

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

Title: BRIEFING BY EPRI ON POLICY, TECHNICAL AND LICENSING  
ISSUES PERTAINING TO EVOLUTIONARY AND ADVANCED  
LIGHT-WATER REACTOR (ALWR) DESIGN

Location: ROCKVILLE, MARYLAND

Date: JUNE 10, 1993

Pages: 75 PAGES

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BRIEFING BY EPRI ON POLICY, TECHNICAL AND  
LICENSING ISSUES PERTAINING TO EVOLUTIONARY  
AND ADVANCED LIGHT-WATER REACTOR (ALWR) DESIGN

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PUBLIC MEETING

Nuclear Regulatory Commission  
One White Flint North  
Rockville, Maryland

Thursday, June 10, 1993

The Commission met in open session,  
pursuant to notice, at 11:00 a.m., Ivan Selin,  
Chairman, presiding.

COMMISSIONERS PRESENT:

IVAN SELIN, Chairman of the Commission  
KENNETH C. ROGERS, Commissioner  
FORREST J. REMICK, Commissioner  
E. GAIL de PLANQUE, Commissioner

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STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

MARTIN MALSCH, Office of the General Counsel

R. PATRICK McDONALD, Vice Chairman, ALWR Utility  
Steering Committee, EPRI

JOHN TAYLOR, Vice President Nuclear, EPRI

JOSEPH SANTUCCI, Manager, Advanced Reactor Development  
Department, EPRI

JOHN DEVINE, JR., ALWR Program Manager, EPRI

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

11:00 a.m.

CHAIRMAN SELIN: Good morning, ladies and gentlemen.

The Commission is very pleased to welcome representatives of the Electric Power Research Institute to present their views on the policy, technical and licensing issues pertaining to the evolutionary advanced light-water reactor designs. They'll also brief the Commission on the status of the advanced light-water reactor program.

The staff briefed the Commission on the policy and technical issues associated with both the evolutionary and the advanced designs on May 14th of this year. I'd like to stress EPRI is a very important organization. Its focus is somewhat different from the vendors. EPRI more or less represents the customer as the features that the eventual people that operate the power plants would like to see in their reactors. So, continuing to get views from EPRI as well as from the vendors, from NUMARC, from the general public is of great benefit to the Commission to make sure that we understand all aspects or as many aspects as possible of the interests of the different parties as these important

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1 projects go forward.

2 I understand that the EPRI's presentation  
3 slides are available at the entrance to this room.

4 Commissioners, do you have anything?

5 Mr. McDonald, we welcome you.

6 MR. McDONALD: Thank you. Thank you very  
7 much. I'm looking for my slides.

8 CHAIRMAN SELIN: All the screens are the  
9 same.

10 MR. McDONALD: Well, we're here to  
11 present you with some information and make some  
12 requests from you. Our presentation will have about  
13 five different parts in it and I will lead off and  
14 then others will follow me.

15 Our objectives today in this session are  
16 about three-fold, tailored to the material we want to  
17 cover. One, we have an objective of trying to assure  
18 their regulatory stability. Second, we want to  
19 assure -- as you indicated, our representation is the  
20 utility. So, we're trying to assure that the users  
21 are getting in these designs what they think they need  
22 to for them to be viable. The third is a simple  
23 requirement put in for design. The devil is in  
24 details, as so many of your people remind us, and we  
25 are going to talk about some details, technical

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1 details today which I think are very important because  
2 some of the details, when we put them in things like  
3 bids and we're going to build plants forward and  
4 design and build can have long-range implications for  
5 safety as well as cost. So, those are the objectives  
6 that we're going to be talking about today.

7 We have been having a very active ongoing  
8 discussions with the staff and I must say we've had  
9 some very productive discussions. So, it's a sense of  
10 working together with the staff and the Commission to  
11 fully inform you of what our needs are.

12 Now, along that same line, sort of our  
13 platform for discussing these things and our  
14 understandings of how we're proceeding, we believe  
15 that by our past discussions and submittals and so  
16 forth that we are completely aligned about where we're  
17 trying to go. We're both interested in safer plants  
18 and better plants, and so we think we have a common  
19 ground with you. We are pursuing the process that's  
20 been agreed upon and that is the utilities set the  
21 requirements in the so-called URD, the utilities  
22 requirement document, NRC reviews and then as  
23 appropriate approves and endorses them via a safety  
24 evaluation report. On that basis, we can proceed with  
25 the certifications with a high confidence that the

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1 requirements that are codified are the appropriate  
2 ones for both what we need and what is needed to be  
3 proper regulation.

4 One other point that we're looking at  
5 now, and I'm sure you are too, is that in this process  
6 of going down certification by Part 52 is that no new  
7 regulatory requirements are needed as part of this  
8 process because of the way it's designed. Our utility  
9 requirement documents requires plants to exceed  
10 current regulations and safety goals by a wide margin.  
11 We want these to be not just as good as present plan,  
12 but we want to try to make them as good as technology  
13 can allow us to make them at the present time.

14 So, we would note that in the subject  
15 document today, that that document would treat these  
16 margins, and some in many cases, as regulatory  
17 requirements.

18 CHAIRMAN SELIN: I'd like to stop you at  
19 this point. Before you leave today, I'd like you to  
20 go into this point a little bit further because the  
21 Commission would be uncomfortable being put in the  
22 position that says, "We're relying on a utility  
23 requirement document to meet some regulatory  
24 purposes." So, before you leave, we'd like you to  
25 discuss, or at least I'd like you to discuss --

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1 MR. McDONALD: Let me just comment. I  
2 perhaps did not express that correctly. What we are  
3 doing is we're putting forth the needs for the design  
4 for our purposes and in doing that we're attempting to  
5 make those robust enough that they will incorporate  
6 what you require for regulation. It's not that we're  
7 trying to design regulations or anything like that,  
8 it's that we're trying to encompass what you require  
9 in the way of safety in present plants or what have  
10 you. Does that respond to it?

11 CHAIRMAN SELIN: It starts, but if we  
12 incorporate -- I'm not in favor of more regulation  
13 than we need, but if a feature or a margin is  
14 something that we agree is important for safety and we  
15 incorporate it in the regulation, would that -- how  
16 would that affect either the utilities or the vendors  
17 adversely?

18 MR. McDONALD: Well --

19 CHAIRMAN SELIN: If they're going to meet  
20 the requirement anyway by putting it in a regulation,  
21 what does that force them to do that they wouldn't  
22 otherwise do?

23 MR. McDONALD: All right. That's a very  
24 good point. You can always put another thing on that  
25 is sensed to some way increase safety. As you hang on

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1 these extra requirements, and the way you hang them on  
2 can make a plant more complex, and we're going to talk  
3 a little bit about that today, make them more complex  
4 and in the total they don't become more safe because  
5 they get too complex.

6 CHAIRMAN SELIN: I don't want to argue  
7 philosophy, but when you get to the details there are  
8 three possibilities. One is the design is going to  
9 meet the requirement anyway. Putting it in the  
10 requirement really is institutionalizing something  
11 that at least currently people agree to.

12 MR. McDONALD: Right.

13 CHAIRMAN SELIN: A design could meet the  
14 requirement, but you're afraid that the requirement is  
15 going to be too prescriptive. So, it's not only going  
16 to say you need a certain margin, but you need to meet  
17 it in a certain way. Well, the third thing is your  
18 statement isn't strictly correct that the safety  
19 margins -- that by putting something in a requirement  
20 we would effectively ask for even a greater safety  
21 margin than you would propose.

22 MR. McDONALD: All right. We'll try to  
23 point something out like that.

24 CHAIRMAN SELIN: Because these are key  
25 questions about how far we go in these --

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1 MR. McDONALD: Yes. Well, let us come  
2 back to that and be very straightforward about it.

3 CHAIRMAN SELIN: Thank you.

4 MR. McDONALD: As we look at that basis  
5 and continue on, on the SECY-93-087 we think that  
6 that's been a very valuable and is a very valuable  
7 paper. We've worked with the staff extensively on it  
8 and I think that paper contains all the major policy  
9 issues. It's a summary of the issues that have been  
10 resolved and outlines the work that remains.

11 Also, I would like to highlight the  
12 recent actions that's ongoing to define the matter of  
13 the regulatory treatment of non-safety systems and the  
14 source terms. That's been very encouraging. The  
15 regulatory treatment of non-safety system gets down to  
16 the heart a little bit of what you were asking right  
17 now, but that's another aspect of it.

18 CHAIRMAN SELIN: But there you are  
19 pleased with the --

20 MR. McDONALD: Yes, very pleased. Very  
21 pleased. What we have done -- and thanks to the  
22 staff. What we have done is we have been able to  
23 think about this matter of safety-related and non-  
24 safety-related to the sense that allows us to simplify  
25 some things. Not delete things, but simply simplify

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1 the process.

