the following
7 caveat. Add to it what you talked about, but including any
8 conditions that may be specified in PDA. I think
9 traditionally if you look at a PDA, you would see some
10 conditions. There may be open items that still yet need to
11 be resolved.

12 MR. CARROLL: Sure.

13 MR. MILLER: So it would have to be the resolution
14 of all issues identified at that time, plus the addition.

15 MR. CARROLL: Okay.

16 MR. MILLER: Now, in practice, I think that the
17 only practical example I think that we have at this agency
18 of a full PDA, that culminated in an FDA, that ultimately
19 culminated in a license, was the CESSAR case, and System 80,
20 that culminated in Palo Verde.

21 But I think the other thought that I wanted to
22 present before Loren began his formal presentation was that
23 we, in Westinghouse, have dialogued over what it is that's
24 desired over time, and because it spanned two generations of
25 thinking, I think that what we mutually agreed that we would

1 want to do was try to tie a knot in the review at some point
2 in time and be able to identify where we are.

3 Westinghouse informed the staff, I guess about
4 nine months ago, that they were not going to immediately
5 proceed with taking the design to a final design approval at
6 this time. They didn't rule out that they would ever do
7 that, but I think they were waiting for some other market
8 forces to take place, and I think that they can articulate
9 their position better than I.

10 But given that, we made a determination, the staff
11 made a determination, given limited resources to a certain
12 extent, that where were we going to get bank for a buck in
13 our standardization reviews. We had many other reviews that
14 we needed to embark upon, one of which was one that
15 Westinghouse is developing, and that's on the AP 600.

16 So, I guess what I wanted to say was at this point
17 in time, what you have before you is what the staff
18 considers to be the final product. We are not anticipating
19 spending any more resources in review of the SP 90 at this
20 time. I think that's an important point.

21 What we tried to do when we developed this safety
22 evaluation report was to basically take the information that
23 we had in hand, tie up the review for those areas that we
24 were able to come to grips with and write-off on, we made an
25 attempt to do that, but there are many, many other areas

1 that I think would be left open and would be the subject of
2 further proceeding if the design were to be finalized.
3 Especially some of the larger issues that we've been
4 dialoguing on over the past year with regard to severe
5 accidents and the 15 policy issues in SEKE 90-016.

6 MR. KERR: So one looks on this SER as an up-to-
7 date review of something?

8 MR. MILLER: Yes. I think what it is is it's --

9 MR. KERR: The sort of review you'd do today if
10 you got an application for PDA?

11 MR. MILLER: Yes, and then I think --

12 MR. KERR: Well, wait a minute --

13 MR. MILLER: -- that to this extent, it's more
14 limited, okay. In other words --

15 MR. KERR: To me, it's not only limited, but it's
16 obsolete, and the reason I asked the question.

17 MR. WYLIE: We're going back to that, is it
18 adequate for a CP?

19 MR. MILLER: I think that's a determination we
20 have to make at the time that we'd make a determination if
21 it's going to be called a PDA, and under what conditions is
22 it going to be applicable.

23 I don't know that the review's necessarily
24 obsolete to the extent that it was done, because I think
25 that the reviewers, as they looked at that, tried to keep in

1 mind as they looked at the reviews the latest guidance --
2 the SRPs and the regulatory guides.

3 MR. KERR: Well then, I find, unless I
4 misinterpreted the report, that the review of the control
5 system would not work. If we haven't learned anything in
6 the 11 years since 1979, we're in bad shape.

7 MR. MILLER: Fair comment, and to that extent, I
8 think we should probably find areas where the review would
9 have to be updated in order to be able to make it purely
10 applicable to someone who wanted to reference it in the CP,
11 and that's why I made the remarks into the conditions. I
12 think what we have to establish as the time we would issue a
13 PDA is the conditions by which we issue it.

14 The safety evaluation report would accompany it as
15 the staff's findings, but there would be conditions that
16 would be attached to it, and one such condition could be
17 that an area that we find had been obsolete would have to be
18 upgraded in order to be able to support an application.

19 MR. WILKINS: May I ask the same question, perhaps
20 in a different way? Is the issue before the subcommittee
21 whether we shall recommend to the committee that the staff
22 proceed with the PDA? Is the staff prepared to proceed with
23 the PDA, or is this simply an information briefing and
24 somewhat later there will be a --

25 MR. CARROLL: I think the staff would like a

1 letter from the full committee at the October meeting
2 saying: We think this is a fine PDA, except it's got these
3 problems --

4 MR. WILKINS: As noted?

5 MR. CARROLL: -- or whatever, yeah.

6 MR. MILLER: Traditionally, what we would like to
7 see is a letter from the committee giving your commen's
8 concerning the review that you've done which, traditionally,
9 would be attached to the safety evaluation which becomes the
10 report that is used to judge number 1: whether a PDA is
11 issued; and number 2: if such a PDA is issued, under what
12 conditions it is issued. The PDA itself, historically, is
13 only about a 2 page document. It's the safety evaluation
14 that stands behind it that --

15 MR. CARROLL: Have you drafted that 2 page
16 document yet?

17 MR. MILLER: No, we have not, okay. I think what
18 we wanted to embark upon was to complete the safety
19 evaluation report, air that with the ACRS, get your comments
20 and reviews, then try to put it in a final form.

21 MR. CARROLL: Well, I think what some of us at
22 least are struggling with is what is it that we're signing
23 off on? How's it going to be used, and I guess it would
24 help crystallize my thinking if I could at least have some
25 clue as to what the staff is going to say in the PDA.

1 MR. MILLER: What Loren plans on doing today is
2 going through some discussion of what is in the regulations
3 with regard to language concerning design approvals, and how
4 they would be used and what they may be subject to. I think
5 that's going to cause a fairly lively dialogue and, in the
6 end -- to be quite honest -- I think that we the staff are
7 going to have to sit down with OGC and make a determination
8 as to how the language in any PDA that's written has to be
9 structured.

10 At the time that PDAs were envisioned initially,
11 it was purely a staff document, and if you look at the
12 regulations, it does not bind any boards, the commission, or
13 anything else from making separate findings. The reason
14 that I say we've kind of transcended to 2 generations is
15 that today's Commission is very active in the involvement of
16 advanced reactor reviews, and to the extent that they're
17 very active, we anticipate that before any PDA is issued,
18 the Commission's going to want to be informed and briefed
19 and somehow give the okay that they see that that's the path
20 that they want the staff to take.

21 I guess the main point I wanted to make is that
22 the Staff does not envision spending more resources in this
23 time in any further review of the SP/90.

24 MR. CARROLL: So to the extent that you believe
25 the review you have done is obsolete or incomplete or

1 whatever your idea is that would all be spelled out as a
2 condition in the PDA?

3 MR. MILLER: Yes, sir, and we may have to
4 carefully craft that language such that all parties
5 understand them and it's clear to everyone.

6 A second thing is I think you hear Loren talking
7 about the conclusion has to be made indeed if we want to
8 call it a PDA.

9 You certainly have a safety evaluation report that
10 captures the review that the Staff has done of the design at
11 this point in time but PDAs in the futuristic sense, if you
12 look at 10 CFR 52, Appendix O, are an optional item.

13 MR. CARROLL: Are they specifically mentioned in
14 there?

15 MR. MILLER: In Appendix O it says preliminary
16 design approvals or final design approvals but a preliminary
17 design approval is not a prerequisite for final design
18 approvals, purely the option. The idea, if you talk to the
19 main authors of the rule, was to allow the potential
20 applicant who wanted to ultimately proceed with design
21 certification to get feedback from the Staff and from the
22 ACRS and the NRC concerning the development of the design,
23 so that if there are any major impediments that might be
24 identified that they can be identified early.

25 MR. MICHELSON: Is this a PDA with design

1 certification in mind or is this just a PDA with a
2 construction permit in mind? There is a difference, even on
3 FDA in Part 52 points out there can be an FDA which wasn't
4 intended for certification. Later they want to go back and
5 append it and it requires a re-review.

6 MR. MILLER: That's correct.

7 MR. MICHELSON: The entire document -- how about
8 if the PSAR -- at the PDA stage. This one appears to be
9 coming in with certification in mind. It's a mishmash.
10 There's a chapter in here on the 16 items even. I don't
11 know what it is for sure.

12 You never sit down and really spell out what the
13 purpose of this PDA was. Now if it is for certification we
14 take one approach to review. If it is just for a PDA for
15 construction we take a different approach. We take the
16 traditional approach.

17 MR. CARROLL: No, Carl. I think I read in it in
18 many places that they have at least attempted to write it
19 with either eventuality in mind.

20 MR. MICHELSON: As I say, it's a mishmash without
21 really clearly coming out and are you clearly saying this is
22 a PDA with certification in mind?

23 Is that how we do the review?

24 MR. MILLER: I don't think that I can say that
25 it's a PDA with certification in mind. However, we tried to

1 leave the avenue open that if Westinghouse wanted to proceed
2 on that avenue --

3 MR. MICHELSON: So it is a PDA in which
4 certification is a possibility?

5 MR. MILLER: Yes.

6 MR. MICHELSON: Therefore we review it as if it
7 were in mind, is that right?

8 I think that's what you've got to do. This is a
9 next generation plant. This is a PDA for it.

10 MR. CARROLL: Similarly though, I think they have
11 to be prepared because the regulations envisioned in it at
12 least that this could be used as part of a construction
13 permit application.

14 MR. MILLER: Well, sure, that's correct, but we
15 have to keep that in mind because the regulation, the two-
16 step licensing process is still a legally viable process.

17 MR. MICHELSON: But that is the lesser of the two
18 requirements I think, or a lesser to PDA to get by, the
19 construction permit under the old rules, than it would for a
20 design certification.

21 MR. MILLER: And I guess if I could make one
22 comment, we have kind of tried to search the regulations as
23 hard as we can for language that might help us on this and
24 to be quite honest, they're fairly silent.

25 There isn't a whole lot said about PDAs and FDAs

1 and describing what they are.

2 MR. MICHELSON: Yes, and your SER is pretty silent
3 on what the purpose of this particular PDA is or what you
4 even have in mind for sure -- it's a mishmash.

5 MR. MILLER: It is, and --

6 MR. MICHELSON: -- and it's here and there.

7 MR. MILLER: It's transcended two generations of
8 thinking in it.

9 MR. MICHELSON: Now the question is whatever we
10 agree to at the PDA stage, to what extent can we revisit it
11 at an FDA stage when you become more serious about this
12 business.

13 MR. MILLER: Key question.

14 MR. MICHELSON: And I think you have to answer
15 that before I would at least be willing to sign off on it.

16 MR. MILLER: You are going to see that come out as
17 part of Loren's presentation, okay? Again, to the extent
18 that we can discuss it today, I'd like to be able to
19 exchange views. I really do think -- I admit I'm going to
20 need some help from our lawyers on that one because a lot is
21 going to be left to interpretation and precedent.

22 MR. MICHELSON: Well, you're leaving this pretty
23 open, I think, and yet expecting a letter so the letter
24 might be kind of open too.

25 MR. CARROLL: That is one possibility.

1 MR. MILLER: The one thing that the regulation is
2 clear on is that if you look at Appendix O it specifically
3 says that the ACRS will review and comment. Now the nature
4 of your comments is up to you.

5 MR. MICHELSON: You made a statement that --

6 MR. MILLER: The area that was covered was that.

7 MR. MICHELSON: You made a statement earlier that
8 you're trying to tidy up what you could and leave open what
9 you had to leave open.

10 Now I can generally find the open items. You kind
11 of highlight them. Am I to infer that unless it's signalled
12 as opened you considered it closed?

13 I mean I can find a number of items which I'd like
14 to bring up but you didn't bring up those open items and I
15 think they are far from closed but how do I interpret your
16 SER if you don't identify it as an open item?

17 MR. MILLER: If they are not identified as an open
18 item, I would conclude that the staff did not find a problem
19 in that area.

20 MR. MICHELSON: And that means that you have
21 written off on that particular area as far as a PDA for
22 design certification?

23 MR. MILLER: Let's be careful about calling it a
24 PDA for design certification.

25 MR. MICHELSON: Well, I think we went through that

1 argument a little while ago and you never gave me a real
2 answer so I said I at least would have to conclude that that
3 is what it is.

4 MR. CARROLL: It's a PDA for either a construction
5 permit application or a design certification.

6 MR. MICHELSON: We I think generally agree that
7 certification was a more rigorous requirement so we'll deal
8 with certification.

9 MR. CARROLL: I want to come back to that. I am
10 not sure that is true, Carl.

11 What do you say, Charlie?

12 MR. MILLER: That certification would be a more
13 rigorous requirement?

14 MR. CARROLL: At the PDA level.

15 MR. MILLER: At the PDA level we're basically
16 trying to give our findings based upon a preliminary design
17 and to the extent that the information has been presented to
18 the nature of that preliminary design, we're trying to make
19 a finding as best we can.

20 MR. MICHELSON: For certification.

21 See, if you don't revisit it at the FDA stage
22 you've got to for certification.

23 MR. MILLER: You have to revisit it at the FDA
24 stage.

25 MR. MICHELSON: Well, that's an important --

1 MR. MILLER: It would be used as a document that
2 could allow you to proceed towards certification.

3 MR. WYLIE: Could proceed further.

4 MR. MICHELSON: You just made a very profound
5 statement, though. I believe you said we had to revisit
6 these areas. If we are going to revisit everything then I
7 have no problem with a PDA.

8 MR. WILKINS: Then we are wasting our time now.

9 MR. MICHELSON: We are wasting our time now. This
10 is fine for information but that's all.

11 MR. MILLER: You may be coming from a different
12 angle to the conclusions that the Staff came to and why we
13 wanted to cut of the review at this point in time and try to
14 tie it up.

15 Now a lot of resources have been spent by both
16 Westinghouse and the Staff over the years and I think the
17 biggest thing we wanted to do was to be able to document
18 where were at this point in time.

19 MR. MICHELSON: It is the tying up that worries
20 me. How much are you tying up that can't be revisited, if
21 anything?

22 MR. MILLER: That's why we have to carefully craft
23 any language that we would put in the PDA.

24 MR. MICHELSON: But I think don't we need to know?
25 I mean normally we find this out by reading your SERs. I

1 can't find it out from reading your SER so I am trying to
2 speculate now as to what I am even looking at.

3 Somehow we have to know what we are agreeing to
4 ahead of time. That is usually what the SER is for.

5 MR. CARROLL: I guess to amplify what Carl has
6 said, I find these statements in there where it says: The
7 staff finds this facet of the design acceptable. Just flat
8 out acceptable. I find statements that say: We find it
9 acceptable for the PDA stage of review.

10 I find other statements that go a little farther
11 than that in putting a caveat on it, but it seems to me it's
12 obvious different people, in writing sections, had their own
13 ideas of what kind of caveats they wanted to put on things.
14 It's the ones that, in the SER, just flat out say that this
15 is acceptable that I think is bothering Carl. I think it,
16 in effect, is saying this is it, we're not going to go back
17 and even look at this at the FDA stage, unless, you know,
18 there's some very major thing that happens that would
19 require us to look at it.

20 MR. MICHELSON: I think a lot of your SER was
21 written before people even talked certification, and it's
22 got the traditional -- I mean, it's a great SER, this is one
23 of the best SERs I've ever seen for what an SER used to be
24 used for at the PDA stage. I think it's one of the most
25 complete SERs I've seen -- but it's not the right SER for a

1 certification plant.

2 It is the right SER for a construction permit. I
3 have no quarrel with this. It's a great SER for a
4 construction permit. I have some reservations about it as
5 an SER for a certified design.

6 MR. MILLER: The way I view the SER is certainly
7 it's an SER that could be used for a construction permit.
8 That was the initial intent of what a PDA was to be. Now,
9 from a practical standpoint, you know, we can debate whether
10 or not anyone was ever going to proceed with the traditional
11 way of licensing a plant again, so it may be moot.

12 To the extent that we've been doing reviews of
13 future designs and certification in mind, we didn't want to
14 leave out of this SER any thinking that's been done in
15 silent and give one any impression that, even if it were a
16 plant that would be coming in under a CP, there were things
17 that we've considered that we want for future plants that we
18 didn't want to leave those undone, so we wanted some kind of
19 documentation that tied it up to say: Here's areas that
20 you're going to have to address if you decide to proceed
21 with an FDA and a design certification application.

22 But I still think they would have to address those
23 areas if they went to a traditional two-step licensing
24 process. I mean the fact that if you used part 50 or part
25 52 should not leave a future applicant open that can proceed

1 easier with a license and not have to do as much, if I use
2 the 2-step processes that one should. What we require the
3 design of a plant to have to satisfy us from a safety
4 standpoint should be the same regardless of the path that's
5 used.

6 MR. MICHELSON: You don't think that will affect
7 the design, depending on which they're using?

8 MR. MILLER: Ultimately, I feel that the plant
9 design should come out the same either way. By the time the
10 NRC has totally signed off --

11 MR. MICHELSON: You may feel that way, but there
12 are a different set of rules, to some extent, governing the
13 certified plants versus the two-step licensing plant.
14 There's a lot of additional licensing issues that we've been
15 talking about and spending an awful lot of time on. Those
16 have to be incorporated somehow into the design, for
17 instance, and so it isn't the same design I don't believe.

18 MR. MILLER: Well, I believe that it is, and I
19 believe it ultimately would be. I don't think --

20 MR. MICHELSON: If you apply the same rules, it
21 certainly will be the same design, but you haven't convinced
22 me you would apply the same rules, or maybe you'll convince
23 me right now. Just say from now on even a PDA is going to
24 include whatever design considerations we are now generating
25 for future plants.

1 MR. MILLER: If we were to embark upon a new FDA
2 right now and begin the review, we would absolutely go in
3 that direction.

4 MR. MICHELSON: I think so, but this one doesn't.
5 This one here was written before we ever talked about this
6 stuff, and you're trying peddle it off as something also
7 suitable for certification, and I just don't buy it.

8 MR. MILLER: No, Carl, I disagree with you. We're
9 not trying to peddle it off as that.

10 MR. MICHELSON: Well, maybe I shouldn't have said
11 that. You haven't convinced me what you're gearing it
12 towards for, or why you're even here is what I don't figure
13 out.

14 MR. CARROLL: Let me ask this question that may
15 help. I think a lot of us would feel a lot more comfortable
16 if we at least had some notion of what you were going to say
17 in the PDA. Is that something that could be done between
18 now and the full committee meeting, or between now and this
19 afternoon?

20 MR. MILLER: I certainly think it something that
21 can be done between now and the full committee meeting.

22 MR. MICHELSON: That would be helpful.

23 MR. WILKINS: If I heard you correctly, though,
24 you want to get OGC involved in that.

25 MR. CARROLL: Oh, yes, absolutely.

1 MR. MILLER: If feel we need to, because what I've
2 tried to really focus on over the last couple of days is the
3 language in the regulations and what does it say with
4 regard, because I've anticipated this was going to be a
5 major stumbling block on getting a PDA out. I don't want to
6 say the regulations are unclear, they're just silent on a
7 lot of these issues. It did not articulate specifically how
8 a PDA would be used to proceed towards an FDA.

9 MR. MICHELSON: Let me tell you what concerns me
10 is the extent to which we can revisit these issues once you
11 really hunker down and start looking at this, which I don't
12 think you did under certification guidelines at all, because
13 a lot of this was written years ago.

14 Once you do that, and you find a problem, I would
15 like to think that the problem can be rectified. I wouldn't
16 like to believe that you've already written off on it, so
17 that if the PDA says: Yes, we'll revisit anything we wish,
18 then fine.

19 MR. MILLER: That's what I talk about the
20 conditions they specified in the PDA.

21 MR. MICHELSON: That's what I'd look for.

22 MR. WILKINS: You're looking for something more
23 broader than, I think, Charlie's talking about.

24 MR. MICHELSON: Well, I think he's trying to --
25 yes, but I said that's what I'm looking for. If we aren't

1 signing off on anything yet for a design certification,
2 fine. No problem.

3 MR. MILLER: It's not my intent to sign off on
4 anything for a design certification at this stage.

5 MR. WILKINS: Those are those words he's been --

6 MR. MICHELSON: That's the words I've been
7 listening for.

8 MR. CARROLL: If I were Westinghouse and were
9 reading your SER, I mean, without the PDA, I don't know what
10 it's going to say, I would say there are many places in here
11 where you have signed off, because you have said this facet
12 of the design is acceptable to the staff without
13 qualification. You have put certain qualifiers on it.

14 MR. MILLER: There are a lot of places we
15 intentionally put qualifiers on. Perhaps we should revisit
16 that and maybe we need to put the qualifiers everywhere.

17 That is where I feel a general condition that
18 followed the PDA would take care of that, because it would
19 specify you get this PDA subject to the following
20 conditions, and those conditions can be spelled out, and
21 those conditions are applied to the Safety Evaluation Report
22 as it is written.

23 And it may be some, you know, I'm thinking off the
24 top of my head, but it may be something like, to the extent
25 that the design has been developed at this stage. Now, the

1 details that would go underneath that in many cases would
2 have to be looked at in an FDA where you are getting more of
3 a final design. And as you proceed with that, you may
4 uncover all kinds of concerns, or you may find that the
5 design supports the underlying premise.

6 MR. MICHELSON: Charlie, what I would like to see
7 is what I think Part 52 originally intended, even though the
8 appendix in one place mentioned a PSAR.

9 Basically, Part 52 says if you've got an FDA and
10 you want to go for certification, it has to be re-reviewed
11 with certification in mind.

12 MR. MILLER: If you have an existing FDA.

13 MR. MICHELSON: If it had not been reviewed for
14 certification, it has to be re-reviewed. That's all I'm
15 saying. When this FDA comes in, it's a new FDA. The PDA
16 means nothing. It's a new FDA. Because if you had done the
17 PDA with certification in mind -- and Part 52 didn't even
18 provide for that -- but if you had, then I'd have no problem.
19 But I don't think you did.

20 MR. WILKINS: I guess I'd like to not think that
21 the PDA means nothing. I like to think that it means
22 something like this, that if there are areas that we feel
23 that certainly we have concerns, we can get earlier feedback
24 to the applicants, and they know hey, we're on the wrong
25 track here, this is going to be a bigger issue.

1 If there are areas that we think that generally we
2 think that they are proceeding in the right way, and there
3 are many of those in the design areas, called facets, we
4 would say that that is okay and looks to be acceptable, to
5 the extent that we've got the information. But we have to
6 do a full-blown re-review at the time that a final design is
7 submitted. And that is clearly our intent.

8 MR. MICHELSON: Those words leave me with total
9 comfort. If that's your intention.

10 MR. WILKINS: You just want to see it written down
11 someplace.

12 MR. MICHELSON: I'd just like to make sure, and I
13 would like to see it in the SER. I mean, that's where it
14 belongs. You know, what this SER was for, and what you were
15 trying to accomplish, how you are going to approach it. But
16 emphasizing that we had not really done these reviews with
17 certification in mind in many cases, that some were done
18 years ago. And it would, if an FDA comes up for
19 certification, we would revisit. That's all.

20 MR. KERR: You could put a forward in which said,
21 we have done a lot of work on this SER, and we hate to see
22 it go completely to waste. It's not yet finished. But we
23 thought we ought to publish something, so here it is.

24 MR. MICHELSON: That's fine, too.

25 MR. SHEWMON: I don't know that you have to answer

1 that.

2 [Laughter.]

3 MR. MILLER: I might state it a little
4 differently.

5 Okay. The other thing I guess that it is fair to
6 do is to ask Westinghouse what they would want out of it.

7 Now, depending upon what they would want out of
8 it, that could lead to a different direction of discussion,
9 also.

10 MR. CARROLL: Do I understand correctly, Charlie,
11 that this is still a predecisional document which
12 Westinghouse has not --

13 MR. MILLER: Westinghouse has not seen this
14 document yet, no. It's predecisional. It hasn't even been
15 completely signed off by NRR management. It's being
16 reviewed for that now. But it was simply forwarded to you
17 so that you would have the meat of what it is that the staff
18 concluded.

19 MR. CARROLL: Do you expect that signoff to occur
20 before our October meeting?

21 MR. MILLER: No.

22 MR. CARROLL: Okay.

23 MR. WILKINS: But if that doesn't occur before the
24 October meeting, then we won't discuss this until the
25 November meeting, will we?

1 MR. MILLER: That's feedback that I need. One of
2 the things that we had to make a decision on was do we want
3 to issue an SER and publish it prior to receiving any kind
4 of letter from the Committee? Or would we prefer to get a
5 letter from the Committee that could be then included in
6 what is initially issued?

7 If we were to do it another way, we would have to
8 issue the SER, then go back and amend the SER to handle the
9 Committee's comments. And I wanted to get those comments
10 out on the table and thought about and in for one main
11 reason. And I think I alluded to it before.

12 We want to wrap up a knot in this review, and not
13 expend a lot of more time and resources on it. We have
14 other standard plant designs that we need to be really
15 focusing our attention on. And it's just a simple matter of
16 priorities given what we have been told by Westinghouse are
17 their initial plans are using it in the immediate future.

18 If they were to come in tomorrow and say we're
19 going to take this design of an FDA and we want
20 certification for it, rightly, we would go on a different
21 path.

22 MR. MIC. LON: The Committee can write you a
23 letter of course, just indicating what it thinks of it so
24 far, but it won't be the kind of letter that you could put
25 in your SER as a writeoff of the SER, or as a writeoff of

1 the PDA.

2 I mean, we could write that kind of letter this
3 month and then whenever you resolve whatever comments we
4 have and so forth, then we can write another letter, and
5 that would be the one that goes in the SER.

6 MR. CARROLL: But that latter letter would
7 probably be after we have a chance to look at what the PDA
8 document is.

9 MR. MICHELSON: Get the draft PDA document,
10 writeoff from the staff --

11 MR. MILLER: What I'm hearing is that I think it's
12 the Committee's desire to want to see the draft PDA language
13 prior to writing any letter of substance. Is that fair?

14 MR. CARROLL: I think so. Does everyone agree
15 with that?

16 MR. MILLER: Okay?

17 MR. MICHELSON: Yes, I think, or alternatively,
18 write it and put it in the SER.

19 MR. CARROLL: Well, it's a separate document,
20 really.

21 MR. MILLER: If you do look at the regulations,
22 they at least covered that aspect of it. They said, you
23 know, any finding for issuing a PDA or denying a PDA would
24 be supported by the report giving the details of the review.
25 And that is what this document is that we have before us

1 today.

2 MR. MICHELSON: Okay.

3 MR. MILLER: And we have to be careful, very
4 careful, concerning that language, be very cognizant of
5 that. Because as you will see in Lauren's presentation, if
6 you look at the backfit rule, it calls design approvals out
7 specifically. And I won't steal his thunder.

8 MR. MICHELSON: How does the backfit rule now
9 apply to Part 52 design?

10 MR. MILLER: It does.

11 MR. MICHELSON: How, I said.

12 MR. MILLER: All it says is that design approvals,
13 and it does not distinguish between preliminary design
14 approvals or final design approvals.

15 MR. MICHELSON: You are telling me then as soon as
16 I write off on the PDA and you don't take exception on the
17 PDA, that those items are --

18 MR. MILLER: Subject to --

19 MR. MICHELSON: -- now subject to the backfit
20 rule. That makes me even more uncomfortable.

21 MR. MILLER: Yes. Subject to the backfit rule
22 with certain exceptions.

23 MR. MICHELSON: This is all on paper, to begin
24 with.

25 MR. MILLER: Right.

1 MR. MICHELSON: We aren't talking about having to
2 go out and spend a lot of money. How do you do a cost
3 benefit on a backfit rule when it is paper? Well, I guess
4 you can. You can cost how much engineering time that put
5 in. And it doesn't come out big bucks like it does when
6 you're dealing --

7 MR. MILLER: It doesn't come out big bucks when
8 you have to start ripping components out and replacing them.

9 MR. MICHELSON: Yes. So I think, well, it just
10 doesn't seem to be in the spirit of design certification to
11 start talking backfit right away on the paper. Which is
12 what you're suggesting.

13 MR. MILLER: I'm simply quoting the regulations.

14 MR. MICHELSON: Yes. Yes. It's no problem once
15 you have done what we thought you were going to do, and that
16 is a one-stop licensing, an FDA-certified design.

17 MR. MILLER: But what I wanted to point out, Carl,
18 was that because the regulation speaks to that, we have to
19 be very cautious about issuing a PDA that does not have
20 proper language concerning caveats and conditions in it,
21 because I agree with you, if we were to write off on it, say
22 it was acceptable to make no comments, my reading of the
23 regulation says that the backfit rule would have to be
24 invoked before you could go off and require changes.

25 I don't think that the staff is comfortable doing

1 that at this point in time where we've been, and I don't
2 think the Committee is either.

3 MR. CARROLL: A lot of places in this document
4 where you say it is acceptable, it is kind of fuzzy. It's
5 arguable what you are saying is acceptable. So, I really
6 caution you to go back and look at places where you've made
7 that statement.

8 MR. MICHELSON: Yes. And also on the basis of the
9 reviewer's knowledge, at the time he made that statement,
10 I'm sure -- this thing here is a carbon copy of a lot of the
11 old SER's. And what it is is an upgraded, old SER.

12 And now, you have to ask in your mind when that
13 author -- when you make that statement, what kind of
14 knowledge level are we talking about. And I think you're
15 talking about several years ago kind of knowledge. And on
16 today's knowledge, which is hopefully what we're using for
17 the next generation, not some old knowledge, unless it's
18 still good, I think you have to revisit every one of these
19 assumptions, or every one of these statements. And it's not
20 clear that you have.

21 MR. MILLER: I think -- I think, in listening to
22 you, as we dialogus, that we could carefully couch that in
23 some language that would go into the PDA that I think --

24 MR. MICHELSON: Yes, I think you can.

25 MR. MILLER: -- that would cover that concern.

1 MR. MICHELSON: I think you can.

2 MR. MILLER: So that we all know what playing
3 field we've left it on. But I think the important thing
4 that we want to be able to do is wrap up any staff efforts,
5 at this point in time, on SP90 and put it on the shelf and
6 go on with the other ones --

7 MR. MICHELSON: Charlie, what you're trying to do
8 is you're trying to go back to two-step licensing on a
9 certified design. You're trying to do this review in two
10 steps; and I just don't buy it. That was the whole idea of
11 getting rid of two-step licenses. Let's do it once and for
12 all. Now you are going back to two-step.

13 MR. CARROLL: Okay, but we have -- but we have got
14 this old dog sitting here that we've got to do something
15 with.

16 MR. MICHELSON: We've got an old dog and he
17 doesn't know what to do with it.

18 MR. KERR: Two-step licensing is not illegal yet,
19 is it?

20 MR. MICHELSON: Well, it isn't clear how -- what
21 the process is for Part 52. It's only mentioned, I think,
22 in that one spot in back, in an appendix. Back in the main
23 body of Part 52, it only talks about FDAs and it says if
24 you've got an FDA and now you want to certify it; you've got
25 to go back and review it.

1 MR. MILLER: That's --

2 MR. MICHELSON: If it wasn't reviewed with
3 certification --

4 MR. MILLER: Yes.

5 MR. MICHELSON: -- in mind, it's got to be re-
6 reviewed.

7 MR. MILLER: That's in the main body of Part 52
8 regulations.

9 MR. MICHELSON: Yes.

10 MR. MILLER: The PDA -- the PDA that we're talking
11 about here is in Appendix O, which was originally in Part 50
12 -- and when Part 52 was promulgated, it was -- brought in.

13 MR. MICHELSON: It slipped in.

14 MR. MILLER: It slipped in.

15 MR. MICHELSON: But I'm wondering if it was ever
16 intended this way even? Was it ever intended to even talk
17 PDA for a certified design?

18 MR. MILLER: No.

19 MR. MICHELSON: I don't think it was.

20 MR. MILLER: I think the intent, as I talk to some
21 of the -- of the staff that's embarked upon the more exotic
22 designs, like the gas and liquid metal reactors is that the
23 idea of a PDA, futuristically, is that if someone wants to
24 get some initial thinking from the NRC, that they could
25 issue a PDA, but that wouldn't buy them anything more than

1 hear some feedback, and everything is subject to re-review
2 at the FDA stage.

3 MR. MICHELSON: That's all this document should
4 be, is some feedback and so forth, subject to review when
5 the FDA comes.

6 MR. CARROLL: A good example of what you're
7 talking about might be CANDU, where they might want to, you
8 know, see if it really makes sense to pursue licensing in
9 the United States.

10 MR. MILLER: Right. Are there any major
11 impediments to licensing that might be able to be
12 identified?

13 MR. CARROLL: Without spending all the money to --

14 MR. MILLER: Right.

15 MR. CARROLL: -- get an FDA application together.

16 MR. MILLER: Right. But, I don't think we're at
17 odds over the fact that the staff does not want to right off
18 on things completely, at the PDA stage, we do not.

19 MR. CARROLL: Okay. But, on the other hand, I
20 have some sympathy for what you're saying also, that this
21 document ought to send a message to Westinghouse that --
22 yes, in terms of this, this and this, you are on the right
23 track, and here we've got some problems that you better be
24 thinking about if you pursue this. I think that's an
25 important aspect of it too.

1 MR. MILLER: I agree. I think we at least owe
2 them an honest interchange of -- of where we are today and
3 what our reaction to what they've put before us is.

4 MR. MICHELSON: Your conclusions, in Chapter 25 of
5 the SER don't reflect that kind of a statement. They're a
6 far more positive statement than that.

7 MR. MILLER: Okay, I'll have to revisit those
8 then.

9 MR. MICHELSON: We'll get to it.

10 MR. MILLER: Okay.

11 MR. MICHELSON: They're written like we've really
12 written off on it, except for a particular item that is held
13 over.

14 MR. MILLER: We'll have to look at that language.
15 It makes me more convinced that -- it makes me more
16 convinced that I wanted to get the Committee input before we
17 finalized this thing in the final state. I think -- I
18 really do think that's important, that we all come to a
19 common agreement -- understanding, before we call it a
20 signed-off and put a NUREG number on it.

21 MR. CARROLL: Okay. Is there any more upfront
22 sort of stuff we want to talk to Charlie about, or shall we
23 get into the presentation?

24 MR. MILLER: I just want to mention one thing,
25 just as a matter of interest.

1 The last PDA that was issued by this agency was
2 about 1978, so --

3 MR. CARROLL: Last PDA, yes. And if I looked at
4 that PDA would I find this one very similar to it? Like
5 we've changed the names in some places?

6 MR. MILLER: No, I don't think so. I think --

7 MR. CARROLL: Is this in more depth, less depth?

8 MR. MILLER: I think the --

9 MR. DONATELL: I'll address some of that.

10 MR. CARROLL: Okay. Anything else for Charlie at
11 the moment?

12 [No response.]

13 MR. CARROLL: You're not going to leave, are you?

14 MR. MILLER: I have to go back for some meetings
15 with Dr. Murley later today, but I'll be here a little while
16 this morning, so, I'm available if you want to shoot at me.

17 MR. CARROLL: Okay.

18 MR. MILLER: Okay.

19 MR. CARROLL: Thank you.

20 I guess I have one question -- who best answers
21 it.

22 When this becomes a public document eventually,
23 and Westinghouse gets a chance to look at it, what's the
24 mechanism by which they would correct -- or they would have
25 a shot at correcting things that they think are incorrectly

1 stated or wrong or they -- would you issue an addendum to
2 it, if there were enough substantive things of that nature?

3 MR. MILLER: You guys misrepresented what is an
4 error here and misunderstood.

5 MR. CARROLL: One that comes to mind is we've got
6 AC igniters in the containment in the Chapter such and such,
7 and DC igniters in Chapter such and such. It must be either
8 AC or DC.

9 MR. MILLER: We could approach from one or two
10 ways: One way would be to take the draft and put it in the
11 PDR as a draft and allow for any interchange like that to
12 take place before it's finalized. The other way, of course,
13 it would be issued and to the extent that there were any
14 corrections like that needed, it would have to be done in
15 errata an addendum or whatever you might want to call it.

16 MR. MICHELSON: What did you do in the past to a
17 PDA when, obviously, there were many things that needed to
18 be corrected? Did you ever correct the SER for a PDA, or
19 did you just go on and cover all this at the FDA stage?

20 MR. MILLER: I think it was primarily handled at
21 the FDA stage.

22 MR. MICHELSON: That was my recollection on how it
23 was handled. Once that SER and PDA was issued, you just
24 forgot about it, and now you start working final to decide
25 approval.

1 MR. MILLER: Once the PSAR review was done and a
2 construction permit was issued, then you'd start looking at
3 the FSAR level material and all kinds of things came up.

4 MR. MICHELSON: I think that's the way it was
5 done. Now in this case, I'm not sure it's even advisable to
6 go back and try to keep this thing as a living document
7 somehow or as a corrected document, not even sure it's a
8 advisable to issue it as a document for that matter, but
9 that's only one opinion.

10 MR. MILLER: Well, I think we should issue it as a
11 document. What that document says may be another matter.

12 MR. MICHELSON: You don't know what it's used for
13 or how it's kept up to date if at all.

14 MR. CARROLL: Given those two options, you've
15 talked about it, you haven't done any additional thinking as
16 to how you'd approach this?

17 MR. MILLER: I think I wanted to get a feel for
18 how close we might be to feeling that it should be issued in
19 final form before we send it out. I guess the mechanism
20 that I'm trying to achieve is that I'm trying to put a
21 closure on this review as quickly as we can.

22 It's dragged out for a long time to be quite
23 honest, and Westinghouse has been waiting for a long time
24 and we've been involved a long time, and we just need to get
25 on to other things. I think if we conclude that it's better

1 to give it to them in draft form and let them make any
2 comments and conclusions, I think the important thing that I
3 want to try to prevent is I don't want to get into a whole
4 series of meetings and dialogues and interchanges and re-
5 reviewing of what we've got.

6 MR. CARROLL: If there are substantive errors and
7 it --

8 MR. MILLER: Errors of fact.

9 MR. CARROLL: -- Errors of fact. I think it would
10 serve both the staff and Westinghouse to get this document
11 corrected, because if it's something that gets put on the
12 shelf and five years later it gets pulled off, and hey,
13 we're going for an FDA, it will be very well, I think, to
14 have it as correct as possible.

15 MR. MICHELSON: Are you suggesting that for the
16 Westinghouse side as well? There's a lot of errors in that.
17 Are you suggesting that they keep that document up-to-date?

18 MR. CARROLL: I am just saying a one-shot review
19 of the SER and corrections as appropriate, not a living
20 document concept. Just so everybody have their day in court
21 so to speak in 1990.

22 MR. MICHELSON: Are you suggesting that
23 Westinghouse also make one-shot change in their documents,
24 or at least a two course bond -- if I read one, I go back
25 and then get confused?

1 MR. CARROLL: I did not say that. I mean, I think
2 the SER would be the point of departure for something in the
3 future, and it ought to be as accurate as we know how to
4 make it at this point in time.

5 MR. MILLER: Right. I guess one comment that I
6 might want to make is that before I would make it publicly
7 available, I would want to at least visit some of the things
8 that might be identified today.

9 MR. CARROLL: Sure.

10 MR. MILLER: Questions concerning your
11 interpretation of the way we've written off on things,
12 because I think it would be best, as an agency, if we're
13 going to issue it, we try to get it as close to what we
14 intend it to be at the time that the draft is issued, rather
15 than issuing a draft that says: This is all acceptable and
16 then in a final version, put all kinds of caveats on it and
17 then it's said that we've retracted positions that we were
18 ready to make. I don't think we should do that. I think we
19 should have our final views as best as we can articulate
20 them.

21 MR. CARROLL: Okay.

22 MR. MILLER: Okay, that's a fair comment, and
23 maybe we can ask Westinghouse for their view on how they'd
24 like to see that also.

