ACRST-1820 ORIGINAL

OFFICIAL TRANSCRIPT OF PROCEEDINGS

0/1

Agency: U.S. Nuclear Regulatory Commission
Advisory Committee On Reactor Safeguards

Title: Subcommittee On Advanced
Pressurized Water Reactors

Docket No.

LOCATION: Bethesda, Maryland

DATE: Thursday, November 1, 1990 PAGES: 1 - 135

ANN RILEY & ASSOCIATES, LTD.
1612 K St. N.W., Suite 300
Washington, D.C. 20006
(202) 293-3950

PUBLIC NOTICE BY THE

UNITED STATES NUCLEAR REGULATORY COMMISSION'S

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

DATE: Thursday, November 1, 1990

The contents of this transcript of the proceedings of the United States Nuclear Regulatory Commission's Advisory Committee on Reactor Safeguards, (date) Thursday, November 1, 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.

U.S. NUCLEAR REGULATORY COMMISSION

*****

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

*****

SUBCOMMITTEE ON ADVANCED PRESSURIZED WATER REACTORS

*****

Nuclear Regulatory Commission
Conference Room P-110
7920 Norfolk Avenue
Bethesda, Maryland

Thursday, November 1, 1990
8:34 o'clock a.m.

PARTICIPANTS:

J. CARROLL, ACRS Subcommittee Chairman

C. MICHELSON, ACRS Member

P. SHEWMON, ACRS Member

E. WILKINS, ACRS Member

M. EL-ZEFTAWY, ACRS Cognizant Staff Member

E. KENNEDY, C-E

S. RITTERBUSCH, C-E

R. TURK, C-E

C. MILLER, NRR/NRC

T. WAMBACH, NRR/NRC

T. ROTELLA, ACRS Staff Member

PROCEEDINGS

[8:34 a.m.]

MR. CARROLL: Good morning.

The meeting will now come to order.

This is a meeting of the Advisory Committee on Reactor Safeguards Subcommittee on Advanced Pressurized Water Reactors.

I am J. Carroll, Committee Chairman.

The other ACRS members in attendance are Carl Michelson, Paul Shewmon, and Ernest Wilkins.

The purpose of our meeting today is to discuss the ABB Combustion Engineering Licensing Review Basis document and a staff Commission Paper, SECY-90-353, regarding the LRB for the System 80+ evolutionary light water reactor.

Dr. El-Zeftawy is the cognizant ACRS staff member, and Tom Rotella is also here, since he will be taking over this project eventually.

The rules for participation in today's meeting have been announced as part of the notice of this meeting previously published in the Federal Register on October 18, 1990. A transcript of the meeting is being kept and will be made available, as stated in the Federal Register notice.

It is requested that each speaker first identify himself or herself and speak with sufficient clarify and volume so that he or she can be readily heard.

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

I would point out to the members that Tom and Med have passed out an additional SECY, SECY-90-362, which is pre-decisional and is erroneously titled "Staff Comments on the Continuing Need for a Licensing Review Basis Document for Each Passive Design."

Actually, it also discusses the staff's views with respect to System 80+, as well as the staff's views on LRBs for high-temperature gas-cooled and liquid-metal reactors, but for our purposes this morning, the couple of paragraphs of interest are those dealing with Combustion System 80+, and as I said, this is a pre-decisional document, which is available only to the Committee members.

With that, unless other members of the Subcommittee have things they'd like to bring up at this point, I'd like to proceed with Combustion Engineering.

While Ernie is getting ready, I would mention one other thing to refresh the Committee's memory: We were asked by the Commission, on December 15, 1989, in a staff requirements document, to -- it says "The ACRS should review both the GE ABWR and the CE System 80+ LRB documents and comment on each. The ACRS should pay particular attention to the issue of whether the approach taken in the two LRB documents is consistent."

We, of course, have mentioned this from time to time in the past, and I guess the full Committee has indicated that Carl, ABWR, and myself, 80+, as subcommittee chairmen, ought to deal with this at the appropriate time, and obviously, if we're going to make this kind of a comparison, we're going to have to wait until the Combustion System 80+ LRB document is complete, but that is something we have on our plate, at this time, to deal with.

Ernie?

[Slide.]

MR. KENNEDY: Good morning, gentlemen.

My name is Ernie Kennedy. I am the Manager of Nuclear Systems Licensing for ABB Combustion Engineering Nuclear Power.

I have with me today our lead licensing engineer on System 80+, Stan Ritterbusch, and also, we are expecting to arrive shortly, if the fog lifts, Rick Turk from our Light Water Reactor Program Office.

We did not bring a large crew today to go into a lot of technical detail. We have had some technical meetings with the Subcommittee, but I think, with the people we have here today, we can answer the questions you may have on the LRB.

[Slide.]

MR. KENNEDY: What I would like to discuss today

is that the System 80+ Licensing Review Basis document, the last major revision we submitted to the staff was last January, January 1990. That is the version we will be discussing today.

We did send in a letter in August of 1990 addressing two or three issues which the staff asked us to address, which commit to revisions to the LRB on some specific issues, and I will discuss what those are today with you.

The other thing is I would like to discuss what we expect might change in the LRB as the result of what we understand staff comments to be, and finally, very briefly -- you mentioned the comparison to the General Electric ABWR LRB. I'd like, very briefly, just to touch on that for the benefit of the Subcommittee.

[Slide.]

MR. KENNEDY: The idea of a licensing review basis concept was initiated generally in '86-'87 timeframe. It was initiated by General Electric essentially. The purpose of a licensing review basis document, at that time, was to document administrative procedures for a review of a design certification application and the approach to new technical concerns.

In general, an LRB discussed the scope of the design, which would be submitted to the Commission, to the

staff, the anticipated review schedule, the administrative procedures under which the review would be conducted by the staff and the applicant and technical issues beyond those of the existing body of the standard review plan and regulatory guides. That is what essentially an LRB was intended to do and I must remark that I think LRB's were kind of committed out of the -- you know, invented out of the blue. There is no guidance that I know of that defines what an LRB should or should have in it. So, they've been kind of created as the need arose.

MR. CARROLL: To your knowledge, Ernie, is there any requirement -- or maybe Charlie can answer this -- for an LRB in Part 52 -- is it part of the process envisioned by Part 52?

MR. MILLER: This is Charlie Miller from the staff. Part 52 has no such requirements.

MR. CARROLL: All right.

[Slide.]

MR. KENNEDY: The System 80+ Licensing Review Basis Document was initially drafted and submitted to the staff in July of 1987. Between the issuance of that draft and the issuance of 10 CFR Part 52 there were, in fact, several revisions which I have not put on the chart here, just to keep the chronology brief. There were several revisions in this timeframe.

The salient point is that in April of 1989 10 CFR Part 52 was issued and we subsequently revised our LRB in August of 1989 to reflect our understanding of the Part 52 requirements. This is significant in that, prior to this time, there were some policy difference with the staff that we were arguing. In our view, those policy decisions were resolved with the issuance of Part 52 and with this revision, we believe we no longer had any significant policy disputes with the staff and the Commission. So, we believe this LRB was in compliance with Part 52.

In December of 1989, there were two Staff Requirements Memoranda issued by the Commission. The following month we revised the LRB once again to incorporate some of the requirements of these SRM's. In particular, the Staff Requirements Memorandum asked for comparison to the EPRI Requirements Document. We provided such a comparison in this revision of the LRB.

This Staff Requirements Memorandum also put in place a process by which the staff would identify policy issues and bring those policy issues to the attention of the ACRS and the Commission for resolution. We reflected that process in this LRB revision in January of 1990.

Also in January of 1990 the staff identified policy issues to the Commission in SECY-90-016. The Staff Requirements Memorandum on that was issued this past June of

1990. Now, as it turns out, in this revision of the LRB, we correctly anticipated 13 of the 15 policy issues that were included in SECY-90-016, so we did not revise our LRB at this point. We thought it was still adequate, that we had correctly anticipated the policy issues. Although, in August 1990 we did send a letter, particularly hydrogen control is the most important technical content of this letter, and I'll go into it; committing to revise the LRB in a couple of specific places.

The last bullet here is we're aware that the staff has prepared a SECY paper on the combustion engineering LRB that is not publicly available. We have not had a chance to examine that yet. We believe we understand, in general, through our discussions with the staff, what is in it; but I would caution we have not yet seen the words in the SECY document itself.

[Slide.]

MR. KENNEDY: Now, in parallel with the continuing discussions on the LRB, I want to point out to the subcommittee, that we have been proceeding, in parallel, with completing the submission of our Standard Safety Analysis Report CESSAR-DC, our Standard Safety Analysis Report. We began submittals in November of 1987. They have continued. You can see here the sections of the SAR -- the topics which have been submitted and we have discussed much

of this material with the subcommittee.

[Slide.]

We just submitted, in fact, although we've given an advanced copy to the staff, we just put in UPS yesterday a large amendment that includes the general arrangements which we discussed with the subcommittee at the last meeting. It includes the final ECCS and containment analyses and all of the Chapter 15 safety analyses are in this amendment which is now coming to you. It also includes all of the Chapter 14 start-up test requirements and includes the final set of our PRA results. That amendment is now in transit officially to the staff and they should be receiving it shortly.

MR. MICHELSON: I wanted to ask Medhat, do you know when I'm going to get a copy of the CESSAR document? Amendments don't do me any good. I mean, I won't even have a copy of the document. I've asked for some time now for a copy.

MR. ROTELLA: Yes. I just heard about a week ago that it was on its way.

MR. MICHELSON: Okay. I haven't received it yet.

MR. KENNEDY: We took an action item at the last subcommittee to send a set of CESSAR-DC's to a number of members of the Committee. We wanted to fold in this amendment in the document before we sent it to you.

MR. MICHELSON: Oh, it will be in there already?

MR. KENNEDY: Yes.

MR. MICHELSON: Oh, that's fine.

MR. ROTELLA: They also had a problem with your -- they had a problem with your address also, I believe, and I gave them a different address.

MR. KENNEDY: We intend to file this amendment and then send you the set of books, so you don't get a book and then a huge stack of papers.

MR. MICHELSON: That's fine because it takes a secretary a while to file all that.

MR. CARROLL: On the next viewgraph, however, he's going to tell you about another -- about the --

MR. KENNEDY: We're not going to save you all the work. There is going to be some more work.

[Slide.]

MR. KENNEDY: We do plan, by the end of this year, to submit what we hope will be the last planned amendment to the document. Clearly, there will be amendments as we respond to staff review and staff questions. But by the end of this year, we plan a submittal that includes the results of the seismic methods, the seismic envelope and the seismic criteria for the design, the proposed technical specifications, we will complete our write-ups on our resolution of the unresolved safety issues and generic

safety issues. We have part of that information in the document now, but we're continuing to update it.

We hope to close out a list of open items which have resulted from the staff review to date, so there will be some miscellaneous amendments to the document. We will put in our program for environmental qualification and the radiation and shielding assessment. So those are currently planned for the December 1990 submittal.

MR. MICHELSON: A little while back we had a meeting where you discussed the layout of t. ` plant. Is that layout going to be reflected in this new addition, this Amendment 14? I think it was a 14 or whatever the number was.

MR. KENNEDY: The October Amendment includes those general arrangement drawings in it.

MR. MICHELSON: Okay.

MR. KENNEDY: And I have not yet seen the print quality of those documents. If I think they're not quite that readable, I believe we'd be happy to send you some full size drawings as well.

MR. MICHELSON: I just wondered if that was the level, though -- the whole document's brought up to that level.

MR. KENNEDY: Yes.

MR. MICHELSON: Okay. Thank you.

MR. CARROLL: Are they going to be in color?

MR. KENNEDY: No.

MR. CARROLL: I've got colored pencils.

MR. KENNEDY: Let me point out for those of you who -- you've been following this for some time -- you will note a deletion from this slide, and I should point it out to you.

In previously showing this slide there was an item here called Inspections Test Analysis and Acceptance Criteria -- the ITAAC required by Part 52. Given where we stand today and with the Commission still deliberating on the level of detail issue and whether Tier 1 or Tier 2 approach that NUMARC has recommended, there is no way that we can meet a December 1990 submittal date for those inspections tests and analysis. I removed it from this.

It will have to be a separate submittal to the staff, and I'm not going to show a schedule of that until I understand really where we're headed. So you will note that that is no longer here.

That's an important document. It's something we need to keep our eye on, but I don't know when to schedule it right now.

[Slide.]

Okay. Let us turn to the licensing review basis document itself. It's got seven sections and an appendix.

There is nothing unique about the organization. It's fairly straightforward. The appendix is a list of the design differences that we have identified between the System 80+ design and the evolutionary requirements document produced by EPRI and under review by the staff.

And I will briefly go through each of these sections of the LRB and talk about what's in them.

MR. CARROLL: Before you do that, Ernie --

MR. KENNEDY: Yes.

MR. CARROLL: -- answer an even more basic question. What is it called? Is it called a Combustion Engineering System 80+ LRB or is it the ABB Combustion Engineering?

MR. KENNEDY: It is the Combustion Engineering, Incorporated System 80+ standard design licensing review basis document.

MR. CARROLL: No ABB.

MR. KENNEDY: No ABB. As a matter of legal standing, Combustion Engineering, Inc. is still a legal entity and is the organization applying for the design certification. We are still Combustion Engineering, Incorporated, although we are wholly owned by ABB. When I use the phrase ABB Combustion Engineering Nuclear Power, that is the name of a division. It is not a legal entity.

MR. CARROLL: Okay.

MR. MICHELSON: Just for clarification, as long as there is a short pause, can you tell me how complete your design's going to be in terms of the -- you know -- what parts of the design will not be detailed?

[Slide.]

MR. KENNEDY: We are providing an essentially -- complete design

MR. MICHELSON: Oh, wait. I see you're there.

MR. KENNEDY: Well, the slide doesn't tell you much, but I'll try to answer it in words.

MR. MICHELSON: All right.

MR. KENNEDY: You will remember that Combustion Engineering in the 1987-'88 time frame was arguing for a major portion of a plant. We started out with the nuclear steam supply system, expanded that to the nuclear power module. Part 52 requires an essentially complete plant. We are providing an essentially complete plant.

If you look at the LRB, there's a two page listing of all the systems and structures included in the plant. It is a complete plant. There is a very short listing of structures and systems for which a conceptual design will be provided. Those are generally the site-specific structures -- the intake structures, the warehouses, the administrative buildings and that type of structures. It is a complete nuclear power plant.

That argument is over. We are not arguing that it

should be anything less than a complete nuclear power plant. And the LRB, hopefully, says that. That we are providing an essentially complete nuclear power plant.

The other thing that the introduction of the LRB discusses is any exemptions which we take to current Commission regulations. In the January version of the LRB, we identified one potential exemption. That is the requirement to address 100% zirc/water hydrogen generation in the design. We were at the time of the LRB supporting the EPRI suggestion that it be 75% zirc/water reaction. We identified that in the LRB.

In the August 1990 letter which we sent in, we commit to 100% hydrogen generation as required by SECY 90-016. That will require us to put igniters in the design. So we are currently evaluating now the type of igniters, the location of the igniters, but we are not going to take that exemption at the present time.

MR. CARROLL: In your consideration of the igniter question, are you looking at DC powered igniters?

MR. KENNEDY: Yes. We are looking at them. I believe -- Stan, you can correct me -- that the -- right now it appears to be that the preference is going to be AC powered igniters, but we are looking at DC powered igniters.

MR. CARROLL: When we talk about powered, I'm talking about the ultimate power.

MR. KENNEDY: Yeah. That evaluation's currently undergoing right now. Duke Engineering Services is doing that evaluation for us.

MR. CARROLL: Recognizing that many of the accidents that are going to produce hydrogen are loss of AC power, I would encourage a strong look at the DC approach.

MR. KENNEDY: Stan, would you like to add something to that?

MR. RITTERBUSCH: This is Stan Ritterbusch. Yes, I would, Ernie. We expect that our igniters will have battery backups. It's all but final. Dedicated batteries.

MR. SHEWMON: Are the igniters glowplug or spark or --

MR. RITTERBUSCH: I believe they're glowplug.

MR. SHEWMON: No catalytic action at all in this country.

MR. RITTERBUSCH: That's my understanding.

MR. SHEWMON: Okay.

[Slide.]

MR. KENNEDY: The LRB does contain a schedule for review. This our requested schedule. I would be less than honest if I indicated that the staff was in agreement with this schedule. This is our requested schedule.

As I pointed out, we intend to complete our Standard Safety Analysis Report by the end of this year.

What we have asked for is staff issuance of an FDA by the end of the following year, 12/91, followed by a design certification a year later, at the end of '92.

Charlie Miller, I think, and Tom Wambach can speak to this later in their presentation, but I think it's safe to say that the pace of the staff review, as we perceive it right now, probably doesn't support this date. We would very much like to increase the level of review and meet these dates, but these are our requested dates.

MR. MICHELSON: You're aware, of course, that the question of what the scope of your application should be has not been settled yet. Until it's settled, it's hard to know how much more work you have to do before you have completed your application.

MR. KENNEDY: With regard to level of detail, we understand that.

MR. CARROLL: Is that what you meant, Carl?

MR. MICHELSON: Yes, that was what I meant.

From your view of the situation thus far -- you're aware of the level 1, 2, and 3 and 4 levels of design that were in SECY-241. Where do you think your application lies in that spectrum of level 1 through 4, your present application?

MR. KENNEDY: Our present application I would characterize, as general, level 3 and, in specific areas,

level 2. There are areas where we exceed the level 3 information and do have level 2 information.

MR. MICHELSON: Okay.

MR. WILKINS: Are there any areas where you exceed level 2?

MR. KENNEDY: No.

MR. WILKINS: The areas where you get to level 2, do those tend, in general, to be those associated with the Nuclear Island or with the core?

MR. KENNEDY: Yes.

MR. CARROLL: Did you have somebody here yesterday?

MR. KENNEDY: I believe Mr. Brinkman was here yesterday, but I have not had a chance to talk to him yet. I am very anxious to know what may have been said here yesterday.

MR. CARROLL: When you talk to him, you will find that the staff's position is going to be that it should be level 2, with some stuff approaching level 1.

MR. MICHELSON: We'll let the staff characterize it. That was sort of my understanding.

MR. CARROLL: What does that do to the schedule?

MR. KENNEDY: I have to see what that's going to be. I don't know.