2 Now, the positions described today that  
3 we have are, in fact, very close to those of the staff  
4 recommendations in almost all cases. The closure and  
5 implementation details are important to achieving this  
6 design and I think we all agree upon that. We're  
7 going to talk about some details today. We're going  
8 to talk about three issues, but we're also going to  
9 talk about some details.

10 Following on will be Joe Santucci who is  
11 going to talk a little bit about our history  
12 involvement with the SECY process on these policy  
13 issues.

14 Go ahead, Joe.

15 MR. SANTUCCI: Thank you, Pat.

16 The purpose of the next couple of slides,  
17 really just two minutes, is to provide historical  
18 perspective as to how we come about to be here today.

19 There's been a suggestion that some of  
20 the issues that we are raising are, in fact, the new  
21 issues and we wanted to clarify that this is not the  
22 case. The ALWR Program, EPRI identified optimization  
23 issues very early in the program. In fact, as far  
24 back as 1986 or 1987. These were basically areas  
25 where the design solution could simplify the licensing

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1 process and really provide a way to affect the  
2 simplification or relief in the regulatory  
3 requirements. One example of this is the elimination  
4 of the OBE that we've come to agreement with the staff  
5 on.

6 In early 1990 the staff prepared SECY-90-  
7 016, which listed the number of issues related  
8 primarily to evolutionary plants and we provided  
9 comments on that document. Later on, anticipating  
10 that staff would be putting together a similar  
11 document covering passive plants, we went ahead and  
12 provided a separate list of central issues, what we  
13 considered to be central issues. This was supplied to  
14 the NRC in 1991. These were basically high priority  
15 items that had to be resolved or at least understood  
16 well enough because they had a big impact on even the  
17 conceptual design development. One example of this is  
18 the RTNSS issue that was just mentioned.

19 The staff identified additional issues  
20 and released the draft positions on this several times  
21 during 1992, in February and in June, and we provided  
22 comments in May, August and December. I think the  
23 concept of developing a draft and reviewing this draft  
24 with industry is a very good concept and we really  
25 commend the initiative of the staff in doing so.

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1           We've had discussions with staff  
2 management on some of these issues in detail, in  
3 particular the RTNSS issue at our January 1993 meeting  
4 in Palo Alto. There was an extremely productive  
5 session and we think largely responsible for the  
6 progress that we have made to date, in particular with  
7 respect to RTNSS.

8           Now, we have not had a chance to review  
9 with NRC management a resolution of some of the other  
10 key items that we felt were critical central issues  
11 through the passive plants. We've had a number of  
12 interactions with the staff, but not had a chance to  
13 interact with management on these items.

14           On the 12th of April, SECY-93-087 was  
15 issued with really no explicit requests for comment.  
16 We have reviewed the document internally and really  
17 feel that generally it is a good document. It's quite  
18 clear that a lot of effort went into it and many  
19 issues have been resolved to the satisfaction of both  
20 the NRC and industry. So, it's a very, very good  
21 starting point. Nevertheless, some items important to  
22 us remained open and we decided to comment. We have  
23 reviewed this with our utility steering committee and  
24 they agree with this position. Further, NUMARC and at  
25 least two of the design teams have also decided to

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1 provide their comments in writing and I believe that  
2 letters have been received. I apologize for the  
3 typographical error on the slide because it is two.

4 COMMISSIONER REMICK: Westinghouse and --

5 MR. SANTUCCI: And ABB.

6 COMMISSIONER REMICK: ABB.

7 MR. SANTUCCI: Yes. GE has not decided  
8 as yet to provide written comments, but they may  
9 still. We're still interacting with them.

10 I should clarify for the benefit of all  
11 that we've had, of course, a number of interactions  
12 and discussions with all of the design teams and we  
13 all agree with respect to the positions in which  
14 you're going to be hearing today about the critical  
15 items of differences of opinions.

16 Now, we supplied comments to the NRC  
17 staff on the 11th of May. I took us about a month to  
18 sort through that very comprehensive SECY. Then, of  
19 course, we had to review these comments in detail with  
20 the Utility Steering Committee, which we have done,  
21 and on the 7th of June, really just last week, we were  
22 able to provide an official reply endorsed by the USC.  
23 It turns out that the June 7th submittal and the May  
24 11th submittal are identical effectively. There was  
25 really no change that we obtained from reviewing this

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1 matter with the steering committee.

2 So, we're asking for this briefing  
3 because the USC really wanted us to communicate that  
4 notwithstanding the great progress that has been made  
5 today, we do have a few critical issues. We have  
6 three or four that we want to talk to you about in  
7 detail today which have been closed by the staff, but  
8 which we believe warrant further consideration. We  
9 did not realize at the time that this took place and  
10 that the final SECY would not reflect a resolution of  
11 our concerns in these particular areas. In the past,  
12 really much of the success that we have -- much of the  
13 progress that has been achieved has really resulted  
14 from our ability to resolve issues with NRC  
15 management. I think the meeting in January was a  
16 beautiful example and the resolution of the RTNSS  
17 issue is just a beautiful example of that process  
18 working.

19 We've not had the benefit of this for the  
20 issues that we're going to be talking to you today and  
21 this is really part of the request that we're making  
22 to you, for us to be able to go back and work these  
23 things through with NRC management.

24 So, this concludes --

25 CHAIRMAN SELIN: I should say something

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1 at this point, Mr. Santucci.

2 MR. SANTUCCI: Yes.

3 CHAIRMAN SELIN: The Commission is not in  
4 the habit of asking outside advice on documents that  
5 the staff prepares for us. But in this case, partly  
6 because there hasn't been as much work done in closing  
7 the loop on this set of issues as before and partly  
8 because the staff has asked for resolution rather than  
9 publication for comment of these points. We've  
10 acceded to your request to hearing, to hearing your  
11 arguments at this point.

12 MR. SANTUCCI: We understand and we  
13 really thank the Commission for providing us this  
14 opportunity.

15 CHAIRMAN SELIN: Thank the staff.

16 MR. SANTUCCI: And the staff, yes. Thank  
17 you.

18 Next, Jack DeVine will cover in detail  
19 the issues in the SECY.

20 MR. DEVINE: Good morning.

21 Thanks, Joe.

22 As Joe indicated, my objective is to walk  
23 through in some more detail the issues with which we  
24 have concern, point out our basis for concern and give  
25 you a better idea of why we're really here.

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1 In so doing, I will try to be responsive,  
2 Chairman Selin, to your question about specific  
3 examples of good requirements turning into regulation  
4 which then turn out to be restrictive or pose some  
5 difficulty to the designers or to the operators and  
6 there are examples.

7 I would like to simply provide the  
8 observation that across the board, since 1985, we've  
9 been creating requirements, working with the utilities  
10 and with the Commission. In the lion's share of these  
11 areas we've reached closure, both in terms of what the  
12 requirements should be and what the regulatory  
13 treatment should be. The bulk of the items which  
14 showed up in SECY-93-087 reflect that agreement. It  
15 is only in those specific areas where we --

16 CHAIRMAN SELIN: Let me just make sure  
17 that I understand the process. At the end of this  
18 point the Commission is being asked to vote on the  
19 staff's positions, but it's my understanding, is it  
20 your understanding that even at that point the  
21 positions are tentative in the sense that they will be  
22 embodied in a draft rule which will then go through  
23 the full public comment where yourselves and the  
24 general public will have a chance to comment on these  
25 positions or do you feel that the positions will be

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1 embedded so deeply in the rule that it will be  
2 difficult to have general discussion of them?

3 MR. DeVINE: I may be the wrong person to  
4 ask.

5 MR. McDONALD: Let me answer that. I  
6 think in the things that we'll bring forward, such as  
7 the first one on the seismic, our comments on this  
8 previously were not reflected in the dialogue and  
9 there was no rationale that we know of, for example,  
10 of requiring a .6g, which is in excess of a .5g, which  
11 is far in excess of what present plants have. So, in  
12 terms of completeness of presenting this to you to  
13 pass it on for comments, we thought it would be better  
14 to talk to you at this time about it rather than wait  
15 until later.

16 CHAIRMAN SELIN: But it still goes into  
17 a draft rule and this is not your last shot nor  
18 anybody else's. Is that correct?

19 MR. McDONALD: Oh, I understand that, but  
20 we've worked very closely together and we sort of want  
21 to keep in lock step and not let this thing get too  
22 far down the road before we note -- have our comments.

23 MR. DeVINE: Let me make an additional  
24 point, however. Two points. One is the designs are  
25 proceeding and they're proceeding based on the

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1 designer's best assessment of what it takes to meet  
2 the requirements document and what the Commission will  
3 accept. In two places that I recall, and probably  
4 more in the SECY document, the words "final" are used.  
5 So, this was presented as the final position of the  
6 staff. So, those who were busy trying to design the  
7 plant figure, this is what we're going to have to live  
8 with, notwithstanding later rules.