25 MR. CARROLL: Is this a good time to do that?

1 MR. MILLER: Fine with me.

2 MR. BURNS: Ed Burns of Westinghouse Licensing.

3 In the discussion that's revolved around whether or not we
4 have errors in our application or in the SER itself, has it
5 been mentioned we have not had a chance to look the final
6 SER?

7 If you were to look through almost any document,
8 any large document, you're going to find what somebody may
9 call an error, and undoubtedly, there are some places where
10 there are some numbers or some inconsistencies in sections.
11 One example was igniters. Could you really look beyond that
12 --

13 MR. CARROLL: Out of curiosity, which is it?

14 MR. VAN DE VENNE: The intent is to say that the
15 igniters are fed from DC sources. Now, that may come in the
16 form of vital instrument in AC inverters, or -- but the
17 point is, it's an assured supply that's independent of any
18 AC. So there can be some confusion. That really depends on
19 the particular igniters that you buy as to what it would be.

20 MR. BURNS: I think it also comes down to what is
21 the interpretation, and unfortunately, as you'll see on some
22 of our slides, we've been on the 8-year program now, and
23 material that was presented earlier in that 8 years does get
24 changed to questions, answers, request for additional, over
25 time.

1 As recalled, some of that and the text in some of
2 this where we have amended it from some more recent
3 materials, an error, I don't think we would call it that. I
4 think that more clarifications in some of the later
5 submittals, and I know from our history of working with
6 utilities on FSARs, one of the major questions that comes up
7 is at the time of taking the plant operational, what do you
8 do to go back to incorporate all that later information,
9 corrections and additional information.

10 The tons of paper that have been out there for the
11 last several years during the active review -- that's why
12 part of 50-71 was very important a number of years ago --
13 and so, I think there is a very valid question about how
14 that information gets back in there, but I think that
15 question needs to actually be subsumed into what do we plan
16 on doing with this document. What do we plan on doing with
17 this application, and where are we going with that?

18 We, ourselves, have had that question on our
19 plate, and you'll see from some of our slides, there's a
20 broad fear of the market forces, we have to clear our plate
21 and start looking at the 1990s. We are no longer back in
22 1982. We are looking at an advance plant -- an AP 600. We
23 are still discussing with many utilities, hopefully, a near-
24 term chance for a bid spec.

25 We have a lot of activities coming on here, and we

1 have to look at where we are now, and we don't agree with
2 the discussion that what language goes into the letter --
3 what language in the SER as for when you can revisit,
4 because I think we'd have to admit that if we do proceed
5 further with this, we'd have to go an FDA, we'd have to go a
6 classical two-step license, because this document by itself
7 cannot support Part 52 language. I think the open items
8 listings that we have seen also state that.

9 MR. CARROLL: I guess my question would be do you
10 think it would be constructive for you guys to get a crack
11 at this draft before it gets finalized?

12 MR. BURNS: We would like to have a look at the
13 draft, and not to look so much at what someone may call
14 errors or inconsistencies. We would much more like to look
15 at it because of the needs of the open items, what are the
16 differences between those that are called open item and a
17 PDA versus open item, as I think will be presented here by
18 the staff, and also we can, if we wish, later, if we have
19 enough time, what we consider our next step. Are they open
20 at an FDA or an applicant stage? Because that is very
21 important.

22 We view the next role to be one of an FDA, an
23 applicant, not where we would take this and go into a design
24 certification.

25 MR. MICHELSON: You are primarily interested in

1 two-step licensing. That is an important consideration.
2 And we view the thing quite differently, if this is just the
3 first of a two-step licensing process, and has nothing to do
4 with certification, which is not the message that came
5 through.

6 MR. CARROLL: No. No, I don't think that's what
7 he said.

8 MR. MICHELSON: Well, I thought it was. Maybe I
9 misunderstood.

10 MR. BURNS: We embarked upon this in 1982, looking
11 at it, at that time, as a two-step, because that was the
12 licensing mechanism.

13 MR. CARROLL: CP and OL.

14 MR. BURNS: Right. If we continue waiting until
15 1990 and 1995, we may have different rules. There may be
16 one-half step licensing.

17 What we have to look at is when information is
18 needed in SI, so people can feel comfortable enough that
19 they are willing to proceed.

20 If you look at the classical two-step, the
21 original PSAR was made to get a warm feeling that if you
22 proceeded down that path, your investment would be well
23 rewarded. If we look at the various markets today in the
24 United States, we have to say I don't know of any utility
25 that is willing to stand up and say they wish to proceed

1 down that path of PSAR, and then an FSAR. And not
2 necessarily because of the technical rules, more because of
3 the adjudicatory issues.

4 MR. MICHELSON: What does Westinghouse wish,
5 though? That's what the utilities might wish. What is your
6 intention concerning this document and this SER that is
7 written against it?

8 MR. BURNS: I think this document comprises a lot
9 of good information.

10 MR. MICHELSON: What's its purpose, though?

11 MR. BURNS: The original purpose?

12 MR. CARROLL: No. Its purpose today.

13 MR. MICHELSON: Why are we here today? What do
14 you want? You must want something or you wouldn't be
15 spending your time to be here. Now, what do you want?

16 MR. BURNS: Well, I'll let the cat out of the bag
17 in one of my slides, if you wish.

18 There are several purposes.

19 One, we want to get this off the desk. It's been
20 out there too long, and the longer it stays there, the
21 questions become more forceful. The questions brought up
22 about the language being final. Some of the reviewers write
23 their words saying that this is, in their opinion, quite
24 final. They're happy. Others were a little bit different.

25 If we drag it out over several more years, that

1 language becomes more suspect. It was final in 1990. It
2 may not be final in 1992.

3 The second thing being a lot of what is in this
4 application, and has been discussed on some of the
5 subcommittees more, goes beyond classical PDA level of
6 information.

7 And as you quite well know in this past year with
8 a lot of the discussion on what is an acceptable level of
9 design detail that is put into applications, there is a lot
10 of room to maneuver.

11 In some places in our document, we have gone
12 clearly beyond that of a PDA. In other places, because
13 there are open items against it, it is obvious that maybe we
14 have not gone far enough. And those open items point those
15 out.

16 In some areas in here we have gone not PDA, but we
17 have also gone into late 1980s and early 1990s thinking,
18 back in 1982, USIs, GSIs, published risk assessments, I
19 believe you addressed those, human factors, leak-before-
20 break, obviously. Those type of informational areas would
21 not have been there initially. And those were brought in at
22 later dates.

23 So as we moved through the '80s up to 1990, we
24 have added other technical areas.

25 So getting good staff feedback in those areas is

1 very vital, and we need that. We have not had a good
2 feedback in some of those items as far as an application
3 goes. And now we're embarking on an AP-600.

4 So getting this information at this stage, getting
5 a good SER that gives us some feedback, helps us start on
6 that AP-600 program with a more solid footing.

7 We would also have another area. I realize it is
8 a little outside -- and that is the foreign market. The
9 original program was started with the Japanese, and still
10 remains with them.

11 If we were to say what does the two-step licensing
12 mean in a foreign market, you have to ask yourself what does
13 an informational two-step license mean? Because in a
14 foreign market you find that there is a need for information
15 upfront because of the various parties. Taiwan, Korea,
16 Europe, some of the regulatory authorities wish to
17 participate in the bid spec. process. They need significant
18 information. They need clearly some feedback in the
19 regulatory areas much earlier in the process than we would
20 today in the U.S., if we're looking at a one-step design
21 certification.

22 So having this information out there and having a
23 good SER helps us in that manner.

24 So there are a number of things we are looking at
25 here. But we have to agree with the staff. And I think it

1 is time to get this off the docket.

2 MR. MICHELSON: Once it has gotten off the docket,
3 what does it mean, what does this SER in your opinion at
4 least mean?

5 I'm thinking particularly of what items are closed
6 and what items are open.

7 MR. BURNS: At this stage, we have a list that we
8 have gone through. We have not seen the document. We have
9 seen several pages of the open item list.

10 MR. MICHELSON: Yes. Clearly there is an open
11 item list.

12 MR. BURNS: Right.

13 MR. MICHELSON: We will anticipate seeing that.

14 Now, if an item is mentioned as acceptable, what
15 do you think that means to you on this PSAR in terms of
16 future use of that particular design aspect?

17 MR. BURNS: We feel that we would have to proceed
18 with an FDA, and that FDA would have to revisit the various
19 areas.

20 MR. MICHELSON: Okay. So you don't disagree with
21 revisiting at the FDA stage, then.

22 MR. BURNS: No. And we think there is probably
23 some value in that in many areas.

24 MR. MICHELSON: Well, then, if nobody disagrees
25 around the table, then that's great. Then that's what the

1 . SER should say. We can revisit anything we want. Because
2 here are the items that we so far see as the problem areas,
3 and some of them are so much of a problem we even call them
4 an open item. But it doesn't mean that all the others are
5 closed. It just means that we didn't have any particular
6 objection at this time with it, on the basis of our
7 understanding today of what was going to be done.

8 MR. CARROLL: Okay. Maybe we ought to get back in
9 sync. I mean, you were up here to answer one question. And
10 I don't want to ruin your presentation, either.

11 MR. BURNS: The list of open items is 168. If we
12 took the position that those were the items for future
13 review, I'd love it as a licensing manager. We now have 168
14 items. That makes life much easier. To be realistic, that
15 is not the open item list to get a plan online. I think we
16 all have to realize that.

17 MR. CARROLL: Okay. Let's kind of get back in
18 sync and let the staff give their presentation, and then you
19 guys are on, unless you've got something that you think is
20 important.

21 MR. VAN DE VENNE: Well, I had a direct response
22 to Dr. Michelson's comment, you know, what does it mean if
23 something is acceptable. It means that, from our point of
24 view, we see no reason to change it in the FDA application.
25 It doesn't mean that we expect blanket approval at a more

1 detailed level. But from our point of view, unless
2 something else happens, there is no reason for us to change
3 it.

4 MR. MICHELSON: I think that is a reasonable
5 approach. Sure.

6 MR. VAN DE VENNE: And from that point of view,
7 the PDA, to my mind, is very valuable.

8 MR. MICHELSON: But if it does change, it doesn't
9 mean you use as a defense the fact oh, you approved this
10 already at the PDA stage.

11 MR. VAN DE VENNE: No.

12 MR. MICHELSON: Okay, then.

13 MR. VAN DE VENNE: But we would expect some
14 reason.

15 MR. MICHELSON: Yes. Oh, yes.

16 [Laughter.]

17 MR. WILKINS: Rationale.

18 MR. MICHELSON: well, I think you are quite right.

19 MR. CARROLL: Okay. Let's get Lauren up here.

20 MR. DONATELL: Well, at least I'm happy, after
21 Theo's statement, I guess I'm not the only optimistic person
22 here.

23 What we are going to hear now I guess is a little
24 bit different viewpoint of this whole issue coming from the
25 Project Manager, and the fact that I'd been charged with

1 making it all happen, and trying to lump it in discrete
2 blocks that I can sort out and move things along --

3 MR. MICHELSON: Excuse me. Are you the new
4 Project Manager? You're the old Project Manager.

5 MR. DONATELL: Well, if you can call me old.

6 MR. MICHELSON: Not relatively. But you're not
7 staying, you're going to something else after this is tidied
8 up?

9 MR. DONATELL: The intent is that I'll be going on
10 to the AP-600.

11 MR. MICHELSON: You've been with us for how long?

12 MR. DONATELL: Fourteen months, the same amount of
13 time that I've been with the Commission.

14 MR. MICHELSON: Yes.

15 MR. DONATELL: The first time in front of you, I
16 had been with the Commission for two months.

17 MR. MICHELSON: I see.

18 MR. WILKINS: Now you're an old hand.

19 MR. DONATELL: I'm telling you.

20 I want to thank Charlie for giving my
21 presentation.

22 MR. CARROLL: He had some help.

23 MR. MICHELSON: Now, you have to do the cleanup.

24 MR. MILLER: Since Loren works for me, I guess I
25 have that right. Listening to the exchange -- both myself,

1 and Westinghouse and the Committee, I guess there's one
2 other item that maybe we ought to leave open for discussion,
3 and maybe give further views on. And that is -- we're using
4 the term PDA, we've listened to what the various parties say
5 it should be and Westinghouse saying what they hope to get
6 out of it, and I guess it leaves a question begging in my
7 mind is what do we call this beast once we wrap it up? Do
8 we indeed need to call it a PDA, or should it be a safety
9 evaluation of some point, of where we are today?

10 MR. MICHELSON: PDA means something very special -
11 "

12 MR. MILLER: Yes.

13 MR. MICHELSON: -- in Part 50.

14 MR. MILLER: Yes. And that's a question we've
15 kicked around in the staff's mind for some time.

16 MR. CARROLL: So what you're saying, Charlie, is
17 one option would be to simply issue a staff safety
18 evaluation --

19 MR. MILLER: Yes.

20 MR. CARROLL: -- and forget the whole idea of it
21 being a PDA?

22 MR. MILLER: That is an option. Now, I guess I'd
23 also be interested in listening to the comments that
24 Westinghouse has made. Questioning in my mind whether, if
25 we just did that, would that satisfy the intent of what they

1 hoped to receive?

2 MR. KERR: Well, don't they tell you what they
3 want, and did you respond to that?

4 MR. MILLER: Well they -- what they told us --
5 what they told us they wanted, the request for the PDA is
6 some seven years old. And, you know, if we go back to the
7 beginning, when a request was made -- the world of licensing
8 was different than it's envisioned for the future.

9 MR. MICHELSON: They paid for a PDA, didn't they?

10 MR. DONATELL: They paid for a PDA review.

11 MR. MICHELSON: Yes, so I think you've got to give
12 them a PDA then.

13 MR. MILLER: Yes. Well, we give them a finding.

14 MR. DONATELL: We give them a decision.

15 MR. MICHELSON: Oh yes, and the decision may be I
16 won't give you a PDA. Yes, but they paid for the review, a
17 nominal amount at least.

18 MR. MILLER: So, it's a question of do we -- do we
19 issue a PDA or an SER that has all the caveats and
20 conditions thereof?

21 MR. MICHELSON: If I were Westinghouse, I think I
22 would rather have the PDA, even with the caveats, because
23 I'd drop all the caveats and tell people I got a PDA.

24 MR. MILLER: I'm sure that that's the response --
25 I'd be surprised if Westinghouse said anything different.

1 But I just wanted to throw that on the table and --

2 MR. CARROLL: That is an option?

3 MR. MILLER: Yes.

4 MR. CARROLL: I saw Westinghouse nod affirmatively
5 that they would like a PDA. Do you want to say any more
6 than that?

7 MR. MILLER: With that, I'll get out of the way
8 and let Loren get on with his presentation.

9 MR. BURNS: I think the point has already been
10 made that the PDA would have more attention to detail. I
11 think it carries -- if it carries the name SER, it would
12 tend to get lost.

13 MR. MICHELSON: There might be a miracle and
14 somebody will want to start building one of these on two-
15 step licensing -- and how it got to PDA and where did it go.
16 I mean, there's -- it's always a chance for a miracle. So
17 it's worth more as a PDA than it is an SER. A lot more.

18 MR. WILKINS: And the PDAs would be more useful to
19 you, even internationally.

20 MR. MICHELSON: It's a sales tool. I think we are
21 obligated to make sure it's clear what the PDA means, that's
22 all.

23 [Slide.]

24 MR. DONATELL: I think my slides have been
25 overshadowed pretty strongly here. I'll still utilize them

1 and try to branch off and get into some of the areas that
2 have already been discussed, and my views of those areas.

3 I don't need that. You all know how to get a hold
4 of me.

5 [Slide.]

6 This -- the current review status -- again, you've
7 seen this. I just bring it to your attention for historical
8 purposes, to shake your memory a little bit, as far as what
9 this thing has been through.

10 The application was received in October of 1983,
11 the document, this document over here, was submitted between
12 '83 and '87. In 1988 there was a draft SER which related to
13 the PRA, March of '88; the Subcommittee then, at that time,
14 in April following that -- two additional draft SERs related
15 to the SRP -- essentially the SRP portion of the review,
16 June of '88, March of '89.

17 In those reviews, there were a number of open
18 items. If you remember some of the earlier slides from
19 meetings gone past, there were 107 open items. Westinghouse
20 responded to those open items. These were in addition.

21 This portion up here -- we went through the REI
22 question and answer period. Here there were 107 remaining
23 items, if you will, that Westinghouse responded to between
24 June and September of '89.

25 We started -- this is the area -- this is where I

1 came into the picture -- came into the agency and took over
2 the project managership of this particular design.

3 We had a Subcommittee meeting in September of '89
4 to cover PRA items and, frankly, it was then, I guess, that
5 I realized what kind of shape we were in because you guys
6 looked at it and said why are we getting this when we
7 haven't had anything else? That's when we went back into
8 the individual chapters of the review, and essentially the
9 SRP review. And the remaining Subcommittee meetings
10 essentially covered all of those chapters and the remaining
11 information.

12 In October '89, Westinghouse submitted their
13 amended USIs, GSIs, further subcommittees. It was roughly
14 this timeframe, January -- between -- I think it was after
15 this meeting, or before this meeting that the office
16 decision was made to discontinue utilization of excessive
17 resources for the completion of SP/90 project.

18 It was nice words. What they meant -- what it
19 actually meant was that the reviewers were essentially out
20 of the cycle at that time. There was no further review and
21 it was left up to me to tie up the loose ends and make an
22 SER out of it; which I've been doing since that period of
23 time. And these are the remaining Subcommittee meetings.

24 [Slide.]

25 MR. DONATELL: This just a quick overview. The

1 open items people have mentioned, I brought the slide, I'll
2 put it up. The 168 open items written in the SER. This is
3 my categorization of the open items, just pure numbers.

4 Those items that were site specific fall in two
5 categories. One, you have to know what the site is to do
6 everything there is associated with that particular item.
7 Or two, to complete the review, you need information on that
8 item that is in fact site specific. And there are 17 of
9 those.

10 Information not in scope of application, 110
11 items. Obviously, the bulk of the items. Those fall into
12 the categories of anything outside of the nuclear power
13 block, essentially, because that was outside of the scope of
14 the application that Westinghouse provided. That's systems,
15 a number of things.

16 It also includes information that was requested
17 over time, the period of the review, and was not provided,
18 didn't come in-house. So review was not done on it.

19 Incomplete resolution at close of review.
20 Although these start blending together, this is probably
21 what was left over of the 107 items that were really in
22 question the first part of the year, in general. Those
23 items are things that we said hey, Westinghouse, this is not
24 exactly what we're looking for; please clarify. The
25 clarification came in and it still wasn't enough to close

1 the item. And since we had essentially stopped the staff
2 resource as a review, the next question in line did not go
3 back to Westinghouse for clarification again to resolve or
4 settle that issue one way or the other.

5 [Slide.]

6 MR. DONATELL: This is what I had intended, prior
7 to the discussion this morning.

8 This subcommittee meeting, full Committee, with
9 the final again, and to request ACRS comment letter.

10 The issue of the final SER in October. PDA
11 decision the following October. It's obvious to me now a
12 PDA decision the following October 1990 is probably
13 unrealistic.

14 MR. CARROLL: What does PDA decision mean?

15 MR. DONATELL: I think the way I focus --

16 MR. CARROLL: Does that mean the Commission?

17 MR. DONATELL: The way I focus on this thing is,
18 one, there are really two separate items we are looking at
19 here. One is the Safety Evaluation Report, that will be
20 issued, or is intended at this point in time to be issued,
21 published as a NUREG. It is a Safety Evaluation Report.

22 The next question is the decision as to whether or
23 not to issue a preliminary design approval. All right? The
24 SER is part of that decision-making process. It's not all
25 of it. But it's part of it.

1 I sent copies of old PDAs that I could dig out of
2 the system so you could take a look at what had been written
3 in the past. Traditionally, I think what had been done is,
4 here is a PDA, subject to the things that are in the SER. I
5 referenced that. And that was pretty much it, I think.

6 It's obvious, especially as of this morning, that
7 that's not the process that this new PDA would take, for
8 one.

9 In any event, now, who issues the PDA? There have
10 been 13 PDAs issued, ever. Those have been typically issued
11 at the Office Director level. Staff, it's a staff issuance.

12 My personal belief is that that will no longer be
13 the case. I think Charlie stated it this morning with the
14 interest that the Commission has in this entire process
15 right now that the PDA will more than likely go to the
16 Commission level before it is issued.

17 I would also, I would fully expect, although it
18 hasn't been verbalized and decisions haven't been made,
19 outside of, I think what you guys would expect is it would
20 have to come here. If it is going to go to the Commission
21 level, it's got to come to the ACRS. And that is my belief.

22 One, you get to this point that you make a
23 decision, you think that's an office decision. The office
24 says are we in fact going to issue a PDA? If the answer to
25 that is yes, then you get into a process. You craft a PDA

1 and you get into the approval process. It comes to the
2 ACRS. It goes to the Commission. The decision is made at
3 those levels as to whether that PDA in that form will in
4 fact be issued.

5 MR. CARROLL: So now this is something that Murley
6 and others are presently considering?

7 MR. MILLER: I think, to just amplify what Lauren
8 has said, I don't believe the Commission would put itself in
9 the position as being the approving body for the PDA,
10 because I think if you look at the regulations, it is
11 supposed to be a staff document, and it doesn't bind the
12 Commission whatsoever.

13 I think what Lauren is alluding to is the fact
14 that we don't anticipate issuing a PDA without so informing
15 the Commission of the staff's plans to do so. And the
16 Commission has indicated to us that they would like the
17 staff to supply them with draft Safety Evaluation Reports
18 and final Safety Evaluation Reports on these quote "future
19 designs" prior to, well in advance of issuing them.

20 So we have to provide it to them for information.
21 And I guess the only way I would see the Commission directly
22 involved is if for some reason they find something that the
23 staff plans on doing there, really, that they don't like,
24 and they would so instruct the staff to do it differently.

25 But you're not going to see the Commission be the

1 approving body for PDA.

2 MR. CARROLL: So you would expect it would be the
3 Director of NRR that would issue the PDA?

4 MR. MILLER: Yes. Yes.

5 MR. CARROLL: Okay.

6 MR. MILLER: That's what the regulations I think
7 provide for.

8 But it's Dr. Murley's intention, given the nature
9 of the Commission's interest in advanced reactors, that we
10 are certainly going to inform them of what we are doing and
11 give them the details of where we've been, including, I
12 think, that's why we feel that a letter from the committee
13 is important so that the Commission gets the benefit of the
14 committee's views prior to the staff trying to issue such a
15 document.

16 But it is clearly a staff-issued document.

17 MR. CARROLL: Okay.

18 MR. WILKINS: The PDAs are not signed by the
19 Director of the Office of NRR, but the Director of the
20 Division of Project Managers.

21 MR. CARROLL: They didn't have one in those days.

22 MR. MILLER: That was then and this is now.

23 I would be very surprised if Dr. Murley himself
24 wouldn't want to be the signature authority on this. Now,
25 from a practical standpoint, maybe the Division Director

1 would sign the PDA. But I think --

2 MR. WILKINS: He would initial it before Murley
3 would sign it, certainly.

4 MR. MILLER: Yes. Oh, absolutely.

5 MR. CARROLL: So you have still got to make a
6 decision as to whether you are going to issue one at all, a
7 PDA.

8 MR. MILLER: Yes.

9 MR. CARROLL: And then if the answer to that is
10 yes, what is it going to say; get a draft out, and I think
11 what you heard this morning is, it is at that point we would
12 like to get involved again and look at the draft of it to
13 make sure that it says what we want it to say.

14 MR. MILLER: Yes, I think that came through loud
15 and clear.

16 MR. CARROLL: And then from there we would have a
17 letter that would comment on it, you would schedule a
18 meeting with the Commission, and get their holy water
19 sprinkled on it, and at that point, a PDA would be issued.
20 Okay.

21 MR. MILLER: But again, the Commission would not
22 be the body that issues it. They would have to keep
23 themselves removed from that.

24 MR. MICHELSON: I guess all those Octobers may be
25 Novembers, then.

1 MR. MILLER: I think that's what Lauren has just
2 said.

3 MR. MICHELSON: I don't think they want to come to
4 the full Committee but once.

5 MR. CARROLL: I think that's right.

6 MR. MICHELSON: And I think they need to come with
7 a draft of the PDA in hand, so we know what the approach is
8 going to be.

9 MR. CARROLL: They didn't tell me they couldn't
10 bring us a draft this afternoon, Carl.

11 MR. MILLER: I'll tell you that I can't bring you
12 a draft this afternoon.

13 MR. WILKINS: He's told you now.

14 MR. MILLER: The question becomes, we may be able
15 to get you a draft before the full Committee meeting, but,
16 given the fact that it may come to you pretty near that
17 meeting, is that going to give you enough time to have
18 reflected on it?

19 MR. CARROLL: It's not going to be a 380-page
20 document. So I'm not sure that would be a problem to us.

21 MR. MILLER: And to the extent that we give you a
22 draft, remember, as we go through this, --

23 MR. CARROLL: Would you also bring us a lawyer to
24 explain it to us?

25 MR. MILLER: I would try.

1 It is certainly a necessary step. We have to get
2 OGC concurrence on what we issue. And OGC is going to have
3 to be involved in helping us craft the exact language that
4 would go with the PDA.

5 MR. MICHELSON: I think at the time though, that
6 decision whether to release, whether to just do it as an SER
7 or do it as a PDA, that might take you a month. I don't
8 know. It depends on how many people get involved in that
9 decision. But that's up to you. That's not our concern.

10 October, you're already on schedule in October.

11 MR. MILLER: We're on the full Committee schedule
12 to October. To the extent that we can bring you a draft,
13 why don't we try to shoot for that and then that can be a
14 point of further dialogue.

15 MR. MICHELSON: Well, I'm wondering if you don't
16 bring us a draft, whether there is any use in having a
17 meeting.

18 MR. CARROLL: No, I would say there isn't.

19 MR. MILLER: There is not.

20 MR. CARROLL: Yes.

21 MR. MICHELSON: Don't come until you are ready,
22 because I don't think the Committee will belabor it too
23 long.

24 MR. MILLER: Okay.

25 MR. MICHELSON: Depending on what that PDA draft

1 says, it may fly right to it.

2 See, the Committee has heard about this many times
3 before. So I don't suppose that they need any more
4 briefing.

5 Is that right? I think we have just, the purpose
6 of your being there was for us to write a letter on it.

7 MR. MILLER: Okay.

8 What I'm hearing is that you would prefer to see
9 the language in the PDA itself prior to writing a letter.

10 MR. MICHELSON: Yes.

11 MR. CARROLL: Otherwise, we're going to have to
12 write two letters.

13 MR. MICHELSON: Yes.

14 MR. CARROLL: And that's kind of wasteful.

15 MR. MICHELSON: The Committee is going to ask why
16 are we writing this one? It would just waste a month.

17 MR. CARROLL: You certainly will get some
18 technical comments, as part of this. But I'd like to polish
19 off the legalistic issue of what the PDA says also at the
20 same meeting.

21 MR. MILLER: I guess I would try to get some kind
22 of -- there's a certain question too -- if we're going to
23 make a decision to maybe issue something in draft form, and
24 I would have to try, along with Murley and others about
25 intentions to do that to Westinghouse -- and allow for a

1 period of them to comment and make corrections on what's
2 stated there, we're not going to be in the final form until
3 that's done anyway.

4 What I'm thinking about now is if you were to go
5 upon that route, would it be better to delay, wait until
6 November and hopefully, get you a draft PDA that's had legal
7 input and you'd have a little bit more time to reflect on
8 it. Why don't you let me discuss that with my management
9 and I'll try to get back to you.

10 MR. MICHELSON: Now their letter will only be
11 valid if you don't make significant changes to your draft
12 PDA. If you write a new PDA after we write our letter --

13 MR. CARROLL: I don't think that's going to
14 happen.

15 MR. MILLER: That's why I would like to get you
16 something that I feel that hey, this is what the staff feels
17 is what the language should be.

18 MR. CARROLL: But I do think there may be some
19 issues that Westinghouse would like to bring to our
20 attention after they read it and bring to your attention?

21 MR. MILLER: And given that, what I'm saying is
22 all of that is not going to happen by the October meeting.

23 MR. MICHELSON: That's right.

24 MR. WILKINS: Does all this imply that this
25 subcommittee has to meet again between now and the November

1 meting?

2 MR. CARROLL: Not necessarily. Probably not. I
3 think we can individually read two pages of the PDA and --

4 MR. MICHELSON: And give two different meanings at
5 least.

6 MR. CARROLL: -- At least.

7 MR. MICHELSON: I was just thinking that October
8 just doesn't seem like a reasonable time period.

9 MR. MILLER: Maybe we ought to shoot for November,
10 it's what I'm thinking is a more realistic date then, given
11 --

12 MR. CARROLL: Well, October would be okay if you
13 guys make the decision to --

14 MR. MILLER: I think the thing that I would want
15 to avoid is saying that we're going to do that, and then
16 calling up at the twelfth hour and say: Hey, we're still
17 debating this between the staff and OGC and trying to get
18 the language worked out, and I can come down and report that
19 in October, but that's not going to help you in your
20 deliberations.

21 MR. CARROLL: Well it's already scheduled in the
22 Federal Register on this.

23 MR. MICHELSON: That part's easy, but we need to
24 rejuggle our schedule.

25 MR. CARROLL: So we can use the time for other

1 purposes if you can't make it.

2 MR. MILLER: Okay.

3 MR. MICHELSON: It won't be any real problem.

4 MR. MILLER: Why don't I take that back, and maybe
5 I could Ned or Tom a call and tell you. I can commit to do
6 that maybe by tomorrow.

7 MR. CARROLL: All right.

8 MR. MICHELSON: I would imagine in November that's
9 the magic date that Westinghouse will then at time be
10 prepared to make a presentation to the full committee on
11 their views, and the staff would make a final presentation
12 on their views, and the committee would deliberate, which I
13 think is about a 2 or 2 1/2 hour --

14 MR. CARROLL: We have 2 hour schedules.

15 MR. MILLER: I think the more that I hear, the
16 more I'm convinced that the language that we would put in
17 any PDA -- these two pieces of paper -- is probably going to
18 be as critical or more critical than what's in the large
19 volume itself.

20 MR. MICHELSON: Yes, because that's what the
21 agency is signing off on.

22 MR. MILLER: Right, okay.

23 MR. CARROLL: Bill, you wanted to say something?

24 MR. KERR: I wanted to call to your attention the
25 typographical error in this morning's schedule. It says a

1 break at 11:00 --

2 MR. CARROLL: It isn't 10:00 yet, Bill.

3 MR. WILKINS: You've got a whole 10 seconds for
4 that.

5 MR. CARROLL: Is this a good time to take break
6 for you, Warren?

7 [Brief recess.]

8 MR. CARROLL: Let's continue, Loren.

9 MR. DONATELL: Thank you. I guess what I heard
10 before the break -- I just wanted to verify this:
11 Throughout October, for the full committee, and we're
12 looking at probably November. I also heard that you wish to
13 link completely the SER with the PDA document, as far as
14 issuance, decisions, everything. They'll walk hand-in-hand
15 through the rest of the process, is that --

16 MR. CARROLL: Assuming there is a PDA, I guess
17 Charlie was saying their one option would be not to issue a
18 PDA.

19 MR. DONATELL: As long as a PDA is an issue, they
20 will walk hand-in-hand, until such time as one or both is?

21 MR. CARROLL: Yes.

22 MR. DONATELL: Thank you.

23 [Slide.]

24 MR. DONATELL: Frankly, since the rules are pretty
25 silent on what a PDA is --

1 MR. MICHELSON: Which rule are you referring to as
2 silent?

3 MR. DONATELL: I think. -- I think both Part 50 --

4 MR. MICHELSON: Part 50 is silent?

5 MR. CARROLL: He is going to show you what it is.

6 MR. DONATELL: Well, maybe I just dug myself a
7 hole, but I don't find where it's particularly explicit.
8 One thing we have said, historically -- the agency has said
9 historically, is that the preliminary design approval was
10 appropriate for construction permits and manufacturing
11 licenses.

12 Now, it's entirely likely I've overlooked that
13 particular statement. I know that's the way the agency is
14 operated. But I don't and I haven't seen that explicitly
15 called out. And as I've said, maybe that's an oversight on
16 my part.

17 However, this statement is essentially the way we
18 have operated historically. It is also the -- presently,
19 the way that we intend to operate. This statement was given
20 to, I think it was the Regulatory Information meeting that
21 was held here in town the earlier part of this year.

22 Essentially, the PDA deemed a standard,
23 preliminary design acceptable for incorporation by
24 reference, an individual facility license applications,
25 construction permits and manufacturing licenses only, and

1 providing that the approved design be used and relied upon
2 by the staff and the Advisory Committee on Reactor
3 Safeguards in their reviews of any such applications.

4 That's directly out of -- that particular
5 sentence, that statement is directly out of the Rulebook.

6 MR. MICHELSON: That second sentence was not out
7 of the rule, is it?

8 MR. DONATELL: Well --

9 MR. MICHELSON: Did it say "standard preliminary
10 design?" What is a "standard preliminary design?"

11 MR. DONATELL: That was used because of the
12 inclusion, in Part 52, relating to a preliminary design,
13 where it essentially says that the applicant can apply for a
14 preliminary or a final design period.

15 MR. MICHELSON: Wait a minute, it's not in Part
16 52.

17 MR. DONATELL: Yes, it does say that.

18 MR. MICHELSON: I don't see, and applied for a
19 preliminary?

20 MR. DONATELL: Yes.

21 MR. MICHELSON: Where?

22 MR. DONATELL: It's in the first part of the rule.

23 MR. MICHELSON: If it does, then I'll stand
24 corrected.

25 MR. DONATELL: Well, let me -- hope I'm not too

1 much of a liar.

2 MR. MICHELSON: It talks about the FDA but not the
3 PDA. Well, why don't you find it later.

4 MR. DONATELL: I'm pretty sure it is --

5 MR. MICHELSON: I'll assume -- if it's --

6 MR. DONATELL: -- if it's in there it says,
7 preliminary requirement. It also gives the applicant the
8 ability to apply for one -- an essentially complete design
9 or a major part thereof, I think.

10 MR. MICHELSON: Yes, but only -- and it says two
11 things: Either if it's an FDA already, then you've got to
12 go back and re-review it --

13 MR. DONATELL: That's correct.

14 MR. MICHELSON: -- and if it's an FDA for
15 certification on an application, then you review it before.

16 MR. DONATELL: Absolutely correct. And the
17 separation is, a PDA is an optional approval, if you will;
18 it's an optional application.

19 MR. MICHELSON: That's the part I didn't remember.

20 MR. DONATELL: Then you make the jump and you say,
21 all right. If you're going to come in for an FDA, you have
22 to tell us at the front-end, whether or not you're going for
23 design certification. If you're going for design
24 certification, then what you have is a review related to
25 FDA/design certification. If you're not going to design

1 certification from FDA, two separate reviews. All right.

2 And I think you can make a logical connection
3 going backwards that says, if you came in for a PDA, with no
4 intent to go to FDA or design certification, then if you
5 come in for FDA or design certification, you get a whole
6 review.

7 MR. MICHELSON: You might make it logically, but
8 show me the words.

9 MR. DONATELL: They're not there. Okay. Now.

10 MR. MICHELSON: I don't think those words are
11 there.

12 MR. DONATELL: PDA, what does it mean? We're
13 faced with something here that -- you've got Part 50, which
14 is still in existence, and we have Part 52. I think Part 50
15 is pretty explicit, at least to the point that a PDA
16 construction permits, manufacturing licenses, two-step
17 process, it's a PSAR-type review; I think that's realistic.

18 The next question is: If the PDA is referenced in
19 an FDA application, what does it mean? Okay, that's a
20 question. I would have to believe today, if we were to
21 issue a PDA, and a year from now there was an application
22 for an FDA, one thing that occurs when there's an
23 application, is something called an application review, or
24 an acceptance review.

25 The relationship of the PDA, and this is just

1 another check point, maybe another QC hold or something.
2 But, the relationship of the PDA, the existing document, age
3 and content during that acceptability review, would have to
4 be taken into account before acceptance of the application
5 or the final design approval. Just bring that to your
6 attention. I believe this could be a fairly --

7 MR. MICHELSON: That's not in the regulations, but
8 I guess you could dream it up as an office procedure or
9 something.

10 MR. DONATELL: Well, it is, and it's always been
11 done.

12 MR. MICHELSON: We've never done a certification
13 yet, so it hasn't always been done.

14 MR. DONATELL: Every application that has come in,
15 however, has gone through an acceptance review --

16 MR. MICHELSON: Yes.

17 MR. DONATELL: -- prior to acceptance of the
18 application.

19 MR. MICHELSON: That's right. On two-step
20 licensing, that was the case. We're not dealing with two-
21 step licensing.

22 MR. DONATELL: Well, that's correct. And I also
23 can't say -- I can, one, that acceptance review will happen,
24 I feel confident in that. What the content of that
25 acceptance review would be, I can only guess at really,

1 because that's the future. I'm just assuming because we're
2 a diligent agency, that it would probably incorporate that
3 information.

4 [Slide.]

5 MR. DONATELL: Some further words on Appendix O.
6 I have extracted some words out of several parts of the
7 rule. Essentially what this says is that when the review is
8 completed the staff will make a determination of
9 acceptability. It will get published in the Federal
10 Register, an SER or a report of some kind. A report will go
11 to the PDR and this determination of acceptability will be
12 subject to conditions as may be appropriate.

13 Those are words directly out of Part 52.

14 Once that is done, again, same words we used
15 before, utilized, relied upon by the Staff and the ACRS. Any
16 facility license application referencing and approved design
17 unless there exists significant new information which
18 substantially affects the earlier determination or other
19 good cause.

20 MR. MICHELSON: Are you presenting this now as a
21 support for something?

22 MR. DONATELL: No. What I'm trying to say is --

23 MR. MICHELSON: Because this is all true for an
24 FDA all right.

25 MR. DONATELL: This is in Part 52.

1 MR. MICHELSON: For an FDA.

2 MR. DONATELL: It is extracted right out of Part
3 52, okay? Part 52 tells you that you can go for
4 preliminary, a final --

5 MR. MICHELSON: Part 52 doesn't tell you you go
6 for a preliminary and then a final. That's Part 50 that
7 tells you that.

8 MR. CARROLL: It says you can.

9 MR. MICHELSON: I'm not even sure it says you can.
10 That's what you've got to show me. That's the argument we
11 went through earlier today and they said, no, it's not in
12 Part 52, it's back in the Appendix to Part 50 and it got
13 incorporated into Part 52 and it wasn't sure it was
14 anybody's intent even to ever talk about a preliminary
15 review.

16 MR. CARROLL: Well, no. I think Charlie said it
17 was the intent of the drafters of Part 52 to allow people to
18 get a PDA determination on a proposed design.

19 MR. MICHELSON: Sort of a hearing along the way.
20 That should have been provided for then in Part 52.

21 MR. DONATELL: Appendix O, which is now Part 52 --

22 MR. MICHELSON: Wait, wait, Appendix O was Part
23 50.

24 MR. DONATELL: It is however now Part 52. It has
25 been incorporated in Part 52. It really is no longer part

1 of Part 50 and talking to the drafters of the rule, the only
2 reason that Part 50 -- there was some discussion early on as
3 to whether Part 50 should be kept in light of Part 52. The
4 idea was, gee, this is a new process. We still don't know
5 where it's going. We still have to make facility for a two-
6 step license and business as usual so Part 50 stayed in
7 existence but Appendix O is in fact part of Part 52 and it
8 does state preliminary or final design.

9 I assume and I think it is a correct assumption
10 that these statements out of Part 52 then apply to a
11 preliminary design.

12 MR. MICHELSON: That is where the lawyers will
13 have to tell us.

14 MR. DONATELL: And in pointing these things up,
15 these are things that are really directed toward I think
16 comments that you've made in the past because of the
17 uncertainty as to what a PDA is and what kind of latitude or
18 lack of latitude the Staff has if a PDA is in fact issued.