MR. CARROLL: That, of course, is what the staff

is recommending. The Commission hasn't acted on it at all.

MR. KENNEDY: Correct. Without having seen that, I can't make a good assessment of the schedule yet either. The caution that the schedule can be affected by that is well-taken; it will be.

MR. MICHELSON: To give you some appreciation for what is thought to be meant by a level 2 effort, it's estimated that's about half of the total engineering effort for the final, completed plant, as I understand it, and so, that gives you some criteria, and if you think you have done about half of what you think you have to do to build this plant, to engineer this plant, then you're about, perhaps, getting close.

If you've done 20 percent, you've got a pretty big piece of work left to do yet to get to 50 percent. That just gives you some kind of an idea of where some people, at least, think we may be at.

MR. KENNEDY: Okay.

To continue with the LRB, there is a discussion on the format and content of the application. That section of the LRB is not terribly enlightening. It references the Standard Reg Guide on SAR format and content, as well as it repeats the requirements in Part 52 on the content of applications and says our application will contain that information. But to a large extent, it's just verbatim from

the regulation.

MR. CARROLL: So, basically, you're saying you're going to follow the regulations.

MR. KENNEDY: Correct. There is a fairly long discussion in Part 52 on the content of application, and it's reasonably clear.

[Slide.]

MR. KENNEDY: There is in the LRB also a discussion of proposed staff review procedures. In the LRB, we had suggested that the staff issue draft SERs in segments, as they reviewed parts of the design.

We now understand that the staff would rather not do that; they would rather wait until the end and issue a combined draft Safety Evaluation Report. I don't know that I have any particular problem with that.

We and the staff can work closely together and keep lists of open items and understand what's open and what needs to be resolved without the issuance of incremental SERs. So, I think that's a manageable process.

MR. MICHELSON: From our viewpoint, though, I don't see how it's manageable to get the entire document at one point and expect to get a letter out in a couple of months. You know, if you can't do this as we go along in some kind of a reasonably coordinated effort, you have to recognize a several months' delay for us to review it. This

is not a small or lightly-taken project.

MR. CARROLL: Presumably, during all of this, we'll be having meetings with the staff and the applicant and really know what the issues are.

MR. MICHELSON: Oh, yes, but we won't see any SERs until the end.

MR. CARROLL: But the trouble with the piecemeal SER, as we have seen on the GE plant, is that it just doesn't do it for you. There is an awful of places where there is an open item, where it refers to a future SER that's going to tell you what you want to know. It's a very frustrating thing for me to read, at least.

MR. MICHELSON: That's all quite true; I agree. The frustrating thing for me, though, is to get to the end of the game and the tell them that they've got a real problem. It's better to tell them they've got a real problem up front.

You might be able to do that from briefings, but briefings don't carry the same substance as a review of a document they have committed to writing already. In other words, they've got their thinking that far solidified, and we ought to see that as soon as possible and not at the end of the game or it's awfully late.

You know, briefings are one thing, but reviewing a final safety evaluation is a lot different, and we know that

for a fact, that we hear one thing in a meeting, and when the SER comes out, it might be quite different.

MR. CARROLL: Charlie, you got any thoughts on Carl's dilemma here?

MR. MILLER: I have a lot of thoughts on it.

I think, having lived with this over the last few years, the staff has come to the conclusion that if we were to start over again, we would be back to where we were in '87, if you want to say lessons learned.

The concept of the modular, if you will, draft SERs came about because, at that point in time, we were receiving inputs in a modular fashion. In fact, I think for the evolutionary plants and for the EPRI requirements evolutionary submittal, without exception, that's the way we received the information.

Having dealt with that, I guess the staff feels that, looking back on it, we didn't find that to be a very efficient way to do business. Lots of the things that you just mentioned, I think, we encountered.

It's very difficult to take Chapter 4 or Chapter 3, try to write a safety evaluation on it when there's information in a yet-to-be received chapter, yet-to-be-received information. So, we classify it as an open item in some cases, in which case it may or may not have been an open item had we had the additional information.

For the technical reviewers, it becomes very cumbersome, because your frustrations are borne out by them. They like to see everything in front of them so they know what the whole plant looks like, and they can draw an integrated safety conclusion.

So, it's the staff's recommendation, really, that we do not do this in the future and, I guess, to try make a mid-course correction. It's not the staff's intent to try to dump a safety evaluation on the Committee and say that we need you to turn it around in a week.

I mean Carl's comments are very valid there. We recognize it's going to take some time. But I think we need to get an integrated safety evaluation drafted so that we know, from the staff's standpoint, what we're shooting for with regard to open issues.

Remember that a draft safety evaluation is just that. If other issues are developed or identified by the Committee along the way, we're going to have to rectify these things in finalizing our safety evaluation.

I don't think I can emphasize enough the frustrations that I have had with trying to deal with piecemeal submittals. It's just very difficult to do.

You know, we have had many, many, many Subcommittee meetings and several full Committee meetings with it, and we found it very difficult to try to write off

on things in that fashion. Questions come forth, you know, by the staff and by the Committee concerning, well, what about this and what about that, and in some cases, if we haven't got that information, we keep having to say we have to wait.

So, I think the bottom line is that we're going to ask certification applicants in the future to complete their submittals before they submit them. By the way, I am supported on that thought from OCG. I think they feel that an application ought to be a complete application.

Now, from a practical standpoint, we can't penalize the current applicants fully for that, because we're really changing the ground rules in the middle of the game. So, we have tried to deal with it as best we can in a piecemeal fashion.

But future applications, like for the passive plants, we've already put them on notice, and we did with the EPRI requirements for the passive plants. EPRI didn't submit the requirements for the passive plants, so they had a complete set of requirements documented.

MR. CARROLL: As far as the issue of paper to look at as this thing progresses or staff preliminary safety evaluation kind of stuff, you don't see any mechanism that we can be getting that sort of stuff in advance of the --

MR. MILLER: Well, let's explore that for a

minute. You know, the first stage of the staff review is always that we request additional information from the applicants. In some cases in those questions we even state staff concerns of where we think the application is deficient.

Now if that information is forwarded to the Committee as it's issued, that would give you some indication of where the staff has raised concerns and where we have problems.

MR. CARROLL: That kind of information is helpful.

MR. MILLER: Yeah. And you're going to see hundred and hundreds -- as Ernie and Stan can tell you -- hundreds and hundred and hundreds of questions that are generated to that. And I'm not sure that you normally really see that kind of thing.

MR. CARROLL: I've been getting -- or Carl has -- on ABWF.

MR. MICHELSON: It's kind of a piecemeal --

MR. MILLER: It's a piecemeal thing, yeah. Because individual reviewers ask questions, and they go out.

MR. MICHELSON: It's really getting down into many times much greater detail than we prefer to get into.

MR. MILLER: The next step is that the Commission has directed the staff to resolve -- to identify -- and send for their resolution any policy issues prior to putting it

in a safety evaluation.

So as we conduct a review, if we identify things that we think are of a policy nature we are to get them up to the Commission in a timely manner for resolution before we proceed with this draft safety evaluation.

Then at the time that we prepare the draft safety evaluation, the Commission has asked the staff to send it to the Commission well ahead of issuance. Now they didn't say that we had to send it for approval, but they wanted to see it well ahead of issuance. So that requires us to prepare a SECY paper to transmit it. And all of these things add to the administrative burden in the preparation.

Now at that point in time when it's prepared it was my intention that that would come to the Committee at exactly the same time that it went to the Commission. And we would start our deliberations and discussions with the Committee on the draft safety evaluations themselves, and I anticipate that that's going to take many many months before we're finished.

MR. MICHELSON: That's not a bad system, of course, provided that the policy issues that you raise are the same ones that the ACRS might have raised.

If we were to raise issues you hadn't raised, it's an awfully late date to do it at the end of the game. So is there a mechanism by which we raise our issues as we go

along? Well, we haven't suggested such a mechanism yet, but I guess we could bring one up.

MR. CARROLL: Well, for example, the meeting today is beginning with the LRB and the letter I've taken a shot at drafting raises some issues that are in that category.

MR. MICHELSON: Yeah, but, see, we're addressing something the staff has already put forth to the Commission. I'm talking about things the staff has not put forth to the Commission.

MR. CARROLL: In the letter I've drafted I've raised a couple of issues that the staff has not addressed.

MR. WILKINS: With the Commission?

MR. CARROLL: With the Commission.

MR. MICHELSON: Yeah, but the question is, as we go along in this review, then, how are we going -- are we just going to do some kind of a review on our own and if we see areas that we think are of concern we bring them to the Commission's attention or how do we --

MR. CARROLL: Yes, we could bring it to the EDO.

MR. MICHELSON: But there has to be some mechanism. Now the fuel for some of that, of course, is draft SERs and so forth. Once we realize the Commission and staff is going down one path, and it may be a questionable path, then we can raise the question. But we're not even sure what path they're going down if we don't see the draft

SER until the end of the game. That's the disadvantage of doing it all at the end of the game.

Now if they will send us draft SERs as you go along and reveal them as you go along but recognizing that it's just a piece of paper for talking purposes and then a final document, that's fine.

MR. CARROLL: You mean draft sections of the --

MR. MICHELSON: They must be doing it by chapter or section or something. Why can't we see that material? Why do we have to wait until the end of the game to start seeing what they're even thinking?

MR. CARROLL: How would you think you would be doing it, Charlie?

MR. MILLER: Well, from a practical standpoint the applications have caught up in I guess what I'd say in an integrated fashion. The way the staff conducts a review isn't that we look at Chapter 1 and then we look at Chapter 2, we look at Chapter 3. We tried that in a piecemeal fashion.

What we really do is that technical review branches have the application in front of them, and each of those branches has areas of expertise and responsibility so they're kind of looking at the whole application in parallel to the extent that the information's been submitted.

MR. MICHELSON: It's still got to be written in

pieces, though.

MR. MILLER: Well, but those pieces are written by the technical review branches in parallel, and if I'm trying to establish schedules and meet those total schedules and I give the same milestones, theoretically, to each branch and say, you have to have your REIs to me by this date so that we can issue them by this date, the draft safety evaluation input is due to the project staff from the technical staff by this date so that the project managers can start assembling it.

There are some windows in there of where -- you know, people don't all drop it on us on the same day. But for the most part we try to keep things in kind of a parallel path.

MR. MICHELSON: Then there must be material coming in all the time.

MR. MILLER: Oh, sure.

MR. MICHELSON: I guess what we're suggesting is why can't we look at some of that material as it comes in on a section by section basis then instead of by chapter.

MR. MILLER: It could be done. It could be done, but, again, it's going to be -- you're going to get pieces of various chapters that aren't complete. You're going to get pre-decisional information. You're going to get the input that we would receive from the tech review branches

that then the project managers have to synthesize into some integrated safety evaluation. Writing styles are different from -- you know, we have to make sure that we try to take care of all of that.

I mean, certainly there's no problem in sending it to you, but we have to keep it as pre-decisional information -- for your eyes.

MR. MICHELSON: The difficulty I have, though, is when I look at your final schedules it always turns out ACRS has got about two months in it. One month -- they get the thing one month, we hold a meeting the next month, we write a letter the next month. That's the way the staff schedules our work. I just don't see how you can do it on a project this large if we don't have something going on along the way. That's the practical aspect of it.

MR. CARROLL: Well, I think along the way we would anticipate we're going to have numerous subcommittee meetings. It does have a difficulty that you can't look at the written word. You're listening to people explain orally how --

MR. MICHELSON: But the problem is that the staff will tell us what they want to tell us, but if we'd read the SER we may have raised up a number of issues that the staff didn't intend to raise with us unless we came first. And if we wait until the end of the game to come first on those

things, I think that's going to delay the process significantly. It's just a concern.

MR. CARROLL: No. I share it.

MR. MICHELSON: I don't know what a good answer is. I think the staff ought to figure out a good way of somehow letting us review material as we go along a little bit. It doesn't have to anything very formal, but at least get an idea of where you're headed on certain issues so that -- because we may think you're headed down one path and, really, you're going a different path. And we don't know until the end of the game.

MR. CARROLL: Well, you do if they have identified it as a policy issue.

MR. MICHELSON: Only if they identify it as a policy issue and then we would certainly know.

MR. WILKINS: Well, we might just have an indication because they can identify the issue, but the Commission has got to decide how to resolve that issue.

MR. MICHELSON: Yes.

MR. CARROLL: But at that time at least we know the issue is on the table.

MR. MICHELSON: It's no surprise, then, at the end of the game.

MR. WILKINS: How much is the delta in time if the ACRS is on the critical path so to speak? You say you can't

do it in two month. Can we do it in a year?

MR. MICHELSON: It doesn't take a year.

MR. WILKINS: It takes six months.

MR. MICHELSON: Just from experiences with things like GESSAR II which took a long time -- and there, we were getting material right along the way -- it realistically took, I would say, a minimum of four months.

That's assuming that all this -- a lot of these people work at other jobs, and trying to get them together to even focus on the problem; you just can't do it on a full time basis or anything like that.

I would say that four months is a crash program.

MR. WILKINS: Remembering what was on Mr. Kennedy's previous slide, four months or six months is a significant perturbation in his schedule. In fact, it's not a perturbation at all; it's a different schedule.

MR. MICHELSON: Yes, that's a totally different schedule. When I see staff schedules, man, they usually allow us about two months. It's ridiculous, unless we are doing our homework as we go along and getting most of these things settled as we go along.

MR. CARROLL: You recognize that --

MR. MICHELSON: Well, it's just a thought. It's just the thing that when we do see the Staff's proposed schedules, I think we have to make sure that it's

understood, what the ACRS is going to be able to do, unless we want to rubber stamp it. That's a different issue.

It takes about two months to rubber stamp it.

MR. CARROLL: Wash your mouth out, Carl, on rubber stamping it.

MR. MICHELSON: That's just the way I feel about it.

MR. CARROLL: I guess this is something we have to work out. I don't think there's any perfect solution.

MR. KENNEDY: The only comment I would add to the discussion is that, to the extent that Combustion Engineering can help keep the Committee informed on what we are doing and the issues which we think are -- in discussion with the staff -- we're available to work closely with the subcommittee to put as much of that process in parallel as possible. We'd be more than happy to do that.

[Slide.]

MR. KENNEDY: Okay, the LRB also discusses, as I pointed out, the process which the Commission has set up to identify and resolve policy issues. There is a discussion that obligates us to track and keep a list of what we believe the open items to be between us and the staff and make sure those are closed.

There is a discussion of ACRS participation; that discussion got put in the LRB long before Part 52 clearly

identified the role of the ACRS and it has stayed in the LRB. It simply says, we'll keep you informed of the process of the application and that that the ACRS, as we understand it, will participate in the review of the policy issues.

MR. CARROLL: Now, everything on that slide would happen if you had an LRB or not; wouldn't it?

MR. KENNEDY: Yes. Again, it appears that right now this wouldn't happen, but you're right, that would all happen. We're simply documenting in the LRB, what would happen in any event.

[Slide.]

MR. KENNEDY: Now let us turn to somewhat more technical issues discussed in the LRB. The LRB does discuss a number of technical issues, and they got into the LRB by a number of sources. Some of them, CE raised and put in the LRB, a number of them the staff raised and put in the LRB, various staff documents led us to put them in the LRB.

Under Severe Accident Issues, the LRB says we will comply with the post-TMI regulations, 50.34F, I believe. We will present the technical resolution of USIs and GSIs. We will do a design-specific Level III PRA for the design and we state our severe accident performance goals.

The first two of these goals, the core damage and the large release goal, you should recognize as being the EPR evolutionary requirements document goals. They're the

same as the EPRI and in addition, we include at the request of the staff, a containment performance goal.

MR. MICHELSON: Before you leave that slide, I have a question on the GSIs and USIs. I guess it's more a question for the staff than anybody, but when we talk about six months before the date of application, is that the application for certification, or is that some other date? That's what's talked about in Part 52.

MR. MILLER: In discussions I have had with OGC concerning how we should interpret that, the OGC interprets that as six months prior to the application for design certification. They also interpret that as meaning a complete application.

MR. MICHELSON: It's not clear from looking at Combustion's LRB that that's the way it's intended. How did Combustion think it was intended?

MR. KENNEDY: The regulation says six months prior to the date of application. The point of your question, I think, Mr. Michelson, is that it's a moot point. No matter what the regulation says, we have found it convenient and useful to use the very latest revision of NUREG 933 and, in fact, that is what we are doing.

I believe the LRB right now says that we think we're obligated to use Supplement 8. We're, in fact, using Supplement 9 and I think that since that was written,

Supplement 10 has hit the street and we, in fact, plan to use Supplement 10 anyway.

No matter how you interpret the language, we are trying not to address some supplement of 933.

MR. MICHELSON: Clearly, you will not, apparently address one older than six months before your date of application for certification; is that your intention? The regulations talk about the date of application and there's only a question as to what date that means.

If the staff is interpreting that date of application for certification, are you also at least going to meet that, if not better it?

MR. KENNEDY: Yes.

MR. MICHELSON: Okay, thank you.

MR. KENNEDY: Right now the answer is, we're doing better than that, in our view; we're using the latest supplement, yes, sir.

MR. MICHELSON: Well, that doesn't necessarily mean that you'll meet what I said. I don't know how often the supplements come out and so forth. How often do they issue the supplements?

MR. MILLER: Schedule wise, I believe that Research issues them every six months.

MR. MICHELSON: Well, then, you may miss it by as much as six months depending on what the date of application

for certification is going to be.

MR. MILLER: The idea, I think, when the rule was promulgated was to give the designer some target so that the target didn't keep moving on them.

MR. MICHELSON: Right, and he cuts it off at six months.

MR. MILLER: However, you have to have some practical application of that. Someone could send a letter in desiring certification with nothing behind it for two years and if you argue legally that that's the application for certification, I think that the NRC would look differently at that.

MR. MICHELSON: I assume that you're going to look at a complete application?

MR. MILLER: Yes. By complete, I don't mean that they've resolved every open issue.

MR. MICHELSON: No, but it had all the information in there.

MR. MILLER: Someone sits down and says they've taken a good shot at trying to send an application in that addresses all the aspects of Part 52.

MR. MICHELSON: Now, can I apply for certification before I get an FDA? I'm going to answer it for you.

MR. MILLER: The FDA is a necessary component for certification.