9 CHAIRMAN SELIN: So, you'd like to get  
10 these considered fully at the earliest --

11 MR. DeVINE: Yes, sir.

12 CHAIRMAN SELIN: -- before there's a lot  
13 that might have to be walked back.

14 MR. DeVINE: Yes, sir. And we'd like to  
15 put in perspective that for the most part we're in  
16 agreement that the points of disagreement may appear  
17 to be minor, they're minor in numbers, but as Pat  
18 pointed out the devil is in the detail.

19 CHAIRMAN SELIN: My point had nothing to  
20 do with whether there are 2 or 200 points of  
21 disagreement. It had to do with the process by  
22 which --

23 MR. DeVINE: Understand.

24 CHAIRMAN SELIN: -- the public, including  
25 EPRI --

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1 MR. McDONALD: I think we have a good  
2 process. I think this is trying to make me thorough.

3 MR. DeVINE: (Slide) Gary, could I have  
4 the first slide, please?

5 Let me first try to lay out the score  
6 card, if you will, on the whole set of issues in SECY-  
7 93-087. There were 42 issues identified by the staff.  
8 They were really in three categories. One, the  
9 earlier evolutionary plant issues in SECY-016.  
10 Secondly, an additional set of evolutionary and  
11 passive issues which have evolved over time, and the  
12 third is set which were considered by the staff to be  
13 passive only and generally in the future. In their  
14 positions, the staff then further classified those  
15 issues in terms of some which required a decision on  
16 the part of the Commission, some which were provided  
17 for information and some which were in the future bin.

18 I would point out that we reviewed them  
19 all and while most of our comments relate to those in  
20 the decision bin, not all, because we felt they all  
21 deserved attention. We've been way out front in the  
22 requirements document. Most of these issues that  
23 we're talking about, I think in every case, the issues  
24 are topics which have been covered very proactively  
25 and aggressively in the requirements document. In

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1 many cases our concern relates to the specific working  
2 of the application which we feel is either incorrect  
3 or inconsistent with the understanding we have with  
4 the staff or perhaps vulnerable to some  
5 misinterpretation later on.

6 From that total set of 42, we ended up  
7 with three issues which we classified as disagree in  
8 part. There were no issues with which we disagreed  
9 categorically and even in these three we're largely in  
10 agreement with the staff's position. There were six  
11 for which we felt some additional comment or  
12 clarification is needed to the degree that it was  
13 worth talking to you about it. There were many others  
14 in which we might have some fine tuned details and  
15 we're just not worried about those.

16 In the process of the vendor's review,  
17 two other issues were raised which we had not raised  
18 and we simply point out that if you look in the  
19 correspondence you'll see those as well. Then, 29  
20 issues with no disagreement at all.

21 (Slide) Next slide, please.

22 Walking through the three specific ones  
23 in which we have concerns, the first is issue II.N and  
24 it -- and specifically our point of concern has to do  
25 with the seismic considerations to be applied to the

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1 design beyond the design basis. That is, more  
2 specifically, what assessment is required of the  
3 seismic capability of the plant beyond the design  
4 basis safe shutdown earthquake. We agree in concept  
5 that there should be an assessment of the additional  
6 seismic margin in the plant design. We took an  
7 aggressive position in the requirements document to  
8 provide such margin and in that respect we've gone way  
9 beyond what is required for current plants.

10 I would first like to point out to you  
11 what level of margin really does exist here. Current  
12 plants were built or designed without any assessment  
13 of margin beyond SSE. In the IPEEE process, current  
14 plants are now going back and doing that examination  
15 to consider events that are outside the envelope or  
16 caused by external events and they're applying margins  
17 which are substantially less than the margins we  
18 proposed in the requirements document. For round  
19 numbers, most sited plants have peak ground motion  
20 accelerations in the neighborhood or less than .2g for  
21 those plants. NRC, for current plants, requires that  
22 they examine their capability to withstand earthquakes  
23 up to .3g or a factor of one and a half above that  
24 .2g.

25 In the requirements document we've gone

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1 beyond that in two levels. First, we established a  
2 standardized SSE, which was intended really to permit  
3 standardized plant designs and to envelope all sites.  
4 We'd point out there that that is implicit margin for  
5 most sites. We've established .3 as the threshold.  
6 Most of the existing sites in the U.S. would fall well  
7 below that. So, we're already starting out with  
8 margin. We've proposed on top of that a seismic  
9 margin assessment to the .5g level, which is one and  
10 two-thirds again on top of that .3g and a factor of  
11 2 or 3 or 4, depending on what the actual ground  
12 motion is on a site-specific case, which is really the  
13 margin which counts in terms of the confidence we have  
14 and additional capability of the plant design.

15 The staff position largely reiterated the  
16 importance of assessing and assuring that the designs  
17 have some margin beyond SSE and we concur with that,  
18 but the specifics we disagree with are in two areas.  
19 First, they use the number .6g rather than .5 as that  
20 limit for seismic margins assessment, and secondly  
21 they proposed a methodology for analyzing it, which  
22 further compounds the problem. I'll try to describe  
23 clearly how that works.

24 Point one, we've gone way beyond where we  
25 know existing plants are. We see and in all of our

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1 discussions with the staff -- and I've got to tell you  
2 that seismic has been one of these things that goes on  
3 and on forever and we've just discussed it endlessly.  
4 We have not yet heard a rationalization or  
5 justification or some specific benefit which accrues  
6 if we go from .5 to .6. With any margin discussion,  
7 we come up with the how much is enough issue. We  
8 really think .5 is enough. Our concern with going  
9 beyond .5 is more than simply a matter of it is  
10 potentially more hardware, potentially more analysis,  
11 potentially more difficulty, potentially more  
12 requalification, more burden on the operators. It's  
13 also venturing into an area of significant  
14 uncertainty. There is much less information out there  
15 among the component suppliers based on hard experience  
16 and previously demonstrated analysis in that region of  
17 .5 to .6.

18 The staff has taken some comfort from an  
19 analysis by one of the vendors to the effect that a  
20 shutdown path which they examined would be  
21 satisfactory at the .6 level. We think that's fine.  
22 It's evidence of a good, strong design in a plant that  
23 we want. I think it is exactly the kind of thing,  
24 however, that you raised in your question to Mr.  
25 McDonald. If that .6 becomes codified, we're not

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1 sure -- and it's not one of the three categories you  
2 laid out. We're not sure how this will play out to  
3 the whole set of components and systems and structures  
4 in the plants to which it might be applied and we may  
5 be in an arena in which that seemingly easy extension  
6 of the regulatory requirement results in real pain and  
7 cost on the part of the owners.

8 CHAIRMAN SELIN: Not to nit-pick the  
9 thing, it doesn't sound to me as if this case meets  
10 Mr. McDonald's situation. You really don't know if  
11 the design would meet a .6 requirement. It's not that  
12 there's a safety margin that would make .6, but you  
13 just don't want to make it mandatory. You're saying  
14 that both for cost reasons and for the weakness of  
15 analysis it would be hard to certify a design at --

16 MR. DEVINE: But if the staff or if the  
17 Commission were to require .6, we would then be in a  
18 mode where even though we don't know how hard it would  
19 be to meet it, we'd have to meet it in the cost.

20 CHAIRMAN SELIN: Sure.

21 MR. DEVINE: This thing was aggravated by  
22 the second point of our disagreement with the staff's  
23 position and that had to do with the methodology one  
24 uses. The industry, working with EPRI, has made great  
25 progress in deciding and figuring out, and with the

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1 Commission as well, obviously how to deal with IPEEE.  
2 The seismic margins assessment is fairly  
3 straightforward and it involves ensuring by analysis  
4 that there are two safe shutdown paths which will  
5 survive an earthquake at the mandated higher level,  
6 which is generally at the .3 level and in some cases  
7 it's higher, depending on the site-specific seismic  
8 design.

9 The staff's position requires a PRA-based  
10 analysis which requires the probabilistic likelihood  
11 of higher seismic events comes into play and it's one  
12 of the areas in which there is least certainty because  
13 it's out at that high acceleration end, .5 to .6, that  
14 the uncertainty is greatest, that there is the largest  
15 disagreement among us and among the industry. I'll  
16 tell you there are wars within EPRI and the other  
17 industry advisors about what those seismic hazard  
18 curves really should look like. If we compound the  
19 .6g with the requirement to analyze it  
20 probabilistically with all kinds of uncertainty about  
21 what the likelihood of that higher earthquake is, we  
22 end up with potentially much higher loads, potentially  
23 more difficult design considerations, and we think for  
24 no value. If you walk around existing plants and  
25 listen to what people complain about, they complain a

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1 lot about what seismic design costs and what demands  
2 it places on the plant. We think we've gone way  
3 beyond existing plants prudently to provide extra  
4 capability, but this incremental step from .5 to .6  
5 and the methodology requirement we think is simply  
6 carrying it too far.

7 MR. McDONALD: And would be far beyond  
8 the safety goal.

9 CHAIRMAN SELIN: There's sort of three  
10 kinds of questions one might ask, at least three  
11 kinds. One is what's the thread. In other words,  
12 what information do we have on seismic pieces? Do we  
13 have empirical evidence that says such a high over  
14 pressure is just so great that you really shouldn't --  
15 this acceleration is just beyond what we need to look  
16 at? Are you contesting the seismic historical  
17 information that the staff is using in arriving at  
18 this situation or do you draw different conclusions  
19 from the same data?