19 Information requests regarding an approved design
20 have to be evaluated prior to issuance to ensure that the
21 burden placed on the Applicant is justified, approved by the
22 EDO and in accordance with 10 CFR 50.54(f).

23 In accordance with 10 CFR 50.54(f), for me this is
24 kind of a tough transition but --

25 [Slide.]

1 MR. DONATELL: -- the salient points of 50.54 say
2 that, one, when requested the Licensee shall submit written
3 statements under oath or affirmation related to whatever the
4 reason for the requests are.

5 Based on that the Commission will determine if
6 license should be modified, suspended or revoked, verify
7 Licensee compliance with the current licensing basis, and
8 again these are the same words out of Part 52.

9 This is one, the request has got to be justified;
10 two, it's got to be approved by the EDO.

11 MR. MICHELSON: What is a license under -- if we
12 move this over to Part 52, what is a license?

13 MR. DONATELL: That is exactly the transition that
14 lawyers are going to have to make that I can't make.

15 MR. MICHELSON: The thing was not thought through
16 when we accidentally moved it.

17 MR. DONATELL: Part 52 carries us over to this and
18 says this is applicable and then it says this, and then you
19 get words like Licensee in the thing and you are not looking
20 at the traditional license-holder.

21 MR. MICHELSON: I think what you are telling me
22 now is that you really think that a PSAR does have stature
23 and that you can't really change it.

24 MR. DONATELL: What I am trying to tell you is the
25 way the rules --

1 MR. MICHELSON: PDA I should have said.

2 MR. DONATELL: -- the way the rules are written,
3 all right?

4 MR. MICHELSON: You better bring the lawyers when
5 you come to full committee on this one so they can explain
6 what it means.

7 [Slide.]

8 MR. DONATELL: 10 CFR Part 50.109 specifically
9 says that it applies to approved designs. It doesn't say
10 preliminary and it doesn't say final.

11 MR. MICHELSON: Which section are you citing?

12 MR. DONATELL: 50.109, backfitting.

13 MR. MICHELSON: No question on the backfitting.

14 MR. DONATELL: It applies.

15 MR. MICHELSON: If you moved it over, yes. That's
16 why we want to be careful what we do, so we don't worry
17 about backfitting.

18 MR. DONATELL: All I've included here, this is
19 word for word out of the exceptions allowed on 50.109. I
20 just bring it to your attention for your consideration and
21 your concern on what kind of latitude under the rules that
22 you may have with this.

23 MR. MICHELSON: How do you do a cost-benefit
24 analysis?

25 MR. DONATELL: Well, you have asked that question

1 and the answer is, we don't really know.

2 There's two things we've got to look at here.

3 Until it is done, until frankly the Agency is faced with
4 having to do that, I am not sure what the answer is going to
5 be but if you're looking at one the simplistic thing that
6 says it's pen and ink for changing the drawing. It's the
7 other side of it that says if I change this, what does that
8 mean as far as the cost, final cost, of that particular
9 plant should it be built.

10 MR. MICHELSON: That's where we start getting into
11 arguments as to whether it has to do with anything if it
12 were to have been built.

13 MR. DONATELL: Right.

14 MR. MICHELSON: There are no rules, no guidance,
15 as far as I am concerned.

16 MR. KERR: Mr. Chairman, we're spending a lot of
17 time talking about procedure and I think the time is --

18 MR. DONATELL: I'm done.

19 MR. KERR: -- the time is well spent but I have
20 problems with the substance of this SER myself.

21 MR. CARROLL: I think a lot of us do.

22 MR. KERR: I would be very reluctant as an
23 individual to endorse publishing this SER in any case
24 because I think it is obsolete because it gives the
25 impression that this is something that one would entertain

1 as a safety review of today is I think a mistake.

2 I don't want to be specific, but there are a lot
3 of things in it that I think are about 10 or 12 years old,
4 and I think we've learned a lot since then, and I think a
5 Safety Evaluation Report issued today ought to reflect what
6 we've learned over those years. And I don't think that's
7 going to do it.

8 MR. CARROLL: Let's move to that in a minute. But
9 Lauren, that's what you wanted to tell us about, the process
10 issues, is that right? What you just presented completes
11 your --

12 MR. DONATELL: Right. That's my presentation.
13 That is correct.

14 MR. CARROLL: Okay. And does anyone have any
15 other things they want to bring up in the area of process,
16 before we move on to substance, if you will?

17 MR. MICHELSON: Well, the review process, I'm
18 trying to recall, did we have subcommittee meetings in which
19 all 25 chapters of this SER were covered?

20 MR. DONATELL: Yes. And I say that with a caveat.
21 The introduction was not covered; the conclusions, which is
22 Chapter 25, was not covered.

23 MR. MICHELSON: Did we schedule subcommittee
24 meetings? I didn't probably get to all of them, I guess,
25 but I don't recall some of this ever being discussed in

1 subcommittee meetings. Maybe it was covered and I just
2 didn't realize it.

3 MR. DONATELL: Yes. We have covered all the
4 chapters, SRP review --

5 MR. MICHELSON: So all the substance has been
6 covered once, at least --

7 MR. DONATELL: Yes, sir.

8 MR. MICHELSON: -- you're saying. I don't recall
9 it. But that's fine.

10 MR. CARROLL: That is correct.

11 MR. MICHELSON: The last subcommittee meeting
12 before the other was about a year --

13 MR. CARROLL: March. March of this year.

14 MR. MICHELSON: Yes. But before that one --

15 MR. CARROLL: We had a little series of them.

16 MR. MICHELSON: Yes, over the last several years.

17 MR. DONATELL: We actually started in September of
18 '89. And this is the fifth subcommittee meeting in that
19 series; it's in September of '89.

20 MR. CARROLL: We had one in September, one in
21 November, one in January, one in March.

22 MR. DONATELL: The previous four substance
23 presentations.

24 MR. MICHELSON: Okay. So you've covered all 25
25 chapters, sooner or later?

1 MR. DONATELL: Yes.

2 MR. MICHELSON: Okay.

3 MR. CARROLL: Some of them predate me.

4 MR. MICHELSON: So procedure was the only thing
5 left, then. Procedure was the only thing left. We should
6 have covered our problems with substance long ago.

7 MR. DONATELL: All of the items were covered by
8 primarily Westinghouse presentations over the course of four
9 subcommittee meetings from September '89 to March of 1990.

10 MR. MICHELSON: Yes. But as I recall, you didn't
11 have your SER at that time on a lot of this.

12 MR. DONATELL: You had draft SERs. As I mentioned
13 on one of the other slides, you had the input on the PRA
14 from Brookhaven and the draft SER, you had two draft SERs on
15 the SRP issues. You had all of those in your hands prior to
16 the time that I came onboard and realized that you hadn't
17 had any presentation --

18 MR. MICHELSON: How about these 25 chapters here?
19 We didn't have the SERs on all these 25 chapters until quite
20 recently.

21 MR. DONATELL: That SER is a compilation of the
22 two previous SRP-type draft SERs and the draft SERs on the
23 PRA. The PRA was presented to you by Brookhaven from our
24 Research people, and the individual technical chapters
25 covering the systems for the SRP review were done in, I

1 think, three out of the four meetings, full days, by
2 Westinghouse.

3 The conclusions section was not covered. And
4 maybe that's what we're here to do today to some extent at
5 this point in time. But the material was presented.

6 MR. MICHELSON: I guess I didn't go to all those
7 meetings.

8 MR. CARROLL: Okay. Any more on process before we
9 get to Bill's issue here?

10 [No response.]

11 MR. CARROLL: Okay. Well, let's talk about the
12 issue that Dr. Kerr has raised.

13 I guess what you are saying basically, Bill, is
14 that this is a document that stands so much time history in
15 terms of when pieces of it were written that you are having
16 trouble bringing yourself to believe that it is something
17 you would be able to approve as a quote "Safety Evaluation
18 Report."

19 Is that a fair statement?

20 MR. KERR: Yes. That's a fair statement.

21 MR. CARROLL: Do others have thoughts on that
22 subject?

23 MR. MICHELSON: I agree. I've got quite a few
24 questions.

25 MR. CARROLL: Yes, I do, too.

1 MR. MICHELSON: So it must be that it went over my
2 head when it was presented, when and if it was presented.

3 MR. WILKINS: I felt a little ambivalent. I
4 wasn't really prepared to make as strong a statement as Bill
5 has made. But I certainly have to agree that there are
6 areas that seem to me that "obsolete" is as good a word as
7 any to use in the context. But I wasn't all that sure as to
8 whether it needed to be up to date or not.

9 MR. CARROLL: Well, one way out of that dilemma,
10 obviously, is to say that in the PDA, or the forward that
11 you propose, Bill. This is what this thing is. It's not an
12 SER in the sense of SERs that are issued at the time an OL
13 is given, for example. It's a different beast.

14 If the proper description of what this document is
15 were presented in some form, would that make some of your
16 concerns go away?

17 MR. KERR: If something like that were said, I
18 don't know what purpose the exercise has. I guess if it
19 were said we are publishing this document, it has no
20 significance, I wouldn't object to that.

21 MR. CARROLL: I guess Charlie Miller's statement
22 earlier this morning, and I think, as echoed by
23 Westinghouse, was a lot of review has taken place over a
24 long period of time. Both the staff and Westinghouse want
25 to tie a knot around it and say here is what we've done, for

1 whatever it's worth.

2 MR. KERR: As I said earlier, the control system
3 which is being proposed is probably a good control system.
4 And I like the fact that it is integrated rather than
5 apparently making the artificial distinction that we have
6 all made too many years between control and safety systems.

7 But I had in here that the review that was done
8 by the staff was done in 1979, unless I misinterpret what's
9 there.

10 I do not believe that a review done in 1979
11 reflects what we now know and the experience we have had
12 since that time. And we have learned a lot.

13 MR. SHEWMON: Did Westinghouse have an integrated
14 system in 1979?

15 MR. KERR: No, I am not being critical of
16 Westinghouse. I don't know what Westinghouse --

17 MR. SHEWMON: What makes me doubt what you're
18 saying or at least wonder about it is that I suspect the
19 control system is different than it would have been designed
20 in 1978 or '9, if it is an integrated system, and therefore,
21 I question your statement that the final review was done in
22 '79.

23 MR. KERR: I am quoting. I'm not trying to attest
24 to the veracity of the statement. The SER says that.

25 MR. SHEWMON: Maybe we should find out where --

1 maybe should find out where.

2 MR. VAN DE VENNE: The technology -- the digital
3 technology that was used in both the protection system and
4 the control system, the microprocessors, and you know, the
5 optical data links and that kind of technology was developed
6 and was submitted as part of the 414. Now, I'm just talking
7 hard data.

8 As a result of that 414 review, the staff issued a
9 NUREG, and I really don't know what the number of the NUREG
10 is that relates to the verification and validation that is
11 required to qualify that type of a system, from a software
12 point of view. And I think the staff feels that that
13 document that they issued at that time is still applicable;
14 that's the only think I can summarize. Although, I'm not 100
15 percent sure about this.

16 But the control system, and even the hardware has
17 changed from the late '70s, because the design of it was
18 actually was not completed until about '86 and the first
19 application of this hardware, in full, is really the seismic
20 protection system in England.

21 Now, pieces of this technology have been backfit
22 to, for instance, some of the TVA plants, and some of that
23 hardware is finding its way in backfit applications. But, I
24 think the basic, fundamental approach to verification and
25 validation has not changed. I -- but there's somebody from

1 the staff here that -- can address this?

2 MR. SHEWMON: Before we get that, the report
3 you're talking about, the 414 submittal and review was 1978
4 and '79?

5 MR. VAN DE VENNE: It was the late '70s, I think.

6 MR. SHEWMON: Fine, thank you.

7 MR. JOYCE: I'm Joe Joyce from Instrumentation --
8 Branch. Dr. Curtis correct, with respect to the timeframe?
9 In 1976 we reviewed an application called RESAR-414. We
10 spent quite a bit time reviewing that. And at that time, in
11 August '78, both the Subcommittee and the Full Committee of
12 ACRS have concerns about RESAR-414.

13 At that time, the staff put together a task force
14 consisting of six people, with consultants from Oakridge and
15 Canada. We concluded, based -- this was on 414 -- not RESAR
16 SP/op. At that time, we put out the NUREG that was
17 referenced. This NUREG 0493 is called Defense in --
18 Diversity, RESAR-414.

19 The conclusions of the task force at that time,
20 questioned common mode failure, questioned integrated
21 protection system, and there were a number of items that
22 were talked about in NUREG 0493.

23 We also gave RESAR-414 a PDA. The PDA was based
24 on NUREG 0493 and they had to conform, part of the FDA,
25 demonstrate that the system, through tests and through means

1 of software verification for the FDA stage.

2 Now, with respect to --

3 MR. CARROLL: Now, this PDA you are referring to
4 was broader than just the control system. It was a PDA for
5 --

6 MR. JOYCE: The PDA for RESAR-414 included the
7 integrated protection system. The integrated protection
8 system consisted of Chapter 7 -- 1 through 77, RPS
9 engineering safety features and control systems.

10 MR. DONATELL: You have copy of the PDA for the
11 414, that was part of the package?

12 MR. JOYCE: With the respect to this application,
13 when we got in the review of the SP/90, Westinghouse had
14 quoted 414 quite a bit throughout the document and built the
15 SP/90, based on the 414 in the area of instrumentation and
16 control. They said "it's the same as."

17 As far as our review, it was the same as the 1414
18 design. As part of our review and the conclusions in our
19 SER, basically said that, come FDA stage, we are going to
20 revisit the topics and issues in accordance with NUREG 0493
21 and we also added a new IEEE standard, which was called
22 verification and validation of the software that was going
23 to be used for the SP/90 design.

24 MR. CARROLL: New, meaning 1982?

25 MR. JOYCE: Yes, sir.

1 MR. CARROLL: What he's been telling us can be
2 found on page 714, 715.

3 MR. JOYCE: I have my SER -- our branch SER in
4 '88.

5 MR. CARROLL: No, I'm talking about in this
6 presentation here.

7 MR. JOYCE: Yes, sir, it is. That's correct.

8 MR. CARROLL: So, what you're telling us is that,
9 instead of getting a current submittal from Westinghouse,
10 you base this on 414 review and put in the caveats that,
11 when this gets to an FDA stage, you're going to look at it
12 again, and --

13 MR. JOYCE: We had a submittal from Westinghouse
14 that was called the SP/90; but when you open up the document
15 and you start looking at the I&C areas, very strong
16 resemblance of the 414 design.

17 And as part of the question that we go back and
18 revisit the questions that were sent to Westinghouse and the
19 answers, were the same thing that we had on 414. And, based
20 on the meetings that we had at Westinghouse, the staff
21 concluded that SP/90 and the integrated protection system on
22 the SP/90 was going to be a mirror image of 414; therefore,
23 the criteria that was applicable to RESAR-414, at the time
24 of the PDA, was also applicable to the SP/90, with the
25 addition of some other open items.

1 MR. CARROLL: So, where does that leave you, Bill?

2 MR. KERR: He does not disagree with what I said,
3 which is that we have not learned anything since 1979.

4 MR. JOYCE: I guess I don't appreciate your
5 comment with respect to learning anything. Learning
6 anything. We upgraded the SER. If you looked in 1979, Dr.
7 Kerr, we were down here on RESAR-414 a number of times, as
8 you well know. And we documented the review of the
9 integrated protection system.

10 One quantum step, if I may, from the RESAR-414 to
11 the SP/90 was insertion of IEEE standards 7432, which is
12 called Verification and Validation of Software for the
13 integrated protection system. That was not incorporated
14 into the RESAR-414.

15 MR. CARROLL: That's not what it's called, by the
16 way.

17 MR. JOYCE: 7432? You're correct. That's right.
18 That's the guts and the ingredients of that document is V&V.

19 MR. CARROLL: Correct. All right.

20 MR. JOYCE: With respect to learning, yes, we did.

21 MR. KERR: The point I am trying to make is that I
22 think we have learned a good bit since 1979 but the SER does
23 not reflect it.

24 MR. JOYCE: Well, sir --

25 MR. KERR: It says that the review was based on a

1 review done in 1979.

2 MR. SHEWMON: Does that make it wrong? Does it
3 make it irrelevant?

4 MR. KERR: It makes it obsolete as far as I am
5 concerned, Paul.

6 MR. SHEWMON: How is it wrong and irrelevant? I
7 am not sure what obsolete means with regard to whether it is
8 relevant or correct.

9 MR. KERR: Let me take an example. We now have a
10 process that is used in the regulation of existing plants
11 which puts pressure on, it's not in the regulation but it's
12 part of the SALP process. It puts pressure on operators to
13 decrease the number of automatic scrams that occur.

14 A great many automatic scrams occur because of the
15 malfunctions in the control systems.

16 This document says that the Staff reviewed the
17 non-safety systems only to the extent of determining that a
18 failure in the control system did not disable the safety
19 systems.

20 Now if on the one hand we are in effect regulating
21 existing plants based on the number of automatic scrams that
22 occur, we are in effect saying you better make those non-
23 safety systems more reliable.

24 Here we have a review which the only thing that is
25 done about non-safety systems is to say that a failure in

1 the control system doesn't disable the safety system.

2 I think we've learned something since that sort of
3 review process was valid but I don't see it reflected in
4 this SER.

5 MR. JOYCE: If I may, you're correct. It's not
6 reflected in the SER. What is the Staff's review criteria
7 for reviewing non-safety systems?

8 If you look at the Table 7-1 and look at the
9 comment that has ~~two~~ stars along side of it, it tells you
10 what our criteria is for the control system.

11 You touched on it a little bit with respect to the
12 control systems failures. Those failures probably are
13 getting back into the safety system and causing the safety
14 system not to be performing safety functions.

15 MR. KERR: That's right. I think in the light of
16 the way you are regulating operating plants today that that
17 criterion is obsolete.

18 MR. JOYCE: Well, sir, at the present time in 1990
19 in my knowledge we do not have a criteria that says go off
20 and review non-Class 1A systems instead of criteria. Single
21 failure and seismic independence generalizations --

22 MR. KERR: I think they should have.

23 MR. JOYCE: I agree. I agree.

24 MR. KERR: All right, that's all I'm saying. I
25 think that this review is obsolete.

1 MR. JOYCE: But, sir, in order for me to update
2 this SER to reflect 1990 --

3 MR. KERR: I am not trying to criticize --

4 MR. JOYCE: -- the criteria is not on the books
5 yet so we can't stick into the SER and say go do it.

6 MR. KERR: But somebody ought to be doing
7 something about it. I* ought to be!

8 MR. JOYCE: Once again you are correct. At the
9 present time and as of two years ago we sent over a user's
10 need to research. There's 27 items on there. If you read it
11 you'll go in there and find some of the bullets that talk
12 about the items you just discussed.

13 MR. KERR: I think it is the job of ACRS, if the
14 rest of the committee agrees with me, when we are doing
15 something that is that obsolete to say so.

16 Maybe this will move the Commission or the Staff
17 or somebody to do something about it.

18 I recognize the constraints under which you
19 operate and I don't appreciate them as well you do because I
20 don't have to live with them, but --

21 MR. VAN DE VENNE: If I may add a point here, that
22 the design does address the concerns expressed here in that
23 the control system is redundant and is designed such that
24 one single failure does not cause a trip. It addresses many
25 of the trips that are caused by testing, by facilitating

1 testing and all of these things, so the point is we probably
2 have a design that is up-to-date. It just simply hasn't
3 been reviewed because it's not currently a review base but
4 you will see exactly the same design by the way as part of
5 the AP-600. Maybe at that time you'll have an
6 opportunity --

7 MR. CARROLL: Also I guess to meet the EPRI
8 requirements document you sit in for less than one spurious
9 scram a year, is that right?

10 MR. VAN DE VENNE: The goal of the protection
11 system and the control system is on the order of ten to the
12 minus two for a year but there's other spurious scrams that
13 do occur which are not related to the design of the
14 protection system.

15 MR. CATTON: But if you just reference 414, how do
16 you expect to have more than an obsolete --

17 MR. VAN DE VENNE: I think the description of the
18 SER does talk about the automatic testing features. It does
19 talk about the redundancy in the control system in all of
20 these things.

21 There are references to 414 because it was
22 reviewed and it provided a usable link between the two from
23 a review point of view, but I believe that even the '76
24 supplemental had some of these features, automatic testing,
25 and so in the design but the Staff is basically saying that

1 is not something that is really part of the Standard Review
2 Plan. We haven't really reviewed it back then and we're
3 still not reviewing it.

4 MR. JOYCE: I don't know if that is thoroughly
5 correct. I think what the Staff said is with respect to
6 online testing but online testing that there were some
7 excellent features and improvements that were made from the
8 414 to the SP/90.

9 Number one was a watchdog timer that was
10 incorporated so as the automatic testing gets hung up in a
11 loop or something the watchdog timer will go off and do
12 certain things with respect to conservative trips.

13 There were features that were built in there but
14 if you did a one-for-one with respect to online testing, go
15 look in the Standard Review Plan or even 279 you'll come up
16 short.

17 That does not necessarily mean that the Staff did
18 not take specific positions on online testing and software
19 development and other issues.

20 MR. CARROLL: All right. I guess one of the
21 issues the committee has been concerned about and I believe
22 we'll be having our first software V&V subcommittee meeting
23 shortly is that issue.

24 Could the same comment be made about the use of a
25 standard that is dated 1982? Have we not learned something

1 since then in terms of what is needed for proper V&V
2 software?

3 I think the Canadians learned something last
4 January about glitches in software, did they not?

5 MR. JOYCE: That's true. They did -- and we have
6 learned something but if you look at criteria, acceptance
7 criteria, at the present time IEEE Standard 7432 has been
8 endorsed by NRC through Reg Guide 14152.

9 MR. CARROLL: This is the 1982 standard.

10 MR. JOYCE: Yes, sir.

11 That standard right now is under revision by the
12 subcommittee, 6.1 of the IEEE standard -- 6.6, excuse me.

13 We have -- and there are other tools. There are
14 other tools since 1982 that you use for software development
15 rather than just verification and validation.

16 As you mentioned, the Canadians are using reverse
17 engineering. That is a technique that they found out to get
18 themselves out of the box that they got in towards the end
19 of the licensing process of Darlington, so there are other
20 tools that the Staff is looking at and are applying to our
21 advanced light water reactor designs.

22 MR. CARROLL: Do you see a conclusion that, in
23 your 7.1.2.6?

24 MR. JOYCE: No.

25 MR. CARROLL: Okay.

1 MR. JOYCE: And if I did, I wouldn't know what to
2 put in there.

3 If I had to rewrite the paragraph today, would I
4 quote other standards without them being endorsed by NRC? I
5 can do that. I can list all of the extensive practices
6 within industry, both IEEE standards, other documents that
7 are used by Westinghouse, other NSSS suppliers, small
8 vendors, Foxboroughs, that they used as good engineering
9 tools or software development tools.

10 But I would certainly get beat about the head and
11 shoulders by my management if I endorsed it.

12 MR. CARROLL: So you're really saying that when
13 you get to the FDA stage --

14 MR. JOYCE: This will be revisited in detail.

15 MR. CARROLL: And that is what the second part of
16 the conclusion states. But it doesn't really give me any
17 indication as to what is concerning you at the present time,
18 or whether you -- One interpretation is that everything is
19 just fine and dandy in September, 1990; and I just want a
20 caveat in there, because something may happen.

21 In reality, I guess I sense that you feel that V
22 and V is something that is pretty important, and we need
23 better acceptance criteria for the way it's done, and so
24 forth. And there's no clue to that in what you've written
25 as a conclusion.

1 MR. JOYCE: Yes there is. 7.4.3.2 is a clue.

2 MR. CARROLL: In what sense?

3 MR. JOYCE: In the sense that it's a structured
4 methodology for software development, the life cycle of
5 software. And this has been endorsed by Reg. Guide 1.152.

6 MR. CARROLL: Yes. But you are saying we've
7 learned something since 1982, as reflected by the fact that
8 that IEEE committee is in the process of revising that
9 standard.

10 MR. JOYCE: Yes.

11 MR. CARROLL: And I guess I get no sense that
12 there is a problem here, from what you've written.

13 MR. JOYCE: If you are asking me do I feel
14 comfortable with what is written, the answer is yes.
15 Because I still believe in the structured methodology for
16 designing of software. And 7.4.3.2 is a bare-bones minimum
17 acceptance criteria for that. And can we make improvements?
18 Yes.

19 MR. CARROLL: All right.

20 MR. SHEWMON: Bill raises an interesting question,
21 as I read through here, in my own specialty, which has to do
22 with the steel they build the pressure vessel out of.

23 Anybody would be criminal to put a vessel in
24 service now that would just meet these criteria, because
25 best current practice is a lot better. They talk about 75

1 foot pounds, which was maybe what you wanted to do to
2 protect yourself when things could be lot worse 15 things
3 ago, but it ought to be twice that now.

4 And there is sulfur control, which may be implicit
5 in this, but it is never called out that they will use best
6 current practice on it, which they should.

7 I don't know whether to, you hope that the vendor,
8 indeed, and the licensee would, amongst themselves, insist
9 on getting best current practice, but the NRC would let them
10 get by with some pretty crappy stuff.

11 MR. CARROLL: We commented on this in our ABWR
12 letter, and I believe we asked Lauren and Westinghouse to
13 look at that letter. We stated in that November ABWR
14 letter, we find that while GE is committed to follow
15 applicable code standards and regulatory guides, they have
16 developed internal specifications for materials used in the
17 fabrication of the pressure boundary components, that have
18 not been submitted for NRC review. So it sounds like that's
19 the same situation here.

20 MR. SHEWMON: One hopes it is.

21 MR. CARROLL: Is it?

22 MR. VAN DE VENNE: We haven't bought a vessel in a
23 long time. I'm not a materials expert.

24 The only thing that I know about the vessel, I'm
25 not a materials expert, but that it is a forged vessel, and

1 that all the components in the primary loop are forged.
2 Piping is forged, the elbows are forged, the channel head is
3 forged, the pump is forged.

4 MR. CARROLL: The issue is that, and GE did the
5 same thing, is the commitment to codes and standards that
6 are obsolete.

7 MR. VAN DE VENNE: Oh.

8 MR. CARROLL: And at least once we started talking
9 to GE about it, they said oh, well, we would never buy a
10 vessel to that code. I mean, you couldn't even buy steel
11 like that today.

12 MR. VAN DE VENNE: That's true.

13 MR. CARROLL: Of course we have our own internal
14 requirements that we'd use.

15 But, as we pointed out in the letter, they were
16 never submitted to the NRC and the staff hasn't even looked
17 at them. That's Paul's point.

18 MR. VAN DE VENNE: Well, it is a dangerous point,
19 because, you know, we have used more than standards. And
20 then it turns out that they are not really reviewed. I
21 mean, in other issues, for instance, on the safety
22 classification, we used the latest, most up-to-date
23 standard. I don't remember what it was. And that caused a
24 problem, too, because it wasn't reviewed and approved. And
25 then it becomes an open item.

1 So there is always this balancing act that you
2 have to go through to expedite the review.

3 But yes, I presume that we would buy whatever the
4 latest technology is, because at least from past experience,
5 there is hardly any difference of cost between that, because
6 most suppliers can do better than what is in here.

7 MR. SHEWMON: You would probably have to pay them
8 extra to put all that sulfur back in.

9 [Laughter.]

10 MR. VAN DE VENNE: Probably. Yes. We've had at
11 least one occasion where that happened. Yes. That was many
12 years ago. That was 15 years ago.

13 MR. CARROLL: But you believe, Paul, from your
14 reading of productions that deal with materials, that that
15 same general problem exists here?

16 MR. SHEWMON: Yes. Some. Yes. And partly, you
17 know, they say we will meet the requirement of 75 foot
18 pounds. And that is an absolute minimum that was put in
19 when Appendix G came in that was, I don't know, 15 years ago
20 or something, 20. And now there is implicit in here, they
21 do specify that there will be vanadium. And it's never
22 spelled out. But that means it has to be well deoxidized,
23 that they've got a fine-grain practice, is why vanadium is
24 there. And I suspect it implies low sulfur, or else, again,
25 the sulfur was combined with it. But I don't know enough

1 about steelmaking to be sure that is true, and the NRC
2 doesn't employ anybody who knows more about it than I do,
3 which says something.

4 MR. CARROLL: We're in deep trouble.

5 [Laughter.]

6 MR. WILKINS: Mr. Chairman, it seems it seems to
7 me that what we're saying here is that the country as whole
8 has a lot of information that the NRC has not yet
9 incorporated in its review criteria, and I have some
10 sympathy for what the gentlemen whose name I missed says
11 about that. He's got to do it the way -- he's got to go by
12 the book, and if he happens to know something that's not in
13 the book yet, all he can do is perhaps call it to the
14 attention of his supervisors and superiors, but until it has
15 been endorsed -- I think that's the technical language,
16 isn't it -- until it's been endorsed by the NRC, he's not
17 allowed to review these proposals against it, but until he
18 reviews it against it, there's no reason for the vendors to
19 make submittals against it.

20 MR. CATTON: That's not always the case. At the
21 thermal hydraulic area, best estimate capability has been
22 approved. Yet, the vendor insists on Appendix K, and I
23 can't believe that he uses Appendix K.

24 MR. MICHELSON: He doesn't want to have to redo
25 the analysis.

1 MR. CATTON: I don't know what the reason is, but
2 it certainly is obsolete by any measure.

3 MR. VAN DE VENNE: At the time the analysis was
4 done, there was no best estimate.

5 MR. CATTON: But Westinghouse is pushing very hard
6 for getting the best estimate capability blessed and has
7 done so in some areas, and I can't believe that you don't
8 look at this new beast with your best estimate.

9 MR. VAN DE VENNE: We have looked at that with the
10 ABWR issue.

11 MR. CATTON: So why don't you tell us about that,
12 instead of this Appendix K?

13 MR. VAN DE VENNE: Because it's not going to be
14 reviewed by the staff.

15 MR. CATTON: Well, it will be reviewed by the
16 staff if you ask for it.

17 MR. VAN DE VENNE: No, no.

18 MR. CARROLL: Yes, because it's in -- You made a
19 very important point earlier this morning. The staff is not
20 going to put any more effort into this thing.

21 MR. MICHELSON: I don't think he meant any more, I
22 think why didn't it come in that way and why wasn't it
23 reviewed that way, not today if it came in.

24 MR. CATTON: Westinghouse is the organization that
25 used to preach about these best estimates. We listened for

1 hours to your representatives tell us why Appendix K was no
2 good, and yet you insist on bringing Appendix K in for your
3 reactor.

4 MR. VAN DE VENNE: I'm just saying it's a matter
5 of timing. The analyses were submitted in 1983 or '84. At
6 that time, first of all, we didn't have the best estimate
7 methodology, and second, it really wasn't approved. We
8 didn't want to make this -- well, it was infeasible at that
9 time, and we have refrained from making a lot of changes
10 throughout the process because each time you put in a
11 change, it's going to really extend the review. That
12 doesn't mean that best estimate is not useful.

13 The other point is that, for a new plant, Appendix
14 K shows a lot of margin, and the best estimate is really
15 applying to old plants that have very little margin and that
16 can really use it. In our particular case, best estimate
17 methodology doesn't really buy us anything better than a
18 lower peak clad temperature for an event that's not --

19 MR. CARROLL: I used to think it buys us something
20 with regard to people getting out of a mindset of
21 conservative kind of analysis. For example, in programming a
22 simulator, I would sure as heck like to see my operators see
23 a best estimate model of what's going to happen, rather than
24 a conservative one.

25 MR. VAN DE VENNE: But the AP 600 submittal will

1 have best estimate technology. So I'm saying it's a matter
2 of schedule and timing, really.

3 MR. CATTON: What it means is that Professor Kerr
4 is absolutely correct. In almost every area, this whole
5 business is obsolete.

6 MR. VAN DE VENNE: The design -- you know the
7 point is --

8 MR. CARROLL: We heard about the materials, we
9 heard I & C.

10 MR. KERR: Look, I didn't say anything about
11 Westinghouse, because I was talking about the SER.
12 Westinghouse may be even more obsolete for all I know. I
13 did not comment on that and did not mean to.

14 MR. CARROLL: In the case of the ECCS analysis, if
15 somebody were to belly-up to the bar and buy one of these
16 things, you'd probably do a best estimate analysis in
17 support of the FDA, is that correct?

18 MR. VAN DE VENNE: We generally use the analysis
19 that's the latest analysis that's available at the time that
20 we do the analysis. That's our, you know, -- we have
21 generic programs to develop advance codes, and by the time
22 they become available, the other ones, by definition, are
23 obsolete and we use the new ones.

24 So it depends on the schedule and the timing as to
25 what you use, because you really cannot -- you know, best

1 estimate analysis is a very long drawn out process, I that
2 TRAC is what a five-year development program?

3 MR. CATTON: Well, you know what I'm concluding is
4 that it really depends on whether you're buying or selling.
5 We use to hear Westinghouse come in to talk about Appendix
6 K, they argued that they really should do best estimate in
7 order to get people to kind of relax a little bit about
8 Appendix K.

9 MR. VAN DE VENNE: We do, but what I'm saying is
10 if we resubmit this SP/90, it will have Appendix K, and it
11 will have best estimate.

12 MR. MICHELSON: You mean by resubmit, you mean to
13 go for an FDA?

14 MR. VAN DE VENNE: Yes, for an FDA, we do all the
15 accident analysis with best estimates with whatever the
16 latest code we would have, we would use for an FDA.

17 MR. MICHELSON: But you can't use a code that's
18 not licensed in a formal submittal letter.

19 MR. CATTON: I asked you a while ago, and I never
20 did get the information about steam generators and how you
21 did your analysis, and you told me you used the blessed
22 method of EPRI. I called EPRI. EPRI refused to give me any
23 information and said you guys weren't suppose to use that
24 code. How does all this fit together?

25 MR. SHEWMON: I don't know.

1 MR. CATTON: So, I've been able to get no
2 information on how you do your analysis of the steam
3 generators.

4 MR. SHEWMON: I thought you said blessed, with an
5 L in it or did you say best, and if it's blessed, why is it
6 out of fashion? I think it should be withdrawn or
7 something.

8 MR. CATTON: Yes, blessed. Wait a minute,
9 Westinghouse told us that the EPRI methods for doing the
10 steam generator analysis were the best estimate and that
11 that's what they used, but EPRI says they can't, and I'm
12 really confused.

13 MR. WILKINS: What does can't mean?

14 MR. CATTON: That its their propriety code and
15 other people called Westinghouse can't use, at least not,
16 and not bring it into this arena. As a result, EPRI would
17 not give me any information about the methods.

18 MR. CARROLL: And the subject you're talking about
19 Ivan is flow-induced vibration?

20 MR. CATTON: Right, that's correct, and what I had
21 seen that Westinghouse was doing was a method that's just
22 physically not right. They were using single phase
23 potential flow through this array of tubes, and that's just
24 not correct. As a matter of fact, it's kind of nonsense.

25 MR. WILKINS: Is it at least conservative?

1 MR. CATTON: I don't know. They don't know
2 either.

3 I am pretty perplexed about how you handled the
4 thermohydraulics in a number of these areas. I also you
5 asked for your -- some information on how you address the
6 fluid structural vibrations question, and I never got any
7 reports. That request was two or three subcommittee
8 meetings ago. Maybe we can blame Med. You did ask them,
9 didn't you?

10 EL-ZEFTAWY: Yes.

11 MR. CARROLL: Perhaps we can go on to another
12 area.

13 MR. MICHELSON: I want to raise another question,
14 which I believe Westinghouse has come prepared to talk
15 about, or the staff or somebody. I asked that somebody be
16 prepared to talk about it. And that is the -- in this
17 particular Westinghouse design, the diesel engines are on
18 the same floor with the control room, and, in fact, I guess
19 down a very short hallway from the control room. I was
20 wondering, first of all, have we ever licensed a plant for
21 construction in the US with an arrangement similar to this:
22 r, what's the closest proximity we ever got to the control
23 room with a diesel engine and its auxiliary fuel and all the
24 other things? The staff was supposed to come prepared to
25 tell us the answer, and Westinghouse was forewarned that we

1 were going to ask.

2 MR. DONATELL: Westinghouse was forewarned that
3 they should address those issues.

4 MR. VAN DE VENNE: I don't know whether there are
5 other plants in the US that have this particular
6 arrangement. I guess this issue has been raised before.

7 MR. MICHELSON: It has been raised on ABWR and
8 they're going back to look because, clearly, you're going to
9 have to do a very careful analysis of the suitability of
10 that high concentration of flammable materials in such close
11 proximity to the control room. You're going to have to show
12 what kind of doorways and what the whole design basis is
13 that says that that's a safe design. I find none of this
14 discussed in the SER. I find none of it really discussed in
15 the SAR. But did this diesel engine end up next -- in that
16 location from the very beginning, in 1983 --

17 MR. VAN DE VENNE: Yes.

18 MR. MICHELSON: -- or you can tell the evolution?

19 MR. VAN DE VENNE: Yes, it was.

20 MR. MICHELSON: It must have been -- but you know
21 of no plans just prior to '83 that had it that close?

22 MR. VAN DE VENNE: Like I say -- I really have not
23 -- I know there are plants that have the diesel generators
24 adjacent or very close to the control room, but they're
25 generally in a separate building and --

1 MR. MICHELSON: Oh yes, with a heavy -- very heavy
2 walls between and no doorways.

3 MR. VAN DE VENNE: -- probably reduce the
4 concerns.

5 MR. MICHELSON: Oh yes, yes. Oh, you could do it,
6 I think, if you put the right kind of walls around and the
7 right kind of doors and -- but you -- I find no description
8 of any special precautions other than the usual three-hour
9 door. A three-hour door is just not going to cut it in a
10 case like this; it may even allow the fuel oil to run under
11 the door, depending on whose rating of three hours used. It
12 seems to be something that nobody was concerned about, and I
13 just think it sticks out like an area that has to be
14 carefully defended if you're going to do it. If you're
15 going to put an engine and its fuel that close to the
16 control room.

17 MR. CARROLL: So you found nothing, Carl, in
18 Chapter 8 or 9 on this subject, which is the electrical.
19 And nothing in Chapter 9 in the fire protection --?

20 MR. MICHELSON: No, no. Nothing in Chapter 9.
21 Doesn't even address it. I had a number of other questions
22 on Chapter 9 on fire protection. Let me just ask as a
23 sample. You claim in the SAR that three-hour fire barriers
24 are always provided between opposite trains. Then it
25 proceeds to describe the cable tray separation arrangement,

1 which I think is the standard 5-foot vertical, 3-foot
2 horizontal. Now, to my knowledge, that's not a three-hour
3 fire barrier, if that's all you do. Can you address that,
4 please?

5 MR. BURNS: Yes, we said that's not acceptable.

6 MR. MICHELSON: You said that one -- oh, you did?
7 Maybe I missed it. You said the 20-foot separation is not
8 acceptable. This is just plain cable tray separations, not
9 the 20-foot. The 20-foot you did turn down, and I'm not
10 raising it. But it does say that you only use three-hour
11 rated fire barriers between trains and equipment. Now, how
12 about a cable tray. How much separation does it take on a
13 cable tray of opposite trains to give you a three-hour
14 rating?

15 MR. NOTLEY: A three-hour barrier. No separation,
16 not -- we're not talking about physical separation of
17 trains and equipment.

18 MR. MICHELSON: But the design here on the SAR
19 talks about the standard three-hour and five-hour cable --
20 3-foot and 5-foot cable tray separations --

21 MR. NOTLEY: The only place that we have

22 MR. MICHELSON: -- between trains.

23 MR. NOTLEY: -- discussed spatial separation as
24 being acceptable is inside containment, where it has to be
25 opened to allow for equal calibration of pressures.