MR. MICHELSON: In order to apply for certification, you have to have an FDA that was reviewed with certification.

MR. MILLER: I think you can apply for certification but in order to achieve certification, the FDA is one component.

MR. MICHELSON: That's a real important point though, because that date of application is very much dependent upon it.

MR. MILLER: If you look at 5247, it gives you what is required in the contents of an application for design certification.

MR. MICHELSON: That's right.

MR. MILLER: There are a whole bunch of things listed there.

MR. CARROLL: Combustion presumably felt that they had done that as of March 30, 1989.

MR. KENNEDY: That is not quite true. We admitted and we, in fact, planned to submit our application in segments, so we knew at the time that we applied for design certification that there was material to come. We did it at that time believe that we were applying for design certification.

The staff, as I understand it, has taken the view that they don't really consider that, at least in OGC's

terms, to be an application until the document is more complete. By the schedule I showed you, that looks like perhaps December of this year.

In regards to is practical applications, the date of application seems to have an effect only on the effective date of NUREG 933 in terms of what the regulation says. My point is, no matter what the date, we are right now voluntarily using the latest revision we can find because it makes sense and it's useful to us.

MR. MICHELSON: You'll continue to do that up till the time the FDA is issued?

MR. KENNEDY: I would say that up until the time that the staff issues its final safety evaluation report. At some point, we need to say that that is the approval at that point in time. There probably is some time lapse between the SER, the ACRS letter and issuing the FDA.

I would say the cutoff is probably the issuance of the Safety Evaluation Report. Clearly, on a case-by-case basis, if there is a significant new issue or a significant change in NUREG 933, that the staff, the applicant and the ACRS thought was necessary to be addressed, we would address it.

MR. MICHELSON: You're willing to address things up to the time staff's SER is issued; is that what you're saying?

MR. KENNEDY: It is not of value to us and our utility customers to achieve an FDA or design certification with any important issue left open. That compromises the value we see in FDAs in design certification.

MR. MICHELSON: The Licensing Basis Agreement should probably reflect that sort of thing, which it doesn't presently.

MR. SHEWMON: On the last item that you've got there, the last three items, the definition of core damage is lack of assured cooling or core on the floor or someplace in between, or what have you taken?

MR. KENNEDY: There is in the LRB a discussion of our criteria of core damage, and it's essential peak clad temperature greater than 2,200 degrees F, a very conservative definition of core damage.

MR. SHEWMON: Okay. Now, what is your goal for -- the performance goal for the containment?

MR. KENNEDY: Next slide.

MR. SHEWMON: Okay.

[Slide.]

MR. KENNEDY: We have, for the moment -- again, we understand -- this is still an issue discussion with the staff, and the staff is still considering this. SECY-90-016 says that a probabilistic approach would be acceptable.

We have taken a conditional containment failure

probability of 0.1 based on this definition that we are looking at core damage sequences with a frequency greater than 10 to the minus 6 per year. We have specified one exception.

External events which both damage the core and fail the containment, we have proposed a 10 to the minus 5 cutoff. That is one of the issues which I understand the staff has some reservations about. I haven't seen the exact wording. And we are more than willing to discuss with the staff how to reconcile our differences.

The intent of this qualification is very simple: At some point, there is a seismic event that is so large we simply cannot design against it, and we need to figure out a way to accommodate that in this containment-performance goal.

MR. SHEWMON: I had a note on that someplace else. As you know as well as I do, the spread of probabilities on large seismic events is very substantial, and so, there, whether you use the mean or the median might be an order of magnitude difference. When you said 10 to the minus 5, which is that, by common acceptance, now?

MR. KENNEDY: I do not know. I would have to get our PRA people in here. I don't know.

Do you know, Stan?

MR. RITTERBUSCH: Stan Ritterbusch.

It's the mean.

MR. SHEWMON: That's at least an easier one to hit.

To come back to the containment, all those things are good. On the other hand, if you take a conservative estimate of core damage, like lack of assured cooling, it would seem to me one could make a very good case that the probability of any significant release into the containment is an order of magnitude less than that, and so, it should be very easy to get from 10 to the minus -- to get an order of magnitude between large releases, meaning containment failure, and peak clad temperature higher than you would like to have it.

What I'm saying is you could have pretty poor containment and still do that. So, it doesn't really say much about how you're going to design containments, to me.

MR. KENNEDY: If you will read the LRB, we were very -- quite careful to preface these couple of sentences, I think about a page-and-a-half discussion, that essentially says this: No matter what criteria we adopt, the intent of this criteria is not to allow us to do anything less in the ruggedness of the containment building.

We intend to design a very rugged, strong containment building. What this is for is simply to demonstrate to the staff, essentially, that we have met some

other criteria that demonstrates that.

But the point of this is not to allow -- if we met this with margin and demonstrated, well, we can build a less-rugged containment, we would not do that. The containment design, in fact, preceded this, and we show that, as a matter of fact, we meet this in addition to the deterministic criteria.

MR. SHEWMON: What chapter is that discussion in? What am I looking for?

MR. CARROLL: Page 22.

MR. MICHELSON: Pages 22 to 24.

MR. SHEWMON: Okay. Thank you.

MR. MICHELSON: Let me ask, on that failure of containment, I'm not sure what kind of failure you are referring to. Of course, you could have a direct core release to the containment and subsequent interactions which cause the containment failure.

Is that the type of failure you're talking about, or are you talking about spurious opening of isolation valves or whatever?

MR. KENNEDY: I will come back to this, because again, this is a place where we believe the staff has a comment.

MR. MICHELSON: You should be able to give me a rather simple answer to what failure of containment -- what

it means.

MR. KENNEDY: This is any sequence which would result in this release, whether it's through failed valves or a mechanical failure of the containment or that in combination with normal leakage, any sequence which would give you this release result.

MR. MICHELSON: You're looking at closure at 10 to the minus 5 for those. Is that right?

MR. KENNEDY: For the external events?

MR. MICHELSON: Yes.

MR. KENNEDY: Ten to the minus six for everything else.

MR. MICHELSON: Yes, but for external events, such as a fire that might spuriously open a containment-isolation valve, you won't look at it unless it exceeds 10 to the minus 5.

MR. KENNEDY: The intent of this was for the seismic event. If, because of the way we have constructed it, the Committee and the staff conclude that, hey, you do that; if you do that, you're excluding other events you ought to consider, we're certainly willing to revise this statement. This was not our intent.

MR. MICHELSON: Really only meant for seismic events.

MR. KENNEDY: That was our intention.

MR. MICHELSON: Okay.

MR. KENNEDY: And if, by the way we stated it, we made it a little too global, we're more than happy to adjust the language.

MR. MICHELSON: It is kind of global for the fire case.

MR. KENNEDY: We simply didn't sharpen our pencil enough when we wrote the words down, and I will come back to that briefly a little bit later.

[Slide.]

MR. KENNEDY: Now, again, in terms of technical issues, the LRB discusses generally, in one or two paragraphs, this list of issues.

The significant thing perhaps about this list is if you compare it to the list of 15 technical issues which the staff identified as policy decisions to the Commission, the LRB addresses 13 of the 15. The two that were not addressed were equipment survivability for severe accidents and in-service testing for pumps and valves. They aren't addressed in the LRB not because there's any unwillingness to address them, we simply weren't quite astute enough to anticipate that the staff would identify those as policy issues and we have no problem adding discussions of those two events to the LRB, consistent with the discussions in SECY 90-016.

[Slide.]

MR. KENNEDY: The rest of the issues are discussed in the LRB.

MR. WILKINS: Not just discussed, but you don't identify -- let me rephrase this. Are there any differences of opinion between C-E and the staff in these 13 areas?

MR. KENNEDY: Let me get into that in just a minute, and I believe the staff later may discuss that as well. Remember, I haven't seen their SECY paper yet, so I have to qualify what I think the disagreements might be, but let me get into that in just a minute.

[Slide.]

MR. KENNEDY: The LRB also has in it a comparison with the EPRI Requirements Document. We updated that list in our August letter So, if you want to look at a current list, the August letter has our most current listing of what we believe those deviations to be.

I should point out that any of the EPRI criteria which are related to regulatory compliance we meet, by definition the regulatory requirements. There are some performance and other requirements in the Utility Requirements Document that we do not meet. Those are based specifically on our evaluation of our design, the cost, the benefits of meeting those particular ones and we do deviate from some and we have a list of those.

This is a little gratuitous, I put it on the slide. That list is for information and compliance with those EPRI Requirements should not be a staff regulatory requirement.

[Slide.]

MR. KENNEDY: Now, let me turn to -- two things. We have the January LRB, we have an August 1990 letter committing to revise the LRB. The most significant item is to, as I mentioned, change our committment on hydrogen control from the 75 percent generation to 100 percent generation, which will add the igniters.

The other point is -- one of the post-TMI regulations right now requires, as we read it, the capability to add a containment penetration and a vent. As I understand it now, a literal reading of the regulation, as the staff reads it, implies that the penetration must be there. We do not have a penetration. We have reserved space for penetration, a penetration can be added. We do not have a penetration.

I think the staff feeling is that literally that would require an exemption from the regulation. If that's the staff's position, then we'll probably put in the piece of paper citing that as an exemption from the regulation. We can't add a penetration, we can't add a vent; but the penetration is not in the design at the present time. So we

clarified that the penetration is not there.

MR. MICHELSON: Is there some reason why you resist adding the penetration?

MR. KENNEDY: I guess the best reason is it's a steel containment. It's easy to add it later -- cut a whole in steel and weld in the penetration.

MR. MICHELSON: It's not very expensive to put it in now. It's probably a lot cheaper than to add it later. So, it's -- and it's a trivial part of the cost of such a plant. In fact, in your case, it's only the cost of the pencil on the paper.

MR. KENNEDY: It would not -- it would not take much cost in me arguing to go get out my pencil and paper and put it in.

MR. MICHELSON: Yes. I just don't see why it's an issue worth elevating to the point of taking exception to the regulation on.

MR. KENNEDY: It may not be.

MR. MICHELSON: It escapes me as to why it's so important to you not to add it.

MR. KENNEDY: Let me make one remark. In discussions with our utility customers, containment venting is a very sensitive issue to our utility customers.

MR. MICHELSON: Yes, but you're not putting the -- you're not adding the system, you're just making the

provision that if it's decided later it should be added, then you are ready to go.

MR. CARROLL: Recall, Carl, that EPRI has taken a strong position that PWR should not have it.

MR. MICHELSON: Yes, but we're not dealing with EPRI here, we're dealing with combustion.

MR. CARROLL: But combustion is dealing with EPRI or the facility members.

MR. MICHELSON: It just escapes me why they want to play the game on this, but that's there business. I think we'll just comment accordingly.

MR. CARROLL: I'd do the same thing, I wouldn't put it on either.

MR. MICHELSON: Well, yes, but we're in a different position; we're on the other side of the tape now.

MR. RITTERBUSCH: Ernie covered the point when he indicated that we really don't want a vent in the design and we don't expect to be adding it based on input from utilities.

MR. KENNEDY: Okay, and then the August letter also provided an updated to the comparison with the EPRI Requirements Document. I should point out that if and when the LRB, in fact, is completed, we would probably want to sit down with the staff on whatever day that was and redo this list because this list has changed over time as the

EPRI requirements document has changed and our design is developed. So, we would want to make sure that list is as accurate as we can the day the LRB got approved.

[Slide.]

MR. KENNEDY: Now, let me return -- let me discuss what we might expect to do to the LRB in response to what we understand the staff comments to be based on our discussions with the staff. When the SECY paper is released, we will have a better idea of exactly what the wording is, but this is kind of where we see things we're going to do.

We believe that the staff would like to see us put in there a specific commitment to provide the SRP comparison that's required by 50.34(g) I believe. We intend to do that. Putting such a statement in is not a problem.

We've discussed this -- that we would be happy to put in a commitment to live with the most recent supplement of the USI/GSI Status Report. We intend to do that anyway.

On the subject of the definition of containment failure. SECY 90-016 has a definition slightly different than what we proposed in our LRB for containment failure. This is the definition out of SECY 90-016. We have no problem adopting that definition for the LRB, if the staff feels that's the appropriate definition. In fact, our review of that is that's somewhat easier to meet than our definition.

MR. CARROLL: Help me out. What does that first bullet mean?

MR. KENNEDY: The first bullet is that 50.34(g) says that the applicant shall provide a comparison to the Standard Review Plan, the extent to which the application meets the Standard Review Plan. The staff has asked us whether we intend to do that. The answer is yes.

MR. CARROLL: So that's just paperwork?

MR. KENNEDY: That's just -- yes.

Now, there is some history behind that. There is a footnote, I think, in the regulation that says those people who hold an FDA don't need to retrofit that requirement. When we started off on System 80+, we said we're starting with CESSAR-F and amending it. I think the staff just wants some assurance that we're not going to pull that footnote out and try to hide behind it. We're not, we're going to provide the comparison.

All right, the staff can speak for themselves, but I think that's why they wanted it in there.

MR. MILLER: Mr. Kennedy is accurate in his representation.

[Slide.]

MR. KENNEDY: To continue, the 10 the minus fifth cutoff on external events, we believe the staff has a problem with and we are willing to work with the staff to

redefine that in such a way that we accomplish our real objective in a manner acceptable to the staff. That's, you know, a negotiation that we think can be carried out.

There are three writeups in our technical discussion on midloop --

MR. MICHELSON: Let me ask you, why do you have a problem with the external events that makes you unwilling to accept the 10 to the minus 6 for the external events?

MR. KENNEDY: The only concern is the large seismic event. That's the only thing that we need to try to accommodate.

MR. MICHELSON: By large, you mean what, in excess of the SSE?

MR. KENNEDY: Way in excess of the SSE, the large seismic event that both fails the vessel and the containment at the same time. Considering the uncertainty on those numbers, we don't want to be in the position of redesigning the plant for this extraordinarily large seismic event and that's our only objective.

MR. MICHELSON: Other than that, for all other external events, you're wiling to use the 10 to the minus 6 criteria?

MR. KENNEDY: I believe that's it, and we can get our PRA people in to talk about it, but I think we can reach an agreement with the staff.

There are three of the discussions of the technical issues which we have in the LRB which, if you read SECY 90-016, the staff position uses somewhat different wording than we used in our LRB. Of course, our LRB preceded our seeing 90-016. The staff would like for us to revise those words so that they are more consistent with the wording in 90-016. We don't believe there's any substantive problem here and we think we can reach agreement with the staff on the appropriate wording of those issues as well. Also, for the two issues that were in 90-016 that we failed to address in the LRB, we believe that they would like to see those addressed in the LRB, and we'd be more than happy to do that as well.

Again, I don't think we have any disagreements with what the staff would like for us to write down.

[Slide.]

MR. KENNEDY: Very briefly, I know the ACRS does have a request from the Commission in one of the SECY papers to perform a comparison of the CE and GE LRB. Just for your information and your background, the function or the original intent of the LRB, as we think, was the same.

In fact, when we started to write our LRB, we did the logical thing. We xeroxed the General Electric LRB, struck out General Electric, wrote Combustion Engineering and went from there. It has evolved over time -- the basic

structure is the same, but the content has differed significantly because of our own progress in developing tne application which we have continued to do in parallel.

The issuance of Part 52 -- Part 52 really defined a lot of things that the GE LRB tried to define in advance of Part 52. Finally, the staff now has the process by which policy issues are being resolved by a different method. They are being identified outside the LRB, taken to the Commission and the ACRS for resolution and that's being done as a separate process.

Our LRB has evolved from, if you will, the GE LRB because of those issues. The reason I bring this up is; we'd be more than happy to come to the subcommittee and the full committee to talk about such a comparison, but in all honesty, I don't know how much I could add to help you with that.

If the committee can make that comparison without the benefit of another meeting, so be it, but there's nothing magic in the differences.

[S. ...]

MR. KENNEDY: Let me conclude, if you will, with a little policy and overview. We've been pursing the LRB since 1987 and its approval and issuance by the staff has been somewhat elusive. In our view, the importance of the LRB has diminished.

It is not, in our view, as valuable a document as it once was. Part 52 has been issued and that settles the procedural questions that may have been in question earlier in 1987 and 1988. Policy issues, many of them have been raised to the Commission and resolved. We fully expect that the staff is going to raise several more policy issues and they will go through that process.

I don't know that the LRB is a necessary ingredient in that process. To the extent that the LRB defines a schedule, we acknowledge that the schedules are uncertain and that they are policy issues open that will affect that schedule. To some extent, any schedule discussion in the LRB has to be qualified.

We also have encouraged the staff and we have supported that the review of CESSAR-DC has been and should continue to be reviewed in parallel with the LRB. Most of the material in CESSAR-DC isn't really affected by the discussions in the LRB.

Much of that review, under the Standard Review Plan, can continue. Finally, as we perceive it, although there are some revisions to the LRB that the staff would like to see, we don't perceive a significant policy disagreement with the staff that we can't resolve.

Now, again, I would qualify this again that we have to look the SECY paper and see if there are any

surprises in it, but based on our discussion with the staff, we believe we can resolve these expeditiously. The LRB really, in our view, doesn't serve the purpose it might have served two or three years ago.

MR. CARROLL: What do you mean by the second dash up from the bottom, most material is not affected?

MR. KENNEDY: For example --

MR. CARROLL: Any material affected?

MR. KENNEDY: Oh, yes, for example, the LRB talks about that we will provide an analysis of midloop operation, the instrumentation, the design features that address midloop operation.

MR. CARROLL: But so does SECY 90-016.

MR. KENNEDY: Correct.

MR. CARROLL: Whether the LRB existed or not, you'd be providing this analysis of midloop operation.

MR. KENNEDY: You are correct. If I took this sentence and said, most of the material in CESSAR-DC is unaffected by SECY 90-016 and any other policy issues that come up, it would be the same statement.

MR. CARROLL: Well, on a positive note, what advantage to Combustion is there to the issuance of an LRB? What do you see it doing for you? You're going to get the same question, Charlie.

MR. WILKINS: I was going to ask it negatively.

In fact, it might be helpful to you to hear my wording of the same question.

What difference would it make if someone were to say, as of right now, we're going to forget all about the LRB? Just forget it. That's the same question.

MR. KENNEDY: Is that question addressed to me?

MR. WILKINS: You're on the stage, yes. It's addressed to you.

MR. CARROLL: Charlie gets his shot at it, too.