20 MR. DEVINE: I don't think we have seen  
21 from the staff a basis for this extension from .5 to  
22 .6. Our experts at EPRI claim that it's not there.

23 CHAIRMAN SELIN: Second is if a plant  
24 were to be built in a relatively high seismic area,  
25 would you just say you wouldn't build a plant or are

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1 there steps that you would -- non-standard steps that  
2 you would see if one were to the high end of the  
3 envelope?

4 MR. DeVINE: We established an envelope  
5 in the requirements document which would be suitable  
6 for most sites and we think that's in the 90 percent  
7 range. For those outside, and that would have to be  
8 dealt with in the specific design application.

9 CHAIRMAN SELIN: Would you just rule out  
10 the sites, or would you say, "No, there are measures,  
11 but we don't want to see them standard because it's  
12 too expensive to do?"

13 MR. DeVINE: Exactly.

14 CHAIRMAN SELIN: What kind of measures  
15 would you see in sites that were otherwise suitable  
16 that close to the edge?

17 MR. DeVINE: That's a hypothetical  
18 question. I think in those cases, depending on how  
19 far outside the envelope it was, the specific design  
20 requirements and the demonstration that one could meet  
21 it.

22 MR. McDONALD: We simply haven't designed  
23 the standard plant to meet all sites at the higher  
24 seismic level.

25 CHAIRMAN SELIN: Yes.

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1 MR. McDONALD: We've excluded those.

2 CHAIRMAN SELIN: Well, the third question  
3 is sort of the second question skewed a little  
4 differently. Not that you're required to do this in  
5 order to make this comment, but have you some sense of  
6 a difference in cost between these two standards?

7 MR. DEVINE: No. It's very difficult to  
8 quantify. And again, GE's look at one narrow piece of  
9 the plant suggested that for at least that subsystem,  
10 the equipment they had selected would meet both  
11 requirements. So, the costs would presumably be zero.  
12 We're very unwilling, however, to enter into that, on  
13 the strength of that small sample, the conclusion that  
14 it would go beyond.

15 Again, I will tell you from operating  
16 plant experience that where seismic gets us in trouble  
17 is -- I think most painfully and continually is in the  
18 purchase and selection and use of replacement plant  
19 equipment which requires greater analysis and failure  
20 information or questions come up in the arena of other  
21 licensing issues or other plants and we're continually  
22 in this highly complex analytical mode at plants for  
23 which I used to be responsible. Oyster Creek was put  
24 on-line in 1969. We are still redefining the seismic  
25 envelope and reanalyzing equipment in that plant, and

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1 we'd prefer not to start out with a very onerous set  
2 of seismic requirements for this new one.

3 CHAIRMAN SELIN: It's a little unusual,  
4 but what I would suggest since these are quite  
5 disjointed issues is the Commissioners just ask the  
6 questions on --

7 MR. DeVINE: Sure.

8 CHAIRMAN SELIN: -- the specific issues  
9 as they --

10 COMMISSIONER ROGERS: Fine.

11 CHAIRMAN SELIN: I think we're all  
12 looking to you.

13 COMMISSIONER REMICK: Oh, okay.

14 Jack, the words that the staff used are  
15 a PRA-based seismic margins analysis. Now, I must  
16 admit I'm not sure exactly what the staff meant, but  
17 I assume from that that they were saying that you  
18 would perform a seismic margins analysis based on the  
19 intelligence of PRA on where might the vulnerabilities  
20 be. Now, that was just how I read their words.  
21 You've been interacting with the staff. Do you have  
22 definite indications that it's other than what I've  
23 indicated? I read those words differently.

24 MR. DeVINE: Well, I think that your  
25 general description is correct, Commissioner Remick,

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1 but the specifics of how that analysis is done are  
2 rather uncertain. Let me tell you I am no expert on  
3 seismic margins analysis, but I've spent a fair amount  
4 of time trying to understand what the levels are. As  
5 I understand, the analytical processes, if you will  
6 there's a continuum of possible more and more  
7 sophisticated analyses. But the approach that has  
8 been agreed upon for existing plants and which we are  
9 proposing involves simply the demonstration of two  
10 shutdown paths which can tolerate higher seismic  
11 independent of PRA.

12 The idea is that --

13 COMMISSIONER REMICK: But the staff is  
14 saying, "We don't want to follow the seismic PRA --"

15 MR. DEVINE: Right, that's the other  
16 extreme.

17 COMMISSIONER REMICK: "-- that we should  
18 go through a margins analysis."

19 MR. DEVINE: Right.

20 COMMISSIONER REMICK: Intuitively that  
21 appeals to me and I thought this is what people  
22 generally felt was the more realistic approach. So,  
23 that's why I read their words as a former seismic  
24 margins analysis and I presumed it would be somewhat  
25 similar to what we've done in the other plants. But

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1 I must admit I haven't put that question to the staff  
2 to make sure my understanding of the words is correct.

3 MR. DeVINE: I think we're reaching  
4 closure because as you point out, and I had the same  
5 reaction, the other extreme is a seismic PRA --

6 COMMISSIONER REMICK: Right.

7 MR. DeVINE: -- which is applying an  
8 infinite number of different probability, different  
9 intensity earthquakes to the plant. It's very, very  
10 complex and it's dependent upon this projection of  
11 likelihood of high earthquakes which is very uncertain  
12 besides.

13 COMMISSIONER REMICK: Yes.

14 MR. DeVINE: The PRA-based analysis is  
15 more in the middle in which point values are taken, as  
16 I understand it, from a seismic hazard curve and then  
17 applied through the PRA process to those parts of the  
18 plant which may be vulnerable. As a consequence, the  
19 numbers of parts and pieces and components which have  
20 to be analyzed to a higher seismic capability is  
21 likely to be greater than in the baseline approach  
22 we've proposed. My understanding, perhaps even more  
23 importantly however, is that this goes from ugly to  
24 very ugly if you try to get out to the .6 range  
25 because that's where the seismic hazard curve becomes

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1 very uncertain. That's why I said these two are  
2 really compounding in their effect on the design.

3 COMMISSIONER REMICK: Part of the IPEEE  
4 process was plant walkdowns. Now, we're talking about  
5 paper reactors at this point with no walkdown. Does  
6 that give you any kind of -- is there any kind of a  
7 conflict there in carrying out the process that was  
8 done with the existing plants? The analysis can still  
9 be done independent of an actual plant.

10 MR. DEVINE: I think so.

11 COMMISSIONER REMICK: Okay. Another  
12 question. The .3g design basis earthquake and the  
13 utility requirements document, what part of the U.S.  
14 roughly would that exclude or include? I assume --

15 MR. DEVINE: I believe it includes  
16 virtually all of the U.S. except the California sites,  
17 or the West Coast sites.

18 COMMISSIONER REMICK: That was my  
19 impression too.

20 MR. SANTUCCI: I think the target was to  
21 cover more than 80 percent of the sites east of the  
22 Rockies.

23 COMMISSIONER REMICK: East of the  
24 Rockies? Okay.

25 Now I have a question I'm not sure you

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1 can answer. But suppose for existing sites when we're  
2 doing the seismic margin studies that are ongoing or  
3 I'm not sure if they're completed or not, but suppose  
4 the seismic margin earthquake at that time had been  
5 .5g as you're proposing for the new design. Do you  
6 happen to know for how many plants this would have  
7 represented a margin of at least 1.67?

8 MR. DeVINE: I'm looking through my notes  
9 to see if I have some numbers on those. I'll answer  
10 from memory, but I really have to qualify it. I  
11 believe that when I asked a similar question the  
12 answer was that 90 percent, approximately 90 percent  
13 of existing sites have SSEs of .2g or below and then  
14 consequently as a result the IPEEE process would do a  
15 seismic margin analysis to .3. So, I think the answer  
16 is 90 percent, but I'm doing that from memory. I  
17 don't see it on the sheet.

18 COMMISSIONER REMICK: Yes. I wouldn't be  
19 surprised by that, that most of them are .2g or less,  
20 except for Diablo and a few others that are in there.  
21 I would assume from what you're saying then that if  
22 they had met -- if the seismic margin earthquake had  
23 been set at .5g, they would have margins even in  
24 excess of 2.

25 MR. DeVINE: Yes, well in excess of 2,

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1 and also it may -- I didn't mention this, but as a  
2 separate issue with which we agreed with the staff  
3 position, we've eliminated the operating base  
4 earthquake and one of the real reasons for doing that  
5 is we ended up with two competing design trains and in  
6 some cases the OBE became controlling. In the case  
7 that you're describing, if a plant were designed at .2  
8 SSE with a margin at .5, the .5 would probably end up  
9 dominating at least parts of the design.