1 MR. MICHELSON: I didn't have any problem inside
2 because you had another good answer for it.

3 MR. NCTLEY: On outside containment, we said a
4 three-hour barrier, and distance is never claimed to be
5 equivalent to a three-hour barrier.

6 MR. MICHELSON: Then, a three-hour barrier means
7 you have to separately wrap or do whatever it takes to get a
8 rating or does it mean concrete automatically? Well,
9 nothing in here says concrete is the only three-hour
10 barrier.

11 MR. NOTLEY: Oh, that's right. Anything that they
12 can show by test is equivalent to a three-hour fire rating
13 we'll accept.

14 MR. MICHELSON: So, your physical separation is
15 not concrete walls necessarily, it might be a wrap.

16 MR. VAN DE VENNE: May I maybe put up a little
17 overhead that I did?

18 MR. CARROLL: Did you anticipate that there'd be
19 questions about fire protection?

20 MR. VAN DE VENNE: This is the main electrical
21 floor. We have to switch gear and the batteries of the
22 inverters and some electrical associated with the diesel.
23 And the basic arrangement is that this is train A and this
24 is train B. And there is no question of any question of any
25 cable trays of A or B being in the same area, because there

1 is a barrier here, which is a three-hour barrier.

2 MR. MICHELSON: Once you leave this nice cabling -

3 -

4 MR. VAN DE VENNE: You don't leave it. You go
5 into containment, okay. And that is really the safety-
6 related cabling. The other safety-related cabling stays in
7 this red area, everywhere.

8 MR. CATTON: On different floors.

9 MR. VAN DE VENNE: On different floors. It goes
10 down and up.

11 MR. MICHELSON: Now, you're saying that blue goes
12 all the way from the ground floor to the top of the
13 building?

14 MR. VAN DE VENNE: Right.

15 MR. MICHELSON: See, that wasn't clear from
16 anything I read --

17 MR. VAN DE VENNE: That is the intent.

18 MR. MICHELSON: Somewhere I would have found that
19 out if -- okay --

20 MR. VAN DE VENNE: Now, the only place where some
21 cables cross this red/blue barrier is in protection systems
22 with fiber optic data link between the various channels that
23 go across there.

24 MR. MICHELSON: Okay. Now, how do you power
25 equipment outside of that red and blue area? That -- you're

1 saying there's no safety related function performed outside
2 of those two defined boundaries.

3 MR. VAN DE VENNE: The only safety related
4 function that is outside these barriers is the essential
5 cooling water; the essential service water pumps, which are
6 located, of course, somewhere else. And there are two
7 tunnels that connect the piping to the building, and the
8 intent is to have the cables run in these concrete tunnels.

9 MR. MICHELSON: That bit of philosophy would have
10 been nice to have kind of pinpointed somewhere --

11 MR. VAN DE VENNE: And the other area that is --

12 MR. CARROLL: Is that philosophy described in the
13 SER?

14 MR. KERR: He hasn't seen the SER.

15 MR. CARROLL: I was asking him.

16 MR. NOTLEY: We asked early on. We were not
17 satisfied with what Westinghouse had said initially, and we
18 pointed out that we would not accept spatial separation;
19 that we wanted clear three-hour barriers, and they came back
20 and said this is our intent.

21 MR. MICHELSON: There's no reason then for three-
22 hour barriers because there's no crossing of the trains,
23 except maybe in some very isolated cases, except maybe in
24 some very isolated cases, other than inside a containment.

25 MR. VAN DE VENNE: You need three-hour barriers

1 here because you're connected to a non-safety area. You
2 need a three-hour barrier here because you're between cable
3 trays --

4 MR. MICHELSON: Cable tray separations, right.

5 MR. VAN DE VENNE: -- or cable tray separations.
6 There are, however, a few isolated instances where special
7 provisions will have to be made. For instance, spent fuel
8 cooling pumps are powered by Class 1-E power. They're
9 really not as widely separated, so there will be individual
10 cases where we would have to use the concrete barriers and
11 be very careful, which is really part of the detailed
12 design, I believe, to show that those are acceptable.

13 MR. MICHELSON: Let me ask the staff. Does
14 Does the staff know how close the cable trains are
15 together; they're all one train?

16 MR. NOTLEY: Not if they're all one train?

17 MR. MICHELSON: Why do we discuss in the SER then
18 this cable tray separation, which I guess was part of what
19 through me off. I'll have to find it now. I read it, but I
20 have to find it again. I don't remember whether it was in
21 the electrical part or in the fire part. Yes, it's either
22 in 8 or 9, and I don't remember which part I saw it, but it
23 went into great detail about it and it says, well gee, that
24 means they must have two trays.

25 MR. CARROLL: How about on top of page 924? Is

1 that --

2 MR. MICHELSON: 924? That's the part he said they
3 object to and -- they didn't even need to include any of
4 that. They should have included a definition of this one
5 boundary and that there are no trays that cross without a
6 concrete wall between, which is what you're saying here.

7 MR. CARROLL: The staff is not saying that there
8 aren't some exceptions.

9 MR. MICHELSON: You give the general rule and then
10 you indicate what exception you have to take to it. But
11 that wasn't the approach.

12 MR. NOTLEY: We were dealing with the separation.

13 MR. MICHELSON: I have no problem with that, if
14 it's served all the way from top to bottom. I'm sure when I
15 go back though, I'll find several other places where they
16 describes that the fire wall -- only had to be certain of
17 the walls within that room because the other walls were non-
18 safety and so forth. But that blue as a barrier wall all
19 that way, is that right?

20 MR. VAN DE VENNE: That is correct.

21 MR. WYLIE: That is on page 813, Carl.

22 MR. MICHELSON: So, I guess it's just a matter of
23 not knowing what -- yes, that's where the three hours -- a
24 minimum of separation redundant cable trays will be three
25 feet between trays will be three feet between trays,

1 separated horizontally and five feet vertically and so on.
2 And the cable spreading areas, and I wasn't sure where this
3 cable spreading area was, but I assume it's like that blue
4 area. And then it said in those areas, you had to have a
5 minimum separation of one foot.

6 The whole thing led me to believe that this is the
7 days when we were putting both trains in the same room and
8 so forth. And the words are that way. These are obviously
9 not up-to-date words or -- or what you're telling me is not
10 fully correct.

11 They talk about cross-overs and what you do when
12 you've got -- you don't worry about any of this stuff it's
13 all train A.

14 MR. CARROLL: It sounds like the electrical has
15 borrowed some generic words of this section.

16 MR. MICHELSON: Yes. This is the way Sequoyah and
17 all those old plants were designed.

18 MR. CARROLL: Sure, sure.

19 MR. MICHELSON: And we'll not ever do it again,
20 but I read the same words, mindset brings me back to the
21 same thing.

22 MR. CARROLL: Loren, have you got somebody from
23 the electrical branch that can --

24 MR. TREHAN: We have to comply with the guidance
25 of the plant. The guidance we have to render the IEEE 84

1 and Reg. Guide 1.75, this criteria are set in IEEE -- Reg.
2 Guide 1.75 doesn't say anything, but we endorse IEEE 1.84.

3 They say that in the cable spreading room, where
4 the cables go from anywhere, go to the control room, you
5 have to pass the cable spreading room. The separation is
6 one foot horizontal, three foot vertical is acceptable.

7 MR. CARROLL: Yes, but suppose a plant doesn't
8 have that configuration? Why do you say -- talk about it in
9 your SER?

10 MR. TREHAN: They have to comply with that. They
11 have to have one foot and three foot separations.

12 MR. MICHELSON: Yes, but, if you're going to
13 design -- I think what we're trying to do is design plants
14 that don't have to have all that mish-mash crossover. The
15 IEEE wrote this a long time ago, when they -- when there
16 wasn't anything to do but to try to sort this out and get
17 some physical separation between cable trays. But we don't
18 have to do that anymore.

19 MR. VAN DE VENNE: There still is the issue, I
20 think, that's being discussed here, which is that, in the
21 control room, clearly, train A and B come together.

22 MR. MICHELSON: In the control room.

23 MR. VAN DE VENNE: In the control room.

24 MR. MICHELSON: Right.

25 MR. MICHELSON: And maybe that's where that

1 applies.

2 MR. MICHELSON: Yes. In the control room; but
3 that's not -- this just talks about --

4 MR. CARROLL: The writeup talks about in the cable
5 spreading area.

6 MR. VAN DE VENNE: Which is really part of the
7 control room.

8 MR. MICHELSON: Where on the drawing?

9 MR. VAN DE VENNE: This room does not have a cable
10 spreading area.

11 MR. CARROLL: It has a cable spreading area then?

12 MR. VAN DE VENNE: Below the floor, that is where
13 the cables run. It is a small space.

14 MR. MICHELSON: You do not have this five and
15 three foot in that floor? Does your spreading area have the
16 three and five foot separation under the control room --
17 that the -- that the -- I thought you were just using a --

18 MR. VAN DE VENNE: It's mostly -- most of it is
19 the fiberoptic data links that are being used to get into
20 the control board. And when you get into the control board,
21 you're talking about inches, basically, of separation.
22 There are plates and steel plates and that kind of stuff
23 too.

24 MR. MICHELSON: I just think that this is, again,
25 a carryover of the old days. This is an old writeup and

1 it's being shoved into this evolutionary plant -- total
2 obsolescence.

3 MR. CARROLL: Well, no. I think I'm beginning to
4 understand that what they're talking about here is the
5 control room and the spreading area under it, to the extent
6 that there are cable trays in those areas. I guess there
7 are some.

8 MR. VAN DE VENNE: There are some. Well, it's
9 most conduit, I believe. But there are really not cable
10 trays, but there are -- the conduits that carry the cable
11 that connect the control room to the rest of the plant --
12 and they would have to be -- meet whatever rules there are
13 for a common area. And this -- the control room, by
14 definition, is a common area; we don't have a control room A
15 and a control room B. We have a common control room.

16 MR. CARROLL: Okay. Now, but this paragraph
17 certainly talks about cable spreading and control room. The
18 first sentence, however, talks about other plant areas,
19 where there are cable trays. Are there such areas? Other
20 than --

21 MR. VAN DE VENNE: There are, outside of what we
22 would call the dedicated safety area, which are these areas
23 here, which include the CCW, Component Cooling Essential
24 Chilled Water, the ECCs, the Emergency Feedwater, all of
25 those systems, there are a few places where you use Class 1-

1 E power.

2 And the one I can think of right now, is the spent
3 fuel cooling pumps, which are -- historically are Class 1-E.
4 The -- maybe the post-accident sampling -- we don't
5 have a post-accident sampling room A and a post-accident
6 sampling room B. And I presume that there are some -- but
7 very few cables that are train A and train B.

8 MR. CARROLL: There you propose a separation
9 between redundant cable trays of three feet horizontal and
10 five feet vertical.

11 MR. VAN DE VENNE: Well, I don't think that we
12 have --

13 MR. MICHELSON: That won't give you a three-hour
14 rating, though. That won't give you a three-hour fire
15 rating, which it says in -- elsewhere that -- you know,
16 opposite trains have a three-hour fire barrier between them,
17 and that three foot and five foot, that was my original
18 concern, that won't give you a three-hour barrier.

19 MR. TREHAN: But that's a different issue.

20 MR. MICHELSON: No, it's all the same issue. It's
21 all physical separation and the ability to accommodate a
22 fire.

23 MR. TREHAN: I do not know if there's a fire and
24 how you achieve that by separating the two areas.

25 MR. VAN DE VENNE: There are two issues here, I

1 believe that shouldn't be confused.

2 If we look at these fire areas, which I will call
3 A and B or red and blue. It is clear that if you have a
4 major fire in this area, you want to keep this division
5 totally free of fire, because you are going to need it for
6 cold shutdown. And so, there is very rigid separation here.

7 If we were, for instance, talking about a post-
8 accident sampling room, where I may have some valves that
9 are train A and some valves or some monitors that are train
10 B if, by chance, I got a fire in there, it really is of no
11 consequence because I'm not really postulating an accident
12 or a large LOCA coincident.

13 So I think the philosophy is slightly different
14 between those two cases and we do not want to escalate the
15 requirements.

16 MR. MICHELSON: Unfortunately, the standard design
17 is only going to be a few words and a few lines on paper.
18 We're not going to have the details. Presumably it costs
19 too much to develop. So we judge on the basis of words, and
20 a few drawings. But that's the name of this game.

21 So your words here in 951.21, which is under
22 "Protection of" --

23 MR. CARROLL: That's not his words.

24 MR. MICHELSON: I'm sorry. I'm going to quote
25 from it anyway. It's called "Protection of Safe Shutdown

1 Equipment." And the first sentence says: "The applicant
2 will use three-hour rated fire barriers to separate safe
3 shutdown equipment from the remainder of the plant and from
4 redundant systems and components out of primary
5 containment."

6 So it is used for two things. One is to keep the
7 safe shutdown equipment separated from the rest, and to
8 keep, and redundant systems and components.

9 And I expect a three-hour barrier between
10 redundant cables.

11 If this is the governing criteria, then, if you've
12 got Train A and Train B cables, I've got a three-hour
13 barrier between them.

14 And then I went over here and read about these,
15 okay, if I got redundant cable trays three feet and five
16 feet is good enough. And I said, gee, the two don't match.
17 I know that's not good enough for three hours. It's good
18 for about five minutes. Not for three hours.

19 So, you know, they are going to have to deal with
20 words, and whatever drawings you provide. And that's all we
21 can talk about.

22 Now, you can put into words, though, some good
23 principles. And this principle just didn't come through to
24 me. But it's a good principle. But you have to show me a
25 few details.

1 For instance, in the control room, there's both
2 Train A and Train B relay racks. How do you bring the Train
3 B in which the control room is a Train A area? It's the
4 blue area. But you have a Train B relay room there, and
5 it's going to have a fair amount of wires, I think, going to
6 it.

7 And how do you get from Train B over to Train A
8 relay, pardon me, from Train B over to the Train B relay
9 room?

10 {Slide.}

11 MR. VAN DE VENNE: The red here is markedly less
12 clear as on the other one.

13 MR. MICHELSON: Well, yes, you see, you've already
14 blown my mind, because the other one was nice and clear.
15 Now you're mishmashing a little bit.

16 MR. VAN DE VENNE: Right. Because the control
17 room is really the exception, and you go from there.

18 MR. MICHELSON: But right under the control room
19 or right over it is not an exception, if I understood your
20 other drawing.

21 MR. VAN DE VENNE: The control room is located
22 really in the blue train. Okay? So there are cables that
23 have to come over from here that connect with the control
24 room, and they have to be basically in --

25 MR. MICHELSON: They have to be red cables.

1 MR. VAN DE VENNE: -- in a special tunnel, that is
2 separate from the blue area.

3 MR. MICHELSON: Is that defined anywhere, this
4 special tunnel?

5 MR. VAN DE VENNE: No, it's not, but it's
6 basically --

7 MR. MICHELSON: Isn't that an extremely important
8 part of this whole -- I mean, if the staff doesn't know
9 about it, or at least they didn't write about it and you
10 have to tell me about it, and it's not defined, what kind o
11 a --

12 MR. VAN DE VENNE: I guess the commitment is made
13 that there is a three-hour fire barrier for those cables.
14 And physically, as it is implemented in detail, I presume
15 would be maybe appropriate for an FDA certification.

16 MR. MICHELSON: I just focused on one little thing
17 that I knew a little about. And that was fire protection
18 and physical separation. And I had a great deal of
19 difficulty reading this document and figuring out what they
20 had in mind. And the staff didn't help me any with their
21 SER, because it didn't even mention it. So one of two
22 things, it didn't know, or alternatively, they thought it
23 was unimportant.

24 MR. VAN DE VENNE: Fire protection has been the
25 subject of two rounds of questions and answers, and I think

1 the, if you read the question and answer --

2 MR. MICHELSON: I looked at those, and those are
3 the traditional questions about your hydrants and so forth.
4 And it wasn't this kind of question.

5 MR. VAN DE VENNE: There were two questions on
6 spatial separation.

7 MR. MICHELSON: Yes. And I agreed with --

8 MR. VAN DE VENNE: And what the exceptions were.

9 MR. MICHELSON: Yes. But see, I wouldn't have
10 even given the answer. Twenty foot is unacceptable, that's
11 right. Any distance is unacceptable without a barrier in
12 between, on redundant equipment. Because elsewhere, you
13 made a commitment to a barrier.

14 MR. VAN DE VENNE: Right.

15 MR. MICHELSON: They just should have said, just
16 go read your document, and do it that way. At any rate, I
17 just think that we are looking at something that was done
18 ten years ago.

19 MR. CARROLL: I don't think the fire protection is
20 ten years ago, is it? I mean, that is one example of
21 something that has been reviewed fairly recently in some
22 amount of detail. Is that correct?

23 MR. MICHELSON: Let me point out that they really,
24 and this one bothered me, if I can find it again, they
25 really finally ended up saying well, fire protection is

1 going to the plant-specific, or we'll worry about it later.
2 And that's fine, if you want to close it out that way.

3 But, if you do, and you find out your walls aren't
4 in the right places or so forth, it could be a major change
5 to sharpen fire protection up properly.

6 MR. DONATELL: I think that that's understood.
7 What we have here again was an application for a preliminary
8 design approval before anybody ever thought about level of
9 design detail or any of that stuff. I think a lot of the
10 things that Theo has mentioned, and please correct me if I'm
11 wrong, were not included in the application, were probably
12 talked about over periods of time with responses and
13 questions and answers, possibly as the design moved forward
14 a little bit, but these are the types of things that just
15 come to the fore during an FDA/DC review, given that we have
16 appropriate guidance on level of design detail as far as
17 what the applicant will submit.

18 MR. MICHELSON: You don't think that will affect
19 the plant design at that stage, then?

20 MR. DONATELL: Oh, I think during the review, yes.

21 MR. MICHELSON: I'd like to read into the record
22 one sentence of the conclusion. It's the second bullet on
23 Chapter 25, Page 25-1.

24 And it says here: "The staff concludes that open
25 issues identified throughout this report are not of a nature

1 as to prevent issuance of a PDA since they can be resolved
2 during the FDA stage of review without significantly
3 affecting the current plant design."

4 And I just totally disagree with that. I don't
5 think you can draw that conclusion. In the case of fire
6 protection, I'm pretty sure you can't.

7 MR. DONATELL: That's probably a point well made.

8 MR. CARROLL: Another example is the 02 meters
9 squared per megawatt thermal.

10 I guess we heard from Westinghouse that if that
11 number goes up significantly, it would involve a redesign of
12 the containment to get enough --

13 MR. VAN DE VENNE: I understand, yes.
14 Significantly, I think we could accommodate an increase by
15 5% percent, or something like that. But if it's .1, I think
16 we would have a real, anybody would have a real problem.

17 MR. CARROLL: Okay. But the point is that that's
18 an unresolved issue at this moment, and I have a little
19 trouble with the staff making this rather all-inclusive
20 comment. I think you could sue them.

21 MR. DONATELL: I think it probably goes back to
22 the comments that have been made before. A lot of these
23 SERs, the inputs of these things, they are old. You are
24 absolutely correct. They've been around for quite a while
25 in some cases.

1 MR. CATTON: We probably should clear all the word
2 processors in the agency.

3 MR. CARROLL: So you are sensitized to the concern
4 we have on that second bullet on 25.1, Lauren?

5 MR. DONATELL: Yes, sir.

6 MR. MICHELSON: I think one should be aware that
7 it is possible to use the building arrangements you have
8 putting the diesel engines very closely controlled, but I
9 think you are going to have to be ready to show a lot of
10 special care taken to assure that that doesn't become the
11 source of a total loss of this plant.

12 MR. WYLIE: Well, let me ask a question, Carl. Do
13 you disagree with the staff summary in 9.5.1.6? It
14 basically says that the staff review --

15 MR. CARROLL: What page number, Charlie?

16 MR. WYLIE: It's on 932.

17 MR. MICHELSON: That's one where they agreed that
18 it's okay?

19 MR. WYLIE: It doesn't say it's okay. It says
20 that the staff review at the next licensing stage would be
21 governed by the results of fire hazards analysis and the
22 fire protection requirements that are in effect at the time
23 of the review.

24 MR. MICHELSON: Yes, but, Charlie, that's where
25 I'm trying to point out to them, they say that, and I'm

1 saying that if you really do a close look at the fire
2 protection, you may end up with some changes in the current
3 plant design. And they are concluding at the end, no, we
4 think that whatever is wrong with this design can be
5 corrected without changing the current plant design
6 significantly. And I think it would be significant, in some
7 of these areas.

8 MR. VAN DE VENNE: I tend to agree with the staff.
9 I think if we use this design to go to FDA, and most likely
10 take the diesels off the aux building, to a separate diesel
11 building, I don't consider that a major change. That's not
12 a major change. But I think fundamentally the arrangement
13 that I showed you in the blue and the red will hold up.

14 MR. MICHELSON: Yes, I think it will. I didn't
15 realize in reading all this that that is what you were
16 doing.

17 MR. VAN DE VENNE: It's been in the design since
18 1983.

19 MR. MICHELSON: And you probably even told me
20 about it one time and I don't even remember. But I would
21 like to read about it again and get my memory refreshed.

22 MR. CARROLL: I am sure it wasn't intended, but
23 that statement Charlie read implies that if there are no new
24 fire hazards analyses or fire protection requirements five
25 years from now, then the staff is stuck with what they wrote

1 in the SER, or I think a lawyer could argue that.

2 MR. VAN DE VENNE: We would have to do an
3 analysis.

4 MR. CARROLL: You would have to do a fire hazards
5 analysis.

6 MR. VAN DE VENNE: Yes.

7 MR. CARROLL: Okay.

8 MR. TREHAN: It is my thinking that when you are
9 doing the fire protection review, you don't assume an
10 accident. But these cable trays, when you do electrical
11 review, you assume an accident.

12 MR. MICHELSON: The key problem you will have to
13 face up to sooner or later on an evolutionary plan, and that
14 is once you have got a fire somewhere, you have to consider
15 all effects of the fire, and that includes inadvertent
16 actuations in the next room and this sort of thing.

17 You have been looking at inadvertent actuation,
18 for instance, as a starting point of an situation, and you
19 say oh, it's okay, because it's limited. But if that
20 inadvertent actuation comes from a fire in the next room,
21 you haven't even looked at those combinations. And that's
22 where physical separation becomes very important. And smoke
23 moves around, unless you put some pretty firm barriers in
24 the way. And you haven't even looked at it.

25 No, I don't think you get a pipe break and a fire

1 at the same time, although I think you can get a diesel
2 engine explosion and a fire at the same time. I'm not sure
3 you've accounted for those kinds of combinations.

4 So it depends on how you define accident. If you
5 mean Chapter 15, I agree. We aren't assuming Chapter 15
6 accidents in conjunction with fire, or in combination with
7 fire. But gee, otherwise, you have to be realistic about
8 how fires start and what they can cause.

9 MR. CARROLL: Okay. Who has other issues they
10 would like to raise at this point?

11 MR. MICHELSON: Yes. Along another line, it
12 appears that Westinghouse is using for ventilation system,
13 using a common building ventilation system. And the
14 philosophy is if something goes wrong like a pipe break
15 occurs, then you use local cooling of individual rooms to
16 take care of the environmental requirements of the pieces of
17 equipment, and that you provide somehow isolation barriers
18 of this common ventilation system to keep the steam or
19 whatever from getting away from the area where the pipe
20 break is, so it doesn't affect these other environments.

21 Is that correct?

22 MR. VAN DE VENNE: No, that's not entirely
23 correct.

24 It really depends on the area we're talking about.
25 The two safety areas that I did show you earlier, the red

1 and blue, have separate ventilation systems.

2 MR. MICHELSON: You have no common ventilation for
3 the building, serving no barriers?

4 MR. VAN DE VENNE: No.

5 MR. MICHELSON: Oh. Well, that's quite different
6 than the SER, which you haven't seen, so --

7 MR. VAN DE VENNE: Also, each safety area is
8 further --

9 MR. MICHELSON: Let me chase that. Let's find out
10 where that is. Where was that?

11 MR. VAN DE VENNE: And in fact in your letter on
12 the evolutionary certification issues, that is one of the
13 things that you suggested.

14 MR. MICHELSON: Yes. That's where we brought it
15 up.

16 MR. VAN DE VENNE: And I think that was suggested
17 from our design.

18 MR. MICHELSON: I picked it up from General
19 Electric.

20 MR. WILKINS: You really know how to hurt a guy.

21 MR. CARROLI: Take that.

22 [Laughter.]

23 MR. VAN DE VENNE: The last time I made this
24 presentation, Dr. Michelson said we should do it also.

25 MR. MICHELSON: I will have to find it. Let's

1 see. That would be in Chapter what, that heating and
2 ventilating? It should be in 9.

3 MR. EL-ZEPTAWY: 9-14.

4 MR. MICHELSON: All right. 9-14. Okay. 9-14.

5 that's the main control room. That was okay. Reactor
6 external building ventilation system. Okay. Now, the way
7 you wrote it, and the way I assume it is, the way the staff
8 wrote it, I should say -- It is Page 15, 9-15.

9 It says: the reactor external building
10 ventilation system is designed as a general supply and
11 exhaust ventilation that provides heat removal and air
12 exchange for non-essential building areas. That's fine.
13 The ventilation system will be supplemented by individual
14 cooling units and ventilation fans that serve the central
15 mechanical areas.

16 I read that to believe then that you had a normal
17 ventilation system and then a supplemental cooling system.
18 Okay?

19 Then I think it goes on in more detail --

20 MR. SHEWMON: It starts at the bottom of Page 9-15
21 and you are now going to the top of Page 9-16?

22 MR. MICHELSON: Yes.

23 MR. SHEWMON: The staff hasn't found it yet.

24 MR. CARROLL: By way of definition, what is the
25 reactor external building?

1 MR. VAN DE VENNE: It's the building that
2 surrounds the reactor.

3 MR. CARROLL: And it does include the blue and the
4 red?

5 MR. VAN DE VENNE: Yes, but the blue and the road
6 each have their own ventilation system.

7 MR. CARROLL: That's what you say, but that's not
8 what the staff says.

9 MR. VAN DE VENNE: That is what is in the
10 document.

11 MR. MICHELSON: And that goes on later on say near
12 the bottom of Page 9-16, it says: in the event of a loss of
13 coolant accident, the general ventilation equipment will
14 continue to operate normally, assuming offsite power is
15 still available. Ducts to areas with essential cooling
16 units will be isolated to enable proper operation of the
17 emergency equipment.

18 You know, it leads me to believe that there is a
19 normal and there is an emergency, and that you isolate --

20 MR. VAN DE VENNE: That applies specifically to
21 the ECCS pump rooms where we need to exhaust over charcoal
22 because of post-accident recirculation.

23 MR. MICHELSON: You are telling me that you have
24 both a normal ventilation and an emergency cooling for those
25 --

1 MR. VAN DE VENNE: And emergency exhaust over
2 charcoal.

3 MR. MICHELSON: Okay. Then that's in that red
4 area and blue area shown there.

5 MR. VAN DE VENNE: Well, that's really below this
6 sphere.

7 MR. MICHELSON: You told me those red and blue
8 went all the way to the bottom.

9 MR. VAN DE VENNE: Yes. But it's below that. It
10 goes below the sphere.

11 MR. MICHELSON: I know what you're saying now. It
12 does go in underneath the sphere.

13 MR. VAN DE VENNE: Underneath.

14 MR. MICHELSON: And you are saying that's not red
15 and blue under there.

16 MR. VAN DE VENNE: It is red and blue, but it has
17 its own emergency ventilation system.

18 MR. MICHELSON: So this is indeed correct; it has
19 both kinds in there.

20 MR. VAN DE VENNE: Yes, it has both kinds.

21 MR. MICHELSON: So indeed you do have a common
22 ventilation system for both trains of equipment.

23 MR. VAN DE VENNE: Only for ECCS equipment.

24 MR. MICHELSON: Oh. That's quite a bit of
25 important equipment, of course.

1 MR. VAN DE VENNE: It is really not safe shutdown
2 equipment.

3 MR. MICHELSON: Okay.

4 MR. CARROLL: I am getting lost, here. I've got
5 this big box called a reactor external building. Part of
6 that box is red and part of it is blue?

7 MR. MICHELSON: Yes. He's going to show you the
8 drawing. He didn't show you the other one.

9 MR. CARROLL: Now for the part that is neither red
10 nor blue, I've got a general ventilation system; is that
11 correct? For the part that's red, I've got a dedicated
12 ventilation system for red, plus I've got this emergency red
13 ventilation system?

14 MR. VAN DE VENNE: It is unfortunately more
15 complicated than that.

16 MR. CARROLL: Oh.

17 MR. SHUM: David Shum. I reviewed this. And the
18 system they have is, they have normal ventilation system,
19 which is for normal use.

20 MR. MICHELSON: What does it serve?

21 MR. SHUM: This serves all the buildings.

22 MR. MICHELSON: The entire building?

23 MR. SHUM: Yes.

24 MR. MICHELSON: Okay.

25 MR. SHUM: In addition to those systems, each

1 compartment, ECCS compartment, and all the spray pump
2 compartments, they have separate coolers. Those coolers are
3 safety grade. If there is a LOCA, the ventilation system,
4 which is designed for normal use, if there is still AC
5 power, they will work; if there is no AC power, they quit.

6 But those coolers, individual coolers will be on
7 to cool the pump compartment.

8 MR. MICHELSON: It is your view or it is your
9 understanding that the red and the blue area are both served
10 by a common single ventilation system for normal operations?

11 MR. SHUM: Right.

12 MR. MICHELSON: That's not what Westinghouse said.

13 MR. CARROLL: Westinghouse says no.

14 MR. MICHELSON: That's the way the SER reads. I
15 agree with you. What you told me is what I was led to
16 believe from reading the SER. And unfortunately, I didn't
17 take it with me to Florida, so I couldn't go back and see.
18 I just assumed it was right. What is right?

19 MR. VAN DE VENNE: There is a dedicated, well,
20 there are two dedicated blue ventilation systems. One
21 serves electrical equipment and cleaning equipment. There
22 is another blue ventilation system dedicated to blue which
23 serves the emergency feedwater system which can, which has
24 high energy lines and which can cause steam to propagate to
25 the building.

1 So those rooms are separately ventilated, because
2 if there is a steamline break, the steam would be able to
3 exhaust without getting into any electrical areas.

4 Now, there are also two red areas which you cannot
5 show on this view, which are below the sphere. And each of
6 those has an ECCS pump and a spray pump. And there are two
7 blue areas which have an ECCS pump and a spray pump. A
8 total of four areas. Two blue and two red.

9 MR. MICHELSON: These are all in the, defined in
10 the --

11 MR. VAN DE VENNE: They are defined in the
12 ventilation system design.

13 MR. MICHELSON: Okay.

14 MR. VAN DE VENNE: Now, the ECCS, those rooms
15 which have potential for recirculation leakage, those rooms
16 are normally handled by the reactor external ventilation
17 system which serves basically this radioactive area. So it
18 has your usual filters for exhaust purposes --

19 MR. MICHELSON: It doesn't cross into the red or
20 the blue?

21 MR. VAN DE VENNE: It doesn't cross into the red
22 or the blue. Now, well, it crosses into the red and blue
23 below the sphere, because the ECCS pumps are there.

24 MR. MICHELSON: Yes, you did tell me, yes.

25 MR. VAN DE VENNE: Now, on a LOCA, the reactor

1 external building ventilation system would continue to
2 operate, but the rooms, the safety rooms would be isolated
3 by redundant dampers. And the system would then go to
4 cooling units, internal cooling units in each of the four
5 areas, which are cooled by essential chilled water, plus
6 there would be an exhaust, safety-grade fans would exhaust
7 the atmosphere, would keep the rooms at a negative pressure
8 and would exhaust to some charcoal filters, to the
9 environment.

10 MR. MICHELSON: Which system was that?

11 MR. VAN DE VENNE: That is the annulus exhaust
12 system.

13 MR. MICHELSON: Okay. I saw it was in the corner
14 there. Okay. That serves just the annulus?

15 MR. VAN DE VENNE: It serves the annulus and these
16 four safety-related ECCS rooms that could potentially have
17 high radioactivity, because of pump seal failures, valve
18 leakage, or whatever.

19 MR. MICHELSON: So there are quite a few
20 ventilation systems breaking this thing up, and they just
21 didn't get the message --

22 MR. VAN DE VENNE: They are in Chapter 9.

23 MR. MICHELSON: The staff must not have understood
24 it the same way, because the staff SER is quite different
25 from what you are describing, I think, at least, because it

1 talked about the common ventilation system for the whole
2 building. That set me off right away as well, how are we
3 going to isolate it.

4 MR. VAN DE VENNE: There is a lot of dedicated,
5 and the main steam tower has its own ventilation system
6 because it is --

7 MR. MICHELSON: Yes, you have to break it up. In
8 the electrical rooms, you have to be awfully careful about
9 interconnecting them with areas where there is high
10 pressure, and you have done that, you are saying.

11 MR. VAN DE VENNE: Yes.

12 MR. CARROLL: Well, does the staff agree with
13 Carl's assessment, that there seems to be some disconnect
14 between Westinghouse and what's written here in the SER?

15 MR. SHUM: What Westinghouse is, that is not what
16 we understand what it is.

17 MR. CARROLL: So what you just heard this morning
18 is news to you?

19 MR. MICHELSON: As was understood, though, it is
20 all defined in the SAR. If it is, then the staff wrote it's
21 its SER against the SAR, I hope.

22 MR. VAN DE VENNE: These are the A switchgear room
23 and air handling system which is normally operating; and
24 this is the B switchgear room ventilation system. This is
25 the ventilation for the ECCS front rooms that is normally

1 ventilated from the reactor external building supply and
2 exhaust, but is isolated on an accident and presumably on a
3 fire.

4 MR. MICHELSON: Now, the blue and the red area in
5 general is served by --

6 MR. VAN DE VENNE: Well, that is really the
7 switchgear rooms.

8 MR. MICHELSON: Yes, that's right, those are
9 switchgear rooms, part of it.

10 MR. VAN DE VENNE: There is also emergency
11 feedwater system.

12 MR. MICHELSON: But there clearly is no common
13 ventilation system.

14 MR. VAN DE VENNE: Here is the main feedwater
15 motor-driven, A, which is a separate system.

16 MR. MICHELSON: And they've got their own
17 dedication there, too.

18 MR. VAN DE VENNE: And this is the B and then this
19 is the main steam tunnel.

20 MR. MICHELSON: Okay. Unfortunately, as I said,
21 when I read this, I didn't have all this information.

22 MR. VAN DE VENNE: There are a lot of little
23 systems.

24 MR. MICHELSON: Yes. So I think though, the staff
25 might want to go back and look at the SAR again and see if

1 the words match the SER, and if not, fix it.

2 MR. CARROLL: Anything else?

3 MR. MICHELSON: We went over this road two or
4 three times on ABWR, I'm sure.

5 MR. CARROLL: This example and some others we've
6 heard this morning I guess suggest to me to get a document
7 that is the quote "truth as it exists at the moment." It
8 does make sense for Westinghouse to have a shot at looking
9 at the SER, or draft SER.

10 Bill?

11 MR. KERR: Mr. Chairman, I think I heard
12 Westinghouse say it might be likely that the diesels would
13 be moved and put in separate enclosures. And I assume that
14 previous subcommittee meetings have convinced Westinghouse
15 that when they make that move, they will take into account
16 the risk that has been found to be caused by station
17 blackout and will add a couple of diesels so it will have
18 four diesels instead of two.

19 MR. CARROLL: I was going to get to that topic
20 eventually today. But as long as you raise it -- or should
21 we have lunch and let that sink in?

22 MR. MICHELSON: Maybe the staff could also check
23 on the ventilation to see if maybe I'm reading it wrong,
24 maybe it's something that just didn't come through right.

25 MR. CATTON: Maybe they just pulled the wrong file

1 out of the word processor.

2 MR. MICHELSON: The old plants did have common
3 ventilation.

4 MR. CATTON: That's right. That's why I say maybe
5 they just got some section out of a.. old SER rather than the
6 correct one.

7 MR. MICHELSON: Gee, I hope not.

8 MR. SHEWMON: So here is one of the more momentous
9 decisions we have to make today. Do we eat lunch now or in
10 15 minutes? You said we are going to have the diesels
11 before or after lunch.

12 MR. CARROLL: Oh, no. I thought we would let the
13 N plus 2 issue sort of ferment a little bit over the lunch
14 hour.

15 All right. Let's adjourn for our lunch break and
16 we will be back at 1:00 O'clock sharp.

17 [Whereupon, at 12:00 O'clock Noon, the meeting was
18 recessed for lunch, to reconvene the same day, Thursday,
19 September 20, 1990, at 1:00 O'clock p.m.]

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AFTERNOON SESSION

[1:00 p.m.]

1
2
3 MR. CARROLL: Let's reconvene. Let's see, should
4 we get into the Westinghouse presentation. It may be in
5 there that'll explain to us about the N plus 2 issue. Do
6 you want to lead off, Ed?

7 MR. BURNS: This is handout from this morning, and
8 I think we've gone through most of them.

9 [Slide.]

10 MR. BURNS: I think just a couple of the slides
11 have some true value to our discussions here today. If we
12 look at the overall program, we have to remember this has
13 been 8 year licensing program, and I would hate to undertake
14 such a program again, knowing that we're going to end up
15 with just, say, something at the level of a PSAR, and then
16 have to undertake another PSAR, so we have been exposed to a
17 very large amount of time and a very large amount changes in
18 thinking and in the review practices of that time. So a lot
19 of these questions that we've gone over this morning have
20 hit upon that very point. The design effort was originally
21 tied to the Japanese program.

22 MR. SHEWMON: Is the Japanese program still hung
23 up on a site, or is it that simple? Are they building
24 anything?

25 MR. BURNS: I think that's the major problem.

1 They're having problems with local opposition on obtaining
2 either of the potential sites.

3 MR. MICHELSON: Did they start in 1983? I think
4 that is how the diesel engine got inside the building,
5 because of their seismic problems.

6 MR. VAN DE VENNE: Correct.

7 MR. MICHELSON: That's what I was told on the
8 ABWR. That's how that engine got next to the control.

9 MR. BURNS: I think we also have to look at
10 something else here. In the 1980s, there weren't too many
11 reactor buyers, and as a vendor, Westinghouse needed to
12 maintain -- and we still today have that very need to
13 maintain -- a good design licensing group to move these
14 forward. So one of the parallel programs that we set in
15 place was the fact that we also keep up a good group or
16 cadre of designers and safety analysts.

17 As we got into the 1980s and closer to 1990, we
18 see a number of additional review requests, obviously the
19 severe accident questions that came up in that. We now have
20 the request last year to start taking a closer look at USIs
21 and GSIs, instead of one at a time coming in with an overall
22 program. So we've gotten some changes in our design
23 approach of how our licensing program than what we
24 originally started out for.

25 And all the purpose of this program was to -- and

1 we still expect to end up with a PDA -- to back off and go
2 to something else other than that would be cheating
3 ourselves of our effort that we've expended -- we're looking
4 at a PDA as the outcome of this program.

5 [Slide.]

6 MR. BURNS: Just very briefly look at the Japanese
7 program that we were tied to because of this licensing
8 effort and realize it's a fairly extensive program, and what
9 we are seeing in the SAR is just one small portion of that.
10 We're seeing the safety aspects from the U.S. view. The
11 item there is the Japanese has announced intent to build,
12 but they're still hung up on the site. They do have
13 problems with the local population. Where we left it is in
14 sort of a mixed view.

15 Since Chernobyl, there have been some rethinking
16 around the globe about whether or not to pursue with
17 nuclear, and we can even take a more closer one. In the
18 last few months, there's been some rethinking in the
19 opposite bend. So there's still a mixed view out there on
20 the street.