MR. KENNEDY: My answer is; I don't believe anything would change. The issues which are open between us and the staff would still be subject to discussion and the LRB would not be a necessary ingredient. I believe that if the LRB disappeared tomorrow, it would not change anything.

Now, you phrased the question positively. The real benefit, or the only benefit, I can honestly state, is we'd finish a long process and get it done. That's not much of a benefit, but it's the only one I can cite right now.

MR. WILKINS: I heard someplace, at one time, that you might anticipate some benefits in your marketing strategy if you could point to this document.

MR. KENNEDY: Again, I would phrase that negatively. Our inability to get an LRB has, in some markets, been construed as a negative, not that it has any positive benefit, but gee, why can't you get one? There

must be something wrong.

MR. MICHELSON: You could simply point out one is not called for by the regulations.

MR. KENNEDY: Correct.

MR. MICHELSON: That's one good reason for not issuing a document that isn't required, and nobody seems to have any great deal of usefulness for it. Why are we issuing it? It's not required by the regulations.

MR. CARROLL: Do you want to deal with that now?

MR. MILLER: How about if we do this? Why don't we let Ernie finish his part.

MR. CARROLL: I think he's finished, isn't he?

MR. MILLER: Then I'll try to take that one before Mr. Wambach gives the formal presentation for the staff.

MR. CARROLL: Paul, do you have a question?

MR. SHEWMON: Just out of curiosity, do you have additives, or is the staff requiring additives on containment spray systems now? There's some corrosive things got put in plants earlier on -- that is an excuse -- and it hangs some on how much iodine you've got to worry about and so on.

MR. KENNEDY: Stan, do you remember what the additive situation is right now?

MR. RITTERBUSCH: Yes. The staff does not require additives, and we are going through our analysis without

them.

MR. SHEWMON: The other question, as you keep pumping this, you may --

MR. RITTERBUSCH: I can't answer the question with pH control. I was speaking with respect to iodine removal during accidents.

MR. SHEWMON: But Combustion used to have some baskets of salt down underneath the core.

MR. CARROLL: That's Westinghouse with trisodium phosphate.

MR. SHEWMON: CE did, too.

MR. RITTERBUSCH: We had an interface requirement. The actual baskets were not in our design.

MR. SHEWMON: The stuff that got GPU at TMI-1 in such bad trouble with their steam generators was a thiosulfate of some kind. That's different from what you said, though. You said a trisodium phosphate. Okay.

MR. KENNEDY: I was going to simply suggest -- I don't know how long your list of technical questions are. I am still expecting Rick Turk to join us a little bit later, who can go a little bit deeper in your technical questions.

If you would like to come back to those after the staff presentation, we might have a little more information at hand.

MR. SHEWMON: I'd also be some interested in the

labyrinth you have down beneath the vessel, because you have at least two things in here. One, you've got lots of area, so that anything that comes out of the vessel in a molten state spreads out and has got lots of space to take care of the cooling.

MR. CARROLL: I don't think that's true. I think they have got enough space to meet the 0.02.

MR. SHEWMON: That's what I am defining as a lot of space.

MR. CARROLL: There are some that might argue that that isn't a lot of space.

MR. SHEWMON: Well, my concern -- or not a concern but the question is more whether, even if you had four times as much space, it would do you any good.

It might get some people off your back, but my impression is this stuff is viscous enough that it wouldn't spread anyway, but also, more immediately to the question, you talk about a labyrinth which would help you with a DCH accident, and I am mildly curious to know how you can have a labyrinth which will stop the gaseous flow of this stuff in one accident but wouldn't sort of make the flow of anything that came out of a vessel pretty difficult, too.

MR. RITTERBUSCH: This is Stan Ritterbusch. I'd like to give a brief response, and if we have to get into more details, then we'll have to wait until Mr. Turk.

The part about the labyrinth, the labyrinth is with respect to the event path from the cavity up to the containment. It's designed to be a complicated path so that material cannot get directly from the cavity.

The cavity itself is relatively open for spread-out.

MR. SHEWMON: So, that's up off the floor.

MR. RITTERBUSCH: Right. And it has something we call a debris-collection chamber, intended to keep any debris that splatters around in the cavity area, but the vent path -- the labyrinth is a vertical vent path.

MR. CARROLL: From the cavity.

MR. KENNEDY: Mr. Turk has just joined us.

MR. SHEWMON: Welcome in from the fog.

MR. RITTERBUSCH: Ernie, maybe we would like to simply finish an identification of the issues and then take a break, and we can talk with Rick.

MR. KENNEDY: Rick, let me put you on the spot, since you just walked in the room.

Dr. Shewmon asked a question on the current situation with regard to containment spray additives. What additives are we currently using for either iodine removal or pH control? Do you know the answer to that offhand?

MR. TURK: I don't know the exact answer at the moment. I do know that we are not adding any additive for

iodine control. The pH control question is, I believe, still under review, as to how we're going to maintain pH in the cavity and hold up volume.

MR. SHEWMON: Thank you.

MR. KENNEDY: Any other questions?

[No response.]

MR. CARROLL: You're going to stay around?

MR. KENNEDY: Yes.

MR. CARROLL: Let's take a break at this point and reconvene at 10:15.

[Brief recess.]

MR. CARROLL: Let's reconvene. I guess we do have some additional questions of Combustion.

MR. KENNEDY: Yes. As I understand it, the subcommittee might like some more discussion on the deviations we've identified from the EPRI utility requirements document. The most recent list is in our August 28th letter.

We can either just go through these items one by one, or I could ask the subcommittee if there are particular items they would like for us to discuss.

MR. CARROLL: I think it is the latter.

Carl also just raised an issue regarding Table 2 of that document.

MR. KENNEDY: Yes, I heard that discussion during

the break.

Our intent was that that Table 2, those items for which a conceptual design will be provided, we'd intended that to be consistent with Part 52 that we consider those to be site-specific features which Part 52 didn't require. There would be interface criteria for those as required by Part 52.

If the subcommittee feels, as I think maybe I heard some hints, that one or more of those should not simply be a conceptual design, an interface criteria, but ought to be included in the design, then I think the subcommittee ought to make that comment.

Our intention was that we considered those to be either site-specific or far enough removed from safety that a conceptual design complied with the requirements of Part 52, but that's the purpose of this document.

MR. CARROLL: Let's take Carl's specific problem of potable water systems in the plant.

MR. KENNEDY: Yes.

MR. CARROLL: I think you perhaps intended this to mean a potable water system external to the plant.

How would you deal with lines potentially running over switch gear that might break?

MR. KENNEDY: Our intention was at the present time we did not plan to design the potable water system and

show the pipe routings and all the small piping, that instead our submittal would include an interface requirement that said the potable system supplied by the Applicant for COL shall not -- and you list the design criteria, but for purposes of design certification we right now have not planned to design that system.

MR. MICHELSON: If you look at the Standard Review Plan, Section 3.6.1 you are required to do this pipe break study and that includes both safety and non-safety related piping, that contains fluids like water that if they were to fail could cause an interaction with safety-related equipment.

To do that study you've got to know where the potable water lines are, I would think.

MR. CARROLL: Or make a commitment that there are not going to be or could not have an impact.

MR. MICHELSON: I can make a commitment to build this plant safely and not do any of this. That doesn't work. You've got to -- that's the whole object of certification, so you don't have to go back and remove a line later and so forth. We know where everything is. It has been checked. We have written off on it. It is done.

You can't do that if they start saying, oh, we're going to do this later.

MR. KENNEDY: I agree with you and our list of

laters ought to be very, very restricted. There'll be some laters.

Again, we thought that we could in fact on the potable water system define the appropriate interface criteria, have it designed by the Applicant site-specifically at the COL stage, still have it closed before the COL, but not as a part of our design certification.

Again, if the subcommittee feels strongly about that, I think that is an appropriate comment.

MR. MICHELSON: It is deviating from the essentially complete design and I kind of got an impression earlier -- you agreed to supply an essentially completed design. Now we are starting to hear about the exceptions.

MR. KENNEDY: Again, most of the stuff on that list like warehouses, the intake structures -- clearly site-specific. I think I have heard one example of a place that you feel uncomfortable. That is the potable and sanitary water.

Let me ask, is there anything else on the list that makes you uncomfortable?

MR. MICHELSON: That is the first one that stands out. Sanitary water can be a real problem too, depending on how you lay out your sewer lines. Sewer lines can really interact with safety-related equipment if not done properly, including floor drain systems and so forth, which some

people consider part of the sanitary system.

They don't specify floor drains and show where they are going to be routed and how you prevent backflows and all these sorts of things. You can write rules, but hell, you can write rules for this whole plant -- and not have to detail anything!

MR. CARROLL: You don't mean floor drains under sanitary water, do you?

MR. KENNEDY: Floor drains we do intend to route in design. Floor drains are included.

MR. MICHELSON: Then that's not a part of your sanitary water system. It must tie into it somehow.

MR. KENNEDY: They tie into it. I am not quite sure where the division is but we intend to identify them and route the floor drains.

MR. MICHELSON: But up to what point do you start writing criteria for interface then? Where is this interface to the sanitary system? Outside the reactor building, for instance?

Well, I guess you use auxiliary building in that case.

MR. KENNEDY: Yes.

MR. MICHELSON: So if we know where the boundary is and have the details up to that boundary, I think that is a good idea but in looking at this list I wasn't sure

whether you were omitting the sanitary system.

MR. KENNEDY: That list is meant to be consistent with the definition of essentially complete plant. If the subcommittee has these concerns, this is what we need to hear.

MR. CARROLL: Do you have others, Carl, on that category?

MR. MICHELSON: No, I don't. I wouldn't swear to it. I haven't looked at it that carefully but most of the stuff I think is a non-problem except, you know, the interface criteria will take care of the non-essential buildings tumbling onto essential structures, that sort of thing I don't mind but within a vital area like within the control rooms, control buildings, auxiliary buildings, you have got to know where everything is.

MR. TURK: Well, an interface requirement as opposed to designing the whole potable water system, an interface requirement could be saying that within safety related structures piping for the potable water system will be relegated to a certain area. I think that would address your area but without us requiring to go in and figuring out, for instance, what the usage rate is going to be for the potable water system at that site and then try and size the system, which, you know, you would have to do if you were going to actually come up with a complete design for

that system.

You would need to know the utilities' manning and their procedures, so --

MR. CARROLL: Whether you are on an existing site, on a site with an existing potable water system.

MR. MICHELSON: There is no problem with space allocation --

MR. TURK: So --

MR. MICHELSON: -- you haven't shown space allocations yet and I would expect to go that far. I would expect beyond that to give me the criteria by which you are going to place pipe within that space allocation.

MR. TURK: In order to satisfy the Staff for line break analysis, we are going to have to do that.

MR. MICHELSON: I thought conceptual design didn't go that far here but maybe if it does, maybe -- it depends on how you define conceptual design on this.

MR. KENNEDY: This subcommittee has raised the issue of potable water with us before. If that in fact is the item on the list which concerns you, we can certain clarify it to the extent I think we can resolve your concern.

MR. MICHELSON: Sanitary and potable are the --

MR. KENNEDY: We have the message.

MR. CARROLL: Okay. EPRI requirements document,

Appendix.

MR. KENNEDY: Yes, and again if you would use the list from the August letter, that is the most up-to-date list.

MR. CARROLL: I am on page A-2 of the August list.

MR. ROTELLA: Attachment 2 in the Staff's report.

MR. KENNEDY: It really makes no difference which one. If you tell us the issue, we will find it on our list.

MR. MICHELSON: I didn't even bring that one because it's all in this other --

MR. CARROLL: Oh, okay, you're right. You're right.

MR. WILKINS: I have the August letter.

MR. CARROLL: A-2 of the SECY is fine, too. Either one. It's the same thing.

MR. KENNEDY: Whatever list you're reading from, tell us the issue. We'll address it.

MR. CARROLL: Okay. Let's go to -- the first one I would like a little more information on is System 80+ control element drive mechanisms will not have anti-ejection latches. What's that issue?

MR. KENNEDY: Well, it's interesting. You have picked one there which has gone away. Because the EPRI requirements document has now been changed to remove the requirement the CEAs have anti-ejection latches. Our

deviation has gone away by virtue of the requirements document having changed.

MR. CARROLL: Okay. Let's try it another way. Why did they at one point have this requirement? Can you --

MR. KENNEDY: Can you address that, Ray?

MR. TURK: No, I can't.

MR. KENNEDY: I believe the incentive was to try to get out of the safety analysis the traditional CEA ejection analysis by putting in a design feature by which one could claim that such an event was incredible. I believe that was the intent.

MR. CARROLL: Okay.

MR. KENNEDY: We still analyze the CEA ejection event.

MR. CARROLL: All right. And the next one, the cross tie between EFS trains, I'm surprised, I guess, that EPRI didn't do that. Do you have a comment on that?

MR. TURK: That EPRI did not require the cross-connect?

MR. CARROLL: Yeah. Because I think it's a very good feature. I guess PRAs have shown that it's a very desirable feature if you can control it.

MR. TURK: Okay. In the PRA space it is a significant advantage we found. So we've decided to do that.

I should say that we're having a meeting next week out in Palo Alto with EPRI to go through our exceptions list, and that's really the first meeting on that subject with the evolutionary plant in quite a while, so in many cases it may be just a matter of us pointing out to EPRI what we found as we have implemented the requirements document in the design. So we expect this list will shrink.

MR. CARROLL: All right. I guess with my Westinghouse orientation it's not clear to me why you don't have a main steam isolation on pressure rate of change.

MR. TURK: We have --

MR. CARROLL: You have something that does the same thing?

MR. TURK: It does the same thing. It's, basically, a variable set point that reduces the low pressure actuation as you come down in plant pressure during a cooldown. The purpose of that signal was to identify steam line break events when you're in other than full power conditions.

MR. CARROLL: Not on a Westinghouse plant. It's for full power also.

MR. TURK: All right. Well, we use just a straight pressure set point, but that set point is then reduced as plant pressure comes down and that meets the intent.

MR. CARROLL: Okay. Let's see -- I'm flipping back and forth between lists here.

MR. WILKINS: Well, since you're pausing, can I --

MR. CARROLL: Go ahead. Jump in.

MR. WILKINS: Why don't you want to use what has been described as realistic source terms instead of --

MR. KENNEDY: It's not a question of why we don't want to use them, but in reality considering the schedule which we're trying to achieve, we simply did not think that the staff would be in a position to approve any other source terms for us to use in a time frame to support our schedule. So our rationale was we would perform our safety analysis using the traditional source terms.

If the staff and the Commission approved new more realistic source terms, we certainly would seek that relaxation and modify our safety analysis, but rather than take the chance of proceeding with something different and having that in the final analysis not be acceptable to the staff or the Commission we just didn't feel it was prudent to do that right now.

Certainly we would much prefer to use a more realistic source, but there's one not really available to us now.

MR. WILKINS: The containment design leak rate -- I'm not sure I understand these words. Not that I question

your judgment here. I just want to make sure I understand them.

You're saying the Systems 80+ safety analysis will demonstrate that NCFR 100 limits can be met with containment of .3% leak rate versus .5% per leak rate per day in the requirements document. What I think that means is that you're not as safe as you would be if you had .5 of a percent. Am I wrong?

MR. TURK: No, that's not what it means. It means that we're more conservative, but the testing acceptance criteria that will be placed on the plant will be somewhat more stringent than a .5% per day.

MR. WILKINS: So you're going to demand that the leak rate not exceed .3%?

MR. TURK: As opposed to the EPRI requirement which, essentially --

MR. WILKINS: Which was permitted to be .5%.

MR. TURK: That's right. And that was predicated upon acceptance of the reduced source terms. Both of those are a considerable improvement over current practice which might be as low as .1%.

MR. KENNEDY: That does tie in to your source term question. If we were using more realistic source terms, we could demonstrate acceptability to .5 weight percent. So, again, if the source term is relaxed, we can come back to

this criteria and relax that one as well. But with the traditional source terms, .3% is about all we feel comfortable in demonstrating right now, and that is a threefold relaxation over current practice.

MR. CARROLL: How about the one of RVLMS?

MR. TURK: I believe that one also becomes a non noncompliance in that EPRI is going to remove their requirement that you eliminate the vessel level monitoring system.

MR. MICHELSON: They're going back to it again.

MR. TURK: Correct.

MR. MICHELSON: Gary's going to do the same thing.

MR. TURK: They never left it.

MR. MICHELSON: Oh, that's right. Excuse me.

MR. CARROLL: Again, can you give me some insight as to what they were thinking?

MR. TURK: Well, their insight was that the system was a complication and the operator could infer the same information from other sources and, therefore, by eliminating it it was a simplification to the plant.

MR. CARROLL: Like they did at TMI?

MR. WILKINS: Yeah.

MR. CARROLL: That's called a rhetorical question.

MR. WILKINS: Because your explanation of the reason they didn't want to comply just strikes me as

absolutely unassailable. If there's an NCFR 50.34 and so on -- I didn't go look it up -- NCFR 50.34(f)(2) -- what's that -- 28?

MR. KENNEDY: We had a choice of noncompliance with an EPRI requirement or noncompliance with a Commission regulation.

MR. WILKINS: You don't have any choice.

MR. KENNEDY: We chose noncompliance with EPRI.

MR. CARROLL: Cowards.

MR. WILKINS: Well, I guess you could ask for an exemption.

MR. CARROLL: Okay. I'll ask one for Paul here. What's the issue about the use of 690 and pressurized reheater sleeves and instrument welds?

MR. KENNEDY: If you've been following current events in some of our older operating reactors, we have had material cracking problems with our pressurizer heater sleeves.

MR. SHEWMON: The alloy 600.

MR. KENNEDY: That is alloy 600. We believe that it would be better in our future designs to use alloy 690. If you look at the EPRI requirements document, they say you can alloy 690 in the steam generator tubes, but they don't want it elsewhere. That was written before we had that experience, and we think it's prudent to go to 690 for these

other applications.

MR. MICHELSON: Why didn't they want it elsewhere?

MR. TURK: I am not really sure. It may be because of the way the requirement ended up being written. In the requirements document, there's lists of materials and lists of applications. As I said, in part of our discussions with EPRI next week, we'll be talking about why we want to use 690 in the heaters.

That may result in some revision to the requirements document, or at least an acknowledgement.