10 COMMISSIONER REMICK: So, also from that,  
11 if you're right that 90 percent of the sites, the  
12 design basis SSE would be two-tenths of a g or less  
13 and you use .5g, the margin would be over two anyhow.

14 MR. DeVINE: Yes. Yes. Absolutely, and  
15 that's the real margin. That's the margin that counts  
16 and that's the point we're trying to make because our  
17 standardized design is such that we've got a lot of  
18 plants out there that were designed to .3 and  
19 installed to .3 as an SSE, as a design basis SSE in an  
20 area which a site-specific analysis would suggest 1.8  
21 is good enough.

22 MR. SANTUCCI: .18.

23 MR. DeVINE: Or .18. Thank you, Joe.

24 CHAIRMAN SELIN: We can accept that offer  
25 right at --

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1 COMMISSIONER REMICK: That's all the  
2 questions I have on seismic margins.

3 COMMISSIONER de PLANQUE: Just one. If  
4 you look beyond the United States and look to  
5 countries where they're actively considering new  
6 plants, how much does that percentage change that  
7 might be within the .3?

8 MR. DeVINE: I think it changes  
9 significantly for the Far East plants. But --

10 COMMISSIONER de PLANQUE: And if you took  
11 it to the .5?

12 MR. DeVINE: I am guessing. I think it  
13 is the same kind of ratio, but I'm really not  
14 guessing. I am guessing and I'm not qualified to  
15 answer that question.

16 MR. SANTUCCI: Conversely, if you look to  
17 Europe as an example, the .3g number is very, very  
18 conservative.

19 COMMISSIONER de PLANQUE: Right. Okay.

20 COMMISSIONER REMICK: But am I correct  
21 that some countries in the Far East where bids are  
22 out, that .3g is considered the SSE?

23 MR. SANTUCCI: Are you thinking about the  
24 Taiwanese --

25 COMMISSIONER REMICK: Yes.

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1 MR. SANTUCCI: Yes. I am not -- I know  
2 that they've used the utility requirements document in  
3 large part as they prepare their bid specification,  
4 but I am not familiar with what actually changed this  
5 number.

6 MR. TAYLOR: I would suspect they might  
7 be designing to a higher number then.

8 COMMISSIONER REMICK: You think so?

9 MR. TAYLOR: I don't know. Just like we  
10 would in California.

11 COMMISSIONER REMICK: I'm not sure you're  
12 right, but you might be. Okay.

13 MR. DeVINE: The next issue is number  
14 II.M. I think this one is easy. Design reliability  
15 assurance program. Once again, let me emphasize that  
16 we've been in sync, I think, with the staff all along  
17 on reliability assurance program. Doctor Murley  
18 raised the question initially, probably four or five  
19 years ago when we first started talking passive plants  
20 and we picked up the charge and developed a plan for  
21 both design reliability assurance programs and  
22 operation reliance assurance programs.

23 This issue was identified by the staff as  
24 a future issue. At our first look we were quite  
25 satisfied to let it continue to evolve because there

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1 are a lot of nuances about how the reliability  
2 assurance program is going to play in operation of the  
3 plant, which need to be agreed upon. However, there  
4 is the specific requirement in the issue statement to  
5 the effect that the design reliability assurance  
6 program should be a part of tier 1 rulemaking for  
7 design certification. In our view this is quite  
8 inconsistent with the concept of rulemaking on design-  
9 specific issues which are important to safety.

10 This is a program. It is by definition  
11 a framework. It is somewhat vague in the sense that  
12 interpretation will be applied through the course of  
13 the design. Some flexibility is needed and we've felt  
14 it was important to extract this element of that issue  
15 even though the issue itself will come back to you  
16 later and bring it to your attention, because again  
17 the designs are being developed now and design  
18 certification work is in process. So, that decision,  
19 if the vendors are going to comply with that, they  
20 need to know it today and we would argue strongly that  
21 it shouldn't be. Had very strong support from the  
22 vendors on this point as well, and that's really our  
23 only concern with the issue as stated.

24 COMMISSIONER REMICK: How would you  
25 classify this, then, as Tier 2 or is it a programmatic

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1 ITAAC?

2 MR. DeVINE: Tier 2 at most. It could  
3 certainly be handled programmatically and, as we point  
4 out in the slides, we've covered it through the  
5 requirements document and our initial intent was to  
6 carry it that far and let it guide the design. We  
7 didn't even see a regulatory role for that, although  
8 we don't disagree at all that reliability is important  
9 to you and at a tier 2 level I think it's quite  
10 tolerable. At tier 1 it becomes a rigid inflexible--

11 COMMISSIONER REMICK: Have you had  
12 discussions with the staff of why the statement, tier  
13 1 versus tier 2?

14 MR. DeVINE: No, we have not. Really,  
15 this is a very late addition to our list, frankly. We  
16 had set that aside as a future issue and when we  
17 examined it carefully we thought we'd better raise it.

18 And again, I think it's maybe to some  
19 degree an example of the question you asked. This is  
20 an area in which we've tried to establish requirements  
21 which are important which in effect add marginal  
22 restraints to the design. But once they become  
23 regulations, then we can become a slave to those and  
24 we can be trapped and that's further than we wanted to  
25 go.

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1 COMMISSIONER ROGERS: But on this  
2 particular issue, you really haven't tried to thresh  
3 it out with the staff yet?

4 MR. DeVINE: To my knowledge, we've not.

5 Let me ask John Trotter, who is here, if  
6 that has come up.

7 MR. TROTTER: No.

8 COMMISSIONER ROGERS: I heard a mumble.

9 MR. TROTTER: No, we have not.

10 MR. DeVINE: It was an unamplified "no."

11 COMMISSIONER ROGERS: Thank you.

12 MR. DeVINE: The third issue is, and I  
13 keep saying this over and over and over again, it is  
14 yet another issue in which we've had very productive  
15 dialogue with the staff and come a long way to  
16 reaching closure. But on one specific point, we've  
17 not reached closure and it's a very important one, the  
18 high pressure gas samples in post accident sampling  
19 system.

20 The PASS requirements grew out of TMI.  
21 Those of us at TMI are fully in favor of having a  
22 capability to safely secure samples quickly after an  
23 accident. We didn't have that capability and we  
24 needed it.

25 The specific issue here is, must there be

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1 a capability to withdraw a pressurized gas sample, and  
2 that is a sample of reactor coolant under pressure so  
3 that both the fluid and the gas and the gas content in  
4 the fluid can be analyzed as distinct from a sample  
5 which should logically be attainable and that is a  
6 sample of a pressurized reactor coolant system, i.e.,  
7 a system which can extract fluid from a pressurized  
8 system, knock the pressure down and deliver it  
9 depressurized to the sample station, two distinctly  
10 different approaches.

11 For the advanced plants we have  
12 epressurization system capability, automatic  
13 depressurization capability for the advanced PWR  
14 designs, the AP-600. So immediately we're struck by  
15 the inconsistency of the staff's position that a  
16 pressurized gas sample would be required in the PWR  
17 case but not the BWR case. We think that's  
18 inconsistent and we see no justification for that.

19 Very importantly and I think  
20 fundamentally this is an issue of complexity. The  
21 simplicity versus complexity trade-off of going from  
22 the capability to get a sample of a system under  
23 pressure to a pressurized sample is substantial and I  
24 would point you to Combustion Engineering/ABB's letter  
25 in that respect because it was quite thorough and much

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1 more thorough than my slides or our response. In  
2 their estimation, the number of valves increases by  
3 about a factor of ten, from four to five to 40 to 50,  
4 with attendant increase in cost. They estimate it's  
5 about \$10 million.

6 But it's not the cost effect that's  
7 really bothering us. It's living with that complexity  
8 and with the valves which have to be tested and  
9 maintained and which threaten reliability of the  
10 system. As you know, we've been on the simplification  
11 crusade for seven, eight years now and one of our  
12 findings has been there's no Holy Grail for  
13 simplification. It's a matter of system by system  
14 eliminating unnecessary parts and pieces, and there  
15 are a lot of unnecessary parts and pieces in this PAS  
16 system as prescribed by the staff, so we would argue  
17 very strongly that that specific requirement for  
18 pressurized gas sample be changed, deleted from the  
19 staff's requirement. The residual aspects we're quite  
20 comfortable with.

21 With respect to exchange with the staff,  
22 I have to say that we have been arguing this point for  
23 five years and this one is well understood and if the  
24 staff were here they would say, "Yes, we know they  
25 want that," and we still think it's important and we

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1 simply have never come to the point that we even  
2 understand, let alone agree with, the rationale for  
3 adding complexity to the plant for this very marginal  
4 increase.

5 If you think in terms of the need for  
6 this, it would be only under an accident, a very  
7 severe core damaging accident in which for reasons we  
8 can't comprehend the plant would not have been  
9 depressurized. And even in that case, the advantage  
10 is the marginal increase in analytical information one  
11 would gain from being able to get the undisturbed gas  
12 as part of the sample. And if that were going on in  
13 the plant, I think we'd have a lot of other things  
14 going on, on our minds.