21 MR. KERR: I like that language that the progress
22 has been adversely impacted.

23 MR. WILKINS: He didn't say things came to a
24 screeching halt.

25 MR. BURNS: Like I mentioned before with the 8

1 year program, to move ahead today, we want to move ahead
2 actively into a design effort -- a final effort -- that
3 would be in very short periods, a matter of several years
4 and not an 8 to 10 year preliminary effort. Those
5 timeframes are way unacceptable in the 1990s, and that's
6 what we are pushing for in our other advance programs is the
7 AP-600.

8 From a licensing point of view, the exposure of
9 time is very important because of the amount of new issues
10 that can be raised or the changing in the review standards
11 or/and the make of the reviewers. People who come out at a
12 later date take a different view or a different review and a
13 different review standard than the earlier ones would have.

14 MR. MICHELSON: What is that final engineering --
15 what schedule are you talking about there?

16 MR. BURNS: I think this is an estimate that was
17 made a couple of years ago was if we were to continue on
18 with a progressive program, what would it take at that time
19 to come up with the final engineering activities ready to go
20 into a construction effort.

21 MR. CARROLL: That would include the licensing
22 aspects?

23 MR. BURNS: Yes.

24 MR. MICHELSON: Was certification in mind there,
25 or was it what you'd do if there were a 2 step process?

1 MR. BURNS: I believe it was a 2 step.

2 MR. CARROLL: And what we're looking at today
3 represents \$150 million worth of development costs?

4 MR. BURNS: You're looking at the licensing
5 portion of that, and that portion is significantly less. It
6 is not the \$150.

7 MR. CARROLL: What's been expended on SP 90?

8 MR. BURNS: Yes.

9 MR. WILKINS: What is MHI?

10 MR. BURNS: Mitsubishi Heavy Industries.

11 [Slide.]

12 MR. BURNS: I've included several slides. I don't
13 know if they're of particular need on the plant features and
14 the SAR. The submittal, if we're looking back at 1982-84,
15 that's probably important. Modular at this time is not our
16 approach in the future. There are benefits in preparing it
17 in that, and there's also detriments, and in the future, we
18 are specifically, looking at a batch bringing in one shot.
19 It's that much easier to undertake a review.

20 I mentioned this morning that this document
21 actually goes, in some case, much farther beyond the PSAR or
22 the PDA level. We do have in there accident analysis that
23 would have to be redone at an FDA level. There are also
24 other discussions in there which go beyond the standard
25 review plan, or go beyond the classical items that you would

1 expect to see in a PSAR.

2 Because there are some open items, there are some
3 ones that are not resolved yet at the PDA or the PSAR level.
4 So obviously, it ranges over a broad spectrum of level of
5 detail than that information provided in the SAR.

6 MR. MICHELSON: You're well acquainted, I guess,
7 with the current discussions about scope of design required
8 for certification. In looking at what you have here for SP
9 90, have you made any attempt to estimate what it would take
10 to bring that up to the level 1 or level 2 -- using the
11 staff's terminology -- have you even looked at that sort of
12 thing, yet?

13 MR. PURNS: I think the question really is between
14 a level 2 and a level 3. We have not looked at the SP 90 to
15 take it up to that for an SP 90 application, because you'd
16 really have to understand what is the level of the design
17 program that's done in parallel and what information is
18 available. Because in some cases, the available information
19 sneaks into the document, because it's available.

20 In other cases, the license program leads the
21 design, and we need to request that the information be
22 prepared to support a safety review. We are recommending,
23 and my group is going to be starting the work on the SAR for
24 the AP 600, that this be used as a very good base document.

25 Whenever you start a new SAR, you try not to

1 start from scratch, because that's too big of an
2 undertaking. We try to find a recent SAR that contains a
3 description of the format, the level of discussion -- I
4 won't say level of design -- that's the level of discussion
5 to make-up of the review requirements, the regulatory, the
6 safety classifications, those type of aspects, and use it as
7 a base document by which you kick off your reviews, which we
8 will do in this case with the AP 600. This needs much more
9 work. I would just roughly estimate easily another doubling
10 or tripling of the size of the document. An AP 600 for a
11 design cert will, of course, need to reach the final level.

12 MR. MICHELSON: You mean about 8 feet instead of 4
13 feet?

14 MR. BURNS: If you look at recent FSAR, they are
15 twice this.

16 MR. MICHELSON: Yes, but they have all the answers
17 and everything.

18 MR. BURNS: For certification, we would have look
19 at an FSAR plus our additional items that are not even
20 discussed in the reg guide format, the ITAC interface
21 requirements. All of that makes it a plus.

22 MR. MICHELSON: Okay. Thank you.

23 MR. BURNS: We've provided a module discussion on
24 USIs and the GSIs. That is a recent licensing initiative
25 brought in the late 1980s, and it's regarded in the Part 52

1 rule for future applications.

2 Deterministic analyses were provided.

3 Probabilistic risk assessments --

4 MR. CARROLL: What does that mean?

5 MR. BURNS: Chapter 15.

6 MR. CARROLL: Okay.

7 MR. BURNS: We have looked at the internal events
8 in the PRA and at an FDA stage to incorporate the recent
9 requirements for looking at external events.

10 MR. MICHELSON: Are you proposing to take credit
11 for pipe -- elimination of pipe breaks outside of
12 containment?

13 MR. BURNS: In certain places, like with the steam
14 line and feed line applications.

15 MR. MICHELSON: Beyond main steam and feedwater,
16 do you anticipate coming in with leak before break?

17 MR. BURNS: That is an open item we currently are
18 looking at, not necessarily on SP/90, on a generic basis, as
19 an initiative or kickoff for AP-600 and is also in the EPRI
20 document; 10 CFR 50.46 and GDC-4 only went so far, EQ only
21 went so far, and then it was decided several years ago not
22 to proceed further in pursuing leak before break items
23 beyond just get impingement shields, large pipe, and so,
24 there is an area out there that I don't think that we have
25 fully investigated as to how far we wish to go with that.

1 If you look at the 1980s, leak before break has
2 been a very active program that has had a moving target, a
3 growing review through the '80s, and that's going to
4 continue in the '90s. I don't know, at this stage, how far
5 we're going to take it.

6 MR. CARROLL: But thanks to ACRS, you're able to
7 take it there, wherever you want to go.

8 MR. SHEWMON: On the reduction of operating
9 earthquake, I am not familiar with what that means. It used
10 to be half the SSE. Is it now less?

11 MR. BURNS: It's one-third. If you look at the
12 EPRI program, they're looking at reducing it completely.

13 MR. SHEWMON: Eliminating.

14 MR. BURNS: Eliminating with an LBE review.

15 MR. WILKINS: We've had some discussion on that in
16 the full Committee meeting, but I wasn't aware that any
17 decision had been made by the Commission.

18 MR. CARROLL: It's one of the fifteen 90-016
19 issues.

20 So, the elimination of spray additive is the use
21 of tri-sodium phosphate baskets in the sump. Is that it?

22 MR. BURNS: The phosphates.

23 MR. VAN DE VENNE: The spray additive has two
24 functions. One was the scrubbing and the other one is the
25 pH adjustment.

1 On the evolutionary designs, we propose to have a
2 spray additive injection from a tank, get it outside
3 containment, although we're still looking at that. The
4 baskets are one possibility, but they take up a lot of
5 space, and there's also longevity concerns that you may have
6 to carry them all out and in. So, maybe if the tank was
7 concentrated, sodium hydroxide would be more attractive to
8 the utility from an operational point of view.

9 MR. SHEWMON: Did you convince the staff that just
10 spraying water is about as good?

11 MR. VAN DE VENNE: From a dose point of view.

12 MR. SHEWMON: I don't know. I'd just hate to see
13 that concentrated sodium hydroxide running around the inside
14 of that or even the outside.

15 MR. VAN DE VENNE: Right now, most plants have
16 sodium hydroxide. I think we've shown that the dose
17 analyses with or without the sodium hydroxide is not a big
18 difference. The sodium hydroxide has some benefit, but it's
19 on the order of 20 percent, so it's not a big benefit.

20 MR. MICHELSON: It's certainly not a -- it's a
21 potential hazard. But it ought not to be there if you don't
22 really, really have to have it.

23 MR. VAN DE VENNE: But you need some pH
24 adjustment, and the question is how can you -- what's the
25 optimum way of getting it in during an accident and

1 preventing it from getting in when you don't want it?

2 MR. SHEWMON: Is there something that drives this
3 acid? Is that what the concern is?

4 MR. VAN DE VENNE: Well, if you put it in a tank,
5 it would be compressed air that would drive it out.

6 MR. SHEWMON: Is there something that shifts the
7 pH of the water as it recirculates? Why do you need it?

8 MR. VAN DE VENNE: Yes. It's boric acid, because
9 otherwise you'd get excessive corrosion. It's really to
10 neutralize the pH, and there are a number of ways of doing
11 it, and it's to find a way that has the least possibility of
12 inadvertent actuation and the highest probability of success
13 when you need it. That's still ongoing.

14 MR. CARROLL: The staff thinks you're going to use
15 baskets.

16 MR. VAN DE VENNE: There are plants out there that
17 have baskets, but some plants are complaining that -- there
18 are several hundred baskets, and they have to be removed
19 every 2 or 3 years, because apparently the stuff degrades,
20 and that's a big operational issue.

21 MR. CARROLL: That was what I wanted to get into.
22 The reason I brought this up was that I went to my bag of
23 tri-sodium phosphate the other day to mix up some solution
24 to do some painting, and I found myself ultimately using a
25 coal chisel and a big hammer to break it up the point that I

1 could put it in solution, which led me to wonder about the
2 viability of this.

3 MR. VAN DE VENNE: So, it has to be replaced, and
4 that's quite a burden, because to carry these things in and
5 out, hundreds of baskets in and outside containment is a big
6 operational hassle. So, I think some utilities are
7 certainly not enthused about that solution.

8 MR. CARROLL: Well, you've got 18,000 pounds of
9 it.

10 MR. SHEWMON: Which would be several baskets.

11 MR. VAN DE VENNE: Hundreds.

12 MR. CARROLL: So, the staff apparently didn't know
13 that this was an issue we were still looking at, because
14 they, in the SER, indicate that the way we've been doing it
15 is with baskets and tri-sodium.

16 MR. VAN DE VENNE: Well, that's currently the way
17 it's planned, but the feedback we're getting from utilities
18 is not positive. So, what I'm saying is we're looking at
19 other ways of getting it in.

20 MR. CARROLL: All right.

21 MR. BURNS: We included a few items in the PRA
22 application that go beyond the classical risk numbers that
23 we took, but within our designs we've been using reliability
24 risk analyses to look at the system tradeoffs: two pumps
25 versus four pumps, number of valves, types of valves. So,

1 there have been some of those feedbacks brought into the
2 designs, and we continue with that in the next program.

3 MR. CARROLL: Now, did you do that in the case of
4 the two diesels? Do you have an analysis that shows what
5 the delta risk is, two versus four -- two diesels plus a
6 blackout auxiliary diesel, as opposed to four diesels?

7 MR. VAN DE VENNE: No. We looked at the two
8 versus four diesels, and the results are in the PRA
9 document. They show a small reduction in risk.

10 More recently, of course, we have committed to
11 have a large blackout unit of some unspecified nature, and
12 we are currently doing some risk analysis and seeing what
13 that does.

14 MR. SHEWMON: A large blackout unit means an
15 auxiliary power supply, like a turbine or something?

16 MR. VAN DE VENNE: Yes, a gas turbine or another
17 diesel generator of diverse design -- different design, no
18 diverse, different.

19 MR. CARROLL: Would you comparison of two versus
20 four diesels, would that have taken into account the kind of
21 events that led to Vogtle or worse?

22 MR. VAN DE VENNE: No. At the time, we only
23 looked at the internal events, and we did not look at, like,
24 shutdown cases, where one diesel is out for maintenance and
25 the other may be -- may not start or something like that.

1 MR. CARROLL: What do you think would happen to
2 the delta risk if you did take into account shutdown cases?

3 MR. VAN DE VENNE: Well, the shutdown risk would
4 definitely improve. I don't know whether four diesels or
5 two diesels plus a diverse or different diesel, I don't know
6 the tradeoffs of that. I think, certainly, the third unit
7 would help, because one of the reasons, for instance, on the
8 RHR system we went from two pumps to four pumps was for
9 exactly that reason. With four RHR pumps, you can have one
10 taken out for maintenance and still have three left and
11 still take a failure and still have two left.

12 So, a lot of the driving forces on the RHR system,
13 also in this PRA was exactly that. So, having the
14 additional -- one additional unit, at least, would be very
15 helpful.

16 MR. CARROLL: That station blackout diesel, we'll
17 call it, could be connected to either --

18 MR. VAN DE VENNE: Yes, to either bus, but only
19 under manual control.

20 MR. WYLIE: You know, it looks like you've got an
21 ideal situation for a four-train system all the way through,
22 which you could accomplish the whole thing with, the
23 blackout and the whole bit. You've got a four-loop plant,
24 four steam generators, and in most cases, you've got four
25 trains of safeguards, and then to come down to two diesels

1 seems like, to me, just ridiculous, particularly if you're
2 going to come back down and add a gas turbine or something
3 on top of that. It seems like, to me, you just integrate
4 the whole business together and go with the a four-train
5 system and forget the gas turbine.

6 MR. CARROLL: Well, except they're also caught up
7 in a regulatory situation where the gas turbine buys them
8 something.

9 MR. WYLIE: Well, it's permitted to use onsite
10 diesels, to take that as a means of protecting against a
11 blackout. You may to put some diversity in it -- I don't
12 know -- but you could do it.

13 MR. CARROLL: I was telling Charlie at breakfast
14 this morning, I know of a utility that, years ago, made a
15 bad decision on a two-unit plant. They put in five diesels,
16 one being a swing diesel, and now have concluded t need
17 the -- they really ought to put the sixth diesel in; there
18 was a place for it. And the cost of that today will be \$85
19 million. So, sometimes the decisions we make earlier on,
20 when we have to reverse them, get very expensive.

21 MR. VAN DE VENNE: The cost of the additional
22 combustion turbine has been estimated, I think, at \$15 or
23 \$18 million, which even that number sounded astounding to
24 me.

25 MR. CARROLL: I guess the way you're going to lay

1 this one to rest with some of us Doubting Thomases is to see
2 a PRA-type analysis that takes into account shutdown risk
3 and persuades us that you don't get a heck of a lot for a
4 true four-train system as opposed to two trains of 1-E DGs
5 and a blackout DG or whatever it is.

6 MR. WYLIE: You studied this, I know. Why is it
7 you did this? Why did you go to two? I know good and well
8 you studied the four.

9 MR. BURNS: We studied four, yes.

10 MR. VAN DE VENNE: We really studied three cases
11 back then. We had --

12 MR. WYLIE: Was that before or after the blackout
13 rule?

14 MR. VAN DE VENNE: This was before the blackout
15 rule. We had three cases.

16 One was a case where had two -- the case that we
17 have now, two full-size diesels, 8 or 9 megawatts each. We
18 had a second case where we had four diesels, each of them
19 being half-size, 4 to 5 megawatts each.

20 MR. WYLIE: Down in the reliability size.

21 MR. VAN DE VENNE: Well, the big advantage we
22 found at the time was we could buy the tandem high-speed
23 units, which supposedly are more reliable, although we have
24 never been able to really verify that. And we have four-way
25 separation. And the extra cost, if I remember, at the time

1 -- this is now 8 or 9 years ago -- was on the order of \$50
2 million or something like that. I don't remember the
3 numbers exactly.

4 Then we had a third case where we said let's put
5 two half-size diesels into each train, keep the basic two-
6 way separation, because it's a separation where you're start
7 paying in additional concrete and complication, but let's
8 keep two-way separation and treat the two diesels as one,
9 but each of them, on its own, can carry half the load in
10 ~~that~~ particular train, can carry one high-head pump, one CCW
11 pump, one service water pump. And that is only a modest
12 cost increase, and it buys you most of the advantages of the
13 total four-way separation.

14 But the thing that really gave the deciding vote
15 was really that we had a program with utilities that we had
16 in to review some of these decisions, and they mostly were
17 adamantly opposed to having four diesels, because they said
18 we have a lot of problems with two diesels, with four
19 diesels there's twice as many problems and twice as many
20 outages and twice as many of everything that we have now.
21 That finally swung the decision. And we couldn't see a big
22 benefit in PRA. We had some benefit but not a big one, and
23 it was mostly the blackout.

24 Now, the same utilities have easily adopted
25 another combustion turbine which, according to the data from

1 Canada, at least, are pretty unreliable. I mean the
2 maintenance outage is about a month a year, which is not
3 very good, in my opinion.

4 MR. CARROLL: If you run them a lot, that sounds
5 about right to me.

6 MR. VAN DE VENNE: These are the nuclear power
7 standby sources in Canada.

8 MR. WYLIE: The combustion turbine is not safety-
9 grade, and it is located outside someplace, right?

10 MR. VAN DE VENNE: It probably has a minor
11 enclosure.

12 MR. WYLIE: Some sheet metal or something. As far
13 as blackout is concerned, one tornado could knock it all
14 out.

15 [Slide.]

16 MR. BURNS: I'm going to go past a couple of
17 slides that Lauren showed this morning. I think we have
18 identical ones that were shown earlier.

19 The question that always comes up is what is our
20 view of the PDA? It is an 8-year program, and we want to
21 have something out there that documents what has happened
22 over 8 years. It becomes a little difficult and harder to
23 explain. The design feature is preliminary, of course, and
24 we want to get feedback from NRC that going down this path,
25 using these design features would be acceptable. That's the

1 whole purpose of going forward with a preliminary level.

2 The safety analyses is the same thing. Of course,
3 the longer the timeframe you stay out there, the greater the
4 probability of coming in with new, improved codes on the
5 methodology, instead of going with an Appendix K or from the
6 early 1990s and today, looking at the best estimate.

7 In defense of that, actually, we still do best
8 estimates. We have to do that to support the procedure
9 preparations, the set-points generations. The simulator is
10 always brought up, has already been one area, the training
11 aspects. So, even if we go ahead with those things, that
12 stills need to be done with best-estimate methodologies.

13 Resolution of severe accident issues: This is
14 says "after"; it should say in conjunction with the EPRI
15 program: This is an item that's been on the table for the
16 last year, how we actually come to resolution of issues that
17 are still before the industry. We don't want to beat to
18 death each individual issue on this application and consider
19 it final if, indeed, in the industry, they are not final.
20 The EPRI program is out there, and it's taken on a life of
21 its own. In licensing space, we look at our resolution in
22 conjunction with that. So, that's still an area where some
23 issues need to be resolved over the next few years.

24 The benefits: We've put a lot of effort and a lot
25 of time in this, and we definitely need to get something out

1 there that can show what we've done for that 8 years. For
2 agreements reached to date, there's been a lot of good
3 reviews conducted, and I think some of the comments brought
4 up earlier today were that some of the sentences in the SER
5 make be unclear to casual readers or may be overly clear to
6 expert readers who may get a different meaning.

7 Basically, to the people working in those areas,
8 they understand what we're trying to get at. We have to get
9 the NRC staff reviewers to understand our design, that we
10 their review and continuing in this path, we believe that
11 we're on the right course. That doesn't mean that they're
12 not going to be reviewed again in the future. So, there is
13 another is another review out there, but at least we're on
14 the right path.

15 Support the U.S. leadership in licensing --

16 MR. CARROLL: Roll out the flag for the last
17 refuge of scoundrels or whatever the saying is.

18 MR. BURNS: Some people say it's not a specific
19 item, so why did I put a bullet like this down here? I
20 think everyone realizes that when you've got a good feather
21 in your cap that that carries much further than just this
22 application. We need to do that.

23 There have been a lot of discussions in various
24 regulatory agencies around the world and also some of the
25 utilities around the world and in the U.S. about our

1 capability to get out and to license a product, to see
2 something through its preliminary phases, to get feedback
3 from the various reviewers, to put it through its final
4 phases and get it out there on the street. To drag it out--
5 and I heard one comment made, why not just an SER? --that
6 really doesn't accomplish what we set out to do.

7 We need to have something out there that shows we
8 can accomplish what we set out to do, and that is the PDA.
9 I would have liked to have said that we could accomplish it
10 in 3 or 4 years. Unfortunately, it has been 8 years, and we
11 are still working on it.

12 Will be utilized in the AP600 design
13 certification: The overall program, the knowledge learned,
14 the feedback from the staff that they've given us -- just
15 the discussion on V&V, that's a very vital one that's been
16 in recent applications. We need to carry that forward and
17 use it as a foundation for AP600.

18 We are not going to reference the SP/90 PDA in the
19 AP600 as taking that benefit and no further review. But all
20 of the effort that we have undertaken, both internally and
21 with the staff, we're going to use that as a springboard to
22 get us moving on AP600, and it has a lot of value in those
23 areas where the standard review plan doesn't get you there;
24 it only gets you 80 percent of the weight to go on.

25 Where all the staff guidelines or requirements

1 over the last few years are not contained in readily
2 accessible or one location, this helps, because it brings
3 our thinking together, and we need that. So, it's got a lot
4 of good benefit where the staff has given us the feedback.

5 As Lauren mentioned this morning, allow the NRC
6 staff to focus on Part 52 implementation, to get it off the
7 NRC's desk. We need to get it off ours, they need to get it
8 off theirs, and start moving forward.

9 If we really look at the overall program, we still
10 have a number of different activities that are ongoing. In
11 the mid-'80s, I worked on one for the Advanced PWR-1000, an
12 improved plant with a large three-loop. The SP/90 is the
13 large four-loop. If we really look at the market for that,
14 it's primarily international.

15 We're saying, in 1990, the primary market in the
16 United States is for a much smaller plant. That is why
17 passive designs are being promoted and are being moved.
18 AP600 is responsive to that U.S. market. Should a U.S.
19 utility come forward in the near future and decide that it
20 does have some type of a need, that they wish to pursue
21 this, we obviously want to move ahead with the SP/90, but
22 again, we would have to review it further, at a later stage
23 in the FDA, at the FSAR stage for the applicant.

24 The last bullet there about the EPRI utility
25 requirements is to get into the true resolution of some of

1 these severe accident issues and some of the generic safety
2 issues that are still with us. We need to stand back from
3 this particular application and look at the industry
4 approach to that, and currently, that is being handled in
5 the AP/90 program, and we are working with EPRI in that
6 area.

7 MR. CATTON: Do you have some memos on the 600?

8 MR. VAN DE VENNE: The utility advisory group,
9 whatever that is.

10 MR. BURNS: There has been a lot of language that
11 has come through various industry marketing. We'd like to
12 say that we've had more than a nibble, that we've had a
13 chomp, but I don't think we can say that right now.

14 Our basic message is we believe that a PDA at this
15 stage is not something that's wasted; it is needed. I think
16 there's a lot of good benefit that we've received, a lot of
17 good staff review, and the positions that they have pointed
18 out are well-needed for us to use as a starting point to go
19 ahead on the AP600.

20 MR. CARROLL: How would you characterize the
21 conformance of SP/90, as it stands today, with the EPRI
22 requirements document? Does it meet most of the present
23 requirements or virtually all?

24 MR. BURNS: As recent as the AP600, it does not
25 meet 100 percent, but I would say most. For the steam

1 generators, the fire protection, I think we're quite far
2 along if we want to say most.

3 MR. VAN DE VENNE: I would probably say in excess
4 of 90 percent.

5 MR. BURNS: We are currently working with EPRI,
6 and we're preparing a line-by-line match-up between our
7 AP600 and the EPRI document.

8 MR. CARROLL: You have not done that on SP/90,
9 though?

10 MR. BURNS: No. The EPRI document came along in
11 later years and did not have the licensing requirements it
12 has today. When you look at the EPRI document and listen to
13 the discussion around the table here about how to pin down
14 the review in the standard review plan, you're going to find
15 that the same questions come up later with the EPRI program.

16 MR. CARROLL: What are some of the major
17 departures from the EPRI document?

18 MR. VAN DE VENNE: T-Hot, hot-leg temperature.
19 It's too high.

20 MR. SHEWMON: The EPRI document requests are
21 higher T-Hot or the other way around?

22 MR. VAN DE VENNE: The EPRI requirements request
23 that the hot-leg temperature goes to 600 degrees F. As
24 planned, it's like 622 or thereabouts.

25 We have hydrogen igniters which, of course, EPRI

1 is still fighting. We have containment cooling by both
2 containment spray and containment fan cooling, as well.
3 EPRI insists that it be with spray only.

4 Right now, we do not use direct vessel injection
5 for the accumulators, while EPRI prefers that.

6 We had a lot of differences of opinion on the
7 pumps and specifically the seals, but most of these have
8 been ironed out by having EPRI provide more functional
9 requirements rather than specific requirements.

10 MR. CARROLL: Next time we meet, could you have a
11 slide on the subject?

12 MR. VAN DE VENNE: Yes. I have about 10 or 20
13 overheads, not here but in my office, which list some -- the
14 problem with the EPRI requirements is 70 percent of them are
15 really not new requirements. They're saying the vessel has
16 to be of high integrity. Well, that's generally been the
17 case. And so, we've generally taken the more -- what we
18 would call new requirements, like the combustion turbine, a
19 whole bunch of things --

20 MR. CARROLL: I'm not really asking for a
21 percentage match. I'm asking for what the major --

22 MR. VAN DE VENNE: The major new issues and
23 whether we address them or not.

24 MR. CARROLL: Okay. Go ahead.

25 MR. MICHELSON: Perhaps you said it and I missed

1 it, but how are you -- for this PDA, how are you treating
2 the generic safety -- you know, the unresolved safety issues
3 and generic issues? You know, for an FDA, you have to
4 address all the mediums and highs up to a certain date.
5 What's the rule for this one?

6 MR. BURNS: We provided -- I'm not sure of the
7 cutoff date, but we provided a submittal on that.

8 MR. DONATELL: October '89.

9 MR. MICHELSON: October of '89? You addressed all
10 mediums and highs?

11 MR. CARROLL: Yes. Unfortunately, the staff
12 hasn't reviewed it. Is that right?

13 MR. DONATELL: That's absolutely correct.

14 MR. MICHELSON: Can we get a copy of the
15 Westinghouse addressing of the issues?

16 MR. VAN DE VENNE: Module Two.

17 MR. MICHELSON: So, it must be a quite recent
18 amendment then.

19 MR. VAN DE VENNE: Yes, it was recently amended,
20 about a year ago.

21 MR. CARROLL: Sounds like October '89 if it's
22 about a year ago.

23 MR. MICHELSON: We'll hear about that later, I
24 guess.

25 MR. CARROLL: Well, I don't know.

1 Lauren, what do you want to say about it? You
2 just ran out of resources.

3 MR. DONATELL: That's right. The decision not to
4 review the USI/GSI submittal was made at the same time that
5 the decision was made, again, not to expend any further
6 staff resources on review of the SP/90, and it was explicit
7 that that submittal would not be reviewed.

8 MR. CARROLL: What else was explicitly not to be
9 reviewed?

10 MR. DONATELL: We didn't really complete the TMI
11 requirements.

12 MR. CARROLL: Okay.

13 MR. MICHELSON: Does it say in the SER that you
14 did not review it?

15 MR. DONATELL: Yes. It's a separate chapter that
16 essentially says we didn't do it, and there's a good reason
17 for it. I think it's in Appendix C.

18 MR. CARROLL: That sounds right to me.

19 MR. DONATELL: Yes, Appendix C.

20 MR. MICHELSON: It says in there your review has
21 been minimal.

22 MR. DONATELL: You'll find in the text of the SER
23 that there are some areas where the reviewers made some
24 comments related to those issues, but there was no overall
25 program or review directed toward that final end.

1 MR. MICHELSON: So, a lot of the basic and sticky
2 issues on this forward design business are confined to USIs
3 and GSIs and that's a whole area that remains open.

4 MR. DONATELL: Yes.

5 MR. MICHELSON: So, that could also significantly
6 affect what the final design might look like, depending on
7 how those are resolved.

8 MR. CARROLL: Again, that gets back to the second
9 bullet of 25-1.

10 MR. MICHELSON: In other words, in spite of the
11 fact that you didn't look at USIs or GSIs, they concluded we
12 don't think there is any change in this design needed.
13 Clearly, they will rewrite that conclusion.

14 MR. CARROLL: Okay.

15 Where do we go from here? Theo?

16 MR. VAN DE VENNE: Well, not having seen the draft
17 SER, it was, of course, very difficult to prepare any kind
18 of technical presentation.

19 MR. CARROLL: It might have been even more
20 difficult if you'd seen it.

21 MR. VAN DE VENNE: The only semi-sensible thing
22 seemed to be to talk about the famous 15 issues, but I don't
23 even know whether that's appropriate at this point in time.
24 I have a presentation. I can run through it, or I can just
25 answer any questions that you may have on any of the

1 particular issues. Several of these are open items in the
2 SER, I believe. And I really defer to your wishes in this.

3 MR. CARROLL: Maybe we could go through your
4 slides and just ask Committee members if they want to hear
5 anything about it.

6 Do you want to hear anything about SP/90 versus
7 the public safety goal issue?

8 MR. DONATELL: Chapter 20 of the SER.

9 [Slide.]

10 MR. VAN DE VENNE: The source term issue really is

11 --

12 MR. CARROLL: Does anybody want to talk about
13 that? Okay. Source term?

14 MR. WILKINS: I suppose when you got started on
15 these, there wasn't anything else.

16 MR. VAN DE VENNE: Correct.

17 MR. CARROLL: Ah, yes, ATWS.

18 MR. VAN DE VENNE: As you noticed, this is
19 probably, I presume, also an open issue, because we do not
20 have a converse scram system in.

21 These bullets are -- number one, two, and four are
22 of some substantiation, but most of the substantiation is
23 really contained in the third bullet, which is that this
24 happens to be a very special core, and when we recently
25 found some analyses, we found that if we take a moderated

1 temperature coefficient, which is followed for all of the
2 reload cycles and about 3 months of the first cycle, we get
3 a peak pressure of somewhere between 2,800 and 2,900 psi.

4 So, we could probably go earlier in the cycle and
5 probably we'd not get to the 3,200 for all of plant life,
6 except maybe 3, 4, or 5 weeks in cycle one.

7 MR. CARROLL: Bill likes that.

8 MR. VAN DE VENNE: So, we see no basis for really
9 -- when we put in the first scram, it really doesn't do very
10 much for the design. In the first scram, we basically give
11 you a more sure way of long-term cooling, of long-term sub-
12 criticality. But if operator action in a 15- or 20-minute
13 timeframe is really not critical, then you really don't get
14 much credit for this scram system. So, we don't see a very
15 big impact on the rest of it, depending on whether or not we
16 have the scram system.

17 MR. KERR: Let me ask about this third bullet.

18 I thought, in existing Westinghouse reactors, that
19 you could demonstrate that you didn't get failure to do the
20 over-pressurization anytime during the cycle.

21 MR. VAN DE VENNE: Well, the current plans
22 typically have what we call a window of vulnerability, and
23 it depends, really, on reload cycle, and it depends on how
24 long -- the longer the cycle is, the longer the window is.

25 MR. KERR: So, the first few weeks of cycle one,

1 if you had to, you get around that operating at half-power.

2 MR. VAN DE VENNE: Which you would probably do
3 anyway. You probably don't run at 100-percent power the
4 first few weeks anyway.

5 MR. KERR: I would, of course, much prefer that to
6 a diverse system, if you can really demonstrate it.

7 MR. VAN DE VENNE: You can make conventional
8 plants better, too, by adjusting the fuel cycle, but it
9 generally costs you hard money, and most people don't like
10 to do that, although there are some utilities overseas that
11 have, after they reviewed the result of the PRA, they said
12 we're just going to run with a negative moderator
13 temperature coefficient all of plant life. They just
14 basically make that decision.

15 MR. KERR: You have been encouraged that everybody
16 will make that decision, I hope.

17 MR. VAN DE VENNE: Some regulatory pressure would
18 help.

19 MR. DONATELL: EPRI has said something along those
20 lines.

21 MR. VAN DE VENNE: EPRI has a requirement for
22 evolutionary plants that they have a negative moderator
23 temperature coefficient above 50 percent power. This is
24 where the issue came up with passive plants, and after a lot
25 of discussion, they decided the passive plant had to be

1 negative at all power levels. And the rationale was that
2 passive plants not only have to have the perception of being
3 more safe but they have to be really more safe.

4 MR. WYLIE: Back on your bullet number one up
5 there, you say you've improved the reliability of the
6 reactor trip breakers over current plants. What did you do
7 to them?

8 MR. VAN DE VENNE: Well, we have eight breakers,
9 which are arranged into separated cabinets. I've shown that
10 picture before.

11 There are two cabinets, each having four breakers,
12 and there's a two out of four logic that goes into each
13 cabinet..

14 MR. KERR: The breakers themselves are the same
15 breakers but you have a different arrangement?

16 MR. VAN DE VENNE: A different arrangement, a more
17 elaborate one.

18 MR. KERR: So, it's a little bit -- you didn't
19 really mean to say that the reliability of the trip breakers
20 has been improved.

21 MR. VAN DE VENNE: The arrangement or system.

22 MR. KERR: Okay.

23 MR. WYLIE: You're still using both under-voltage
24 and shunt trip?

25 MR. VAN DE VENNE: Yes.

1 MR. WYLIE: These are DS-412s?

2 MR. VAN DE VENNE: I am not aware of the model
3 number.

4 MR. CARROLL: Now, the SER on page 20-4 --

5 MR. SHEWMON: Let me go back to ATWS.

6 Westinghouse used to be better than any of the rest with
7 regard to pressure relief. Will that still be the case on
8 the SP/90? At least, they haven't cut back on the amount of
9 pressure relief?

10 MR. VAN DE VENNE: I don't know. They probably
11 have added pressure relief.

12 MR. SHEWMON: Okay.

13 MR. VAN DE VENNE: This one is basically designed
14 in accordance with the same ground rules as other plants.

15 MR. SHEWMON: Fine. Okay.

16 MR. CARROLL: Now, on 20.4, 20.5, the staff -- I'm
17 sorry -- 20.4 and .5, right -- the staff talks about ATWS in
18 the context of 90-016 and states the position they stated
19 there and says the Commissioner has approved the staff's
20 position; however, if the applicant can demonstrate that the
21 consequences of an ATWS are acceptable, the staff should
22 accept the demonstration as an alternative to the diverse
23 scram system.

24 So, what you're saying here is not inconsistent
25 with what Westinghouse is saying. It's just that you

1 haven't seen the analysis that he talked about that says
2 they have designed their way out of ATWS, effectively?

3 MR. DONATELL: They are going to provide that
4 analysis.

5 MR. CARROLL: Okay.

6 [Slide.]

7 MR. CARROLL: Does anyone want to hear more about
8 mid-loop?

9 I assume what the experience of Vogtle is going to
10 get factored into the design at some point? I note that you
11 don't really talk about containment isolation in your
12 bullets.

13 MR. VAN DE VENNE: That, I think, was an open
14 item. We discussed that one of the previous meetings, and
15 we committed to indicate at the FDA what would be done about
16 containment isolation, whether it be quick-acting hatches or
17 some other -- or leaving the hatches closed. It's more of
18 an operational issue, I think, than a design issue.

19 MR. DONATELL: I do not recall any commitments
20 that were made in writing. There were some discussions at
21 one the earlier Subcommittee meetings relating to that, and
22 right now, there is a Commission paper on shutdown risk in
23 relationship to Vogtle. So, that will get carried forward.

24 MR. CATTON: Is that air entrainment less than 10
25 percent?

1 MR. VAN DE VENNE: Yes.

2 MR. CATTON: How do you do that?

3 MR. VAN DE VENNE: That is done with the vortex
4 breaker that's shown on the picture. It's really this type
5 of design.

6 [Slide.]

7 MR. VAN DE VENNE: This was our previous SP/90
8 design, or what's currently in the document, which is our
9 typical standard design at 45 degrees. This is a design
10 that we recently tested, and it essentially prevent vortex
11 from starting. It provides a hydraulic mechanism of
12 starting the breaker. We tested several sinks.

13 MR. CATTON: So, as long as you've water in the
14 pipe --

15 MR. VAN DE VENNE: As long as you've got water --
16 you have to have a couple of inches of water. This one
17 tends to start vortexing at a relatively high level. You
18 begin to start some serious vortexing.

19 MR. CATTON: The other starts at a lower level.

20 MR. VAN DE VENNE: A much lower level. There is
21 about a foot difference.

22 MR. CATTON: You've done tests?

23 MR. VAN DE VENNE: Yes, we've done tests. This is
24 also in the AP600.

25 MR. CATTON: Usually when you say vortex breakers,

1 they talk about a fin of some kind that breaks it, and you
2 don't do that.

3 MR. VAN DE VENNE: No. They weren't very
4 effective.

5 MR. CATTON: They weren't?

6 MR. VAN DE VENNE: No. At least not on tests.

7 [Slide.]

8 MR. CARROLL: How about station blackout?
9 Anything we want to discuss there?

10 MR. KERR: I personally am convinced that four
11 diesels, even if they were identical, is more reliable than
12 the alternate power supply, but I'll never sell that to this
13 Commission staff.

14 MR. SHEWMON: You can sell it to the Commission.
15 The Commission asked the staff if they really thought
16 airplanes would be better commercially with four different
17 engines and more different makers, and the staff demurred
18 answering, as I recall.

19 MR. VAN DE VENNE: You'll note that airplanes have
20 gone from four to two engines, and they fly across the
21 ocean.

22 MR. CARROLL: The other alternative is not to even
23 worry about or bother with the staff and the Commission and
24 sell Westinghouse on the idea. The staff certainly wouldn't
25 object, I don't think.

1 MR. KERR: I'm for highly-reliable diesels.

2 MR. CARROLL: Any other comments on this 90-016
3 issue?

4 [No response.]

5 MR. VAN DE VENNE: This was an open issue in the
6 SER.

7 [Slide.]

8 MR. VAN DE VENNE: We recently have started the
9 PRA of evaluating this change, and previously, our major
10 contributions were loss of offsite power and loss of
11 cooling, and our preliminary indications are that they will
12 go down by a factor of 3 to 4. Part of this reduction is
13 because the initiating event frequency or loss of offsite
14 power appears to be lower than the original assumed, by a
15 factor of 2.

16 So, the effect of this combustion turbine is
17 really only about a factor of 2 in that core melt, in that
18 specific scenario. The reason for that is that, originally,
19 we did have an alternate AC power system, but it was a small
20 one. So, we already did get some credit, and having it
21 garaged makes a little bit bigger credit.

22 MR. WYLIE: Are you actually proposing a
23 combustion turbine?

24 MR. VAN DE VENNE: Well, that's what we're
25 evaluating now, but I would have to be convinced that it

1 really is more reliable than the data that are out there.
2 If it isn't reliable, I would rather put in a diesel
3 generator.

4 MR. WYLIE: But you haven't really decided.

5 MR. VAN DE VENNE: No.

6 [Slide.]

7 MR. VAN DE VENNE: We discussed the fire
8 protection.

9 MR. CARROLL: Yes. Let's just pass that.

10 MR. MICHELSON: No. I had a couple of questions
11 to add to the ones from this morning.

12 One of them that came up this morning that I
13 didn't find a reference to until just a little bit ago is on
14 page 930 of the staff's SER. I'll read you the sentence
15 here. I assume it came factually from the SAR, but you'll
16 have to tell me that.

17 It says, "Transformers located inside fire areas
18 containing safety-related equipment will be of the dry type,
19 insulated with non-combustible liquid, or separated from
20 safety-related equipment of 3-hour rated fire construction."
21 It seems to say you can put any kind of transformer you want
22 in there or separate it with a 3-hour fire barrier. Put any
23 kind you want in and put a 3-hour fire barrier on it.