MR. SHEWMON: I was wondering; the 690 will cost you more presumably, but I wondered if there was any particular problems with it being more prone to cracking or welding problems or anything that makes people want to --

MR. TURK: No, I believe EPRI's reasons were basically cost and just not being aware of plans to apply it in that application.

MR. SHEWMON: Certainly, primary side stress corrosion cracking come up in enough places now that I would think they'd change the requirement.

One other thing that I'll ask for Jay is, the first item on some list I have here, whether it's the one you have or not; it talks about reducing the hot leg temperature to 615. What is it now?

MR. TURK: Palo Verde and the Korean units operate

at a TH of 621.

MR. SHEWMON: Okay, so you're coming down there and EPRI had suggested coming down to 600?

MR. TURK: That's correct.

MR. SHEWMON: That was primarily because of corrosion concerns?

MR. TURK: Correct; that was EPRI's concern, yes.

MR. SHEWMON: It might be that you could get away with 600 there. Certainly, that corrosion problem is temperature dependent. Okay.

MR. CARROLL: Other issues from this list?

MR. MICHELSON: Yes, I've got a question. What is the purpose now in System 80-Plus of the atmospheric dump valves?

MR. TURK: The atmospheric dump valves provide the safety grade means to remove decay heat through the steam generators when the condenser is unavailable.

MR. MICHELSON: That's the only purpose?

MR TURK: And achieve cold shutdown conditions as opposed to the safety valves which would remove the decay heat, but remain hot.

MR. MICHELSON: That's the only reason that the atmospheric dumps are in there?

MR. TURK: That's correct.

MR. MICHELSON: I guess then that they could be

manually operated?

MR. TURK: Yes.

MR. MICHELSON: Now, why did we have them pressure actuated with variable setpoints in the past?

MR. TURK: It was a control issue, I believe.

MR. MICHELSON: Was it protection --

MR. TURK: There was also some use of the valves to prevent secondary safety valve lift.

MR. MICHELSON: But you're not even claiming that anymore?

MR. TURK: No.

MR. MICHELSON: You won't be able to claim it if you don't have it automatic.

MR. TURK: Right. We have never done that at Palo Verde and other units. Essentially for any overpressure situation where the condenser is available, the turbine bypass system, steam bypass control system is going to prevent secondary safety valve lift.

If the condenser is not available, if you are going to have to relieve to atmosphere and you have a significant overpressure, probably the dump valves, of and by themselves, are not going to be sufficient. They're about five percent each.

MR. MICHELSON: They're pretty small.

MR. CARROLL: Is the unit designed to accept a

full load rejection?

MR. TURK: The unit is designed to accept a full load rejection.

MR. CARROLL: That's through bypass to the condenser?

MR. TURK: That's bypass to the condenser in conjunction with a reactor cutback.

MR. CARROLL: You don't even use these atmospheric dumps in that?

MR. TURK: That's correct.

MR. MICHELSON: Why can't you use the condenser bypasses to take care of the other heat, the kinds of heat removal that you made the atmospheric dumps for? Why are they needed at all?

MR. CARROLL: Because on loss of power, --

MR. TURK: You wouldn't have the condenser.

MR. MICHELSON: Well, you don't have to. You can blow the condenser diaphragm at such an outside event.

MR. CARROLL: I don't think you want to do that.

MR. MICHELSON: You may not want to do that.

MR. TURK: That requirement has to meet safety grade requirements which would mean taking safety class piping all the way out to the condenser.

MR. MICHELSON: To avoid that sort of thing, you just provide -- what is just two atmospheric dumps?

MR. TURK: There are two per steam generator.

MR. MICHELSON: Right. That's the only function then? Okay, okay. That doesn't have to be done for thirty minutes or so? Is that the kind of times we're talking about?

MR. TURK: With the emergency feedwater system and just the secondary safety valve, you could sit a hot standby, removing decay heat to atmosphere as long you had a feedwater supply.

MR. MICHELSON: Why the atmospheric dumps then?

MR. CARROLL: So you can cool down.

MR. TURK: So you can cool down. The dump valves; you've got to maintain hot conditions.

MR. MICHELSON: You wouldn't want to just do that until you got power back to the condenser?

MR. TURK: You probably would in most cases. I think, rather than lift the spring-loaded safety valve, though, you'd probably take the atmospheric dump valves.

MR. MICHELSON: You're just trying to meet the regulation that says you've got to do this in, what 72 hours or something?

MR. TURK: Correct.

MR. CARROLL: What's the issue on the fans and filters in the control room boundary, control room pressure boundary.

MR. TURK: You may have hit one that I'm not -- Stan, do you want to address that?

MR. RITTERBUSCH: This is Stan Ritterbusch. One of the issues has to do with leakage in the HVAC. We're removing a leakage concern.

MR. CARROLL: By putting them inside the pressure boundary?

MR. RITTERBUSCH: Correct.

MR. CARROLL: EPRI thinks they should go outside?

MR. TURK: We'd have to review that.

MR. KENNEDY: That's one I don't think those of us sitting here at the table are not that familiar with.

MR. MICHELSON: Okay. Could I ask a followup on that question?

MR. CARROLL: Sure.

MR. MICHELSON: It's my understanding -- and correct me if I'm wrong -- that you do not have any normal ventilation systems that serve more than one defined area of the plant. By defined, I mean one division or so forth?

MR. TURK: That's correct.

MR. MICHELSON: There are no common ventilation systems in this plant that are pumping from two or three different divisions?

MR. TURK: Correct.

MR. WILKINS: Are you comfortable with not

requiring separate switch yards for main and reserve offsite circuits? I mean, it seems to me that one could contemplate an event in which you'd take out that switch yard. That's the very last.

MR. TURK: I think this requirement, again, because the switchyard is on the list of issues that are not part of the certified design, all we're doing is making our design general enough that, depending upon the site, it could be applicable if a given utility decided that, at their site, they did not want to conform with the EPRI requirement of physically-remote switchyards, that that wouldn't preclude this design. It does not really enter into the application.

MR. CARROLL: When you're talking to EPRI about their requirements document and your design, where you comply with the EPRI requirements is with respect to 1-E power, two emergency diesel generators for two divisions, one for each of your two divisions of safeguards equipment, plus the non-safety-grade onsite power source.

In view of the Vogtle event, concerns about accident sequences and other-than-power operation, I guess I would ask you to ask yourselves and EPRI whether an "n plus 2" design might not be a better approach, a full "n plus 2" design extending back into the electrical might not be a better approach.

Do you understand my concern?

MR. TURK: Yes.

MR. CARROLL: If you did that, I am not sure you would really need the onsite generation non-safety-grade, other than because of a dumb requirement in the station-blackout rule. I think it's an issue that should be aired, in view of Vogtle and similar events, because you are going to have diesels out during outages, and you also are going to have accidents during outages.

MR. MICHELSON: I had a couple more, mostly for my own edification, I guess, but let's do it.

Why do the containment purge valves have to close in 15 seconds?

MR. TURK: Essentially to meet criteria for the safety analysis. I should point out here this I think the difference with EPRI arises because the EPRI requirement is phrased in generic terms to say that automatic valves should not have to close faster than 30 seconds and then lists some necessary exceptions, and it lists the main steam stops and the main feed stops, and we just believe the purge valves weren't really considered when they listed that.

MR. MICHELSON: There must be some real good reason why you chose this.

MR. CARROLL: That also is source-term related.

MR. TURK: Correct. By not looking at the lower

source term, yes.

MR. MICHELSON: So, you think that if you looked at a realistic source term, you might go back to --

MR. TURK: We might be able to relax that time, yes.

MR. CARROLL: A few hours.

MR. MICHELSON: Well, it's hard to believe it goes from 15 seconds to hours, but maybe it does.

MR. CARROLL: You don't need to close them until you have released the radioactivity into the containment.

MR. MICHELSON: Well, that's the given, though. That's how you decide how fast they have to be.

Another question: The diesel start time, you're talking about a sequence here of 20 seconds, which I gather is to reach all immediately-needed loads, must be on in 20 seconds. Is that the way you interpret it? It says start and load in 20 seconds. What do you load in 20 seconds.

MR. TURK: The first element of the sequence can be loaded onto the diesel starting at 20 seconds.

MR. MICHELSON: That's a lot different answer, of course. In other words, ready to load the first element in 20 seconds.

MR. TURK: Right.

MR. MICHELSON: As opposed to being fully loaded.

MR. TURK: If the diesel's started up to speed --

MR. MICHELSON: That's not the way that the bullet is worded, but maybe it needs to be reworded when this thing is reissued, then. It's start and ready for loading in 20 seconds. Is that what you meant?

MR. TURK: That's what I believe it is. I'll have to verify that.

MR. MICHELSON: I would have no problem with that. I would have quite a bit of problem with -- I'd like to know what you're going to load and get up in 20 seconds.

Apparently, then, EPRI says 40 seconds, but you've got to see what EPRI's criterion is.

MR. CARROLL: Again, that's source-term related.

MR. MICHELSON: No, not necessarily.

MR. TURK: As far as coming up with the criteria -

-

MR. MICHELSON: This is mostly ECCS-related, how fast you've got to get all the water flowing to prevent exceeding 2,200.

MR. TURK: Correct.

MR. MICHELSON: I don't know. I don't have any problem, but I didn't understand what was here. I would think you'd have to tell me more about it, if you're going to be fully loaded in 20 seconds, and then I wondered what did EPRI say?

MR. TURK: We're not trying to complete the

sequence.

MR. MICHELSON: Is EPRI's such that you just start loading in 40 seconds?

MR. TURK: I believe the two numbers are comparable numbers. The numbers were generated in the requirements document when we first started the requirements document 3 or 4 years ago.

Forty seconds was picked, at the time, as a goal to relax the demand on the diesel. When we actually started completing our Chapter 15 analysis, we found we needed 20. I think you're right; I think most of that reason was thermal hydraulic and not source-term related.

MR. MICHELSON: Well, 20 wouldn't even be too bad a time in which to be ready to load.

MR. TURK: That's what we felt. We felt that the 20 seconds was a significant relaxation over some of the current demands.

MR. MICHELSON: From 10 to 12 right now.

MR. CARROLL: It's also related to leak before break.

MR. MICHELSON: I'm not sure. In ECCS, you don't talk about leak before break. You talk about the design-basis breaks, and that's what all this is based on, irrespective of what the credibility of a design-basis break might be, which is when you get into leak before break. But

this is based on the hypothesized Appendix K specified size breaks.

MR. CARROLL: The fast start time on the diesels was driven by the large-break LOCA.

MR. MICHELSON: That's right.

MR. CARROLL: Which has been --

MR. MICHELSON: It's still a large-break LOCA.

MR. KENNEDY: Leak before break is only used, as we use it, in support and internals design and analysis, or ECCS analysis, Appendix K. We are still required to use the full double-guillotine break.

MR. MICHELSON: That's what drives this thing so fast, and perhaps maybe we should revise the postulated breaks for ECCS. That's been thought about from time to time, too, but right now, it hasn't happened. You will clear up the wording a little bit eventually.

MR. TURK: Yes.

MR. MICHELSON: Okay.

MR. CARROLL: What is the one about initiation of feed-and-bleed mean? Don't you presently initiate feed-and-bleed at the time of steam-generator dry-out?

MR. TURK: Operationally, yes. What this was was to attempt to define a measure of the plant's capacity to essentially absorb heat; in other words, how long could the plant sit there if you did not initiate feed-and-bleed?

So, it's essentially a measure of the heat capacity of the steam generators and the primary coolant and the like, and again, early on, 2 hours was picked, if that's the one you're looking at, as a general measure. When we actually got in an looked at the inventories that -- coolant inventories that we wanted to have in the system, it is 145.

There is also need for some discussion with EPRI regarding how you actually calculate that, whether it's best-estimate methods or not best-estimate methods. But that's not meant to be an operational restriction. If you will, it's a measure of margin.

MR. CARROLL: Okay. Maybe that ought to be re-worded, because it made it sound to me like you're going to wait 30 minutes after dry-out to initiate. I guess I was wondering what the basis was. You started a stopwatch when you dried out? And you're telling me you will. Your emergency operating procedures envision initiation of feed-and-bleed upon dry-out. Okay.

EPRI did, apparently, come up with a 60-mi. requirement, and you can go 30 minutes, but you're not sure whether it's best-estimate or what. So, this one could also be revised for that reason.

MR. TURK: Numerically, yes.

MR. CARROLL: All right.

Anymore?

MR. MICHELSON: Let me ask, just so I've go the background: I don't know much about this requirement for hand-holds at every tube-sheet or every tube-support. Is it just a matter of the cost of putting in the extra hand-holds? Is that the concern? Or is there something else?

MR. TURK: I don't have all the information either. It has to do, I think, also, with maintenance history.

I think there were instances on other vendors' steam generators where they found it was desireable to be able to get up into upper ends of the tube bundle. We have, historically, had adequate access.

We have a man-way in the upper area which allows access to the upper ends of the tube bundles, and with the access that we have, we have alternate access at the tube-sheet level to get in at different angles.

MR. MICHELSON: But not at the separator, not at the supports through the generator.

MR. TURK: Right.

MR. MICHELSON: Just at the top and at the bottom.

Perhaps I'm just speculating. I thought the reason that you might like these, of course, is if you've got a problem with tube dinning at the supports and so forth, that you can get in and wash the debris out and that sort of thing, which is what you do, I think, at the bottom

tube-sheet now.

Is there any reason to believe that it's a worthwhile investment?

MR. TURK: I do not have that evaluation with me and don't recall it. I imagine that was probably the basis, but we can go back and take a look at that.

MR. MICHELSON: It could be that was -- I just don't know. I was curious. It is though an item that didn't look like that big a problem, but -- so why -- why take exception to what the customers think they want.

MR. CARROLL: Let's see. One other comment. I notice that combustion knows how to spell polyvinyl but the staff doesn't. There's no "e" in the end. But you're April whatever document was correct.

MR. KENNEDY: Thank you for the compliment.

MR. CARROLL: All right. Anything else on this -- or for combustion?

[No response.]

MR. CARROLL: All right. Let's move to Tom Wambach of the staff for his presentation, or Charlie, you were going to lead off, weren't you?

MR. MILLER: You wanted me to make some remarks to respond to the question that you had.

MR. CARROLL: Yes, yes.

MR. MILLER: I'm going to flip a slide up there

but I'm going to talk from here.

[Slide.]

MR. CARROLL: Okay.

MR. MILLER: You've seen this one before. I thought it might be worth while to kind of give a quick history of LRB. Ernie covered sort of the genesis of LRB's in his discussion.

At the time that we embarked upon doing the reviews and planning the reviews for the ABWR and the CE System 80+, the staff felt that it would be good to try to sit down and get some general ground rules laid out up-front. I think Carl called it a "gentleman's agreement" in the past, and that might be a good term.

At the time that the ABWR LRB was issued, it was a staff document -- an NRR document really, that Tom Murley issued to General Electric.

MR. CARROLL: Is that right --

MR. MILLER: That's correct.

MR. CARROLL: -- or did he just write a cover letter --

MR. MILLER: Well, okay.

MR. CARROLL: -- attaching GE's LRP?

MR. MILLER: Yes, yes. It's a very -- it's a very sordid history. In reality, the vendor prepares the draft of the LRB, they dialogue with the staff, we come to

agreement on what it should look like and then the staff issues it to the vendor. Okay. I didn't mean to imply that the staff developed this whole thing on their own. That would be selling the vendors far short. The bulk of the work was prepared by the vendors.

As we proceeded through the ABWR review and the Commission started to focus more closely, which was about the time that Part 52 was coming into being and reached its final stages of comment form and was about to be promulgated, the Commission said, ah-hah, staff, you're down there setting policy, and the Commission is the body which sets policy. Some of the things that you have agreed to in the LRB as the way you're going to proceed, should have been raised as policy questions.

At that point in time, the staff and the Commission entered a dialogue through several meetings and what resolved was some guidance that the staff received last December. At that point in time, the staff tried to take the guidance in its various forms as it was issued and try to put it together in some logical format. This monstrosity was the -- that I have up here on the slide, is the result of that.

MR. CARROLL: That's a logical format by definition?

MR. MILLER: Yes. In looking at the guidance that

was given, we tried to see if there was any illogical steps in the process, but from a logic standpoint, it tracked.

MR. CARROLL: Okay.

MR. MILLER: So, the staff developed a Commission Paper 90-065, where we basically said this is our understanding of the guidance that you've given us in the various forms commission and that went back to the Commission.

At that time, the Commission then asked the staff to make suggestions concerning how the process might be streamlined. The staff then prepared a SECY 91-46, which was more of a streamlined approach to how we would conduct these reviews.

The Commission, by a vote of 5 to 0, rejected th streamlined approach and told us to basically follow the process as it was outlined in SECY 90-065.

If you look at the first column there of events, what we basically had done is we've raised the LRB to a level that it was not to be a staff-issued document, but it was now to be a Commission-approved document.

As a result of that iterations and the additional preparations that we had to make, it's caused some delay I think in probably -- where we were trying to get to. As a result of that, I think it's fair to say that it's led to some frustration on the vendors' part because I think it's

felt that the lack of issuance of the LRB has held up getting on with the review in its full ernest.

Nevertheless, at this point in time, the guidance that we have received from the Commission is to issue an LRB. They haven't retracted that guidance. So, that's the main reason that we're here today.

If you look at that -- that sequence of events and the steps -- one of the things that we're supposed to do along the way is to report to the Commission on the staff's comments and recommendations concerning their review of the LRB. The SECY paper that you have before you is exactly that step.

Now, I should go on to say that accompanying this was a schedule of how the LRB would proceed, as best as we could guess. We developed that schedule, I think, with the thought in mind of not that this is System 80 or the ABWR, but this is about what it would take time wise to develop an LRB for some un-named design certification application.

In reality, although we're at the comment and recommendation stage, I would basically agree with Ernie Kennedy's comments earlier, that I don't think that there's any large disagreements at this point and time between the staff and Combustion Engineering; at least nothing that I don't think could be handled through just sitting down and rewriting some words in the LRB and issuing it.

However, the Commission is the approving body for the LRB at this point in time. What we have to do is to send our comments and recommendations, as we've done in this paper to the Commission, get their okay or any other guidance that they wish to give and proceed to finalize the LRB. In our paper, we basically made the recommendation that we didn't see any significant impediments in doing that. We thought that we could finalize it in a much more timely manner than had been earlier anticipated in the schedules in 90-065.