15 This is not something which would be a  
16 very great help under those circumstances. It would  
17 provide some marginal benefit. It's unlikely it would  
18 be required and for that very marginal additional  
19 benefit we'd be paying a price from design right on  
20 through the life of the plant.

21 COMMISSIONER ROGERS: You're saying that  
22 this really wouldn't be of value to the operators in  
23 dealing with the accident?

24 MR. DeVINE: I'm not saying it wouldn't  
25 be of value. I'm saying it would be a marginal value

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1 in either case. Getting a sample is of value,  
2 absolutely, and we had great difficulty with that at  
3 TMI. It took over a day to get the sample and our one  
4 single over-exposure of a human being, the single one  
5 in the course of the accident recovery, was  
6 withdrawing the primary sample.

7 We were using the existing sample station  
8 which wasn't designed for post-accident sampling,  
9 three or four orders of magnitude higher activity in  
10 the sample than the sample station was designed for,  
11 so we're fully in support of ability to withdraw  
12 samples after an accident, but having a pressurized  
13 gas sample -- and let me carry it further. In that  
14 case, we got very quickly the confirmation of serious  
15 core damage and some approximation of the extent of  
16 core damage and one can get that with this fluid  
17 sample. This is not a highly diagnostic laboratory  
18 event.

19 For years people were studying data from  
20 the TMI event afterwards and precisely determining  
21 what was going on in the core. At the time, there was  
22 still uncertainty about just how badly the core was  
23 damaged. We overexposed a person to get the sample.  
24 Once we had the liquid sample we confirmed the  
25 conditions and we also confirmed the level of activity

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1 in the fluid, which was very important in helping us  
2 make the decision not to switch on to decay heat  
3 removal which was not designed for that high level of  
4 activity. All that information would be obtained  
5 without this capability. It's only the additional  
6 diagnostic -- specifically what happened in the  
7 accident -- kind of information that you'd gain and we  
8 don't think it's worth it.

9 COMMISSIONER REMICK: Jack, when I read  
10 the staff's position I misunderstood what they were  
11 saying. I interpreted them to be questioning the  
12 reliability of the depressurization system for PWRs  
13 and I found that is not the question.

14 As I understand it, the staff's concern  
15 is that you might have an incident like a steam  
16 generator tube leak and you have concern that you  
17 don't want to depressurize the primary system too far  
18 because the secondary then might come into the primary  
19 so that you might not want to depressurize the whole  
20 way down. But you might want to know did this lead to  
21 core damage, so you might want a sample at that  
22 somewhat elevated pressure or you might want to know  
23 in a coastal site had the secondary side water come in  
24 and you had chlorides and so forth. That is my  
25 understanding, that they thought there might be some

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1 cases that you might want to ride at pressures other  
2 than being fully depressurized and that was the  
3 reason.

4 MR. DeVINE: However, we think in almost  
5 any conceivable case that would not be a core-damaging  
6 accident and we have the capability to draw that  
7 sample. And if one wanted to be absolutely certain,  
8 and obviously the operator should have a sense from  
9 many other parameters of the extent of damage to the  
10 core if there is some, but one could draw a  
11 pressurized sample with the simpler system we  
12 prescribed and when that confirms no core damage you  
13 could then get that pressurized gas sample. There is  
14 the capability to do this. The question is, is it a  
15 safety-related post accident sampling system as  
16 prescribed.

17 COMMISSIONER REMICK: So that's the  
18 bottom line, the difference between whether it's  
19 safety, safety-related?

20 MR. McDONALD: No, no. You said one  
21 thing about if you had a steam generator tube rupture  
22 and you didn't want to depressurize, could you get a  
23 sample. You can always get a sample, but the sample  
24 is depressurized in the process of getting it. This  
25 thing would not depressurize the sample.

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1 CHAIRMAN SELIN: In other words, you can  
2 get a sample from a pressurized primary --

3 MR. McDONALD: That's right.

4 MR. DeVINE: Right.

5 CHAIRMAN SELIN: -- which depressurizes  
6 just the sample, not the primary --

7 MR. DeVINE: Exactly.

8 MR. McDONALD: That's right. That's  
9 right.

10 MR. DeVINE: I'm sorry, I thought I made  
11 that clear. That is expressly the point and we  
12 support fully the capability to sample a pressurized  
13 system.

14 COMMISSIONER REMICK: So the design as  
15 proposed would allow a sample at any primary pressure?

16 MR. McDONALD: Yes.

17 COMMISSIONER REMICK: I see. Okay.

18 MR. DeVINE: Those are the three and  
19 they're not show stoppers, but every one of them has  
20 potential to be significant in the design.

21 COMMISSIONER REMICK: One other area.  
22 Your third bullet says the area is also being  
23 considered for reduction elimination because of its  
24 marginal safety significance. Is that something the  
25 staff is pursuing or industry is pursuing? Have you

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1 done it yet?

2 MR. DeVINE: No. No. That's perhaps not  
3 well worded. We are proposing that it be considered  
4 for elimination for those reasons. The staff's  
5 position is to let the requirement stand.

6 COMMISSIONER REMICK: Oh, in this case?

7 MR. DeVINE: Yes.

8 COMMISSIONER REMICK: You're not talking  
9 beyond --

10 MR. DeVINE: We are not talking anything  
11 else.

12 COMMISSIONER REMICK: Okay.

13 MR. DeVINE: The following two slides  
14 address those for which we think some clarification is  
15 in order. Let me just very quickly cover it. First  
16 of all, it's our hope and our expectation that in all  
17 of these we're in 100 percent agreement with the staff  
18 and the only difficulty is that the specific wording  
19 in the SECY, we think, is either inconsistent with  
20 that agreement or is potentially open to  
21 misinterpretation in the years ahead and we'd like to  
22 make sure that doesn't happen.

23 To walk through very quickly the kinds of  
24 things, I don't even think I need to discuss them all,  
25 but for example in the intersystem LOCA, the first

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1 item. The issue here is that actually there are two  
2 points of confusion. One could read that requirement  
3 to specify that even for those connected systems, that  
4 is systems connected to the primary systems which  
5 extend outside the containment which we have hardened  
6 and we've very aggressively approached this in the  
7 requirements document and I'll tell you that it caused  
8 a lot of agony years ago when we first presented it to  
9 the steering committee, but we've hardened connected  
10 systems to ensure that directly rather than by  
11 controls or instruments or quick closures that our  
12 connected systems are not vulnerable to LOCA. One  
13 could read this to suggest that even in those cases  
14 you have to do additional things to make sure that the  
15 systems stay isolated.

16 More importantly, and not stated in my  
17 summary slide, although it is stated in the letter  
18 that we sent to you on June 7th, is that there is a  
19 question of practicality. The words in the SECY  
20 suggest that in all cases, in all practical cases,  
21 interconnected systems should be hardened. By  
22 hardened I mean designed such that the ultimate  
23 rupture strength is below the design pressure of the  
24 primary system.

25 We agree with that in principle. We went

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1 further in the requirements document to say what  
2 practicality means. The SECY doesn't do that and we  
3 would simply like to make sure there is some  
4 reasonable bounds on practicality. Practicality can  
5 get perilously close to possibility in the eyes of  
6 regulators sometimes and we'd just like to put some  
7 bounds on the practicality question.

8 Hydrogen -- yes?

9 MR. McDONALD: We've been specific in  
10 saying which of those systems we think do need it and  
11 it is practical.

12 MR. DEVINE: Hydrogen control. I think  
13 we're in complete sync here, although we've disagreed  
14 with you for a long time over the specification for  
15 hydrogen, the design basis for hydrogen treatment.  
16 The words in the SECY use "such as" in describing the  
17 kinds of systems that can be employed for handling  
18 hydrogen. Since the SECY was written, we've -- and in  
19 parallel with the preparation of the SECY, we've been  
20 working with our European colleagues to examine a  
21 passive autocatalytic recombiner device which we're  
22 very encouraged will be a better answer than ignitors  
23 or inerting in the primary containment and we simply  
24 want to ensure that that option is not foreclosed by  
25 the words in the SECY. I think it's just a

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1 clarification.

2 COMMISSIONER ROGERS: Has EPRI done any  
3 or funded any studies on that?

4 MR. DeVINE: Yes.

5 COMMISSIONER ROGERS: You have?

6 MR. DeVINE: Yes. We're working very  
7 closely on that and we submitted a report to you I  
8 think a month ago.

9 Similarly, the question of practicality  
10 came up on testing of pumps and valves and that's an  
11 issue of high importance to existing plants. We  
12 simply want some reasonable bounds on what  
13 practicality means. We would not want full pressure  
14 test loops to be installed in plants just for the  
15 purpose of testing motor-operated valves and that sort  
16 of thing, and we don't think you want that either.

17 Containment leak rate testing was silent  
18 with respect to some of the items in Appendix J which  
19 we presume should be included but are not stated.