24 Is that what Westinghouse says?

25 MR. VAN DE VENNE: I presume that's what we say.

1 MR. MICHELSON: I assume they pulled it out. I
2 think you'll want to look at that pretty carefully.

3 Apparently, you can even use a combustible liquid
4 transformer, if you wish. The second choice was a non-
5 combustible. The third one, you're using combustible with a
6 3-hour barrier on it.

7 MR. SHEWMON: You don't trust 3-hour barriers or
8 what?

9 MR. MICHELSON: They aren't designed for explosion
10 of transformers.

11 MR. WYLIE: Well, you don't have to do it.

12 MR. MICHELSON: No, you don't have to do it to
13 begin with.

14 MR. WYLIE: My question is how much of this in
15 this SP/90 is influenced by the Japanese?

16 MR. VAN DE VENNE: I'd say a fair amount.

17 MR. WYLIE: So, a lot of this may come from them.

18 MR. VAN DE VENNE: Yes. Some of it does.

19 MR. WYLIE: I think it's poor practice to put oil-
20 filled transformers inside a plant. You don't have to do
21 it. There are utilities that haven't done it for 20 or 30
22 years.

23 MR. CARROLL: Poor practice if it's --

24 MR. WYLIE: Oil-filled. You don't have to do it.
25 Everybody knows dry-type transformers. Everybody knows gas-

1 filled transformers. They did make PCB-filled ones.

2 MR. SHEWMON: You don't get the dry ones that will
3 operate up to the capacity that would be needed.

4 MR. WYLIE: Sure. Inside the plant. When you get
5 bigger, you go outside.

6 MR. MICHELSON: These really boil. They're
7 fantastic explosions when they go.

8 MR. VAN DE VENNE: These are really the
9 potentially safety-feature transformers, and they are not
10 really that big.

11 MR. MICHELSON: I haven't heard about that fire in
12 Chicago yet, but I understood that that was a transformer
13 explosion, but I've never heard the facts on it. The staff
14 hasn't gotten the facts for us yet. The one in New York
15 might have been, the one down near Wall Street. There was a
16 substation. They never told me what in the substation blew
17 up, but something blew up there. Transformers are often
18 good candidates.

19 But there is no reason to -- I mean there are
20 plenty of good transformers available, and Westinghouse
21 should think, for evolutionary plants, you know, what the
22 criteria is to reflect good practice. It's an evolutionary
23 plant. Some things are evolving.

24 Another one I came across under fire protection
25 was on page 9-31. You talk about the potential for water

1 spray from fire protection water suppression systems, and
2 the way you're going to take care of that is by rerouting
3 the fire protection piping. Of course, that doesn't take
4 care of inadvertent actuation. You're going to install
5 spray shields; that could. Or you're going to qualify the
6 safety-related equipment to withstand the effects of water
7 spray. So, only two of these are valid, either spray
8 shields or make the equipment withstand it.

9 Do you agree that that's what Westinghouse is
10 asking for? I'm reading out of the SER.

11 MR. VAN DE VENNE: I presume that's what it's
12 asking for.

13 MR. MICHELSON: So, when I look at an inadvertent
14 actuation, the equipment around that area will either be
15 shielded from the inadvertent actuation or it will be
16 designed to withstand the water effects.

17 MR. VAN DE VENNE: Or use something else than
18 water.

19 MR. MICHELSON: Or not have any water in the area
20 at all.

21 MR. VAN DE VENNE: Use something else.

22 MR. CARROLL: Or reroute it.

23 MR. MICHELSON: I was a little surprised. I think
24 that, if you look at this carefully, what you'll have to do
25 is go back and see that you're going to have inadvertent

1 actuators and the equipment is going to fault, and what you
2 have to do is demonstrate that when the equipment faults,
3 you're still okay. That's not what this says. This says
4 you're going to take care of the problem by putting in water
5 shields or taking care of the water, designing the equipment
6 for water.

7 I didn't get a chance to look at all your slides
8 here yet.

9 MR. KERR: Carl, are you saying that you think
10 it's impossible to do that?

11 MR. MICHELSON: It's very expensive. It's
12 possible, yes. You can design electrical equipment to take
13 care of water spray. It gets pretty damn expensive in the
14 case of inverters and things like that. It's almost
15 impossible. You'd have to put another enclosure around it
16 or something.

17 MR. CARROLL: Well, I think what I read it to say
18 is that, in those cases, they just wouldn't have water in
19 the area. That's what the rerouting refers to.

20 MR. MICHELSON: Rerouting won't do you any good.
21 I've got to have fire protection in the area.

22 MR. VAN DE VENNE: But it doesn't have to be
23 water.

24 MR. MICHELSON: It does not have to be water.
25 That's another option.

1 So, anyplace, then, that you -- you will either
2 have shields or the equipment will take care of the water or
3 you'll use CO-2 or halon, as long as we can. Halon may not
4 be for long. CO-2 has got its problems, also. Okay.

5 One of the things I couldn't find anywhere in the
6 drawings -- maybe you can help me -- where are these
7 evacuation control runs? There's two of them, an A run and
8 a B run. What floor are they located on?

9 MR. VAN DE VENNE: They're on the electrical
10 floor. I believe they're next to the main steam.

11 MR. MICHELSON: Are they labeled on the drawing?

12 MR. VAN DE VENNE: Yes. They're next to the
13 emergency storage tank, I believe.

14 MR. MICHELSON: I've got the emergency feedwater
15 storage tank here.

16 MR. VAN DE VENNE: It's higher up.

17 MR. MICHELSON: Higher up? That's the valve room
18 there. Emergency panel room -- okay, there they are. Good.
19 Okay.

20 Now, eventually you're going to do a fire hazards
21 analysis of some sort.

22 MR. VAN DE VENNE: Yes.

23 MR. MICHELSON: I don't know if you're going to do
24 it at PRA or what you're going to do. It would have to be
25 in the PRA under external events.

1 When you have a fire postulated in a particular
2 area as an initiating event with the fire analysis, what
3 assumption are you going to put into your PRA or into you
4 deterministic analysis concerning what happens, how does the
5 equipment behave when the first starts burning in the room.

6 MR. VAN DE VENNE: It depends on what type of
7 equipment it is. If it's pumps, for instance, I don't think
8 much of anything will happen.

9 MR. MICHELSON: Well, what if it's electronics?

10 MR. VAN DE VENNE: If it's electronics, we would
11 have to go to the I&C designers and see what happens. There
12 are provisions to shut off the I&C at high temperatures.
13 Whether that would work under fire conditions, I don't
14 really know.

15 MR. MICHELSON: Of course, some people that do
16 this analysis do that I call a simple-minded analysis. They
17 just say if there's a fire in the room, they can't take
18 credit for the functioning of any of the equipment. That's
19 not too bad, except it totally disregards the fact that
20 equipment may do things you didn't want it to do, unwanted
21 actions from the equipment, which is critical, and you've
22 got lots of experience to look at to prove that.

23 But I don't find it in the fire analysis where
24 they take credit for the heating up of the area and so
25 forth, and all that equipment may be remote from the trash-

1 can in the corner that's burning. As the room heats up,
2 even in modest amounts, you've got to take -- you've got to
3 do some kind of an analysis as to what happens to the
4 equipment.

5 MR. VAN DE VENNE: The equipment is being tested
6 up to 150 degrees to see what happens.

7 MR. MICHELSON: The electronics is geared for room
8 temperatures of 150 degrees?

9 MR. VAN DE VENNE: No. It's being tested.

10 MR. MICHELSON: I don't care what it's tested to.
11 What is the ambient required in the room?

12 MR. VAN DE VENNE: It's supposed to operate
13 normally up to 120 degrees.

14 MR. MICHELSON: Yes. You use 120; some people use
15 104. You're using 120 throughout the plant?

16 MR. VAN DE VENNE: That's the design basis. We
17 really operate, obviously, at much lower temperatures.

18 MR. MICHELSON: But you can take temperatures up
19 to 120 and still stay within the design basis.

20 MR. VAN DE VENNE: Right. Tests are being done to
21 run at higher temperatures to basically see what happens.

22 MR. MICHELSON: A room temperature of 120 degrees
23 is not unexpected.

24 MR. VAN DE VENNE: That's right. That's why tests
25 are being done to see whether the equipment shuts off at

1 high temperatures.

2 MR. MICHELSON: When you exceed 120, are you going
3 to disconnect all the power before you get there or
4 something?

5 MR. VAN DE VENNE: The intent to shut down the
6 circuits to the microprocessors and so on.

7 MR. CARROLL: They would fail in a safe manner?

8 MR. VAN DE VENNE: There is a temperature monitor
9 that's supposed to shut it down automatically.

10 MR. MICHELSON: You mean in the cabinets there are
11 temperature monitors that will shut that off?

12 MR. VAN DE VENNE: Yes, in the cabinet. I don't
13 know exactly the details of it. I don't really know how
14 that's done.

15 MR. MICHELSON: It's a good idea, in a way, and in
16 another way, it's not such a good idea.

17 If you can kill the power and get your fail-safe
18 modes before the equipment goes out of temperature range,
19 you're okay. I haven't seen anybody propose that.

20 MR. VAN DE VENNE: People are working on it.

21 The temperature issue was discussed during the I&C
22 presentation.

23 MR. CARROLL: But not this specific aspect of it,
24 I don't think.

25 MR. VAN DE VENNE: Not the fire aspect, no, but

1 what would happen, what was the environment.

2 MR. MICHELSON: It's the same as the environment
3 rise from anything; it's just like the loss of room cooling,
4 what happens.

5 There is temperature monitors in the cabinets.

6 MR. VAN DE VENNE: Yes.

7 MR. MICHELSON: This is one what kind of cabinets,
8 all the safety-grade?

9 MR. VAN DE VENNE: Class 1E.

10 MR. WYLIE: Is that natural circulation?

11 MR. VAN DE VENNE: It's forced ventilation. There
12 are fans at the bottom.

13 MR. MICHELSON: It depends on the particular
14 cabinets, too. I don't know if what you've told me is true
15 of all of them. I don't think you're monitoring temperature
16 in there, but they also may have solid-state control,
17 depending on what kind of motor-control centers you buy at
18 this plant.

19 Okay. That's interesting. Did the staff realize
20 that that's what was intended?

21 MR. DONATELL: I'm trying to remember back to when
22 we had our I&C presentation. I don't recall mention of the
23 device. We talked about the environmental issues, the
24 qualification, the testing at 150, but I personally don't
25 recall the device to shut the power down.

1 MR. MICHELSON: It's the first I heard of it, too.
2 It's not necessarily a bad idea. I just didn't know that
3 anybody had decided to do it.

4 MR. CARROLL: All right.

5 MR. MICHELSON: You read the discussion of the 016
6 issues related to fire protection. And, I think, somewhere
7 I read that you said that you can take care of the migration
8 of heat and smoke -- the design will take care of the
9 migration of the heat and smoke and so forth. Is that
10 right.

11 MR. VAN DE VENNE: The main way to keep track of
12 the heat and the smoke is to have a separate ventilation
13 system -- it could be -- you know, especially in the
14 electrical areas and so on.

15 MR. MICHELSON: But, I think one of the things to
16 keep in mind, of course, even with smoke exhaustion and so
17 forth, your rooms get very hot, depending on where the
18 exhaust equipment is and so forth, the ceilings may get very
19 hot or the floor areas even might get very hot. And did you
20 understand that the migration problem relates to one thing -
21 - as the inadvertent actuation of fire protection, not in
22 the area where the fire is burning, but in an area at the
23 other side of whatever zone we're talking about?

24 And it's also related to this question of what
25 happens when the equipment starts heating up from fire in

1 some part of this train A, because train A is a big area in
2 your building, it's several floors and so forth.

3 So you're going to take care of that?

4 MR. VAN DE VENNE: You'll see on the arrangement
5 that, for instance, the emergency feedwater tanks separate
6 train A and B, at the lower level; and the main steam tunnel
7 separates train A and B at the upper level.

8 MR. MICHELSON: Yes, but see, the concern is that
9 when I get a fire in train A, that I would like to know how
10 much equivalents it's going to be exposed to an adverse
11 environment and what -- how it behaves when it does.

12 Part of the adverse environment is heat. And you
13 explained to me that if it sees heat it's going to shut
14 itself off. If it sees smoke, for instance, or water,
15 because water suppression is going on somewhere up in a
16 higher floor where the fire is -- and you can tell me, I
17 guess, that your floors are water-tight, but I won't believe
18 you. There's a lot of stairways in here; are you going to
19 curb every stairway and so forth? And how much are you
20 going to curb?

21 MR. VAN DE VENNE: Water would tend to drain down.

22 MR. MICHELSON: Pardon?

23 MR. VAN DE VENNE: Water would tend to drain down.

24 MR. MICHELSON: It tends to drain down by gravity.

25 MR. VAN DE VENNE: It's intended to drain down,

1 really.

2 MR. MICHELSON: You want controlled drainage, you
3 don't want it coming down in torrents.

4 MR. VAN DE VENNE: That's right.

5 MR. MICHELSON: And so -- that's all going to be
6 taken care of in some kind of criteria -- that's a part of
7 what we meant by migration of heat --

8 MR. VAN DE VENNE: Yes.

9 MR. MICHELSON: -- and water and suppressants and
10 so forth? Okay, I just wanted to make sure that was fully
11 appreciated.

12 MR. CARROLL: All right. I guess the next one is
13 inter-system LOCA. I think we all have a good understanding
14 of what the issues are and, at least I have no questions on
15 it, does anyone else.

16 [Slide.]

17 MR. MICHELSON: Now, refresh my memory.
18 Westinghouse was going to put in a high pressure RHR, I mean
19 full design pressure RHR, is that right?

20 MR. VAN DE VENNE: It's not design pressure, it's
21 -- the piping is designed to -- to stay below Level C, I
22 think

23 MR. MICHELSON: Yes. That was the piping but, as
24 you are well aware, there's a lot of other things in the
25 system besides pipes.

1 MR. VAN DE VENNE: There's flanges and fittings
2 and --

3 MR. MICHELSON: And instruments and so forth. Now
4 how is it going to be designed?

5 MR. VAN DE VENNE: The heat exchanger is inside
6 containment.

7 MR. MICHELSON: I bet your pardon?

8 MR. VAN DE VENNE: The heat exchanger is, anyway,
9 a high pressure heat exchanger.

10 MR. MICHELSON: Could -- on all the systems?

11 MR. VAN DE VENNE: No the RHR heat exchanger, in
12 this particular design is a high pressure heat exchanger.

13 MR. MICHELSON: Yes. RHR pump seals and so forth.

14 MR. VAN DE VENNE: They will leak.

15 MR. MICHELSON: They will leak at four times,
16 three times, four times design, I guess they're going to
17 leak quite a bit.

18 MR. VAN DE VENNE: Yes.

19 MR. MICHELSON: Like, I'm not even sure they're
20 housed to take the pressure.

21 MR. VAN DE VENNE: Well that's -- that's really
22 what this last bullet addresses; that if there is a leak, we
23 will lose some inventories, but we should not -- remember if
24 there is a significant interfacing LOCA, the pressure will
25 go down very very rapidly.

1 MR. MICHELSON: Well, if it's a seal leak, it
2 won't go down all that rapidly.

3 [Slide.]

4 MR. VAN DE VENNE: As the pressure goes down, the
5 seal leak will go down. But the point is that even if the
6 seal were to continue to leak and even if -- even if --
7 because there is always a static head on the seal, we would
8 get into a situation where we would fill this -- one of four
9 compartments; but we would still have water inside the
10 containment that we could take structure and inject to the
11 vessels, so we're not a situation where all the water is
12 lost. We always will have ECCS water available for the core
13 coolant.

14 MR. MICHELSON: Your pump rooms down there are
15 isolated from each other by --

16 MR. VAN DE VENNE: Yes.

17 MR. MICHELSON: -- and how much elevation -- water
18 -- can you get in one pump room without pumping out --

19 MR. CATTON: Is the pump room full according to
20 that drawing?

21 MR. VAN DE VENNE: No, but it would -- if there is
22 a leak here, it would tend to go at a level that would be
23 equal.

24 MR. MICHELSON: Why isn't the level of the EWST
25 then?

1 MR. VAN DE VENNE: It's top room.

2 MR. MICHELSON: No, no. Why isn't the water in
3 the valve room at the level of the EWST?

4 MR. VAN DE VENNE: Well, the EWST -- this is the
5 normal water level. It will take this amount of water to
6 fill this room.

7 MR. MICHELSON: You're saying that's the
8 equilibrium?

9 MR. VAN DE VENNE: And then you will get to an
10 equilibrium condition.

11 MR. MICHELSON: And that's several feet in a room
12 I guess?

13 MR. VAN DE VENNE: Yes.

14 MR. CATTON: Is that to fill both the valve room
15 and the pump room?

16 MR. VAN DE VENNE: Yes. That fills the whole
17 thing. But what I'm saying is the tank is of sufficient
18 size to allow one room to be filled and still have
19 sufficient water to incorporate -- no one room -- I mean,
20 well, we have, but we have four rooms.

21 MR. CATTON: One combination.

22 MR. VAN DE VENNE: Yes, one combination.

23 MR. WILKINS: And you still have enough water left

24 --

25 MR. VAN DE VENNE: To take sections near the pumps

1 and pump it back into the vessel.

2 MR. WILKINS: That means that the suction pumps
3 are lower than they are on that drawing? They're way down
4 there?

5 MR. VAN DE VENNE: This is the pump, this is the
6 line that comes from the -- that comes from this tank.

7 MR. MICHELSON: Isn't that water actually filling
8 the pump room as well?

9 MR. VAN DE VENNE: Yes.

10 MR. CATTON: It fills both rooms.

11 MR. MICHELSON: That's why it got so much level --

12 MR. VAN DE VENNE: Yes. That's why it drops so
13 much level.

14 MR. MICHELSON: Which rooms are designed that way?

15 MR. VAN DE VENNE: The four rooms at the -- at the
16 lower level. This is considered to be -- from here to here,
17 it's considered one room.

18 MR. MICHELSON: Okay, that's how that works.

19 MR. VAN DE VENNE: Yes, up to this point.

20 MR. MICHELSON: Up to that wall. Okay. And then
21 there's another section, and this holds part --

22 MR. VAN DE VENNE: And this is the third and this
23 is the fourth.

24 MR. MICHELSON: Okay. I guess that's all that's
25 described in the book there, if I read it. Okay. All

1 right. That's reasonable.

2 [Slide.]

3 MR. KERR: What would you get even if you didn't
4 have igniters? What percent averages; or do you know?

5 MR. VAN DE VENNE: Yes, I know roughly. If -- if
6 you had 75 percent circ water reactor, we'd bet about 14
7 percent. So, if we had 100, we would get close to 18 or --
8 somewhere between 18 and 19 percent.

9 MR. CATTON: How are you going to decide where to
10 put them?

11 MR. VAN DE VENNE: Well, they are going to be
12 local -- they are going to be local igniters in certain
13 areas where hydrogen can pocket. And then there are going
14 to be hydrogen igniters on the top.

15 MR. SHEWMON: Whatever replaces it would have to
16 come out of the vessel. Do you know where it would come
17 out?

18 MR. VAN DE VENNE: Well, one obvious place is from
19 the depressurization system events. You know, from the top
20 of the pressurizer, we have depressurization valves there,
21 so one obvious place is the discharge at these
22 depressurization valves. It's an obvious place for
23 hydrogen.

24 MR. SHEWMON: So, you would put igniters there?

25 MR. VAN DE VENNE: Yes. Now the other place is

1 you could have -- you have a LOCA that could be anywhere
2 really. But the loop compartments are fairly well vented
3 and fairly well open. And so I think the other logical
4 place would be the exit from the loop compartments. The
5 steam generator dog houses above the operating deck would be
6 another logical place to have igniters.

7 If you had a vessel break or a rupture of the
8 vessel itself, it would tend to migrate up to the
9 instrumentation panel. Those are the most obvious local
10 problems.

11 MR. CATTON: How big are these openings?

12 MR. VAN DE VENNE: Well, the steam generator
13 compartment is a round steam generator with a shield wall,
14 not quite square but rectangular shield wall and it's
15 probably maybe a hundred square feet or something like that.

16 MR. CATTON: Where do you put it?

17 MR. VAN DE VENNE: You'd have to put it in several
18 places. You'd probably wind up with 6 or 9 per steam
19 generator or something. The AP600 containment test will
20 include migration -- you know, hydrogen tracking of non-
21 condensibles and hydrogen. Hopefully, we will get some
22 feedback for that.

23 The arrangement is similar to this, and it has
24 good compartments. It has what we call dog houses in the
25 steam generator in there.

1 MR. CATTON: You certainly could shake the ceiling
2 and all sorts of things so that you'd know where it would be
3 migrating.

4 MR. VAN DE VENNE: You could shake the ceiling.

5 MR. CATTON: If you don't do that, then you're
6 going to have to just put in a whole lot of igniters and
7 you're still not going to be sure.

8 MR. VAN DE VENNE: That's correct. The most
9 obvious place is the discharge of the depressurization
10 valves.

11 MR. CATTON: But sometimes you get a hot plume
12 against the wall and it runs right up it. If you don't have
13 an igniter in the way, you miss it.

14 MR. CARROLL: The ultimate power sources for these
15 igniters is DC.

16 MR. SHEWMON: Why is that?

17 MR. VAN DE VENNE: Well, because the most logical
18 scenario, really, is the loss of offsite power. It's one of
19 the most logical scenarios to get to a core melt. It's
20 still a fairly significant contributor, although it's been
21 reduced.

22 MR. SHEWMON: These are blow plugs?

23 MR. VAN DE VENNE: There are catalytic, too.

24 MR. MICHELSON: Do you plan on recharging the
25 batteries during the loss of offsite power?

1 MR. VAN DE VENNE: Well, you really can't. That's
2 an interesting --

3 MR. MICHELSON: You don't plan on doing it then?

4 MR. VAN DE VENNE: Unless you had a portable unit
5 or some offsite --

6 MR. MICHELSON: You don't have ventilation for
7 those batteries, either.

8 MR. VAN DE VENNE: If you don't charge them, the
9 ventilation is not that important.

10 MR. MICHELSON: I say, if you don't charge them.

11 MR. VAN DE VENNE: Right. The scenario here is
12 blackout when we're getting into a core melt scenario.

13 MR. MICHELSON: Do, during a blackout, of course,
14 you don't have any capacity.

15 MR. CARROLL: Let me finish up on igniters. Do I
16 have the impression that some plants with Westinghouse
17 reactors are trying to put in AC igniters? Those are not
18 going to be DC?

19 MR. WYLIE: I think some of the operating plants
20 have AC.

21 MR. CARROLL: Yes, that's what I thought, too.

22 MR. KERR: What does that have to do with this?

23 MR. CARROLL: I'm just curious.

24 MR. KERR: I thought the ice condenser plants had
25 AC power igniters, as far as I know.

1 MR. VAN DE VENNE: I said DC fed. I think that is
2 the important issue.

3 MR. KERR: A lot of power among those igniters,
4 tens of kilowatts.

5 MR. CARROLL: Med or Tom, could one of you take
6 that as an Action Item to find out from the Staff what's
7 going on in the igniter world?

8 MR. SHEWMON: How about spark igniters?

9 MR. KERR: I would think spark igniters would give
10 you one hell of a problem with instrumentation.

11 MR. MICHELSON: Before going on to the next item,
12 can I go back just for a clarification. You had a slide
13 here that you call page 10 on fire protection. The word of
14 it just leaves me -- you can clarify it for me, but the
15 wording just says, "The three hour fire barrier between the
16 redundant safety areas is interrupted by personnel corridors
17 and a limited number of fiber optic datalinks."

18 What's this personnel corridor stuff?

19 MR. VAN DE VENNE: We show that there are
20 personnel corridors that really basically divide or that
21 connect Train A and Train B, which have some three hour fire
22 doors. I didn't want to give the impression that it was a
23 solid three hour wall with no openings.

24 What I am saying is that there are some openings.

25 MR. MICHELSON: But the openings are of a three

1 hour rating?

2 MR. VAN DE VENNE: They're three hour rated, but
3 they're not one three-foot concrete.

4 MR. MICHELSON: If there is a penetration, it's a
5 three hour rated wall?

6 MR. VAN DE VENNE: Right. Maybe that should be
7 stated.

8 MR. MICHELSON: I wasn't sure whether you just
9 left open the corridors.

10 [Slide.]

11 MR. CARROLL: You're saying on this one that if
12 that number went up by 50 percent, you'd probably be okay?

13 MR. VAN DE VENNE: Even a factor of two would
14 probably be okay, but if it gets too large, it would tend to
15 become a problem.

16 MR. WYLIE: What is it for your present drawings?

17 MR. VAN DE VENNE: It's like 98 percent of that
18 value, or very close to it. That's purely coincidental,
19 because we didn't happen to have this criterion in mind
20 eight years ago.

21 It just happens to be that for most plants, for
22 most PWRs -- I think, at least Westinghouse PWRs -- that's
23 roughly the number you'll find, maybe plus or minus 10 or 20
24 percent.

25 MR. CARROLL: So that's the analytical basis for

1 the numbers?

2 MR. VAN DE VENNE: I just don't really know.

3 MR. CATTON: That .02 came from EPRI and the
4 Fauske and Associates Report. It supposedly justifies that
5 number, but it's rather weak.

6 MR. MICHELSON: Maybe that's why it's weak.

7 MR. CATTON: There are two parts to the problem.
8 Under one assumption, you assume that the core is just a
9 pile of rubble, and .02 is just fine. There's experimental
10 data that will back that up, that if you have it so deep and
11 it's all a function of -- it looks like stones, it's
12 coolable.

13 But the other half is when it's a molten mess
14 that's spread out and then it's up there and there's no
15 basis for it.

16 MR. VAN DE VENNE: The plants that have bottom
17 mounted in-core instrumentation tend to have larger areas
18 there than the plants that don't, because the plants that
19 don't only have an area with the vessel and not much else.
20 In this case, the area is below the vessel, but it spreads
21 out further into the containment.

22 MR. MICHELSON: That has to be a horizontal --

23 MR. VAN DE VENNE: Yes, it is horizontal.

24 MR. SHEWMON: Is the plan or the certainty or the
25 design such there will be water there waiting for whatever

1 comes out of the core or out of the vessel?

2 MR. VAN DE VENNE: Well, this --

3 MR. MICHELSON: That's not clear either.

4 MR. VAN DE VENNE: That's this item here, and I
5 guess there's still discussion on whether the water, if you
6 get into a core melt scenario, whether you should drain the
7 water there before you have the core melt, or say, as soon
8 as you get indications of core melt, or whether you should
9 wait until after the core has penetrated the vessel.

10 MR. CATTON: It leads to putting you between a
11 rock and a hard place. If you put the water there before,
12 you have to address the question about steam explosion. If
13 you put the water there after, you have to get into this
14 business of whether or not you could cool it if you have
15 this molten pool and you put the water on top of it.

16 At either end of the spectrum, you don't know.

17 MR. SHEWMON: But not much of it can molten if you
18 contained it in your pressure vessel. We get back to that
19 again, I think.

20 MR. CATTON: That could be.

21 MR. SHEWMON: It's a lousy crucible to get this
22 great ocean of extraordinarily hot stuff that you have
23 running around.

24 MR. CATTON: Those are a different set of
25 arguments and they've not been made. They say that it's all

1 down there and it can be one of two ways: it's molten or
2 it's a pile of stones. A pile of stones are coolable and
3 with the other, it's not clear.

4 MR. KERR: Let's hope we never have to find out.

5 MR. CATTON: I hope so, too. It seems to me that
6 that's what ought to be addressed, what Paul's talking
7 about. If you accept that it's going to happen, then you've
8 got some real questions to answer, difficult questions.

9 MR. VAN DE VENNE: Well, maybe there will be more
10 research to find out.

11 MR. CATTON: But not in time to do you any good.

12 MR. CARROLL: You can solve this. I think
13 somebody invented it already with a lightbulb like taurus --
14 or lightbulb like containment.

15 [Laughter.]"

16 MR. MICHELSON: That spreads it out all right.

17 MR. CARROLL: All right, any more CCI, I guess.

18 MR. WILKINS: This slide is headed, Core-Concrete
19 Interaction. It doesn't talk about interaction.

20 MR. CATTON: That's what that .02 is all about.
21 It's to deal with it.

22 MR. WILKINS: You're talking about it being
23 coolable; that is to say, this interaction is a chemical
24 interaction, so the hotter it is, the faster it will go.

25 MR. CATTON: Wait. The way that it's stated is .2

1 flow meters per megawatt thermal, plus it must be quenched.
2 If they do these things, then there's no problem.

3 MR. MICHELSON: No core-concrete interaction,
4 you're saying?

5 MR. CATTON: There's nothing if they do it.

6 MR. CATTON: It just lies there.

7 MR. MICHELSON: If it works. I thought there were
8 these theories about a crust over the top, and it stays real
9 hot underneath and just seeps right through the concrete.

10 MR. CATTON: The way the criterion is laid down,
11 it's .02 flow meters per megawatt thermal and it must be
12 coolable.

13 MR. MICHELSON: And it won't crust over under
14 those circumstances, that area?

15 MR. CATTON: It may well, but then they don't meet
16 the criterion. If it's not quenched, then they haven't
17 accomplished what they set out to do.

18 MR. MICHELSON: But if it is quenched and the
19 water is on top and there's a crust and it's molten
20 underneath --

21 MR. CATTON: That depends on how you define
22 quenched.

23 MR. MICHELSON: Core-concrete interaction is what
24 the slide is about.

25 MR. CATTON: To me, if it's quenched, it's

1 quenched and it's solid.

2 MR. MICHELSON: Usually quenched means that
3 there's no insulating layer anymore.

4 MR. CATTON: No, it's quenched.

5 MR. MICHELSON: If it was a rubble bed, then it
6 would get quenched?

7 MR. CATTON: That's right. It is quenched and
8 coolability is maintained.

9 MR. MICHELSON: Yes, that will work.

10 MR. SHEWMON: What the mining engineers call the
11 critical angle of repose is zero for this, so it's uniformly
12 spread over this whole area; is that right?

13 MR. CATTON: That's what they assume, yes.

14 MR. WILKINS: If it's molten, it probably is. If
15 it's molten, I'm inclined to believe that.

16 MR. SHEWMON: I defy you to contain it till it
17 gets hot enough so it will stay molten until it runs out,
18 but that's a separate argument.

19 MR. CATTON: If it's piled deeper in one spot than
20 another and it's too deep to cool, it will get molten.

21 MR. MICHELSON: And it will run out of there.

22 MR. SHEWMON: You know, a debris bed, unless the
23 water can percolate through it, you can't keep it cool; it
24 will melt.

25 MR. SHEWMON: My point is that if you told these

1 guys they had to cope with 0.01, and they doubled the area,
2 it's not at all clear to me that this stuff would get out
3 there to take advantage of all this area anyway. So, that's
4 a different argument for a different day, maybe.

5 MR. CARROLL: Let's move on to the High Pressure
6 Core Melt Ejection.

7 [Slide.]

8 MR. VAN DE VENNE: The first bullet of this is
9 simply to say that when we designed the cavity, we asked for
10 some guidance from the severe accident people and we made it
11 out as best you can, but I don't see that there's any way
12 you can lay it out in such a way that for any break at any
13 location, you would actually need that, so I think Item One
14 is really good engineering practice that doesn't cost you
15 anything, or certainly not very much.

16 This is really -- the real way is to depressurize
17 the system.

18 MR. SHEWMON: The second one, AC independent is
19 alternating current?

20 MR. VAN DE VENNE: Yes.

21 MR. CARROLL: All right, let's move on.

22 [Slide.]

23 MR. CATTON: Do you meet the EPRI guidelines with
24 respect to a depressurization?

25 MR. VAN DE VENNE: Yes.

1 MR. CATTON: I thought you said you didn't have
2 the best estimate tools? Part of the EPRI requirement is
3 that you calculate that you've achieved it, using best
4 estimate tools.

5 MR. VAN DE VENNE: Well, we have best estimate
6 tools that we have used to calculate the pressurization
7 rates.

8 MR. CATTON: So my original observation is
9 correct: it depends on whether you're buying or selling.

10 MR. VAN DE VENNE: No, you know, we did not run a
11 specific analysis. We based the sizing or the checking of
12 these valves on comparison with other plants that we have
13 run best estimates on.

14 MR. CATTON: But the EPRI requirements are very
15 clear on what you have to do here. They say that you have
16 to do the calculations and you have to show that the level
17 stays more than one foot over the core -- there are bunch of
18 different things.

19 MR. VAN DE VENNE: We've done -- well, these
20 valves are -- where are these valves?

21 MR. CATTON: They're on the previous page.

22 MR. VAN DE VENNE: These valves have several
23 functions. Now, as far as bleed-and-feed, we have done best
24 estimate tree analyses to show that they're okay. What I am
25 saying is that for the function of severe accident

1 depressurization, we have not done any specific analysis on
2 this plant.

3 MR. CATTON: I was just curious about the
4 depressurization capability, because EPRI is very clear
5 about that. They say exactly what you should do to show
6 it's effective. If you've done that, you have best estimate
7 tools.

8 MR. VAN DE VENNE: We haven't done that.

9 MR. CATTON: Okay, then you don't know if you've
10 met the EPRI requirements in this regard?

11 MR. VAN DE VENNE: We have done qualitative
12 comparisons with other plants that we have done these
13 calculations for.

14 MR. CATTON: So you have done best estimate
15 calculations?

16 MR. VAN DE VENNE: For other plants; not for this
17 plant.

18 MR. CATTON: So you do have the capability?

19 MR. VAN DE VENNE: Yes, we do.

20 MR. CATTON: Fine.

21 MR. CARROLL: He wasn't arguing about the
22 capability to do a best estimate --

23 MR. CATTON: Well, that was part of it.

24 MR. CARROLL: No, it wasn't, I don't think. As he
25 was saying, they just haven't done it.

1 MR. VAN DE VENNE: On this plant. The only best
2 estimate we've used, to my knowledge, on this plant, is
3 straight for bleed-and-feed.

4 MR. CATTON: For part of that, there are some
5 depressurization requirements -- the rate that you have to
6 get it down and so forth?

7 MR. VAN DE VENNE: Right.

8 MR. CATTON: You're supposed to show that with
9 your best estimate tools, and I take it that you've done
10 that?

11 MR. VAN DE VENNE: We've not done it for this
12 plant, but the valves -- this is not the -- the actual
13 depressurization severe accident, in our opinion, is not the
14 limiting size for these valves. These valves are way over
15 sized for that particular --

16 MR. KERR: What is the assumption of what point
17 you should open those valves?

18 MR. VAN DE VENNE: The severe accident -- well, I
19 think you're supposed to open those valves when the
20 temperature on the thermocouples is 1100 or something like
21 that. I think the operating instructions say you open the
22 depressurization valves when you hit 1100 in the core, which
23 means there are still some boil left but not a lot. What
24 comes out is gas and a little bit of steam and probably
25 virtually no water. That's my guess.

1 MR. CARROLL: Under feed-and-bleed conditions --

2 MR. VAN DE VENNE: Under feed-and-bleed, it's a
3 two phase mixture, except for the first few seconds and that
4 really is a more limiting design basis than this one.

5 MR. KERR: You are using valves that will
6 withstand that?

7 MR. VAN DE VENNE: Right. We're planning some
8 tests next year.

9 This is the containment performance.

10 MR. CARROLL: Any questions on that one?

11 [No response.]

12 MR. CARROLL: You do have this problem occurring
13 in the staff about design pressure versus actual peak
14 pressure and whether you're down to half of it in 24 hours
15 or is that still an open issue?

16 MR. VAN DE VENNE: Yes, it really is. It's really
17 a strange open issue, because we use spray and fan coolers.
18 We have two fan coolers per train and, of course, two spray
19 pumps per train. Now, when we ran the analysis, there were
20 some strong feedback from the utilities that they were very
21 concerned about getting a problem with the fan cooler during
22 normal operation and not having to shut the plant down
23 because they were subject to tech specs, okay?

24 We said, well, what we can do is, we can run the
25 containment analysis assuming only one fan cooler, so you

1 could take one out of service, which is okay for normal
2 operation and you would not be subject to tech spec. We ran
3 the analysis, contrary to what most operating plants, with
4 only on fan cooler operating and that hurts us in the long
5 term, and that's why we really can't get the pressure down,
6 although we're very close.

7 If we ran both fan coolers, it really wouldn't be
8 a problem. So, we really got caught up in a little bit of a
9 tech spec optimization issue here. I don't think it's
10 particular serious. It will eventually resolve itself,
11 using best estimate quotes, I'm sure.

12 MR. KERR: In your third bullet, "conditional,"
13 upon what?

14 MR. VAN DE VENNE: Conditional containment
15 failure, given that there is a core melt.

16 MR. KERR: What does a core melt mean? Does it
17 mean core in the containment, for example, or does it mean
18 loss of cooling capability? I'm curious about what your
19 recovery actions are.

20 Are these recovery actions, for example, while the
21 core is still in the vessel or recover actions after the
22 core is on the floor?

23 MR. VAN DE VENNE: They're really not that
24 critical. Really, the two sequences that we currently have
25 that causes a problem are loss of offsite power and loss of

1 cooling. Now, loss of offsite power; if you take AC power
2 recovery models and even if you recover power at, say, 20
3 hours or 24 hours, you can cool the containment, you can
4 recool the containment and you really don't have a problem.

5 MR. CARROLL: In that time period, you've got the
6 core on the floor?

7 MR. VAN DE VENNE: Well, it would progress from
8 being in the vessel to probably on the floor to fully on the
9 floor, presumably. It would progress to that stage. Now,
10 again, is the 24 hours is based on having water down there,
11 because you get steam which leads to more rapid
12 depressurization than if you had no water, in which case
13 you'd get a lot of non-condensibles, but it's a slower
14 process.

15 MR. KERR: So, that will give you your AC power
16 back or the possibility of getting your AC power back?

17 MR. VAN DE VENNE: Now, with loss of cooling, it's
18 much more difficult. There are good data on AC power
19 recovery, based on actual events that have happened, but if
20 you postulate the loss of cooling rate at this point in
21 time, we have no basis or no data to assume any recovery,
22 because first of all, we don't know what caused it. It
23 could be intake blockage, and we don't really know how to
24 recovery from it. So loss of cooling is still an issue.

25 MR. KERR: So reasonable credit could be given for

1 restoration of AC power.

2 MR. VAN LE VENNE: Yes, and possibly you assume
3 reasonable credit, for instance, if you had spare pumps on
4 site for component cooling and service orders if that
5 happened to be the problem. There could be another problem,
6 I don't know what happened.

7 MR. KERR: I was just curious about the recovery
8 action.

9 MR. WILKINS: The second bullet says no
10 containment failure by the vast majority and just,
11 logically, then there's a small minority for the --

12 MR. VAN DE VENNE: Yes, there are early failures,
13 I think, of the core mouths that we have. I think about 2
14 or 3 percent of bypass scenarios, which is tube ruptures,
15 which are not affected at all by this, and there is like a 1
16 percent probability of having an early containment failure,
17 because maybe it's a steam explosion. I really don't know
18 where that comes from, but there is a slight chance of
19 having an early failure. It could be a hydrogen burn or
20 something like that.

21 MR. KERR: What class of failure probability do
22 you use?

23 MR. VAN DE VENNE: As an initiating event?

24 MR. KERR: Yes.

25 MR. VAN DE VENNE: Ten to the minus seven.

1 MR. KERR: Minus seven?

2 MR. VAN DE VENNE: Yes. That, presumably, would
3 lead to early containment failure?

4 MR. VAN DE VENNE: There is a good possibility.

5 MR. KERR: So that's one --

6 MR. VAN DE VENNE: It depends on how it fails
7 also.

8 MR. KERR: Would it fail slowly or --

9 MR. VAN DE VENNE: Well, if you've got a big crack
10 in the bottom of the vessel that would not really affect
11 anything on the top, it would probably be okay as long as
12 you could getting the flooding gone. But if you had the
13 head coming off, or something like that, and going through
14 the roof --

15 MR. KERR: I was thinking of something like, for
16 instance, pressurized thermal shock, where you got rapid
17 failure.