Given all of that rhetoric, the one thing that I don't want to see happen, and I'm speaking for Charlie Miller, personally, in my role in all of this, is that the LRB become an impediment to getting on with the review. If it turns out that that's the case, then I would personally question whether it's really worth doing in full ernest. I think it was at the time that we set out.

MR. CARROLL: This particular LRB?

MR. MILLER: This particular LRB, yes. If you'd like, I can expand my comments concerning LRB's in general. I didn't know if you wanted to get into that in this forum or not?

MR. CARROLL: Yes. I think it's one of interest to us --

MR. MILLER: Okay.

MR. CARROLL: -- if you can do it in about 30 seconds?

MR. MILLER: I guess what we basically concluded is that -- that we were far enough along with the CE LRB and they had put enough effort into it and the staff had put in an effort to it and it looked like we could reach closure pretty quickly, that it was worth finalizing. Also, we haven't been told not to finalize it at this point in time.

What the Commission has asked us, more specifically, is, gee, given the fact that we have told you for passive plants that we want you to resolve all matters, in the context of the EPRI Requirements Document, before you proceed with the formal review of the passive plants, are LRB's of any use anymore?

I think we concluded that given the fact that we're going to resolve those major issues in the context of EPRI first, that there are some values to an LRB that would still be there, but the cost/benefit of really doing one just isn't there anymore; and we recommended to the Commission that we not proceed with formal LRB's for the passive plants.

MR. CARROLL: And that recommendation is --

MR. MILLER: And that recommendation is separate.

MR. CARROLL: -- 90-362 --

MR. MILLER: Right.

MR. CARROLL: -- which we handed out earlier to the Committee members.

MR. MILLER: I should also say that for the more exotic designs that we've yet to face: the liquid metal and gas reactors, we've reserved the right to maybe revisit it again and maybe we would want to put something like an LRB out, depending upon where we stand, because there is at this point is no EPRI Requirements or other vehicle for visiting some major issues.

Now, even given where we've gone, for the evolutionary plants, the Commission has told us to review the EPRI requirements and the vendors' designs in parallel. So as policy issues are identified either through EPRI or through the individual designs, we've got to get them to the Commission right away.

We're not going to be resolving them necessarily -- can't be sure that they'll be resolved in EPRI before they're resolved with each of the evolutionary applications. So, we still felt it was important that -- you know, the LRB be some document that give kind of a -- in one spot, a general understanding of the waiver proceeding.

One thing that I should state is that the LRB has no legal standing. I think that's important for everyone to realize.

MR. CARROLL: I think Murley made that very clear

with the caveats he put into the cover letter to the GE ABWR LRB.

MR. MILLER: Yes. So, we basically have agreed with the vendors that, I believe, that's the case. I'll let CE speak for themselves. But, at this point in time, we have not had the vendors come back and say, staff you said this here and now you're doing it different and you can't make us do it. We have not had that whatsoever. In fact, at this point it has been a fairly cooperative dialogue.

But I think the most important thing --

MR. CARROLL: So, given, Charlie, that the decision is made by the Commission to proceed with this LRB and it does get finalized, what are you going to do with it then? What value does it have to the staff?

MR. MILLER: I think the value that it has to the staff is that we will then have, with Combustion Engineering, kind of a general agreement as to the way they are proceeding and, to the extent that 90-016 issues have been identified, Combustion Engineering will have, if you will, in some minimal form stated their commitment that they understand that that's the way they are proceeding to meet those in their design. Which, by the way, we have not yet gotten to with the EPRI review. EPRI wants to continue the dialogue on some of those issues.

But, the LRB document shows that there is some

understanding there as to the way that we are proceeding. I think that is the biggest value and the fact that it has transcended the evolution of Part 52 and some of these policy issues. It kind of ties a knot in where we started and where we are today.

Now, if the Commission were to decide -- I think one of the reasons that the Commission is looking at it, from my understanding of some of the dialogue I've had with their staffs, and one of the concerns that the industry has, is that the schedules that we laid out for the development of an LRB can take up to two years. I think there is a general feeling of, well gee, if it's going to take two years to develop this thing before we can start with the review, is it really worth holding everything up for that length of time in order to get this document. Could we make schedular savings by eliminating it?

MR. CARROLL: And resources savings --

MR. MILLER: Resource savings, yes.

MR. CARROLL: For staff, for applicants, their ACRS.

MR. MILLER: Stan can tell you. He has put in a fair amount of time in dialoguing with my staff, debating, arguing the language in the LRB and we have gone round and around.

The other thing I should note in the CE LRB -- and

I'll just make this statement generally -- is that there is a difference in the CE LRB and the GE LRB in that, at the time that we issued the GE LRB the Commission had not made the decision that they were going to desire essentially complete designs. So, I think you are going to see the CE LRB addresses that where the GE LRB -- although GE has committed to do it -- does not reflect that.

So there is a difference in the timing difference in the issuance of the two documents. But, in summary, I guess it is our conclusion that we were far enough along we thought it would be good to finish it and get it done.

Now to the extent that -- I don't plan holding Combustion Engineering hostage to this document and saying that we are not going to do a review until it has been issued. I think there was a time where the staff had that intention and hoped to use the LRB as the first step of the process before we would embark upon a review. But, in the case of the System 80+ I no longer have that aspiration.

I guess that's what I wanted to say.

MR. CARROLL: Okay. Do you have questions on this issue?

MR. MICHELSON: What do you envision to be the form of a Commission approval, which is a step in your block there. Is that some kind of a formal Commission letter to the applicant, or what does it mean, Commission Approval? I

guess that says approval if I can make it out from here.

MR. MILLER: I guess it could take one of two forms. It could take the form of the Commission decides that they are the body that wants to formally issue it, so they would put their name on the line rather than Murley, or -- I hate to make this comparison, but it would be similar to issuing an operating license where, you know, you go through the Commission really to get approval before it's issued, but actually Tom Murley who puts his name on the license itself.

MR. MICHELSON: There is no Regulatory basis for doing that sort of thing, nor would you want to generate one without a Regulation to do it.

MR. MILLER: I think that's a very valid comment. The one thing that I personally would not want to see happen and, to a certain degree has happened already, is that the darn thing gets so institutionalized that we treat it as a bigger document from a Regulatory space than it was originally intended to be.

MR. MICHELSON: One might envision, of course, simply doing as was the case for the GE, for Murley to transmit it with one paragraph, a mold, which in my opinion it just says we've got a gentleman's agreement, looks like we're heading in the right direction, now we'll see what you do.

MR. MILLER: Well I think, from a practical standpoint, what we were likely to do is once we get the guidance back on our comments and recommendations to the Commission, if they say go forth and finalize it, we'll go forth and finalize it and probably send something that looks like that and say we plan on issuing this thing and we need your okay to do it. They may just give the okay and then Murley would do exactly what you said.

MR. MICHELSON: If you add a high degree of formality then one has to be much more careful this.

When I look at -- just doesn't seem like the thing that I would recommend at least. I would do it just like the ABWR. That's about as far as I'd go with it.

MR. MILLER: I think we found that the staff found that to be a useful document and so has GE. But remember that, at the time that document went out lots of things that have now -- a lot of water has gone under the bridge since the time that was issued.

MR. MICHELSON: In a larger part it has been preempted by those things.

MR. MILLER: Yes. And, in fairness to Combustion, they've been trying to get one issued now for quite some time.

MR. CARROLL: All right. Tom, you're up.

MR. MILLER: Now I'm going to ask Tom Wambach to

give a formal presentation.

MR. CARROLL: I cut into your time considerably, Tom, partially on the basis that you indicated that Combustion had sort of stolen your thunder earlier. I assume that where there is agreement or no problems, just slip through the slide and focus on the things where there are issues.

MR. WAMBACH: Yes, sir.

[Slide.]

MR. WAMBACH: I'm Tom Wambach from NRR, project manager for CE, System 80+. This may be the only slide that gives you some information that you haven't heard already.

[Slide.]

MR. WAMBACH: This is the schedule. I put this up mainly to address this issue, because there seemed to be some confusion with the subcommittee as to what they were going to be meeting on today. I think Mr. Miller has now addressed that in his introduction.

[Slide.]

MR. WAMBACH: This slide takes the 15 issues from SECY 90-016 and shows us the sections in which they were addressed in the LRB. As pointed out in the CE, two of the items were not included because of the timing of the previous documents and the SRM's.

The asterisks by the other items also indicated

where there was either some modification that the staff wanted to the LRB or some additional information.

[Slide.]

MR. WAMBACH: This is SECY 89-013, which had the other technical issues which were addressed in the LRB and on these, as you see, there are no asterisks. Because of the timing of that issuance, those issues had all been resolved in the LRB previously.

[Slide.]

MR. WAMBACH: The LRB, as amended on August 28th identifies the one exemption on the OBE being one half of the SSE and deleted the other exemption that was identified in the previous LRB. However, as indicated by Mr. Kennedy, the staff feels that a verbatim reading of the rule states that a containment penetration shall be provided.

Later on in the rule at the bottom of the section, it says that the intent of this is to not preclude the addition of a vent. Those words are what CE feels then they wouldn't have required an exemption because they do not preclude the potential for adding a vent.

But we feel that they should either propose the penetration or ask for an exemption. Again, I don't believe that at this point it's a technical issue. It's just making the paperwork right.

MR. CARROLL: The first item, the OBE/SSE issue,

the Commission has agreed with the position you took that it didn't have to be half SSE, right, in 90-016?

MR. WAMBACH: That is correct.

MR. CARROLL: That's an non-issue, really.

MR. WAMBACH: Right.

MR. MILLER: Except for the fact that there's a current effort evolving into changing the regulation. Until such time that the regulation is changed, although we may agree in principle, we would have to treat it as an exemption to the regulations.

MR. WAMBACH: We'd have to issue an exemption.

MR. MILLER: Current regulations provide for something different than I think where we are today.

MR. CARROLL: I've got you.

MR. MILLER: That's the issue.

MR. CARROLL: Yes.

[Slide.]

MR. WAMBACH: Now, one of the items that we indicated we needed some fine tuning on; midloop operation -- the CE proposal did talk about the fact that they would do an analysis. They would consider design features and/or operational restrictions.

Then as the example, they proposed an operational procedure to provide venting to the reactor coolant system so that there would be no pressure buildup during midloop

operation.

We, the staff, feel that the issue is broader than that; that it should propose design features to minimize loss of shutdown cooling flow, not just pressure buildup. You do this, in addition, by showing the reliability of the shutdown cooling system, the instrumentation that's provided to the operator for reactor vessel level and pressures and temperatures and procedures for rapid containment closure.

[Slide.]

MR. WAMBACH: On fire protection, the CE proposal is the same as what the staff had in SECY-90-016. The Commission, in their SRM, approved the staff position, but as supplemented by our response to the ACRS comments in our April 27th memorandum. So, that is what we will do in this exercise, is match it up with our response to the ACRS.

MR. CARROLL: If I remember correctly, the ACRS comments were included in the Commission directive on mid-loop, also.

MR. WAMBACH: That's right.

MR. CARROLL: On the previous slide.

MR. WAMBACH: Yes. I think that the four items that were listed are the ones that ACRS wanted us to add, specifically, rather than in a general statement.

MR. MICHELSON: Do you know, in the case of fire protection, whether there is any problem with CE taking care

of the ACRS comments?

MR. WAMBACH: No, I don't believe there. The HVAC you discusred with them earlier.

MR. MICHELSON: Maybe CE would like to confirm that, and then there would be no doubt.

MR. KENNEDY: We don't believe there's a problem.

[Slide.]

MR. WAMBACH: The intersystem LOCA, the CE proposal discusses the fact that there is no low-pressure safety injection and that they are increasing the design pressure of the shutdown cooling system to 900 psig.

The SRM from the Commission included -- again, there were some ACRS comments about all the components in the low-pressure system, the pump seals, valve bonnets, heat exchanger tubes and so forth, and that all of those things should be addressed, and then all high- and low-pressure interfaces should be addressed.

The LRB, as written, just addressed, really, those two and then made a statement that the PRA shows that all the rest are insignificant contributors.

MR. MICHELSON: What PRA shows that?

MR. WAMBACH: I guess the PRA for System 80+.

MR. MICHELSON: Maybe it should be said the PRA will have to demonstrate that, and then we'll look at the PRA and see if it, indeed, demonstrates it, and then we

would agree, I think. I don't think there is a PRA written right now that we've reviewed yet.

MR. KENNEDY: This is Ernie Kennedy. Not one that you have reviewed.

MR. MICHELSON: Yes.

MR. KENNEDY: We claim it's demonstrated. I guess that is open for discussion.

MR. MICHELSON: What your approach is going to be is to simply show on a probabilistic basis that it's so low as to be discounted?

MR. KENNEDY: It will be a combination of deterministic design criteria, supplemented and confirmed by the PRA. It will not be simply relying on the PRA to say it's not important for other low-pressure-connected systems.

MR. MICHELSON: If you aren't able to provide a reasonable basis, then you would fix it.

MR. KENNEDY: Correct.

MR. MICHELSON: Is that the approach?

MR. KENNEDY: Correct.

MR. CARROLL: On the subject of your PRA, are you interpreting the Part 52 requirement for a PRA as meaning that you need to look at potential accident sequences in modes other than power operation?

MR. KENNEDY: The PRA which we have submitted only looks at full-power sequences. It does not look at

sequences initiated for less than full power.

MR. CARROLL: Do you have any plans to supplement it?

MR. KENNEDY: We know right now that that is a subject of active discussion between the staff and EPRI in the context of the requirements document and the EPRI ground rules. Right now, we are watching that very closely.

Right now, we have no plans to do anything other than the full-power event. We are encouraging EPRI that in their discussions with the staff, to the extent they can, if EPRI can demonstrate generically with some generic analyses as to why that approach is acceptable, it would preferable than having the individual applicants do that. Whether or not they will take our suggestion, I do not know.

MR. CARROLL: All right.

[Slide.]

MR. WAMBACH: The next issue is the core concrete interaction. The CE proposal, as you noted this morning, was 0.02 square meters per megawatt thermal of cavity floor-space and an in-containment refueling water storage tank for flooding.

The staff prefers the more general, rather than agreeing in advance that that is sufficient floor-space, to go back to the more general requirement that sufficient reactor cavity floor-space to enhance debris spreading and

provide for quenching debris in the reactor cavity; in otner words, some demonstration that those two may or may not be acceptable.

MR. CARROLL: Okay. But how do we get out of this dual loop? It's very important that this be resolved, because particularly with a spherical containment, like this design is and some others, if the O2 is doubled or quadrupled or whatever, it just blows the whole containment design out of the water. I mean this has got to be resolved.

MR. WAMBACH: Yes.

MR. CARROLL: What's the staff's schedule for doing that? We've got to fish or cut bait.

MR. WAMBACH: Well, that's why we're going to this more general requirement, so that they will then have to prove that that does this.

MR. CARROLL: EPRI thinks they have. When is the staff going to tell them we agree or disagree?

MR. WAMBACH: How it's going with EPRI, I don't know.

MR. CARROLL: Charlie, Brad, can you add anything to this?

MR. HARDIN: I'm Brad Hardin from the staff.

This is one of the outstanding items, as you know, in the various documents that have been generated on severe

accidents, and there is an experiment that's been ongoing at Argonne now, which EPRI and the NRC and the vendors are all involved in doing cooperatively, and we hope that we get some information from that that will help resolve this question of debris coolability, which will help settle this coolability criteria, but it's a difficult experiment, and they haven't gotten any results from it yet, and I don't know what their schedule is right now. I haven't talked to them recently.

But I think a worthwhile comment to make is that the staff has felt that this has been an issue where we could not really look at it without some conservatism, and so, for GESSAR, for example, we had to use the more conservative approach that the staff has used traditionally on debris coolability and to look at what does that mean in terms of the license-ability of the design, and I would just offer the thought, because I don't think we have any real definitive information on this particular design yet, but generally, the result of not allowing the more rapid cooling that EPRI has used in their analyses is that we have larger loadings on the containment, and yet, those have been acceptable from a licensing viewpoint.

This was true for GESSAR. I think that that's an alternative, if we have to fall back on that. That's probably what will have to happen.

MR. CARROLL: In other words, if somebody designed a cavity based on O2 and you wanted to apply conservatism, your view is that -- and the design was fixed and they've gone ahead, and you know, it was very expensive to recover from it, your approach would be to look at the margins that containment had, as opposed to saying, okay, tear up all that paper and start over again?

MR. HARDIN: That's right. I think, again, I have to be careful that I don't overstate this, but I don't think there is any information that would cause us a great concern that there would have to be a major re-design of the containment. I think it just wouldn't look as nice.

It would have some loadings that would be higher than otherwise, if it was coolable, and yet, our information indicates that those loadings would be acceptable. Those would be included in the staff's final SER for the severe accident response of the design.

MR. CARROLL: Thank you, and you just have no insights, Brad, as to how long this Argonne work is going to go on?

MR. HARDIN: If we had realized this was coming up, we could have checked, but we can get back to you on that.

MR. CARROLL: Well, you'll be coming in on this presentation next week so maybe you can have an answer.

MR. MILLER: Maybe we can get an answer for the full committee meeting next week, okay?

[Slide.]

MR. WAMBACH: The Containment Performance Goal, the definition of containment failure, as Mr. Kennedy, explained this morning, that we prefer this definition rather than the dose-based definition of containment failure.

This I believe is the same one that is in 90-016.

Again, the external events with frequencies less than ten to the minus fifth should not be disregarded.

The criteria for evaluating external events is being worked out with EPRI on the ALWR requirements document and when the resolution is gotten it will be transmitted to the vendors.

MR. MICHELSON: Before you leave that slide, on the first bullet, Containment Failure, you are thinking here in terms of the classical failure in which something happens that the core has gotten into the containment I guess, and then the activity is leaking out of the containment.

How about the case wherein you have an intersystems LOCA in which the core never gets into the containment perhaps until extrememly late in the game but that early-on you have got substantial leakage of the core directly outside of containment? How does that fit into our

definitions of containment failure?

Is that a containment failure, to have an intersystems LOCA and dump the activity outsider of containment?

MR. CARROLL: It's a containment bypass.