20 Had lots of dialogue about the defense  
21 against common mode failure and the staff proposed a  
22 very orderly process of assessing the vulnerability to  
23 common mode failure and demonstrating adequate  
24 capability to deal with it. But there's a fourth  
25 step, position number 4, which involves putting in

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1       hardwired backup controls and instruments.       We  
2       specified hardwired backup controls and instruments in  
3       the requirements document years ago and in that sense  
4       our requirements are quite similar.   However, these  
5       are proposed to be safety-related.   We're not sure  
6       what the design basis is for the safety-related  
7       design, what they are to be designed to do, under what  
8       safety conditions since they come into play beyond the  
9       design basis capability of the plant.   Nor do we think  
10      they need to be safety related.   We think they need to  
11      be simple and sensibly engineered and they are purely  
12      extra confidence builders in the plant.

13                Again, I would point out the comments  
14      from the vendors.   I think Westinghouse was most  
15      explicit on this point, but they support this  
16      agreement in principle, but not on the safety-related  
17      treatment of those systems.

18                COMMISSIONER ROGERS:   When was the last  
19      time you talked to our staff on that particular issue?

20                MR. DeVINE:   That's been a very frequent  
21      point of discussion.

22                John, do you have any --

23                COMMISSIONER ROGERS:   Well, the reason I  
24      ask is that my impression is that -- and I may be  
25      wrong on this -- that the staff had been reviewing

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1 their position and it seemed to me that at least with  
2 some of the vendors they didn't have a disagreement on  
3 that particular aspect.

4 MR. DeVINE: Yes. Actually I'm glad you  
5 raised that and I didn't pick it up from my slides  
6 here and again it is in the letter. Part of our  
7 concern has to do with what we perceive as an  
8 inconsistency both between what we're hearing from  
9 different parts of the staff and also the vendors  
10 report they're hearing from the staff. Case A, a  
11 certain solution was adequate. Case B, the same  
12 solution seems not to be adequate. So, we are also  
13 getting a sense that there's some ambiguity about the  
14 position which we'd like to see clarified.

15 Probably the most important of these  
16 items requiring clarification is the steam generator  
17 tube rupture. Again, our discussions with the staff  
18 have been very good and really reached closure. We  
19 have agreed that multiple steam generator tube  
20 ruptures deserve consideration in the design.  
21 Westinghouse has already done some analysis in that  
22 respect and we're requiring analysis of multiple steam  
23 generator tube ruptures. But it had been our  
24 understanding with the staff that the design basis  
25 will remain single steam generator tube rupture with

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1 an additional requirement to analyze in a best  
2 estimate basis multiple steam generator tube ruptures,  
3 five specifically. Interestingly, it turns out that  
4 when those analyses are made that the best estimate  
5 analysis of five works out to show pretty much the  
6 same kind of plant transient you would see with a very  
7 conservative design basis estimate or analysis of a  
8 single one.

9 In several places in the SECY, the  
10 decision about the design basis is left unclear. It's  
11 suggested that it will be determined later. The SECY  
12 implies, it states in fact, that the analysis should  
13 be required and then they ask for the Commission's  
14 confirmation that the analysis of multiple steam  
15 generator ruptures be required. It's silent with  
16 respect to whether those are best estimate or design  
17 basis, but in two places, not in the part that asks  
18 for your approval, but in two other places in the SECY  
19 the SECY document indicates that based on those  
20 analysis the determination will be made as to the  
21 design basis. That will be, we think, too late down  
22 the design process to know what the design basis is  
23 and we propose that it remain a single steam generator  
24 tube rupture.

25 COMMISSIONER REMICK: Jack, I'm not sure

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1 I completely understand. I thought I heard you say  
2 that the staff is not proposing to change the design  
3 basis. That will be a single tube failure. However,  
4 you agree that there should be analysis done beyond  
5 the design basis for multiple tube failure. Am I  
6 correct then that the concern is -- do you think that  
7 beyond the design basis they should be best estimate  
8 calculations and the staff thinks they should be  
9 conservative calculations or that they still might  
10 come back and make the multiple tube failure a design  
11 basis event?

12 MR. DeVINE: Let me be real specific. I  
13 again apologize for not being completely clear on  
14 this. The staff -- the SECY, the position stated in  
15 the SECY -- I want to make three points. The first  
16 point is that we seem to have strong agreement with  
17 the staff orally on this point. It's the words in the  
18 SECY that are bothering us.

19 Secondly, the SECY is silent with respect  
20 to whether the analyses of multiple steam generator  
21 tube ruptures be done on a best estimate or design  
22 basis conservative method.

23 Thirdly and explicitly, the SECY requires  
24 that or indicates -- in fact, I'll read a sentence.  
25 "The staff will determine --" this is one place and

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1 there's another in here someplace. "The staff will  
2 determine the appropriate number of steam generator  
3 tube ruptures that should be included in the AP-600  
4 design basis after evaluation of the submitted  
5 analysis." So, what the SECY says is, "Do the  
6 analysis and then we'll decide on design basis." So,  
7 it sort of puts it in a future category even though  
8 this one was a -- it's a resolved issue. Those are  
9 the words that are of most concern to us.

10 COMMISSIONER REMICK: And you feel that  
11 the analysis should be handled like we're handling  
12 other analyses, severe accidents and so forth, best  
13 estimate --

14 MR. DEVINE: Exactly.

15 COMMISSIONER REMICK: -- and not have it  
16 uncertain as to whether this will eventually become a  
17 design basis event later on in the process of these  
18 existing designs?

19 MR. DEVINE: Yes.

20 COMMISSIONER REMICK: Okay.

21 MR. DEVINE: That's exactly right. And  
22 the best estimate analyses that have been conducted  
23 have been illuminating and I think it's been good  
24 dialogue about what they show. They'd have been  
25 concerned if some kind of a threshold effect -- after

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1 a few tubes the plant is unable to cope. On a best  
2 estimate basis Westinghouse shows it out to five  
3 tubes. I think the SECY describes that result. The  
4 plant can cope. So, it's been a useful process, but  
5 we're concerned about where does the design basis go  
6 as a result of this process.

7 That concludes the -- and that's it. Of  
8 the 42, those are the ones with which we have issues.

9 (Slide) I would point out on the next  
10 slide --

11 COMMISSIONER REMICK: Jack, when you  
12 mentioned 42, I added up your numbers on your earlier  
13 slide and it came out to 40. I was wondering what the  
14 other two were.

15 MR. DeVINE: I have at least two separate  
16 charts of those and every time I add the numbers  
17 different ways. There are three distinct sets of the  
18 42, but the total number is 42. Maybe the difference  
19 here, there are two issues which came out -- and let  
20 me back up. In large measure, the vendors have come  
21 up with very consistent positions. They point out two  
22 additional ones. The Westinghouse letter questions  
23 issue I.H regarding core debris coolability. As I  
24 read that comment, it primarily is one of consistency,  
25 use of service level C for the containment both for

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1 core debris coolability considerations and for  
2 containment performance.

3 There is another issue in which the staff  
4 takes that position and with which we agree. So, it's  
5 a consistency issue. Also, they refer to some  
6 additional specifics on shell buckling and I'm not  
7 prepared to describe that. But in any case, the  
8 Westinghouse letter covers it.

9 The second potentially more important,  
10 but just for clarification, we recently submitted some  
11 requirements document changes that addressed the  
12 containment performance. Very explicitly in our  
13 dialogue with the staff and our letter we pointed out  
14 that we're doing that in order to ensure that we have  
15 a very rugged plant performance and containment  
16 performance which can support simplified emergency  
17 planning for the passive plants and perhaps for other  
18 plants when and if we're at the point that we're ready  
19 to support that. We wanted to make sure that we had  
20 plants designed that had a very specific and very  
21 demanding containment performance requirement to  
22 support simplified emergency planning.

23 And we didn't question or challenge the  
24 SECY position on this. It was in the future category  
25 and it was simply a dialogue that discussed what's

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1       been happening.

2                   ABB Combustion raised a question on that  
3       which was intriguing. Because that was identified as  
4       a passive plant only issue, their question was why  
5       should this be limited to passive plants? It was  
6       never our intended limitation over the long-term to  
7       limit it. We simply haven't crossed that bridge. We  
8       did make the requirements document change as a volume  
9       3. That is a passive plant requirements change. We  
10      would intend to catch up with volume 2 sometime later  
11      on. Combustion Engineering's design, they feel, can  
12      meet those requirements. That's an indication it's a  
13      good, robust containment building and I think they  
14      simply want to get a placeholder in that says, "Hey,  
15      wait a minute. We want to be considered candidates  
16      for this if and when it comes as opposed to being  
17      rejected because it was proposed by EPRI as a volume  
18      3 change only." So, it's an applicability issue.

19                   MR. McDONALD: May I state that in a  
20      little different way? What we have required is the  
21      containment type of criteria that would be used as  
22      inputs for emergency planning and we put that in the  
23      requirements document as criteria for design for use  
24      in future emergency planning. So, what this says is  
25      that they want that recognized as the criteria in

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1 utility requirements document for emergency planning  
2 likewise in the evolutionary plants.