18 [Slide.]

19 MR. CARROLL: Well, this is certainly one where
20 we're moving towards resolution at the FDA stage.

21 MR. VAN DE VENNE: Right, yes.

22 MR. CARROLL: Some people are still struggling
23 with it.

24 MR. VAN DE VENNE: Yes.

25 MR. MICHELSON: I recall I think that although you

1 can use non-safety grid equivalents, there must be a high
2 confidence of the operability of that equipment under the
3 severe accident environment that the equipment's being
4 exposed to at the time. That includes fire, flood, and so
5 forth. Those are some of the potential severe accident
6 environments that this might have to considered under.

7 MR. VAN DE VENNE: Yes.

8 MR. CARROLL: I think we understand the OBE/SSE
9 from the discussion this morning. Did anyone want to say
10 anymore about that?

11 [Slide.]

12 MR. KERR: I want to go back and question the
13 speaker. What is the expected license ability or life of
14 the pressure vessel? Is it limited by radiation, if it is
15 limited?

16 MR. VAN DE VENNE: The exposure is, I think it was
17 calculated to be like 1 1/2 times 10 to the 19th, which is -
18 -

19 MR. CARROLL: One times 10 to the 19th in 60 years

20 MR. VAN DE VENNE: No, it was 40, so it was 2
21 times 10 to the 19th, roughly. It was 1.4, so 2 times 10 to
22 the 19th for 60 years.

23 MR. CARROLL: And this, in part, is because you've
24 gone back to putting a reflector in?

25 MR. VAN DE VENNE: Right, right. It's partly the

1 reflector, a little bit of credit from lower power
2 densities, so all of these things add up. I don't think the
3 radiation is going to be an issue on the 60-year life,
4 especially not if we specified the materials that are better
5 than the one that's currently SER.

6 MR. SHEWMON: One thing that interested me on
7 this, you've increased the core by volume by 50 percent,
8 you've shortened it by a foot apparently, compared with the
9 14 or whatever you had in there, this means the vessel has
10 increased a good deal.

11 MR. VAN DE VENNE: Yes.

12 MR. SHEWMON: You people have traditionally had
13 less water between your vessel and your core than some other
14 people, have you kept that spacing constant, or did you then
15 increase that or did you say we got a reflector in there so
16 we don't have to? I didn't try to get here, partly I didn't
17 have it hear, but then even then I wasn't sure I could sort
18 out just what the water space was anyway.

19 MR. VAN DE VENNE: I think the water space is very
20 similar. I believe it's around 8 inches to 9 inches, which
21 is typical for our plants, but the reflector is your pretty
22 big benefit.

23 MR. SHEWMON: It was kind of mealy mouthed on what
24 had happen and what the staff put out here. I'm not sure
25 what --

1 MR. KERR: What does it apply to?

2 MR. VAN DE VENNE: It's an array of steel rods --
3 packed steel rods and cams that are located around the core
4 and reflect neutrons back.

5 MR. SHEWMON: And this is how big?

6 MR. VAN DE VENNE: It varies from maybe -- the
7 field has corners and then there is a circle around it, so
8 they're all irregular and straight. It varies maybe --

9 MR. SHEWMON: The minimum sink is zero?

10 MR. VAN DE VENNE: -- No, it's not zero. The
11 min'mum sink is probably 45 inches and the maximum sink is
12 maybe as much 12. As you go around, they all look
13 different. There's probably a drawing in there.

14 MR. SHEWMON: It's not discussed in the SER. I
15 don't know whether you could refer me to a section in here.
16 There was a commitment or a guesstimate that the fast
17 neutron exposure would be limited to 10 to the minus 19, but
18 I think that was in 40 years, wasn't it? Forty years at 80
19 percent capacity was what the staff said.

20 MR. KERR: I remember the one number. It said it
21 would be about 2 at 60.

22 MR. SHEWMON: Okay, that's different from what the
23 staff quotes. It's higher than what the staff quotes.

24 MR. VAN DE VENNE: This is the reflector here,
25 okay. There are some sus spots here, and then --

1 MR. SHEWMON: And this is the core?

2 MR. VAN DE VENNE: This is the fuel. This is what
3 an individual assembly looks like. This is what we call a
4 strong vac, that's all stainless steel; and then, these are
5 rods that get cooled by some flow, because of it's density,
6 but otherwise, it would tend to --

7 MR. SHEWMON: And is this strong vac different
8 than -- is that an additional reflector compared to what you
9 have now?

10 MR. VAN DE VENNE: Yes, we won't have a strong vac
11 now.

12 MR. SHEWMON: This is what you say if your minimum
13 core --

14 MR. VAN DE VENNE: Well, this is the barrel here.
15 We have this now. This is the core barrel, okay, but this
16 would be the minimum here. From here to there, now I'm just
17 guessing.

18 MR. SHEWMON: And this is solid?

19 MR. VAN DE VENNE: And that would be solid, yes.

20 MR. SHEWMON: Actually, I missed his 1.4.

21 MR. CARROLL: The staff says it's 1 x 10 to the
22 19th for a 40 year life with 80 percent use.

23 MR. WILKINS: That is the fast flux.

24 MR. VAN DE VENNE: That was our design goal, but
25 when we finally did the calculations relatively late, it

1 came out to be 1.4.

2 MR. CARROLL: Have you told the staff that?

3 MR. VAN DE VENNE: I don't know. I wasn't even
4 sure that this number was in there. I didn't even know.

5 MR. SHEWMON: Is that the highest spot or is that
6 an average?

7 MR. VAN DE VENNE: That is the highest spot --
8 that's the highest spot. That would be on the corner.

9 MR. SHEWMON: Fine, thanks. And do you know off-
10 hand, what LOCA this give you for a shift in RTNDT. It's
11 getting too much like a materials question.

12 MR. CARROLL: I lost the subject on that section.
13 I don't think it says --

14 MR. SHEWMON: I don't think it said shifts.

15 MR. CARROLL: Let's see it would have been around
16 --

17 MR. SHEWMON: 517 is where it gets into some of
18 that stuff. They argue with the staff, in the middle of
19 that page, about saturation. But, again, it never comes
20 back to numbers.

21 MR. KERR: Is 10 centimeters the minimal shield
22 thickness that's -- minimum reflector thickness. You said
23 four or five inches?

24 MR. VAN DE VENNE: Yes. I think looking on that
25 drawing, that's probably what it is.

1 MR. KERR: It's just about one main -- as I
2 remember.

3 MR. SHEWMON: Did you have a question he's waiting
4 to answer -- did you get an answer.

5 MR. KERR: I got an answer, thank you.

6 MR. SHEWMON: Okay.

7 MR. CARROLL: One thing, however, talking about
8 hardware -- one thing I didn't find much discussion of at
9 all, Lauren, was the water displacer mechanisms and what
10 review the staff has done of -- of reliability of these
11 things and reactivity accidents resulting from them and -- I
12 know we heard a lot of presentation on it, but I found very
13 little on it in here. Is that --

14 MR. WILKINS: You think they might leak and fill
15 up?

16 MR. VAN DE VENNE: I know there are some accidents
17 that are analyzed in Chapter 15 that are inadvertent
18 withdrawals of water displacer rods.

19 MR. CARROLL: You go ahead. Let me try to find
20 it.

21 MR. WILKINS: Well, the discussion of the
22 reactivity effects is on 4.4 and 4.5. And the statement on
23 4.5 -- the nuclear design for the water displacement
24 provides, among other things, no new problems related to the
25 effects of power distribution.

1 MR. CARROLL: That is a nice assertion. I didn't
2 say there were none. I just said I -- I -- since this was a
3 brand new feature, I expected, you know -- find a few pages
4 worth of discussion.

5 MR. WILKINS: I didn't look carefully through the
6 list of references to see what they may have had.

7 MR. CARROLL: Yes, I mean, that's one issue. Will
8 the damn mechanisms blow off the top of the reactor vessel?
9 If so, what happens? I mean, those are all things I
10 expected to find some discussion of, because they are
11 different from the current breeder reactor and --

12 MR. KERR: What's going to blow off the top of the
13 reactor vessel; and if so, what happens? Those are all
14 things I expected to find some discussion of, because
15 they're different from the current breeder reactor.

16 MR. CARROLL: What's going to blow off the top?

17 MR. KERR: The mechanisms that operate these
18 things, are they different than control rod drives?

19 MR. VAN DE VENNE: Yes, they are hydraulic.

20 MR. CARROLL: Okay. I guess we skipped over -- or
21 had nothing else to say about OBE/SSE? Which brings us to
22 IST approach and valves.

23 [Slide.]

24 MR. VAN DE VENNE: This hasn't really been
25 discussed all that much in a concise fashion, and I tried to

1 put some bullets down here. One is that all safety-related
2 pumps can be tested at full flow, at any time, which means
3 also during operation.

4 The other thing that's kind of new is the fact
5 that the emergency core cooling and the emergency feedwater
6 systems are permanently aligned to perform their function.
7 There are -- there is no MOV operation required at any time
8 during, let's say 24 hours or so to -- the only changes
9 really -- the change from cold leg to hot leg injection,
10 which has to be performed at say 24 hours.

11 The EECS and emergency feedwater check valves can
12 be tested at full flow during plant shutdown. That probably
13 is similar to what current plants can do. There is a
14 permanently installed leak testing system for our -- the RHR
15 letdown MOVs and the EECS injection check valves. And, of
16 course, that's done during plant startup.

17 The emergency feedwater system contains
18 instrumentation to prevent back leakage and also the system
19 is arranged such that any back leakage would not affect more
20 than one pump. And, of course, that is to -- to address the
21 steam binding issues, a potential common mode failure.

22 And finally, I guess a comment on high delta MOVs.
23 There are not many, but the ones that are there should
24 probably be qualified by the installation, since testing in
25 the plant would be difficult and maybe even undesirable.

1 And we're talking really primarily here about pressurized
2 PORVs and the emergency letdown valves, which are isolating
3 the reactor coolant pressure from, basically from
4 containment atmosphere. And opening those valves during
5 operation at power would probably not be recommended,
6 although there are two valves, you could close one and open
7 the other one.

8 MR. CARROLL: And once having them open, being
9 unable to close them could probably ruin your day?

10 MR. VAN DE VENNE: Yes.

11 MR. MICHELSON: Not listed on your slide was one
12 item covering the inadvertent alignment of the valve during
13 and ECCS process and how your ability to realign them with
14 additions of differential pressure or whatever might exist.
15 Is that covered somewhere else, or is that an incredible?

16 MR. VAN DE VENNE: You're talking about an
17 inadvertent closure?

18 MR. MICHELSON: That's what the generic letter
19 talks about.

20 MR. VAN DE VENNE: Inadvertent closure of an ECCS
21 valve.

22 MR. MICHELSON: Or any valve, any safety related
23 valve. In other words, the operator pushes the wrong
24 button.

25 MR. CATTON: Davis Besse.

1 MR. MICHELSON: Then you close the valves and he
2 realizes the mistake and he turns around to reopen them and
3 they wouldn't reopen.

4 Well, that kind of mistake has to be checked on
5 the valves now under the generic letter which I am sure will
6 pertain to this plant when and if it's built.

7 MR. VAN DE VENNE: It is hard to -- the ECCS
8 valves; we're talking about his suction valve, of course,
9 which is a low pressure valve. This gate valve --

10 MR. MICHELSON: Well, low pressure doesn't mean a
11 thing. It's how the big the operator is on that low
12 pressure valve that counts. If I never plan on a hundred
13 pounds across the operator -- across the gate, that's low
14 pressure, all right, but it may not work with the operator
15 that's on there.

16 You've got to look at low pressure valves at well.
17 You've got to look at your water systems and so forth, not
18 just what's there. You've got to look at the CCWS, your
19 closed cooling water system; you have to look at that entire
20 system for valves and so on.

21 MR. VAN DE VENNE: Basically, you're saying that
22 valves have to be designed for the pressure.

23 MR. MICHELSON: That's what the generic
24 requirements says, yes.

25 MR. VAN DE VENNE: Well, this valve is normally

1 designed for containment pressure.

2 MR. MICHELSON: I'm sure that it is and it would
3 be no problem for you, because you realize what has to be
4 done and you do it ahead of time. I'm sure it would be no
5 problem.

6 MR. VAN DE VENNE: Most of these pumps can be
7 tested at power through this test line which goes back to
8 the --, so you're testing not only the pump, but you're
9 testing the substantial portion of the normal circuit. The
10 only thing you're really not testing is these two check
11 valves.

12 MR. CATTON: Is there any way they could get stuck
13 shut?

14 MR. VAN DE VENNE: Which ones?

15 MR. CATTON: The check valves.

16 MR. CARROLL: They're tested in other ways.

17 MR. VAN DE VENNE: Yes, they could. Really, what
18 was on our previous slide is that you test those at full
19 flow during every refueling, because they're part of the RHR
20 circuit, so you do test them, but once you start up, the
21 only thing that you do is, you test them to make sure that
22 they're closed, but they could be locked in position and one
23 mechanism that makes you feel a little bit better is that
24 there are four circuits, so that the probability of having
25 all four is -- maybe it's only one in four, but it's still a

1 possibility.

2 I think it's very, very difficult to either test
3 or detect at power. Even conceptually, I have a hard time
4 seeing what you could do, because this pump doesn't have
5 enough head intentionally to go against full system
6 pressure. There's another issue like PORV opening that you
7 really don't want to do, so this pump has a head of 18-1900
8 PSI in order to prevent injection into the system when you
9 don't want it.

10 You really don't have the capability to open these
11 valves at power. The question is; do you really want to,
12 because if you open them, they may not close and the you
13 have a bad situation.

14 MR. CARROLL: I could do things probably like
15 close that motor operated valve ahead of them.

16 MR. VAN DE VENNE: It injects in the pump.

17 MR. CARROLL: I could have a test connection where
18 I could put --

19 MR. VAN DE VENNE: The next thing you're getting
20 into when these valves are leaking; what you would do now is
21 shut down the plant.

22 MR. CARROLL: Yes, I know.

23 MR. MICHELSON: The intent of the generic letter,
24 is, of course, that you should provide for testing in situ,
25 where possible, at least. Now, you've got a brand new

1 design and you should provide for possible --

2 MR. CARROLL: He thinks he has.

3 MR. MICHELSON: But he hasn't covered all of his
4 systems. He has covered part of it. There is more to it
5 than is shown there. You haven't gone out into the water
6 systems and there's problems out there. They find out these
7 valves don't work all the time.

8 [Slide.]

9 MR. VAN DE VENNE: This is the emergency feed. We
10 have a similar situation in being able to test the pumps.
11 There is temperature instrumentation which is really not
12 shown here with which we detect any hot water from back
13 leaking, but again, there is the same problem of testing in
14 the forward direction.

15 I think testing implies opening of these valves
16 and I think that it gets you into a worse situation than you
17 were. I think that the probability that they will not
18 reclose is higher than the probability that they were
19 initially stuck.

20 If they don't reclose, you're forced to shut the
21 plant down. I don't think you can live with a couple of
22 check valves leaking. It's a difficult problem.

23 The cooling water systems are always running. So,
24 I don't think that we have a big problem there with regard
25 to valves.

1 MR. CARROLL: The last slide you shared -- you
2 don't need to put it up again -- is this cavitating venturis
3 to limit flow.

4 MR. VAN DE VENNE: Yes. You mentioned the
5 evaporation problems.

6 MR. CARROLL: I worried about whether you'd looked
7 at the possible issue of vibration with those things.

8 MR. VAN DE VENNE: We did some investigation with
9 manufacturers, and we have not been able to trace the
10 manufacturer of the one that was vibrating. But we're still
11 checking on that.

12 MR. CARROLL: Putting in a nice feature like that,
13 which I agree accomplishes a useful purpose --

14 MR. VAN DE VENNE: Can lead to some other
15 problems.

16 MR. CARROLL: -- and then finding that it causes a
17 fatigue failure when you need the system doesn't sound too
18 great to me.

19 I guess one other note I made is the staff has a
20 section on QA in the SER. Are you aware of the new standard
21 review plan 17-3 on QA, which is either on the street or
22 about to get to the street?

23 MR. BURNS: We got a copy, I believe, on Monday of
24 this week.

25 MR. CARROLL: Okay. I guess it would be premature

1 to ask you if you were going to do any rethinking about how
2 you approach QA based on that.

3 MR. BURNS: We sent it to our QA people.

4 MR. CARROLL: No! That's a mistake!

5 [Laughter.]

6 MR. CARROLL: I think it really means or could
7 mean, for somebody showing a little bit of initiative and
8 innovation, a much scaled-down QA program in terms of rooms
9 full of paper. I applaud anybody who wants to put the
10 effort in to try it, be it a vendor or a utility.

11 Okay. I'm at the bottom of my list. Who's got
12 items they want to further discuss?

13 Bill?

14 MR. KERR: I'd like to ask the staff if any use
15 will be made of the results of NUREG-1150 in this review.

16 MR. DONATELL: I can't answer that.

17 MR. SHEWMON: None spring immediately to mind.

18 MR. CARROLL: Did you read Chapter 19, Bill?

19 MR. KERR: Yes. That's just a matter of
20 curiosity.

21 MR. DONATELL: I will make a note of it, but
22 nothing comes to mind.

23 MR. SHEWMON: A different question: When the
24 staff talks, in Chapter 4, about core size and power
25 density, there's reference to a typical plant with optimized

1 fuel. Does that just mean somebody's economically optimized
2 it, or is that some trade name that Westinghouse has?

3 MR. VAN DE VENNE: It was a trade name. It was a
4 reduction in fuel-rod diameter from .376-inch to .360-inch,
5 which did give some economic benefits, but the economic
6 benefits were mostly related to 12-month cycles, and as
7 utilities are moving more toward 18-month cycles, I think
8 it's had a relatively short product life, because people
9 tend to go back to the bigger rod. But it's really a trade
10 name, yes. It's related to 17 by 17 fuel standards.

11 MR. SHEWMON: Thank you.

12 MR. CATTON: What are the codes, FATCON?

13 MR. VAN DE VENNE: They are structural codes, I
14 think, but I'm not really familiar with it.

15 MR. CATTON: I'm not interested.

16 MR. VAN DE VENNE: It just sounded enthused.

17 MR. CATTON: It's all linear stuff.

18 MR. CARROLL: Any other questions of Theo?

19 [No response.]

20 MR. CARROLL: Okay. Where are we?

21 MR. SHEWMON: We're waiting for a draft letter.

22 MR. CARROLL: Well, I guess we will get updated at
23 the full Committee meeting as to where we stand, by our
24 staff, at least, as to what course of action Lauren and
25 Charlie and those up the chain want to take here.

1 MR. MICHELSON: Full Committee meeting? Which
2 one?

3 MR. CARROLL: The one in October.

4 MR. MICHELSON: That's just a Subcommittee report.

5 MR. CARROLL: Yes.

6 Now, I suppose --

7 MR. SHEWMON: He's talking to what the staff says,
8 and you're talking about a Subcommittee.

9 MR. CARROLL: I said our staff is going to keep in
10 touch with Lauren, and by the time of our October full
11 Committee meeting, Paul, we ought to at least have some feel
12 for the sequence and the way they are going to proceed.

13 MR. MICHELSON: Are you expecting the staff to
14 come in in October, or are you expecting just to get a
15 Subcommittee report?

16 MR. CARROLL: Assuming that they're not going to
17 kick off the whole idea of a PDA and just issue this as an
18 interesting document, which I don't think Charlie ruled out
19 this morning, I don't think we would have a staff
20 presentation in October. I think we'll wait until November.

21 MR. MICHELSON: Yes, that's what I thought

22 MR. CARROLL: But on the other hand, somebody
23 might come to the conclusion that, well, let's just put this
24 out as a NURE and tie a ribbon around it, and that's it.

25 I would like to hear from the staff as to why they

1 did that?

2 MR. MICHELSON: Do you mean that in November or in
3 October?

4 MR. CARROLL: In October.

5 MR. MICHELSON: Are you still holding 2 hours
6 open, then?

7 MR. CARROLL: I think we ought to hear in a day or
8 so --

9 MR. MICHELSON: You think it will be that quick,
10 huh?

11 MR. CARROLL: He said by tomorrow. He told me
12 when he left that he was going to be talking to Murley about
13 the issues we discussed this morning and try to get to some
14 conclusion.

15 MR. DONATELL: I think probably a decision as to
16 whether to approach and go forward on the PDA will be
17 relatively rapidly coming. The other issue as to what is
18 going to be in that PDA, I feel very confident you're not
19 going to see that October 5. It's nothing that needs to be
20 approached that haphazardly. I will say --

21 MR. WILKINS: I expected you to say that.

22 MR. DONATELL: -- The intent that I had up until
23 this morning -- sometime during the morning -- was again to
24 separate in my mind the SER and the PDA as far as issuance.

25 What I was looking at, at the front end, was get

1 your comments on the SER and issue the SER, provided it went
2 through office concurrence and all that. That puts a new
3 reg on the street. The issue or the decision to issue a
4 PDA, is another issue.

5 Now, we had discussions this morning, and I think
6 what I confirmed with you this morning, and I will do it
7 again, is that these two documents, or at least a draft PDA
8 or some commitment along those lines, will march hand-in-
9 hand with issuance of the SER and issuance of the PDA.
10 That's where we stand right now, so we're out to November.

11 MR. CARROLL: Yes, I think the sense of the
12 committee, Warren, is that we really can't -- the
13 seriousness with which we take comments on the SER depends
14 on the what the PDA says.

15 MR. DONATELL: I understand.

16 MR. CARROLL: And I think also another issue there
17 is if, in fact, this is going to lead to a PDA, I guess I'd
18 feel more comfortable in saying something about the SER, if
19 I knew Westinghouse had had a chance to look at it and had
20 gotten back to you with any substantial comments they may
21 have.

22 MR. DONATELL: Obviously, Charlie and I and some
23 other people have a lot of things to be set in the next few
24 days. Other than that, I appreciate your time.

25 MR. MICHELSON: One of the things that would be

1 interesting to hear, of course, is how we treat PDAs and so
2 forth under Part 52, if at all. They're only included in
3 there in that appendix, which was really the same one that
4 was in 50 and just moved forward, but it doesn't make sense
5 when you read it, and then look at it in context. I'd like
6 to hear the lawyers add on that.

7 MR. CARROLL: Yes, at some point in time, I think
8 we need OGC -- probably Crucket, huh?

9 MR. DONATELL: The SER would have to go to OGC,
10 and I sent them a copy, as a courtesy copy, at this point in
11 time. We'll have to officially go to OGC -- this is just
12 the SER -- in the near future. I was frankly anticipating
13 probably next week. Over and above that, there's also no
14 doubt in mind that OGC is going to be intimately involved
15 with the PDA, I mean, that's just --

16 MR. CARROLL: The nature of the beast.

17 MR. DONATELL: -- a fact of life.

18 MR. MICHELSON: Perhaps something will be
19 available in November on that by that time.

20 MR. DONATELL: We're going to attempt to make it
21 available.

22 MR. WILKINS: It's got to be available in October
23 so that we can talk about it.

24 MR. MICHELSON: Well, no, we can schedule
25 briefings by OGC without having papers. We're aren't going

1 to decide on what OCG tells, we're going to decide on the
2 SER. So, we don't have to have the paper, and we can
3 declare an emergency if we felt we did.

4 MR. CARROLL: Okay, any other wisdom at this
5 point?

6 MR. MICHELSON: If they decide for November, are
7 you going to do anything in October at all -- a subcommittee
8 report, or --

9 MR. CARROLL: I'll do a subcommittee report.

10 MR. MICHELSON: Okay. So you'll hold about 1/2
11 hour for a subcommittee report?

12 MR. CARROLL: Yes. It probably would take that.

13 MR. MICHELSON: That's the usual round number.

14 MR. CARROLL: Okay, anything else? Let's call it
15 a day.

16 [Whereupon, at 3:15 p.m., the meeting was
17 adjourned.]

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REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission

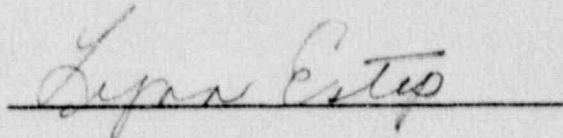
in the matter of:

NAME OF PROCEEDING: Subcommittee On Advanced Pressurized
Water Reactors

DOCKET NUMBER:

PLACE OF PROCEEDING: Bethesda, Maryland

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.



Official Reporter
Ann Riley & Associates, Ltd.

NRR STAFF PRESENTATION TO THE
ACRS

SUBJECT: RESAR SP/90

DATE: September 20, 1990

PRESENTER: Loren F. Donatelli

PRESENTER'S TITLE/BRANCH/DIV.: Project Manager
Standardization Project Directorate
Division of Reactor Projects - III,
IV, V, and Special Projects
Office of Nuclear Reactor Regulation

PRESENTER'S NRC TEL. NO.: (301) 492-1141

SUBCOMMITTEE: Advanced Pressurized Water Reactors

CURRENT REVIEW STATUS

WESTINGHOUSE APPLICATION FOR A PDA

OCTOBER 24, 1983

RESAR SP/80 SUBMITTED

OCTOBER 24, 1983 to MARCH 9, 1987

DSER PRA "FRONTEND"

MARCH 1988

ACRS SUBCOMMITTEE

APRIL 1988

DSER - SRP

JUNE 1988

DSER - SRP

MARCH 1989

WESTINGHOUSE RESPONDED TO OPEN ITEMS

JUNE-SEPTEMBER 1989

ACRS SUBCOMMITTEE

SEPTEMBER 1989

WESTINGHOUSE SUBMITTED AMENDED USIs/GSIs

OCTOBER 1989

ACRS SUBCOMMITTEE

NOVEMBER 1989

ACRS SUBCOMMITTEE

JANUARY 1990

ACRS SUBCOMMITTEE

MARCH 1990

ACRS SUBCOMMITTEE

SEPTEMBER 20, 1990

ACRS FULL COMMITTEE

OCTOBER 5, 1990

OPEN ITEMS

SITE SPECIFIC

17 ITEMS

INFORMATION NOT IN SCOPE OF APPLICATION

110 ITEMS

INCOMPLETE RESOLUTION AT CLOSE OF REVIEW

41 ITEMS

TOTAL

168 ITEMS

COMPLETE PDA REVIEW

items to be accomplished

ACRS SUBCOMMITTEE

SEPTEMBER 1990

Re: FINAL SER

ACRS FULL COMMITTEE

OCTOBER 1990

Re: FINAL SER AND TO REQUEST LETTER

NRC ISSUES FINAL SER

OCTOBER 1990

PDA DECISION

OCTOBER 1990

The preliminary design approval (PDA) is an approval issued by the NRC deeming a standard preliminary design of a nuclear power plant acceptable for incorporation by reference in individual facility license applications (construction permits and manufacturing licenses only) and providing that the approved design be used and relied on by the staff and the Advisory Committee on Reactor Safeguards (ACRS) in their reviews of any such applications. The PDA is optional and is not a prerequisite for a final design approval or design certification.

10CFR52 Appendix O

- o Staff determination of acceptability
 - o Subject to such conditions as may be appropriate

- o Utilized by and relied upon by the staff and the ACRS
 - o Any facility license application referencing an approved design
 - o Unless there exists significant new information which substantially affects the earlier determination or other good cause

- o Information requests regarding an approved design
 - o Evaluated prior to issuance to ensure justified
 - o Approved by the EDO
 - o In accordance with 10CFR50.54(f)

10CFR50.54(f)

(Conditions of Licenses)

- o The licensee upon request of the Commission
 - o Submit written statements under oath or affirmation

- o The Commission will:
 - o Determine if license should be modified, suspended or revoked
 - o Verify licensee compliance with the current licensing basis

- o The reasons for information requests must be developed before issuance
 - o Assure burden on respondents is justified

- o Requests must be approved by the EDO

10CFR50.109

(Backfitting)

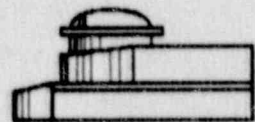
- o Applicable after issuance of a design approval
- o Exceptions - 10CFR50.109(a)(4)
 - o Modification is necessary to bring a facility into compliance with a license or the rules or orders of the Commission, or into conformance with written commitments by the licensee; or
 - o Regulatory action is necessary to ensure that the facility provides adequate protection to the health and safety of the public and is in accord with the common defense and security; or
 - o Regulatory action involves defining or redefining what level of protection to the public health and safety or common defense and security should be regarded as adequate

**ACRS SUBCOMMITTEE ON
ADVANCED PWR'S**

Review of Westinghouse RESAR-SP-90

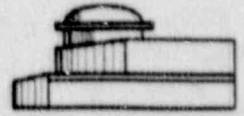
September 20, 1990

Bethesda, Maryland

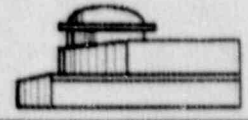




RESAR-SP/90 LICENSING PROGRAM



- **Licensing Program Started in 1982**
- **Design effort was originally tied to the Japanese APWR Program**
- **Purpose**
 - 1) **Position Westinghouse for expected market return**
 - 2) **Obtain NRC approval of key licensing initiatives**
- **Result in a Preliminary Design Approval (PDA)**
 - **Safety Evaluation Report**

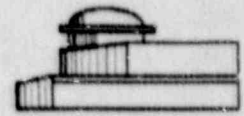


JAPANESE APWR PROGRAM

- **7-Party contract signed August 1982**
- **\$150M total development costs shared by Japanese utilities, Japanese Government (MITI), MHI and Westinghouse**
- **Westinghouse/MHI completed the intermediate design for a total plant (including verification testing of major components) in 1987**
- **Kansai Electric Power announced intent to build first APWR plant in 1988**
- **APWR site investigations are underway but progress has been adversely impacted following Chernobyl**
- **Schedule Estimates**
 - **Final engineering 3-4 years**
 - **Plant construction 4-5 years**



RESAR-SP/90 LICENSING PROGRAM



- **Enhanced Plant Safety**
 - Higher design margins
 - Improved transient performance
 - More reliable safety systems

- **Improved Plant Performance**
 - 90% Average plant availability
 - Higher degree of automation
 - Improved load follow capability
 - Reduced occupational radiation exposure

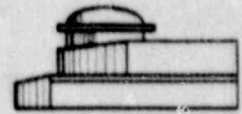
- **Lessons Learned From Existing Designs**
 - Fresh approach to plant layout to minimize effect of common mode failure due to flood, fire and sabotage
 - Separation of safety & normal operation systems

- **Responsive to Current/Future Regulatory Requirements**
 - Unresolved/Generic Safety Issues
 - Severe accident considerations

- **Lower Generating Cost**
 - Plant capital cost
 - Fuel cycle cost



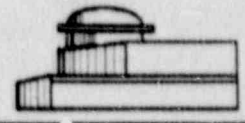
RESAR-SP/90 LICENSING PROGRAM



- **Modular SAR Organized by Systems**
 - **Reactor System**
 - **Primary Safeguards**
 - **Secondary Safeguards**
 - **I&C/Control Room**
 - **Radiation Protection**
 - **Containment Systems**
 - **Probabilistic Risk Assessment**



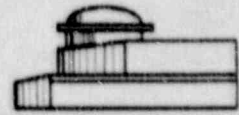
RESAR-SP/90 LICENSING PROGRAM



- **Comply With Regulatory Requirements Involving Post-AMI (10 CFR 50.34 (f))**
- **Address Unresolved Safety Issues, Generic Safety Issues as Applicable**
- **Perform Deterministic Analyses**
- **Complete Probabilistic Risk Assessment**
 - FDA addressed internal events only
 - FDA to include external events
- **Elimination of Pipe Breaks - Mechanistic Pipe Break Concept**
- **Elimination of Spray Additive from the Containment Spray System**
- **PRA Application**
 - System/Component selection
 - Failure Mode and Effects Analysis (FMEA)
 - Value Engineering
- **Reduction in Operating Basis Earthquake Requirement**



RESAR-SP/90 LICENSING PROGRAM



● **NRC Draft Safety Evaluation Reports**

PRA Front End PDA Open Issue #107
(March 1988)

Auxiliary Review 7 Open Issues
(June 1988)

Systems Review 40 PDA Open Issues
(March 1989)

- **Plant/Reactor/Auxiliary Systems**

41 PDA Open Issues

- **Structural/Mechanical Systems**

26 PDA Open Issues

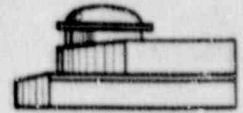
- **Transient Analyses/Single Failure**

PRA Back End Not issued (Included in "Final" SER)

USIs/GSIs Not issued (Included in "Final" SER)



RESAR-SP/90 LICENSING PROGRAM

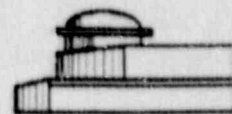


• ACRS/Westinghouse Meetings

- 3/23/82 Subcommittee on Safeguards and Security (Albuquerque)**
- 5/5/83 Westinghouse Subcommittee**
- 8/10/83 Westinghouse Subcommittee**
- 9/25/83 Westinghouse Subcommittee**
- 11/6/87 Full-committee - 12 Recommendations (Severe Accident Issues)**
- 4/6/88 Advanced PWR Subcommittee - Review of DRAFT SER on Probabilistic Safety Study**
- 9/28/89 Advanced PWR Subcommittee - Review of DRAFT SER (Severe Accident Issues)**
- 11/3/89 Advanced PWR Subcommittee - Review of DRAFT SER (Chapters 3, 4, 5, 6 & 8)**
- 1/10/90 Advanced PWR Subcommittee - Review of DRAFT SER (Chapters 7 & 18)**
- 3/6/90 Advanced PWR Subcommittee - Review of DRAFT SER (Chapters 9, 10, 11, 12 and 15)**
- 9/20/90 Advanced PWR Subcommittee - Review of Final SER Issues**
- 10/5/90 Full Committee**



RESAR-SP/90 LICENSING PROGRAM



- **Westinghouse Perspective of PDA**
 - Documents the review that has been completed
 - "Preliminary" NRC Staff safety evaluation of design features
 - "Preliminary" NRC Staff safety evaluation of safety analyses
 - Provides for resolution of some "Severe Accident Issues" after EPRI Utility Requirements Document safety evaluation

- **Benefits of PDA Completion**
 - Preserves expenditure of effort invested
 - Formalizes agreements reached to date
 - Supports US leadership in licensing
 - Will be utilized in AP600 design certification
 - Allows NRC Staff to focus on Part 52 implementation

- **Westinghouse Standard Design Programs Are Responsive to Industry Needs**
 - RESAR-SP/90 and APWR-1000 address near-term need for evolutionary plants, primarily international
 - AP600 is responsive to U.S. market for smaller, simpler plant designs
 - EPRI/Utility Requirements program will establish resolution of generic issues



**SP/90 POSITION
ON
EVOLUTIONARY LWR CERTIFICATION ISSUES**

T. VAN DE VENNE

**PRESENTATION TO THE ACRS SUBCOMMITTEE ON
ADVANCED PRESSURIZED WATER REACTORS**

SEPTEMBER 20, 1990



ALWR PUBLIC SAFETY GOAL

o THE SP/90 PLANT IS DESIGNED TO MEET THE GOALS
STATED IN THE "ALWR REQUIREMENTS DOCUMENT"

- . CORE MELT FREQUENCY 1 X 10⁻⁵/YR
- . SEVERE RELEASE FREQUENCY 1 X 10⁻⁶/YR

o THE PROBABILISTIC SAFETY STUDY FOR INTERNAL
EVENTS INCLUDED IN THE SP/90 PDA SUBMITTAL
PROVIDES A HIGH DEGREE OF ASSURANCE THAT
THESE GOALS WILL BE MET.



SOURCE TERM

- o "TRADITIONAL" SOURCE TERMS HAVE BEEN USED
IN SP/90 DOSE CALCULATIONS FOR DESIGN
BASIS ACCIDENTS.



ATWS

- o THE RELIABILITY OF THE PROTECTION SYSTEM AND THE REACTOR TRIP BREAKERS HAS BEEN IMPROVED RELATIVE TO CURRENT PLANTS.

- o A CONTROL BOARD MANUAL TRIP OF THE ROD CONTROL SYSTEM MOTOR GENERATOR SETS HAS BEEN ADDED.

- o THE VERY NEGATIVE MTC ASSOCIATED WITH THE SP/90 SPECTRAL SHIFT CORE PREVENTS RCS FAILURE DUE TO OVERPRESSURIZATION EXCEPT DURING THE FIRST FEW WEEKS OF CYCLE 1.

- o A DIVERSE ATWS MITIGATION SYSTEM GENERATES TURBINE TRIP AND EMERGENCY FEEDWATER SIGNALS INDEPENDENT OF THE PROTECTION SYSTEM SIMILAR TO CURRENT PLANTS.

- o A DIVERSE SCRAM SYSTEM IS NOT INCLUDED IN THE SP/90 PLANT BECAUSE IT WOULD NOT MEASURABLY REDUCE THE RISK FROM ATWS EVENTS.



MID-LOOP OPERATION

- o THE SP/90 DESIGN INCLUDES FOUR RHR SUBSYSTEMS, EACH OF WHICH IS CAPABLE OF REMOVING DECAY HEAT DURING MID-LOOP OPERATION.
- o WATER LEVEL DURING MID-LOOP OPERATION IS AT LEAST 9 INCHES ABOVE ACTUAL MID-PLANE ELEVATION.
- o WITH VORTEX BREAKER, AIR ENTRAINMENT STARTS TO OCCUR AT APPROXIMATELY 3 INCHES BELOW MID-PLANE ELEVATION, BUT IS LIMITED TO LESS THAN 10%.
- o RHR SUCTION LINES ARE SLOPED CONTINUOUSLY DOWNWARDS TOWARDS RHR PUMPS AND ARE, THEREFORE, SELF-VENTING.
- o RHR PUMP SUCTION LINES PROVIDE ADEQUATE PUMP NPSH AT FULL FLOW ASSUMING SATURATION IN THE HOT LEG.
- o HHSI PUMP WILL BE AVAILABLE DURING MID-LOOP OPERATION FOR EMERGENCY MAKEUP IF REQUIRED.



MID-LOOP OPERATION

- o DEDICATED, REDUNDANT NARROW RANGE LEVEL INSTRUMENTS WITH MCR INDICATION AND ALARM ARE PROVIDED.
- o RANGE OF 'COLD' PRESSURIZER LEVEL INSTRUMENTATION HAS BEEN EXPANDED TO THE BOTTOM OF THE HOT LEG.
- o EACH OF THE FOUR REDUNDANT ISS SUBSYSTEMS INCLUDES RHR FLOW MEASUREMENT AND MAIN CONTROL ROOM INDICATION.
- o REDUNDANT IN-CORE THERMOCOUPLES WILL BE AVAILABLE TO MEASURE CORE EXIT TEMPERATURE DURING MID-LOOP OPERATION.
- o ALL MID-LOOP OPERATIONS CAN BE PERFORMED FROM THE MCR USING THE NORMAL RHR AND CVCS FUNCTIONS.