MR. MICHELSON: It certainly is a bypass but they use the word "failure" and not the word "bypass" and I never know when I see the word "failure" which kind of failures they are talking about. I wish they would be more careful with the words but what was meant here in containment failure? Did that include a bypass type failure?

MR. WAMBACH: I would have to assume so.

MR. MICHELSON: So if I ever see the words "containment failure" I always automatically assume that if the Staff is saying it it means, it includes the bypass possibility.

MR. WAMBACH: Part of the containment is the, you know, the closed system boundaries.

MR. MICHELSON: Beg pardon?

MR. WAMBACH: Part of the containment is the isolation valves in the closed system boundaries --

MR. MICHELSON: Sure. Sure, I think that it can be easily defined that way but it's certainly an uncontrollable leakage and it's substantially greater than a design basis leakage but the containment is not leaking.

It is not a loss of containment integrity except in the sense that you have lost the integrity of piping outside of containment and were for whatever reason unable to isolate it. That's how you got into that.

MR. WAMBACH: I would say that is part of the containment boundary at that point

MR. MICHELSON: Okay, then that is a containment failure then by your definition.

Now your second bullet in your previous slide also gave me some trouble because it is not worded the same way as CE's. You are talking here about any external event which is greater than ten to the minus five? Or are you talking about external events in which the results are loss of containment.

MR. WAMBACH: Yes, that is what is meant.

MR. MICHELSON: Shortened it up?

MR. WAMBACH: Yes, I shortened it up.

MR. MICHELSON: You left out an important part of it.

MR. WAMBACH: Yes.

[Slide.]

MR. WAMBACH: Equipment survivability.

MR. WILKINS: Are you willing to put any number in that sentence? External events with frequencies, say, less than ten to the minus six per year can be disregarded?

MR. WAMBACH: Does anyone on the staff want to answer that?

MR. ROTHMAN: Bob Rothman from the staff.

At the present time the staff is looking at that. As a seismologist as far as earthquakes is concerned I am hesitant to putting bottom line numbers on those, having absolute criteria, because of the fact of the uncertainty in the seismic hazard. You have got such a wide range of uncertainty I think you are really fooling yourself when you put some probabilistic goal ten to the minus five or ten to the minus six and try to reach it with the uncertainty involved in the seisimic hazard, at the input end of it, but the staff is still looking at that.

MR. CARROLL: What sort of alternatives to a quantitative cutoff --

MR. ROTHMAN: What we prefer to do in the PRAs that we have looked at in the past and the hazard studies is look at relative, look at sequences relatively and see what dominates in the accident space rather than putting some number and saying you have to meet that, because we run into problems with the way the hazard is done and things like that to meet the numbers.

We feel that from plant to plant or sequences within a plant you are better off using a standardized methodology and then comparing things relative to each other

to see where you may have problems.

MR. MICHELSON: Well, how are you viewing other external events and by that, other that seismic?

MR. ROTHMAN: You mean --

MR. MICHELSON: The disagreement I gather is only on seismic. Does that mean on all the rest of them it should be ten to the minus six?

MR. ROTHMAN: I don't think that number has been accepted by the staff yet but I think the uncertainty in some other external events are less than in the seismic and they would more easily be quantified.

MR. CARROLL: So you don't think the staff has accepted ten to the minus sixth as a cutoff for non-seismic external events?

MR. ROTHMAN: I don't think the staff has accepted a quantitative number, personally.

I know in the IPEEE program we are still looking. The staff has recommended that there not be a bottom line number that a plant should reach but rather to look at sequences and look at -- as far as IPEEE is the benefits of -- fixing dominant sequences rather than setting some number, to me.

MR. MICHELSON: Does that sort of comply with the safety goal policy? I thought the safety goal policy kind of zeroed in on numbers.

MR. ROTHMAN: I'm not sure about that.

MR. MICHELSON: And they covered external events as well, I assumed, so it doesn't seem like the staff is quite following what guidance the Commission has issued on safety goals.

Maybe I didn't read it carefully enough.

MR. ROTHMAN: The staff -- we're really having a problem with wrestling with this and I am just telling you.

MR. MICHELSON: Oh, you're thinking about that part.

MR. ROTHMAN: Yes. We are still thinking about that.

MR. MICHELSON: You may go back to the Commission and ask for a clarfication?

MR. ROTHMAN: I am not sure what the plan is.

MR. WAMBACH: The next item is equipment survivability, which again CE didn't address because of the timing of the papers.

The Commission approved the staff position is that mitigation features designed for reasonable assurance to operate in severe accident environment for the time needed but not requiring EQ to 50.49 requirements or Appendix B requirements.

MR. MICHELSON: There were some reliability requirments, some magic words about high reliability or

something like that, so it's more than just -- I just that's part of assurance to operate.

MR. WAMBACH: Reasonable assurance to operate in severe accident environment.

MR. MICHELSON: Yes. There were some pretty good words in there, which fell just short of full-blown treatment, it would appear.

[Slide.]

MR. WAMBACH: IST pumps and valves, the CE proposal said they would have an IST program; however, that didn't take into account the additional requirements that were in 90-016 for considering piping design to incorporate full flow testing of pumps and check valves designed and incorporate provisions to test motor-operated valves under design basis differential pressure

MR. CARROLL: And/or flow.

MR. WAMBACH: Yes. Check valve testing should incorporate the use of advanced non-intrusive techniques and a program to determine the frequency of disassembly, inspection of pumps and valves to detect unacceptable degradation.

MR. MICHELSON: There is also in there a -- one now -- has to determine these -- I forgot the term at the moment, but it's essentially the valves that can go into other positions and have to be returned to the right

position. That return must be assured. That was a part of 89.10. Of course, that means CE would want to do an analysis to determine what the name or the most adverse conditions on the valve and assure that it operates under those conditions. I think it is all understood. Compliance with 89.10 is the answer.

Did CE take any -- do you know yet if you're taking any exception to 89.10 for future plants?

MR. KENNEDY: I don't believe we are. No, sir.

[Slide.]

MR. WAMBACH: This slide has sort of miscellaneous items on it. The source term for severe accident evaluation is being developed with EPRI and ALWR vendors. The USI and GSI resolution, as Mr. Kennedy said this morning, they are using the most updated supplement.

Conformance with SRP 10 CFR 50.34(g) -- that's again, Mr. Kennedy said that they plan to do that.

MR. MICHELSON: Refresh my memory. What is that one?

MR. WAMBACH: That's the one -- 10 CFR 50.34(g) requires that applicant to identify deviations from the SRP.

MR. MICHELSON: Okay. Well, there are several other things besides deviations from the SRP that are required by Part 52 and I thought that was even flagged in Part 52 along with several other items that had to be sure

to be in the application. Maybe I'm wrong on that. I wouldn't be at all surprised if I were, but I --

MR. WAMBACH: I think Part 52 has a general requirement that you meet Part 50 and this is part of Part 50. I guess --

MR. MICHELSON: Maybe that was the way you backed into it, yes. I guess that was it because I went back and searched. Yes, I guess that listed them somewhere -- what all they were. Yes, physical security plan safeguards, all that stuff. That was backed into it. Okay. I got it. Thank you.

MR. WAMBACH: The comparison with the ALWR Requirements Document. The staff did sort of a screening review on that only. The SECY paper includes the caveat that if we identify any other potential policy issues during our review, that we will quickly bring them to the attention of the Commission. One that we flagged at this time was the possible prototype testing for the NUPLEX 80+.

MR. CARROLL: Now, you're saying that's an EPRI Requirements Document issue?

MR. WAMBACH: No -- pardon me. No, this was identified in their comparison to ALWR requirements, they pointed out that they did not have the single station, they had, you know, disbursed stations. They didn't have one single station from which the operator could do everything.

It was in that context then that we said, well, we better warn them that there may be the requirement for prototype testing. That --

MR. CARROLL: An NRC requirement, not an EPRI requirement?

MR. WAMBACH: Right.

MR. CARROLL: Okay.

MR. WAMBACH: The same issue could come up on other advanced control room designs.

MR. CARROLL: What's the basis for the NRC's requirement? Is it in a regulation, or it's just somebody's idea of how to deal with these advanced control rooms?

MR. MILLER: It is premature to say that it is a policy issue. What we wanted to identify was that it may be -- emerge as a policy issue. We have staff here from Human Factors that can talk to that in some more detail, if you desire, as to where are thinking is today. I think there's a general thinking on advanced control rooms, in general, we're not just picking on CE.

MR. CARROLL: I would like to hear a couple of minutes of that discussion.

MR. MILLER: I'll ask Rich Correia to come to the microphone and maybe he could give you where our thoughts are at this time.

MR. CORREIA: I'm Rich Correia from the Human

Factors Assessment Branch.

As Mr. Miller stated, the concern isn't necessarily just the CE advanced control room, it's all advanced reactor control rooms. Concern being that they are so different than today's control room in the way that they're laid out, the type of displays that the operator will be using, how the information is processed, coming from the plant to the operator and back again, basically, digital control versus analog control. All of those issues together combined raises the question, well, will it really work? The issue or prototype testing is a method of determining whether or not the operators will indeed have the information they need to perform the tasks they need to control the plant under all conditions.

MR. CARROLL: What would you envision such a prototype to be; a simulator-driven control room?

MR. CORREIA: That would be, I suppose, one extreme and then you would back down from there -- from a full scope simulator, back down to possibly dynamic mock-ups of a control station. We're struggling with that right now.

MR. SHEWMON: What's the dynamic mock-up that's different from a simulator?

MR. CORREIA: I would say a dynamic mock-up would be a part scope simulator, if you will. It wouldn't have the full capabilities of a simulator.

MR. CARROLL: So, it may just be one component of this like feedwater control or something like that?

MR. CORREIA: Right, with partial capabilities to replicate plant system interaction with the operators.

MR. MICHELSON: I appreciate your concern about the newness of such control systems, and I have a particular concern about them, but from a different viewpoint, and that is the potential exposure of these types of systems to extreme environments in local areas or perhaps even in the control room, depending upon what the event is you wish to name. Eventually we have to understand the response of these systems to such events well enough to know that it doesn't interfere with safe shutdown of the plant. Is that going to be a part of this, or is it going to be a part of some other examination?

MR. WAMBACH: I guess that would be part -- more the ISCB-type review. Those are the Human Factor's Staff --

MR. MICHELSON: This is mostly a Human Factor's review. Okay, but somewhere else in the staff you will be reviewing carefully the -- what you think is the vulnerability of this type of equipment to such adverse exposures to assure that it doesn't really jeopardize safe shutdown.

MR. WAMBACH: Yes, sir.

MR. MICHELSON: I would think that that would be

something we would want to pursue with you and would expect to pursue.

MR. MILLER: We would have to look at that as part of our safety review in order to be able to draw a conclusion.

MR. MICHELSON: Well, we'll see.

MR. MILLER: Yes.

MR. MICHELSON: It may even require a test program before CE gets through with it.

MR. WAMBACH: As far as our test program goes, then finally, on the schedule there's not too much that can be said. We did intend now to go to a complete Integrated Draft Safety Evaluation Report which will require more informal type communications and keeping everybody up to speed with the direction that everything is going.

I wanted to point out that the review has commenced. The discussion this morning had to do with whether the LRB would hold up the review or not. It has commenced. We have, back through '87 and '88, we issued 340 RAIs, and the Applicant has responded to about two thirds of those and we have been having meetings. We had visits up to the plant to see the lockups of their NUPLEX 80+ and so on.

So, just to make the point that we are moving forward on the review. The schedule will, as you know, is pending the Commission decision.

MR. MICHELSON: I don't recollect that Charlie you showed earlier, the one with all the reviews and all that going on. But my vague recollection of that chart was that ACRS became involved long before the issue of a final SER, but maybe I'm wrong.

MR. MILLER: Yes. Do you want me to put it back up?

MR. MICHELSON: It might not hurt to put it up. Right.

MR. MILLER: Okay.

MR. MICHELSON: The concern I have, of course, is from comments I heard earlier and our discussion earlier wasn't real clear, how we were going to get integrated into the process. Maybe if you think that this chart is what will be continued to be followed, we can be more specific about where and at what point we become integrated. It looks like it is well before the final SER.

My concern, again, is trying to get a leg up on this thing so we don't end up at the end of the game trying to do our own review. We'd like to be reviewing along with you somehow, so that we can close on it quickly when you're done. What kinds of things do you anticipate now sending to us for possible comment?

MR. MILLER: Let me show you.

[Slide.]

MR. MILLER: This is what we're doing today.

MR. MICHELSON: Right.

MR. MILLER: So the ACRS will be involved as we proceed through the LRB if the Commission decides that they want us to complete it. We will finalize the LRB and again you will see what we've come up with. You'll be involved.

As we proceed through the Design Certification Review.

MR. MICHELSON: When the policy issue shows up, for instance, we will be involved. But what else will be involved in besides that?

MR. MILLER: Okay. As the staff completes its review and drafts its --

MR. MICHELSON: That's a final SER there.

MR. MILLER: It's a draft. That's a draft SER, yes. Integrated SER.

MR. MICHELSON: I mean, that's the integrated SER. Okay, so that's the first time we'll get back in again.

MR. MILLER: Well, first time officially on the diagram but, as Jay said, I anticipate during this process that we're going to be having meetings along the way.

MR. MICHELSON: But, as far as this process, we don't really get involved until that DSER issued.

MR. MILLER: Right. Well, at the time that the draft SER was sent to the Commission and we put them on

notice that we plan on issuing it, we would send it to the Committee.

MR. MICHELSON: Now that might be a couple of months' lead time at least.

MR. MILLER: It is not the staff's intent to try to hold it back for two months before it's given to the vendors so that they can start working on the open issues that are still identified and formally see where we are. That period then would be used to get it to the Committee so that we can start airing it with the Committee and get your concerns and those concerns can get factored in while we're closing open issues and before we prepare a final SER.

MR. MICHELSON: How many months do you think it takes to get the DSER issued after it's a draft SER? You've got a draft SER there and then you do some things and then you issue.

MR. MILLER: It is our intention that this Draft SER would be submitted to the Commission. I anticipate that we would try to issue that thing to the vendor as soon as possible. I don't even know if it would be a matter of months.

MR. MICHELSON: Okay. But then our clock starts when you issue the DSER?

MR. MILLER: Right.

MR. MICHELSON: In this scheme of things.

MR. MILLER: Right.

MR. MICHELSON: We might see the Draft SER a little earlier. Whenever the Commission sees it I would hope we would see it I would hope we would see it, too.

MR. MILLER: Yes. That is our intention.

MR. MICHELSON: But apparently not much time transpires before our clock starts because you think you're going to issue the draft almost as soon as you give it to the Commission?

MR. MILLER: Because of the mechanism that your Commission has set up, their desire is to have policy issues identified and resolved before we --

MR. MICHELSON: Now, I how much -- I know you don't know where we're talking about yet, but that Draft SER, which is the integrated one, must be a year more from now.

MR. MILLER: Absolutely.

MR. MICHELSON: Eighteen months, maybe. So, for the next eighteen months. We can pick and choose things we'd to talk about but we won't see any SER material, as I understand it, until that Integrated Draft SER is issued.

MR. CARROLL: To the extent new policy issues --

MR. MILLER: To the extent that we identify any policy issues, we will have to write a paper on it. And when that paper is written then it will come to you so that

you have an opportunity to comment to the Commission it before they pass judgment.

MR. CARROLL: And to the extent we have a meeting on selective issues, Carl.

MR. MILLER: As we did yesterday, for example, on the ABWR where you have some things that you really --

MR. CARROLL: We might, for example, do what we've done on an ABR. We might write a letter to the EDO saying, hey we had a meeting with the staff and the applicant. We have these concerns and we get some form of written response back from the EDO, as to how the staff views our concerns.

MR. MICHELSON: I'm just trying to understand the extent to which we'd better start leading ourselves and not ask the staff to be doing it.

Traditionally in some cases you wait for the SER and then you start churning up your staff.

MR. CARROLL: No. I think we've got to be proactive on this to some degree.

MR. MILLER: Yes, we'll have to be very proactive on this thing to get ahead.

MR. CARROLL: But as an example of our being proactive we, for example, got scheduled in -- what is it, Tom, January -- the meeting on --

MR. EL-ZEFTAWY: February.

MR. CARROLL: In February? Okay. The meeting on

computer base control systems, to start us down this path. It is not just with combustion, because it is an issue common as with all new plants, but Combustion is one of the participants. So, we will be getting a head start on that.

MR. MILLER: There are several other areas that we're going to pursue like fire protections.

MR. MICHELSON: I'm just trying to make sure I understand the way we will have to play the game to come out without an unreasonable delay at the end of the system.

But after a DSER is issued, then that gets turned around quickly and a final SER approval is conjured up. Then the certification is something that we don't know that much about yet, I guess.

MR. MILLER: Right.

MR. MICHELSON: Okay. I think I appreciate it. Thank you.

MR. SHEWMON: I have two questions for CE before we quit. One, could you tell me what the end of life fluence, fast neutron fluence, that the core midpoint is after sixty years with this? You people used to have kind of a high value even at 40 years, and I wonder if you've changed the geometry much.

MR. KENNEDY: I believe when we were here in September we had those numbers with us, anticipating that you would ask those questions, and I didn't bring them

today. Could I possibly pull that information out and send it to you separately?

MR. SHEWMON: Yes.

MR. KENNEDY: I don't have it with me today.

MR. CARROLL: Or, just give it to him next week.

MR. SHEWMON: Okay. A different question, then. What is the temperature drop across your core at full power, the difference between T-in and T-out?

MR. CARROLL: Temperature rise.

MR. SHEWMON: Temperature rise, all right.

MR. KENNEDY: We will check the number and give it to you. I don't know the number off hand. We'll check the number. I don't want to quote a number and be wrong.

MR. SHEWMON: Okay. Because, as the outlet temperature comes down at full tower, the inlet temperature goes down, too, which means the vessel temperature goes down as it is radiated and so my real interest is in what is the temperature of the inlet at full power.

MR. KENNEDY: Okay. We will give you those numbers and also --

MR. CARROLL: Also, I think you're interested, Paul, in what the impact of coast down would be because that's going to drop T-in also.

MR. KENNEDY: We have also, I think, we have the numbers, we've calculated the end of life RT-NDT shift and

we will give you those numbers and based on the material specs.

MR. SHEWMON: Fine.

MR. KENNEDY: We have that material available and we'll get it to you.