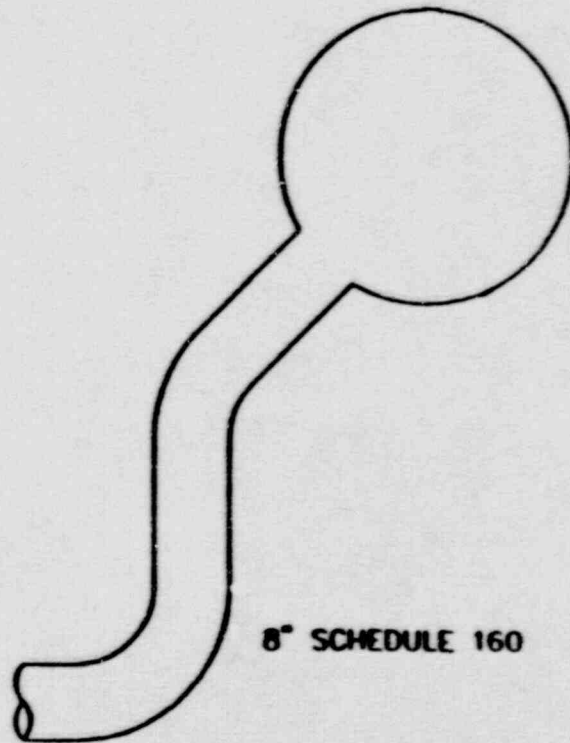
HOT LEG RHR CONNECTION



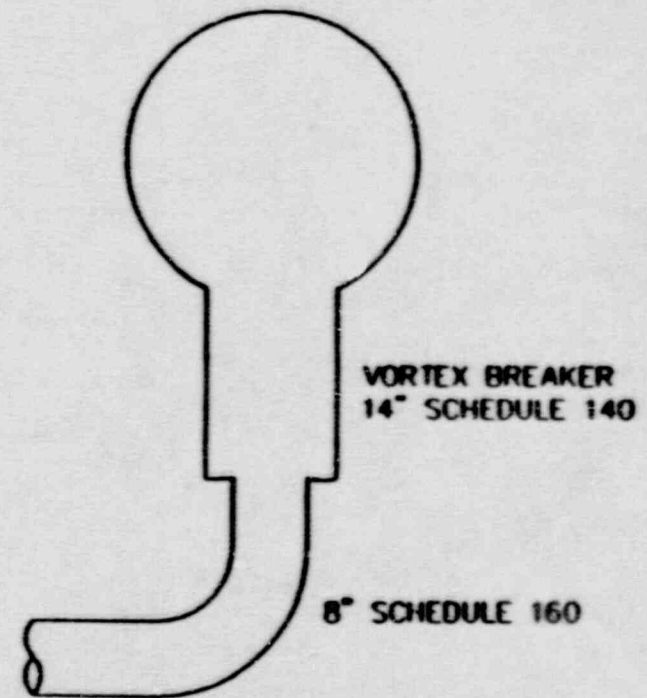
PRESENT SP/90

PDA COMMITMENT

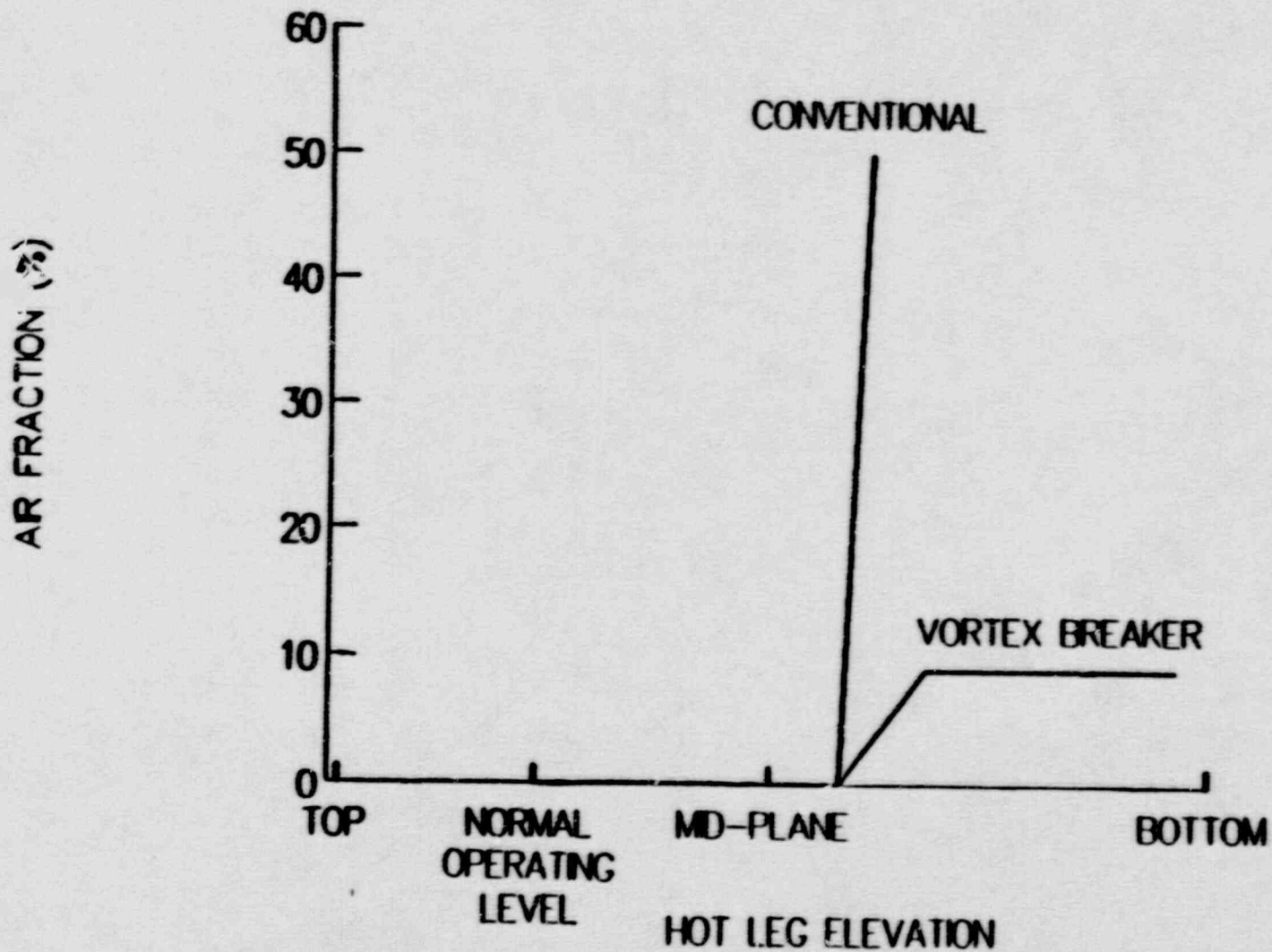
HOT LEG



HOT LEG



RHR SUCTION NOZZLE PERFORMANCE





STATION BLACKOUT

- o FULL LOAD REJECTION CAPABILITY IS INCLUDED.
- o THE ON-SITE POWER SUPPLY CONTAINS AN ALTERNATE AC POWER SOURCE (AAC) WITH SUFFICIENT CAPACITY TO BRING THE PLANT TO COLD SHUTDOWN.
- o THE EMERGENCY FEEDWATER SYSTEM INCLUDES TWO AC/DC INDEPENDENT TURBINE-DRIVEN PUMPS.
- o THE REACTOR COOLANT PUMP SEALS HAVE BEEN UPGRADED SUCH THAT LEAKAGE UNDER STATION BLACKOUT CONDITIONS IS REDUCED BY MORE THAN /N ORDER OF MAGNITUDE RELATIVE TO CURRENT DESIGNS.
- o THE CLASS 1E BATTERIES ARE DESIGNED FOR EIGHT HOURS OF OPERATION UNDER STATION BLACKOUT CONDITIONS.



STATION BLACKOUT

- o SOME OF THE STATION BLACKOUT DESIGN FEATURES ARE NOT ACCOUNTED FOR IN THE SP/90 PROBABILISTIC SAFETY STUDY.

- o EFFORTS ARE UNDERWAY TO EVALUATE THE IMPACT OF THESE FEATURES; PRELIMINARY INDICATIONS ARE THAT THE CORE MELT FREQUENCY CONTRIBUTIONS FROM LOSS OF OFFSITE POWER ($8.1 \times 10^{-7}/\text{YR}$) AND LOSS OF COOLING ($3.4 \times 10^{-7}/\text{YR}$) WILL BE REDUCED BY A FACTOR OF 3 TO 4.

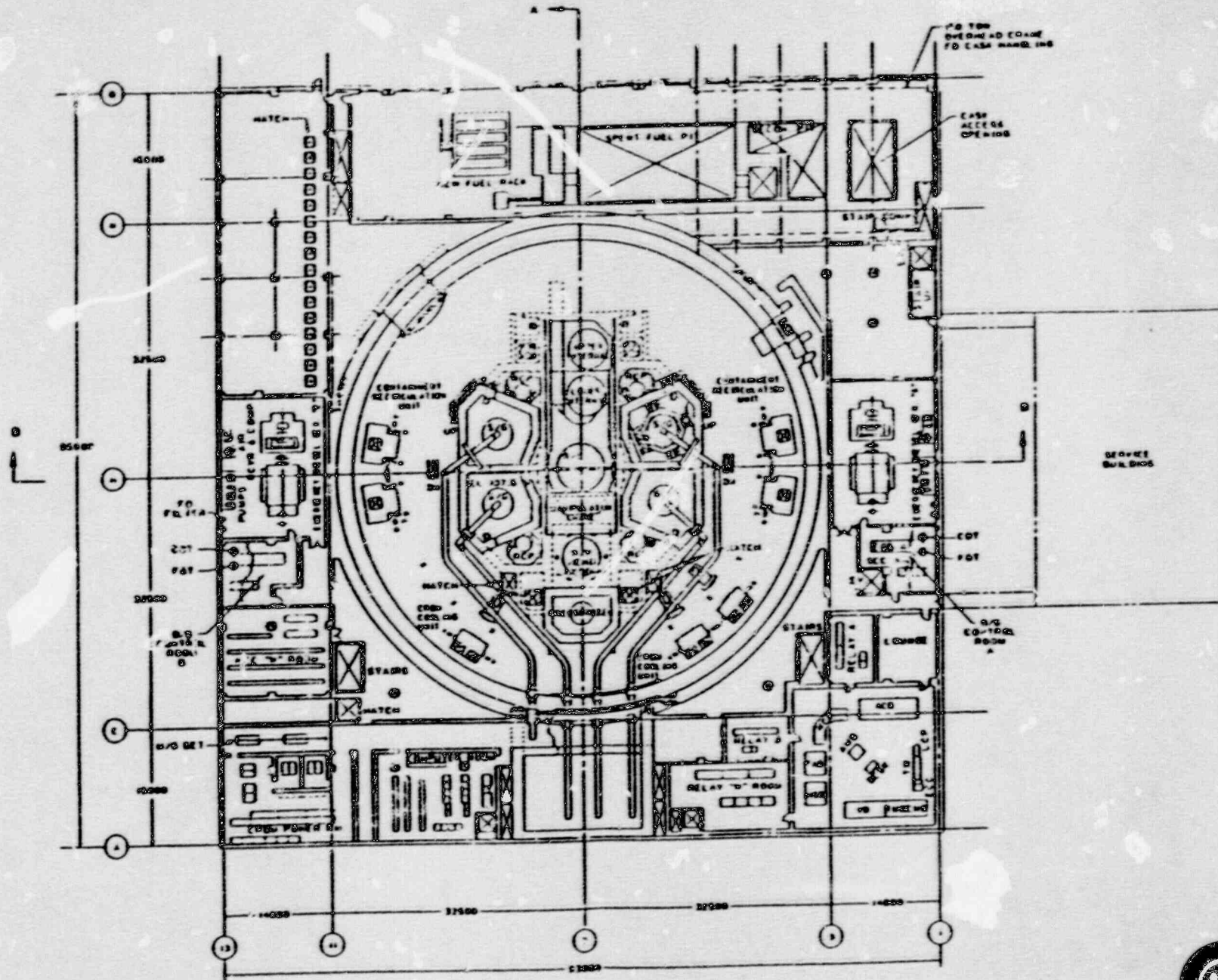
- o A LARGER REDUCTION IN SEVERE RELEASE FREQUENCY IS EXPECTED BECAUSE THE MAJORITY OF COREMELTS FROM THESE EVENTS WILL NOW BE "LATE" RATHER THAN "EARLY."



FIRE PROTECTION
(OUTSIDE CONTAINMENT)

- o OUTSIDE CONTAINMENT, REDUNDANT DIVISIONS OF SAFETY RELATED EQUIPMENT ARE LOCATED IN DEDICATED AREAS WHICH ARE SEPARATED FROM EACH OTHER AND FROM OTHER AREAS OF THE PLANT BY THREE HOUR FIRE BARRIERS.
- o EACH REDUNDANT SAFETY AREA IS PROVIDED WITH SEPARATE VENTILATION SYSTEMS.
- o THE THREE HOUR FIRE BARRIER BETWEEN THE REDUNDANT SAFETY AREAS IS INTERRUPTED BY PERSONNEL CORRIDORS AND A LIMITED NUMBER OF FIBER-OPTIC DATA LINKS.
- o THE MAIN CONTROL ROOM AND MAIN STEAM TUNNEL ARE EXCEPTIONS TO THE ABOVE SEPARATION ARRANGEMENT.

APWR REACTOR BUILDING



El. 100.0 m



FIRE PROTECTION

MAIN CONTROL ROOM

- o FUNCTIONALITY REQUIREMENTS DICTATE THAT THE MCR BE A SINGLE FIRE AREA.

- o FEATURES ARE INCLUDED IN THE MCR TO
 - . REDUCE THE PROBABILITY OF FIRE INITIATION
 - . REDUCE THE PROBABILITY OF FIRE SPREADING
 - . INCREASE THE PROBABILITY OF FIRE DETECTION
 - . MITIGATE THE EFFECTS OF A FIRE

- o IN CASE OF MCR EVACUATION THE PLANT CAN BE BROUGHT TO COLD SHUTDOWN FROM THE EMERGENCY PANELS.



FIRE PROTECTION
MAIN STEAM TUNNEL

- o MST CONTAINS SAFETY RELATED PORTIONS OF MAIN STEAM AND FEEDWATER LINES.
- o EQUIPMENT IS MOSTLY NOT DIVISION ORIENTED.
- o MST DOES NOT CONTAIN FLAMMABLE MATERIALS.
- o HIGH ENERGY LINE BREAK CONSIDERATIONS MAKE COMPARTMENTALIZATION UNDESIRABLE.
- o EQUIPMENT THAT CAN BE USED FOR SAFE SHUTDOWN IS BACKED UP BY OTHER EQUIPMENT OUTSIDE MST.
- o IN ACCORDANCE WITH DEFENSE-IN-DEPTH PRINCIPLES, SAFE SHUTDOWN EQUIPMENT WILL BE ARRANGED TO THE EXTENT PRACTICAL TO MAINTAIN ONE DIVISION FREE OF FIRE DAMAGE.



FIRE PROTECTION

DESIGN FEATURES (INSIDE CONTAINMENT)

- o CONTAINMENT CONSTITUTES A SINGLE FIRE AREA.

- o THIS SINGLE FIRE AREA WILL BE SUBDIVIDED INTO SEVERAL FIRE ZONES SUCH THAT LOSS OF ONE FIRE ZONE WILL NOT JEOPARDIZE THE CAPABILITY TO ACHIEVE COLD SHUTDOWN.

- o FIRE ZONE SEPARATION IS PREFERENTIALLY BASED ON EXISTING STRUCTURAL WALLS. WHERE THIS IS NOT POSSIBLE, OTHER METHODS WILL BE USED (E.G., NO LINE OF SIGHT EXPOSURE, LARGE DISTANCE WITH NO INTERVENING COMBUSTIBLES).

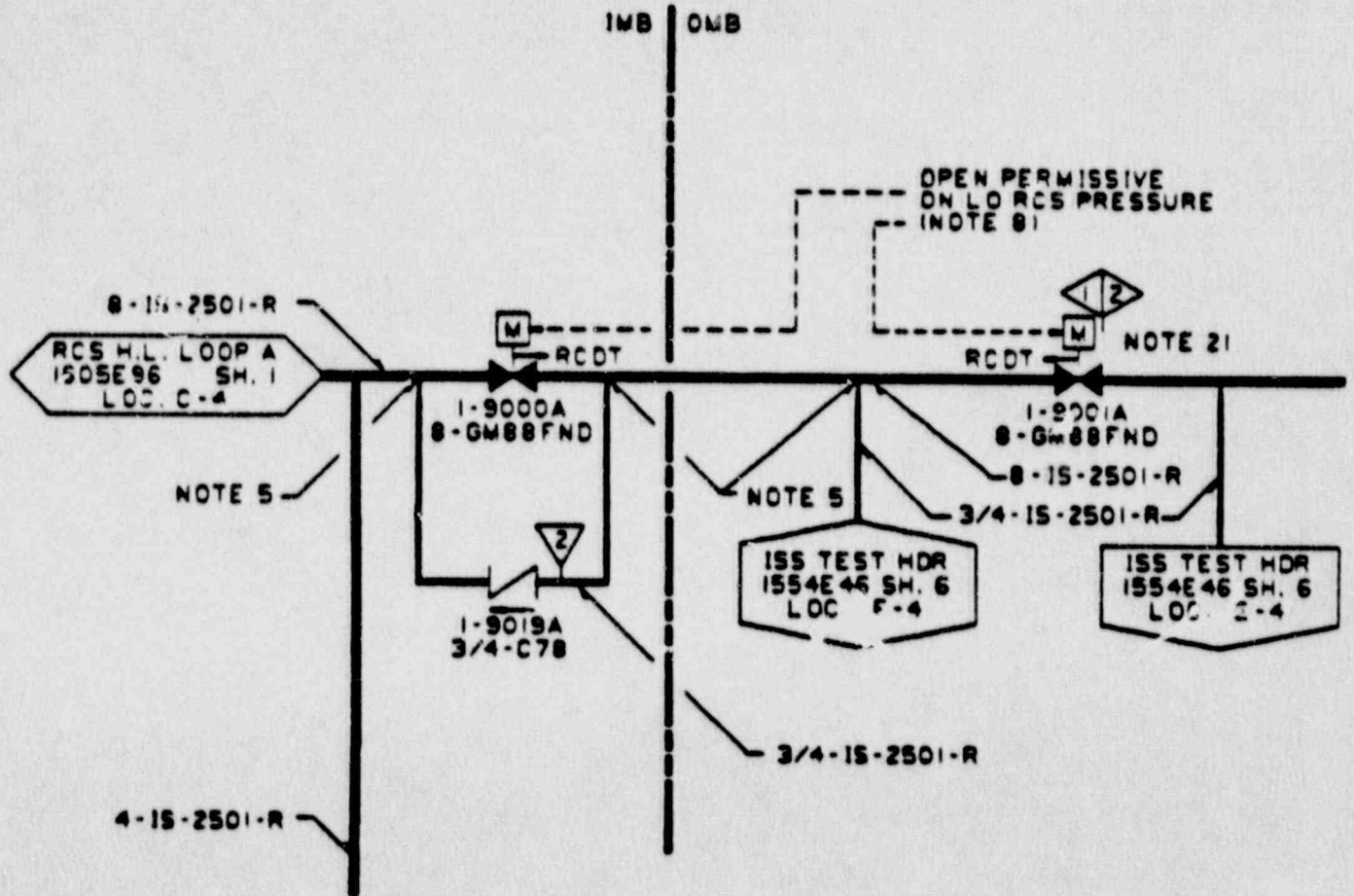


INTERSYSTEM LOCA

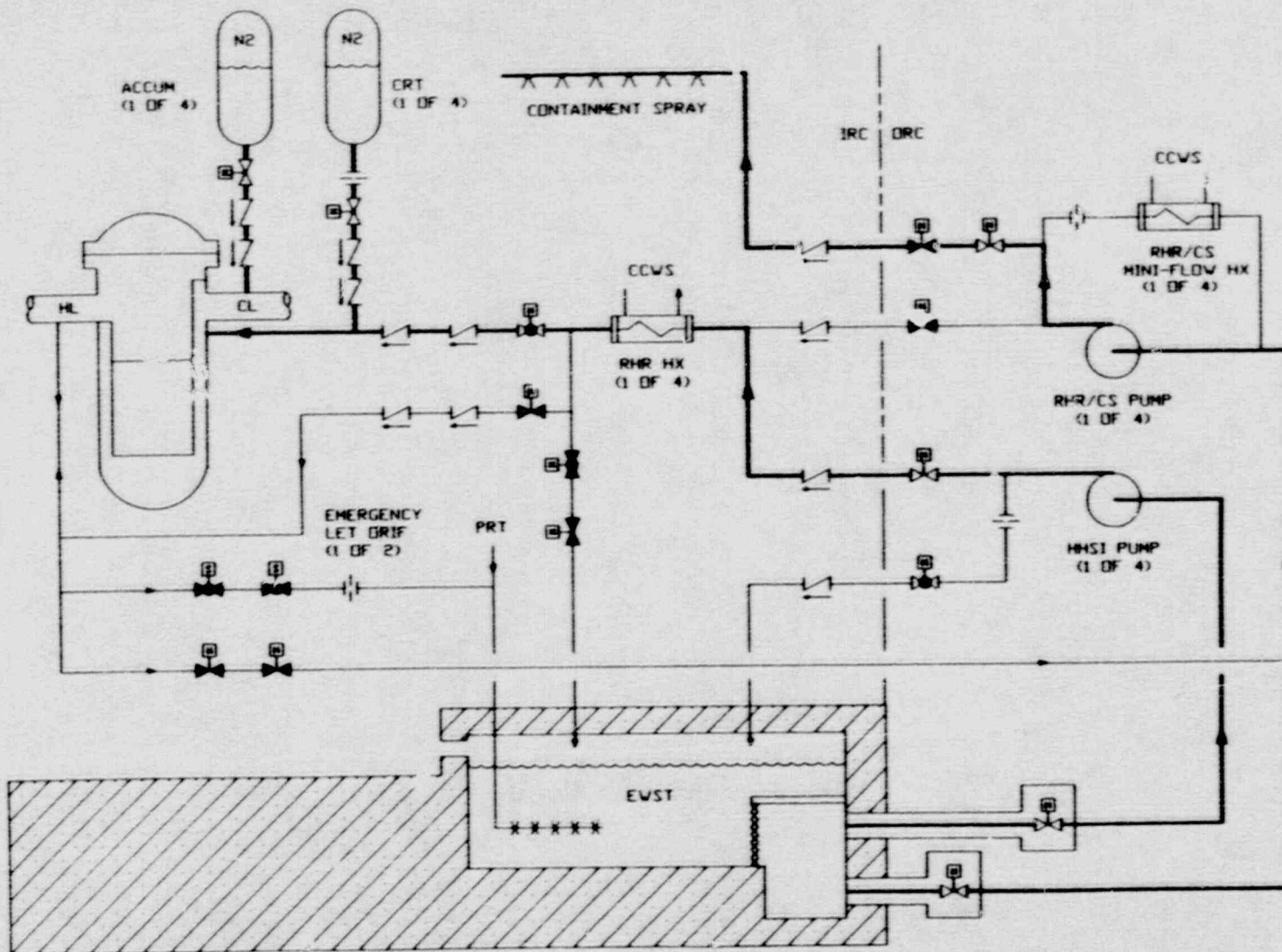
- o RHR ISOLATION VALVES ARE INCLUDED IN ISS TEST HEADER AND WILL BE LEAK TESTED DURING STARTUP.
- o RHR SUCTION PIPING DESIGN PRESSURE HAS BEEN INCREASED SUCH THAT GROSS FAILURE WILL NOT OCCUR EVEN WHEN SUBJECTED TO RCS OPERATING PRESSURE.
- o RHR SUCTION PIPING IS IN OPEN CONNECTION WITH THE IN-CONTAINMENT EWST SUCH THAT PRESSURE IS RELIEVED FOLLOWING LEAKAGE THROUGH RHR ISOLATION VALVES.
- o RHR PUMPS AND PIPING ARE ARRANGED TO ASSURE SUFFICIENT EWST INVENTORY TO ALLOW CONTINUED CORE COOLING WITH NON-AFFECTED ISS SUBSYSTEMS.
- o OTHER RCS CONNECTIONS ARE MUCH LESS LIKELY TO LEAD TO AN INTERSYSTEM LOCA AND WOULD MOREOVER RESULT IN SMALLER CONSEQUENCES.

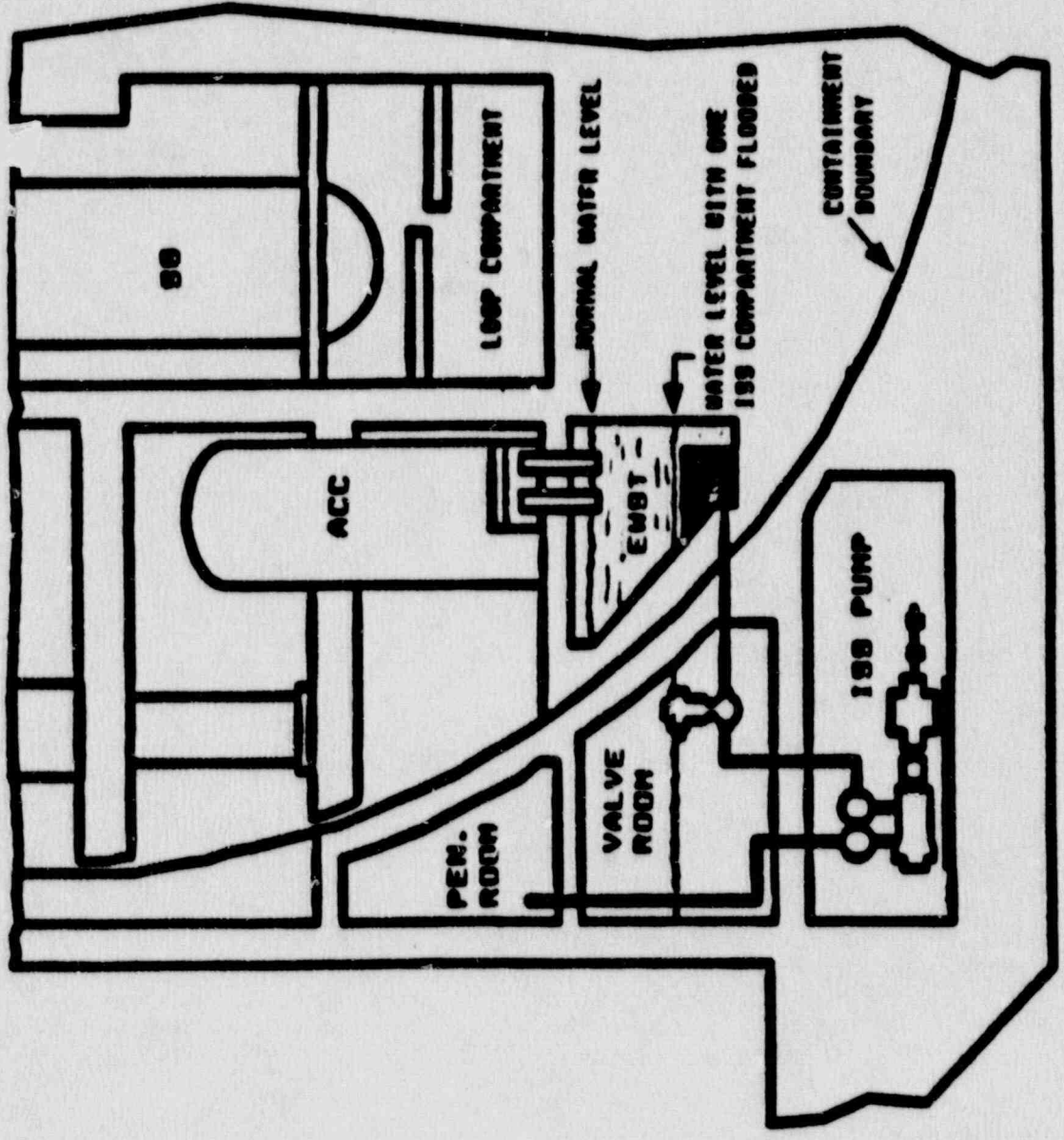


RHR ISOLATION VALVES LEAK TESTING CAPABILITY



APWR - INTEGRATED SAFEGUARDS SYSTEM





INTEGRATED SAFEGUARDS SYSTEM COMPARTMENT ARRANGEMENT



HYDROGEN GENERATION AND CONTROL

- o IGNITERS ARE PROVIDED IN ORDER TO MAINTAIN THE HYDROGEN CONCENTRATION BELOW 10 PERCENT ASSUMING A REACTION OF WATER WITH 100 PERCENT OF THE CLADDING SURROUNDING THE ACTIVE FUEL.



CORE-CONCRETE INTERACTION

- o THE REACTOR CAVITY FLOOR AREA IS APPROXIMATELY EQUAL TO 0.02 M²/MWTH.

- o THE CONTENTS OF THE IN-CONTAINMENT EMERGENCY WATER STORAGE TANK CAN BE DRAINED TO THE REACTOR CAVITY BY REMOTE OPERATOR ACTION.



HIGH PRESSURE CORE MELT EJECTION

- o THE REACTOR CAVITY LAYOUT IS DESIGNED TO MAXIMIZE THE PROBABILITY OF CONTAINING CORE DEBRIS.

- o AC INDEPENDENT RCS DEPRESSURIZATION IS PROVIDED BY THE SAFETY GRADE PRESSURIZER POWER OPERATED RELIEF VALVES.



CONTAINMENT PERFORMANCE

- o NO SPECIFIC CONTAINMENT PERFORMANCE GOAL IS INCLUDED IN SP/90 PDA APPLICATION.

- o NO CONTAINMENT FAILURE IS EXPECTED WITHIN 24 HOURS FOR THE VAST MAJORITY OF SEVERE ACCIDENT SEQUENCES.

- o IT IS EXPECTED THE CONDITIONAL CONTAINMENT FAILURE PROBABILITY WILL BE LESS THAN 0.1 ASSUMING REASONABLE CREDIT FOR RECOVERY ACTIONS.



EQUIPMENT SURVIVABILITY

- o WESTINGHOUSE AGREES THAT FEATURES PROVIDED IN THE SP/90 PLANT FOR SEVERE ACCIDENT PROTECTION ONLY NEED NOT BE SAFETY GRADE.

- o AN EFFORT IS UNDERWAY TO DEFINE AN APPROPRIATE CLASSIFICATION FOR ALL NUCLEAR PLANT EQUIPMENT; THE RESULTS OF THIS WILL BE SUBMITTED AS PART OF THE AP600 FDA SUBMITTAL.



OBE/SSE

- o WESTINGHOUSE AGREES THAT THE OBE SHOULD NOT GOVERN SEISMIC DESIGN.

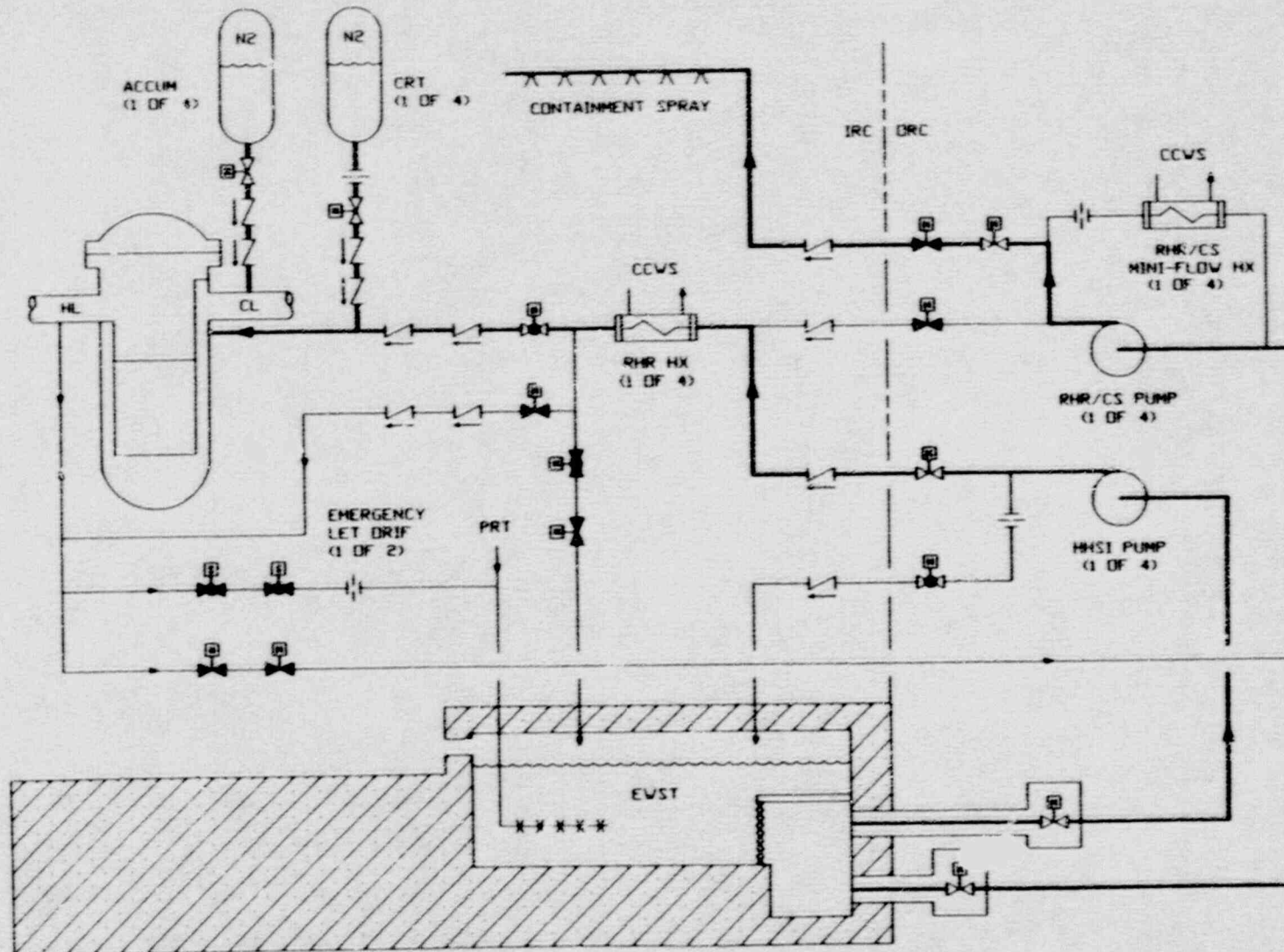
- o THE PROPOSED SP/90 VALUES (0.3 G SSE, 0.1 G OBE) WOULD RESULT IN THE SSE BEING LIMITING.



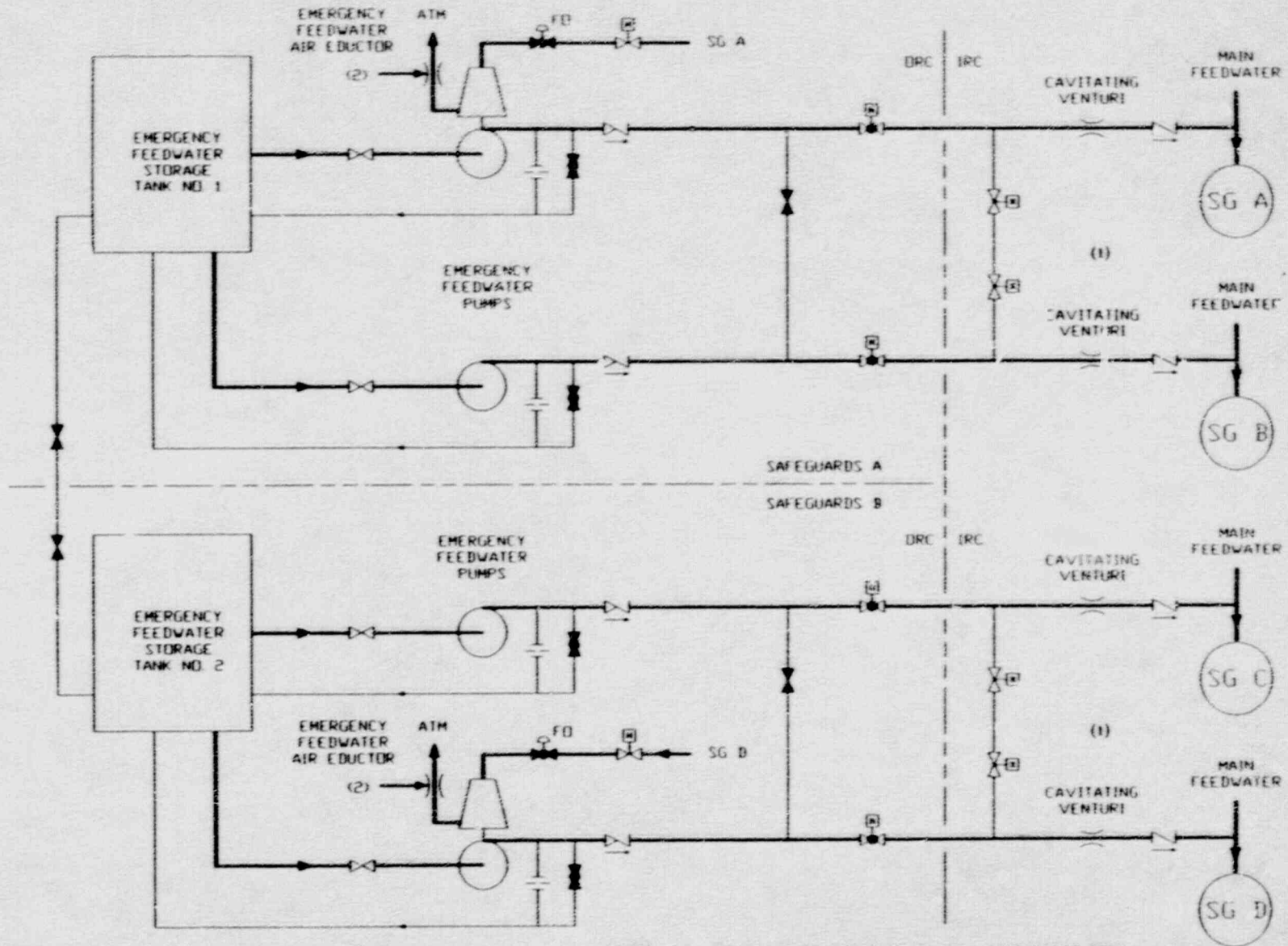
IN-SERVICE TESTING OF PUMPS AND VALVES

- o CAPABILITY IS INCLUDED IN THE DESIGN TO PERFORM FULL FLOW TESTING OF ALL SAFETY RELATED PUMPS AT ANY TIME.
- o THE ECC AND EFW SYSTEMS ARE PERMANENTLY ALIGNED TO PERFORM THEIR SAFETY FUNCTION WITHOUT NEED FOR MOV REALIGNMENT.
- o ALL ECCS AND EFW CHECK VALVES CAN BE TESTED AT FULL FLOW DURING PLANT SHUTDOWN.
- o A PERMANENTLY INSTALLED SYSTEM IS PROVIDED TO ALLOW LEAK TESTING OF RHR LETDOWN MOV'S AND ECCS INJECTION CHECK VALVES DURING PLANT STARTUP.
- o INSTRUMENTATION TO DETECT EFW CHECK VALVE BACKLEAKAGE IS PROVIDED AND EFW PUMPS HAVE INDIVIDUAL SUCTION LINES TO LIMIT THE EFFECTS OF ANY LEAKAGE.
- o HIGH ΔP MOV'S SHOULD BE QUALIFIED PRIOR TO INSTALLATION SINCE IN-SITU TESTING AT OPERATING CONDITIONS APPEARS TO BE UNDESIRABLE (PRESSURIZER PORV'S, EMERGENCY LETDOWN VALVES).

APWR - INTEGRATED SAFEGUARDS SYSTEM



APWR - EMERGENCY FEEDWATER SYSTEM



NOTE: (1) HIGH SG DELTA PRESSURE CLOSES ASSOCIATED MDV's
 (2) EDUCTOR REMOVES WARM AIR FROM T/D PUMP ROOM