MR. CARROLL: It does, of course, depend on whether you use a strategy of end of live coast down each cycle. That's going to have an impact.

MR. KENNEDY: Understand.

MR. SHEWMON: Okay, that's it.

MR. CARROLL: Does anyone else have anything else?

MR. MILLER: Can I bring something up, if you are getting ready to close.

MR. CARROLL: I guess so.

MR. MILLER: Okay, thank you. I appreciate that.

Next week we will have a full Committee meeting, I guess on the same subject. To that extent, are there any insights you want to give the staff with regard to --

MR. CARROLL: I was --

MR. MILLER: Do you want to give the same presentation, a different presentation?

MR. CARROLL: I was going to go off the record and discuss these things.

MR. MILLER: All right, we can do that, then.

MR. CARROLL: Okay. We are off the record.

[Whereupon, at 12:05 p.m., the meeting was adjourned.]

REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission

in the matter of:

NAME OF PROCEEDING: Advance 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.

Lynn Estep

Official Reporter
Ann Riley & Associates, Ltd.

SYSTEM 80+™ STANDARD DESIGN LICENSING REVIEW BASIS DOCUMENT

PRESENTATION TO THE ACRS ADVANCED PWR SUBCOMMITTEE

NOVEMBER 1, 1990

ABB COMBUSTION ENGINEERING NUCLEAR POWER

OVERVIEW

- SYSTEM 80+ LRB AS OF 1/22/90
- AUGUST 1990 COMMITMENTS
- RESPONSE TO STAFF COMMENTS
- STRUCTURES OF THE SYSTEM 80+ AND ABWR LRBs

LRB CONCEPT

- IDEA CONCEIVED DURING THE EARLY DAYS OF DESIGN CERTIFICATION PROGRAMS (EARLY 1987).
- BASIC PURPOSE WAS TO DOCUMENT ADMINISTRATIVE PROCEDURES AND THE APPROACH TO NEW TECHNICAL CONCERNS.
- MAJOR ELEMENTS:
  - DESIGN SCOPE
  - REVIEW SCHEDULE
  - ADMINISTRATIVE REVIEW PROCEDURES
  - TECHNICAL ISSUES BEYOND THE EXISTING STANDARD REVIEW PLAN AND REGULATORY GUIDES

SYSTEM 80+ LRB DEVELOPMENT

- FIRST DRAFT: JULY 1987
- 10 CFR, PART 52: APRIL 1989
- REVISED LRB: AUGUST 1989
- STAFF REQUIREMENTS MEMORANDUM: DECEMBER 1989
- REVISED LRB: JANUARY 1990
- SECY-90-016 (POLICY ISSUES): JANUARY 1990 (SRM: JUNE 1990)
- COMMITMENT TO REVISE LRB: AUGUST 1990
- SECY-90-353 (STAFF COMMENTS ON THE SYSTEM 80+ LRB, NOT PUBLIC): OCTOBER 1990

CESSAR-DC SUBMITTALS NOW COMPLETED:

NOVEMBER 1987	-	GENERAL DESCRIPTION
	-	POWER CONVERSION SYSTEM
APRIL 1988	-	REACTOR CORE & COOLANT SYSTEM
	-	CHEMICAL AND VOLUME CONTROL
	-	PROCESS SAMPLING
JUNE 1988	-	SHUTDOWN COOLING
	-	SAFETY INJECTION
	-	EMERGENCY FEEDWATER
SEPTEMBER 1988	-	SITE ENVELOPE
	-	SAFETY DEPRESSURIZATION
	-	EMERGENCY FEEDWATER
MARCH 1989	-	LEAK-BEFORE-BREAK
	-	BALANCE OF PLANT SYSTEMS
	-	ELECTRICAL POWER DISTRIBUTION
	-	REACTOR PROTECTION SYSTEM
	-	FUEL HANDLING SYSTEM
	-	RADWASTE SYSTEM
	-	BUILDING AND SITE ARRANGEMENTS
	-	CONTAINMENT SYSTEMS
	-	SABOTAGE PROJECTION PROGRAM
DECEMBER 1989	-	UPDATE FUEL METHODOLOGY DESCRIPTIONS
	-	RESOLUTION OF 64 USIs/GSIs
	-	PRA METHODOLOGY & LEVEL 1

COMPLETED SUBMITTALS...

OCTOBER 1990

- GENERAL ARRANGEMENTS
- SITE ENVELOPE
- ECCS AND CONTAINMENT ANALYSES
- SAFETY ANALYSES
- TEST REQUIREMENTS
- PRA RESULTS

REMAINING CESSAR-DC SUBMITTAL:

DECEMBER 1990

- SEISMIC METHODS AND RESULTS
- TECHNICAL SPECIFICATIONS
- USIs/GSIs
- OPEN ITEM CLOSEOUT
- EQ PROGRAM DESCRIPTION
- RADIATION AND SHIELDING ASSESSMENTS

CONTENT OF LRB

SECTION	TOPIC
1	INTRODUCTION
2	SCHEDULE
3	CESSAR-DC CONTENTS
4	REVIEW PROCEDURES
5	ACRS PARTICIPATION
6	SEVERE ACCIDENT ISSUES
7	OTHER SPECIFIC ISSUES
APPENDIX A	DESIGN DIFFERENCES FROM THE EPRI UTILITY REQUIREMENTS DOCUMENT

CONTENT OF LRB

- o INTRODUCTION:
  - DESIGN SCOPE
  - EXEMPTIONS TO REGULATIONS

CONTENT OF LRB...

- SCHEDULE FOR APPLICATION REVIEW:
  - COMPLETE APPLICATION 12/90
  - FDA 12/91
  - DC 12/92
- APPLICATION FORMAT AND CONTENTS
  - REGULATORY GUIDE 1.70, REVISION 3
  - 10 CFR 52.47

CONTENT OF LPB...

- STAFF REVIEW PROCEDURES
  - ISSUE DRAFT SERs
  - IDENTIFY NEW POLICY ISSUES
  - TRACK [AND CLOSE] OPEN ITEMS
- ACRS PARTICIPATION
  - KEEP ACRS INFORMED
  - REQUEST REVIEW OF POLICY ISSUES AND STAFF POSITIONS

CONTENT OF LRB...

- SEVERE ACCIDENT ISSUES:
  - TMI REGULATIONS
  - USIs/GSIs
  - PRA
  - SEVERE ACCIDENT PERFORMANCE GOALS
    - -- CORE DAMAGE (1.0E-5 EVENTS/YEAR)
    - -- LARGE RELEASE (1.0E-6 EVENTS/YEAR)
    - -- CONTAINMENT PERFORMANCE

CONTENT OF LRB...

- CONTAINMENT PERFORMANCE....
  - -- ROBUST DESIGN VIA NORMAL DESIGN PROCESS
  - -- FOR SEVERE ACCIDENT CONDITIONS THE CONDITIONAL FAILURE PROBABILITY WILL BE LESS THAN 0.1 BASED ON:
    - (1) CREDIBLE CORE DAMAGE SEQUENCES WITH A FREQUENCY GREATER THAN 1.0E-6 PER YEAR, EXCEPT FOR EXTERNAL EVENTS WHICH BOTH DAMAGE THE CORE AND FAIL THE CONTAINMENT
    - (2) CONTAINMENT FAILURE WHEN DOSE IS GREATER THAN 25 REM AT ONE-HALF MILE.

CONTENT OF LRB...

- OTHER SPECIFIC ISSUES:
  - COMPARISON WITH EPRI REQUIREMENTS
  - PHYSICAL SECURITY AND SABOTAGE
  - SITE ENVELOPE
  - COMPLETENESS OF DESIGN DOCUMENTATION
  - QUALITY ASSURANCE
  - MAINTENANCE, SURVEILLANCE & RELIABILITY
  - SAFETY GOAL POLICY STATEMENT
  - 60-YEAR LIFE
  - FIRE PROTECTION
  - STATION BLACKOUT
  - LEAK-BEFORE-BREAK
  - SOURCE TERMS
  - OBE/SSE
  - CONTAINMENT LEAK RATE
  - HYDROGEN GENERATION
  - CONTAINMENT VENTS
  - MID-LOOP OPERATION
  - INTERFACING SYSTEM LOCA
  - ATWS
  - ELECTRICAL SYSTEM DESIGN
  - DEGRADED CORE BEHAVIOR

15 "TECHNICAL" ISSUES

*1. Public Safety Goals
*2. Source Terms
*3. ATWS
*4. Mid-Loop Operation
*5. Station Blackout
*6. Fire Protection
*7. Intersystem LOCA
*8. Hydrogen Generation and Control
*9. Core-Concrete Interaction
*10. High-Pressure Core Melt Ejection
*11. Containment Performance
*12. "ABWR" Containment Vent
13. Equipment Survivability
*14. OBE/SSE
15. IST for Pumps and Valves

* Currently addressed in LRB

CONTENT OF LRB...

- COMPARISON WITH EPRI "REQUIREMENTS"
  - MEET EPRI CRITERIA REQUIRED FOR REGULATORY COMPLIANCE
  - DEVIATIONS BASED ON ABB/CE EVALUATION SPECIFICALLY FOR THE SYSTEM 80+ DESIGN.
  - FOR STAFF AND COMMISSION INFORMATION, NOT COMPLIANCE REVIEW (12/89 STAFF REQUIREMENTS MEMORANDUM).

AUGUST 1990 COMMITMENTS

TO REVISE THE LRB

- MEET 10 CFR 50.34(F) ON H_2 CONTROL
- CLARIFY "CAPABILITY" TO ADD A CONTAINMENT PENETRATION AND VENT BASED ON SEVERE ACCIDENT ANALYSIS
- UPDATE COMPARISON WITH EPRI UTILITY REQUIREMENTS DOCUMENT

RESPONSE TO STAFF COMMENTS

- ADD EXPLICIT STATEMENT ON PERFORMANCE OF SRP DEVIATION REVIEW
- IMPLEMENT MOST RECENT SUPPLEMENT TO THE USI/GSI STATUS REPORT (NUREG-0933)
- DEFINE CONTAINMENT FAILURE BASED ON SECY-90-016 (UNCONTROLLABLE LEAKAGE SUBSTANTIALLY GREATER THAN DESIGN BASIS LEAKAGE)

RESPONSE TO STAFF COMMENTS...

- RE-DEFINE "CREDIBLE EXTERNAL EVENTS"
- REVISE WRITEUPS FOR "MID-LOOP", "INTERSYSTEM LOCA", AND "FIRE PROTECTION"
- ADD WRITEUPS FOR "EQUIPMENT SURVIVABILITY" AND "INSERVICE TESTING OF PUMPS AND VALVES"

COMPARISON OF ABWR AND SYSTEM 80+

LRB STRUCTURES

- ORIGINAL FUNCTION OF BOTH LRBs WAS THE SAME
- BASIC STRUCTURE OF THE SYSTEM 80+ LRB REMAINS, BUT MUCH OF THE DETAIL HAS CHANGED DUE TO:
  - DESIGN PROGRESS AND CESSAR-DC PUBLICATION
  - ISSUANCE OF 10 CFR, PART 52
  - IDENTIFICATION OF POTENTIAL POLICY ISSUES RELATED TO NEW TECHNICAL CONCERNS

CONCLUSIONS

- o STAFF APPROVED AND ISSUANCE OF LRB HAS BEEN ELUSIVE
- o IMPORTANCE OF LRB HAS DIMINISHED
  - 10 CFR, PART 52 HAS BEEN ISSUED
  - POLICY ISSUES HAVE BEEN DOCUMENTED IN SECYs AND SRMs
  - SCHEDULES ARE UNCERTAIN
- CESSAR-DC REVIEW CAN, AND SHOULD, PROCEED IN PARALLEL.
  - MOST MATERIAL IN CESSAR-DC IS UNAFFECTED BY LRB ISSUES
  - NO SIGNIFICANT DISAGREEMENT WITH STAFF

NRR STAFF PRESENTATION TO THE ACRS

SUBJECT: LICENSING REVIEW BASIS DOCUMENT FOR THE COMBUSTION ENGINEERING, INC. SYSTEM 80+ EVOLUTIONARY LIGHT WATER REACTOR, SECY-90-353

DATE: NOVEMBER 1, 1990

PRESENTER: THOMAS V. WAMBACH

PRESENTER'S TITLE/BRANCH/DIV: PROJECT MANAGER
STANDARDIZATION PROJECT DIRECTORATE
DIVISION OF REACTOR PROJECTS - III, IV, V AND SPECIAL PROJECTS

PRESENTER'S NRC TEL. NO.: (301) 492-1103

SUBCOMMITTEE: ADVANCED PRESSURIZED WATER REACTORS

CESSAR DC
LICENSING REVIEW BASIS (LRB)

- 1987-1988 CE SUBMITS DRAFT LRB'S
- CE SUBMITS PROPOSED LRB JANUARY 22, 1990
- STAFF REQUIREMENTS MEMORANDUM (SRM) DATED JUNE 22, 1990, DIRECTS STAFF TO IMPLEMENT PROCESS PRESENTED IN SECY-90-065
- SRM DATED JUNE 26, 1990, ADDRESSES STAFF POSITIONS SECY-90-016
- CE SUBMITS MINOR REVISIONS ON AUGUST 28, 1990
- SECY-90-353 SENT TO COMMISSION OCTOBER 12, 1990

SECY-90-016	LRB System 80+
(1) Public Safety Goals	Sec. 7.7 & 6.5
(2) Source Term	Sec. 7.12
(3) ATWS	Sec. 7.19
(4) Mid-Loop Operation	Sec. 7.17*
(5) Station Blackout	Sec. 7.10
(6) Fire Protection	Sec. 7.9*
(7) Intersystem LOCA	Sec. 7.18*
(8) Hydrogen generation & control	Sec. 7.15
(9) Core-concrete interaction	Sec. 7.21*
(10) High pressure core melt ejection	Sec. 7.21
(11) Containment performance	Sec. 6.5.3*
(12) ABWR Containment Vent	Sec. 7.16
(13) Equipment Survivability	*
(14) OBE/SSE	Sec. 1.2.1
(15) IST pumps and valves	*

* Additional information needed to conform to SECY-90-016

SECY-89-013	LRB System 80+
• Technical Specifications	Sec. 7.6
• Reliability Assurance	Sec. 7.6
• Leak Before Break	Sec. 7.11
• Type C Containment Leakage Rate	Sec. 7.14
• Physical Security	Sec. 7.2
• 60 year Life	Sec. 7.8
• Electrical System Design	Sec. 7.20

REGULATORY COMPLIANCE

- EXEMPTION TO 10 CFR 100, APPENDIX A REGARDING OBE BEING ONE-HALF SSE

- STAFF IDENTIFIED EXEMPTION TO 10 CFR 50.34(f)(3)(iv) CONCERNING A DEDICATED PENETRATION FOR CONTAINMENT VENT

MID-LOOP OPERATION

- CE Proposal
  - Analysis
  - Consider design features and/or operational restrictions
  - Concern limited to pressure buildup in RCS
- Commission Directive
  - Propose design features to minimize loss of shutdown cooling flow
  - Reliability of shutdown cooling system
  - Instrumentation
  - Containment closure

FIRE PROTECTION

- CE PROPOSAL
  - SAME AS SECY-90-016
- COMMISSION DIRECTIVE
  - APPROVED STAFF POSITION IN SECY-90-016
  - AS SUPPLEMENTED BY STAFF RESPONSE DATED APRIL 27, 1990 TO ACRS CONCLUSIONS REGARDING EVOLUTIONARY LIGHT WATER REACTOR CERTIFICATION ISSUES

INTERSYSTEM LOCA

- CE Proposal
  - No low pressure safety injection
  - Increase design pressure of shutdown cooling system to 900 psig
- Commission Directive
  - Address all high/low pressure interfaces with the RCS and all components of low pressure system
  - Address the requirements for valve leak testing, valve position indication, and high pressure alarms with open isolation valves as described in SECY-90-016

CORE-CONCRETE INTERACTION

- CE Proposal
  - $.02 m^2/MWT$ cavity floor space
  - RWST in containment for flooding
- Commission Approved Staff Position
  - Provide sufficient reactor cavity floor space to enhance debris spreading
  - Provide for quenching debris in the reactor cavity

CONTAINMENT PERFORMANCE GOAL

- CONTAINMENT FAILURE - LOSS OF CONTAINMENT INTEGRITY RESULTING IN AN UNCONTROLLABLE LEAKAGE SUBSTANTIALLY GREATER THAN THE DESIGN BASIS LEAKAGE
- EXTERNAL EVENTS WITH FREQUENCIES LESS THAN $1.0E^{-5}$/RY SHOULD NOT BE DISREGARDED
- CRITERIA FOR EVALUATION OF EXTERNAL EVENTS ARE BEING DEVELOPED IN THE REVIEW OF ALWR REQUIREMENTS DOCUMENT

EQUIPMENT SURVIVABILITY

- CE Proposal

  - None

- Commission Approved Staff Position

  - Mitigation features designed for reasonable assurance to operate in severe accident environment for time needed

IST PUMPS AND VALVES

- CE PROPOSAL

  - IST PROGRAM

- COMMISSION APPROVED STAFF POSITION

  - PIPING DESIGN SHOULD INCORPORATE FULL FLOW TESTING OF PUMPS AND CHECK VALVES

  - DESIGN SHOULD INCORPORATE PROVISIONS TO TEST MOTOR OPERATED VALVES UNDER DESIGN BASIS DIFFERENTIAL PRESSURE

  - CHECK VALVE TESTING SHOULD INCORPORATE THE USE OF ADVANCED NON-INTRUSIVE TECHNIQUES

  - A PROGRAM TO DETERMINE THE FREQUENCY OF DISASSEMBLY AND INSPECTION OF PUMPS AND VALVES TO DETECT UNACCEPTABLE DEGRADATION NOT DETECTABLE THROUGH NON-INTRUSIVE TECHNIQUES

- Source Term for Severe Accident Evaluation
  - Being developed with EPRI and ALWR vendors
- USI & GSI Resolution
  - Version of NUREG-0933 current 6 months prior to completion of application
- Conformance with the SRP 10 CFR 50.34(g)
- Comparison with ALWR Requirements Document
  - One issue identified as potential policy issue - prototype testing of NUPLEX 80+
- Schedule
  - Complete DSER to be issued not section by section
  - Review has commenced
  - Schedule pending Commission Policy on Level of Detail