3 COMMISSIONER REMICK: I asked the staff  
4 at one of our meetings this very question about  
5 emergency planning for the evolutionary plants. As I  
6 recall, the staff's answer was that they had no  
7 specific requests from any vendor to relax the  
8 requirements for the evolutionary plants and the staff  
9 was not going to initiate this themselves. They did  
10 indicate that they thought EPRI was working on this.  
11 Perhaps they were referring to what you've just  
12 described, but that without specific vendor requests  
13 for relief in this area, that the staff did not have  
14 any basis.

15 MR. McDONALD: Well, I didn't quite  
16 understand that. I read that dialogue that you had  
17 also of what the staff might expect. We're proceeding  
18 with the Part 52 process and we're dealing with design  
19 criteria. So, when we specify a certain design  
20 criteria for how much a containment would leak or how  
21 gas is handled and things like that, that criteria and  
22 the results of that then is used outside the Part 52  
23 process for determining emergency planning.

24 COMMISSIONER REMICK: Yes.

25 MR. McDONALD: So, I didn't understand

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1 that either.

2 COMMISSIONER REMICK: And that I  
3 understand, but just the fact that you've made those  
4 requirements, utility requirement document does not  
5 mean that automatically the agency would proceed to  
6 relax --

7 MR. McDONALD: No. No. No. No.

8 COMMISSIONER REMICK: Yes. And the  
9 staff's answer is, "We haven't had a request for  
10 evolutionary plants."

11 MR. DeVINE: Absolutely.

12 MR. McDONALD: Yes. Well, you haven't  
13 had one for passive plants either.

14 COMMISSIONER REMICK: No, that's correct.  
15 That's correct. No.

16 MR. DeVINE: (Slide) The final slide is  
17 simply a table of those with which we have no  
18 disagreement and I'd propose not to discuss any of  
19 them except to point out that the lower right-hand  
20 side, those category 3s include some pretty weighty  
21 issues. However, we think we're making continued  
22 progress and some will be resolved shortly.  
23 Regulatory treatment of non-safety systems we think is  
24 resolved and the paperwork is catching up now. Source  
25 term is another which is making great progress, but

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1 we're still reaching closure.

2 But in the main, we're very impressed and  
3 pleased with the work that the staff has done in  
4 closing all of these issues. We think the relatively  
5 small number of items with which we disagree is  
6 evidence of a good cooperative job.

7 Thank you.

8 The next presenter is John Taylor.

9 MR. TAYLOR: These issues that have  
10 identified has disagreeing in part and requiring  
11 additional clarification are new. We've made the  
12 industry's position clear, I believe, and the staff  
13 understands it. We feel a potentially of major cost  
14 and operational implications to the utilities in them  
15 and should be resolved through the utility  
16 requirements document and we would ask that  
17 expeditious complete technical discussions with the  
18 staff be completed, particularly at the management  
19 level. We don't think that would require a scheduled  
20 delay. But if it's done on the contrary, the  
21 resolution of those issues at the requirements  
22 document will have beneficial effects on cost and  
23 schedule in the design certification process.

24 That, in fact, has been one of the major  
25 purposes of the utility requirements document and the

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1 review by NRC, to establish a generic basis which  
2 would permit design certification to proceed  
3 expeditiously. We're very pleased that the utility  
4 requirement document reviews have been generally kept  
5 on schedule over the several year period. However, we  
6 are concerned that the NRC design certification review  
7 schedule has recently been extended.

8 We're also concerned about other  
9 potential delays. For example, the proposed  
10 rulemaking on severe accident performance criteria for  
11 future reactors seems to us to be an unnecessary time  
12 and resource drain that would impact schedules now and  
13 could have serious schedule impacts during rulemaking.  
14 We've been debating and corresponding on this question  
15 of whether or not this intervening rulemaking is  
16 needed with the staff for about five years.

17 The position the industry takes, and it's  
18 shared by the EPRI Utility Steering Committee, NUMARC  
19 and the vendors, has consistently been that we resolve  
20 the technical issues generically in the contents of  
21 the utility requirements document. Vendors follow  
22 that guidance and NRC certified designs through the  
23 rulemaking in its design certification that the  
24 criteria are met, which they have approved via the  
25 safety evaluation report of the utility requirements

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1 document. That would involve the public comment that  
2 is necessary for the process without any separate  
3 rulemaking.

4 But we're not suggesting in this  
5 expression of concern that NRC staff is the sole cause  
6 of delay. But we are suggesting that the industry and  
7 NRC staff take constructive actions to minimize any  
8 future delays and even identify ways in which we can  
9 recover the present schedule over what it has been.  
10 We would urge your support in asking the staff to work  
11 closely with us to try to define that for us.

12 CHAIRMAN SELIN: I should just say  
13 something. We've said this at this table in the past.  
14 We will not require that the vendors meet the  
15 specifications of the industry document. We have made  
16 significant -- I won't call them concessions, but  
17 embracing of the document saying, "If you do meet  
18 these approaches, we won't go through with a whole new  
19 approach." But we do take the vendor documents as  
20 they come. If they seem safe to us, it's between the  
21 industry and the vendor to close that loop.

22 MR. McDONALD: We understand.

23 MR. TAYLOR: Chairman, in fact we like  
24 that for the reason cited at the beginning, that we  
25 would not like the movement we've made in increasing

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1 the margin beyond what the regulatory requirements  
2 would demand to be applied in the regulatory sense.  
3 So, we're for that. We, however, do believe that the  
4 basic technical understandings that have been achieved  
5 by working with NRC on this requirements document will  
6 provide a more expeditious review of those issues in  
7 a design certification.

8 CHAIRMAN SELIN: Fine. Thank you.

9 MR. McDONALD: Let me go back a minute in  
10 sort of summing. We stated the objectives at the  
11 start were to try to assure stability in the  
12 regulatory process and also to get good technical  
13 requirements. It might seem that we've strained at  
14 some technical details here, but we have been very  
15 detail oriented because we're trying to work that all  
16 out and have a good credibility.

17 I think we've come a long way on that.  
18 We've worked well with the staff. So, I would  
19 congratulate them.

20 We've brought these questions up at this  
21 time now and we'd like to request you to ask the staff  
22 to work with us. With respect to schedules, I believe  
23 this can be done in a one day meeting with -- plus  
24 what time is necessary to write it up. I don't think  
25 we have anything that has any significant schedule

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1 delay. I don't think that we can really afford much  
2 schedule delay. There are several factors that  
3 dictate that the new schedule for certification be  
4 reduced significantly with the principal reason for  
5 this being that the continuing slippage of schedules  
6 as milestones are approached is eroding confidence in  
7 our ability to accomplish our regulatory-related work  
8 in a predictable and cost effective manner. We've got  
9 to do something about it and we want to work with you  
10 all we can to try to accomplish that. We think it's  
11 a very critical item.

12 CHAIRMAN SELIN: If you want to keep to  
13 the schedules, I suggest you also have conversations  
14 with the vendors.

15 MR. McDONALD: I think we all need to  
16 analyze exactly what's causing them and take some  
17 appropriate action. We will be working with your  
18 staff and doing whatever we can to improve that.

19 CHAIRMAN SELIN: Fine. Commissioner  
20 Rogers?

21 MR. TAYLOR: And the vendors.

22 COMMISSIONER ROGERS: Well, it's not  
23 quite clear to me what your position is with respect  
24 to SECY-93-087. The Commission hasn't acted on that  
25 yet. Are you asking for more time to resolve issues,

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1 these issues before the Commission acts on that? Is  
2 that what you're asking here or are you not asking  
3 that?

4 MR. McDONALD: We are asking that these  
5 issues be resolved before you act upon them. We think  
6 that the questions, the dialogues we've had here today  
7 indicates the incompleteness of the document on  
8 presenting the case on those limited issues we've  
9 talked about. And you notice we gave those comments  
10 and we had no dialogue on those comments because we  
11 think they've done a good job. But here again when it  
12 becomes a matter of interpretation, that doesn't give  
13 us stability in regulation that we need to go forward.  
14 So, we need to make these as good as possible.

15 I must say -- add one thing here about  
16 the foreign involvement. We have a lot of foreign  
17 involvement and there's more than just the U.S.  
18 industry looking at this. They are looking at us for  
19 how we pin these things down and how thorough we are  
20 on these design things. We're trying to do a straight  
21 number 10 job on this and we've come a long way. I  
22 just congratulate the Commission and the staff on it.

23 COMMISSIONER ROGERS: On the other hand  
24 they're developing their own requirement, European  
25 utility requirements document, aren't they?

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1 MR. TAYLOR: They've started that  
2 process, Commissioner. We are talking with them about  
3 a process where we would get draft information,  
4 express our opinion on the requirements and so on.  
5 There's a general goal that the fundamentals of safety  
6 and reliability wherever possible be very similar. As  
7 we see it, they're building up from their deep  
8 participation with us in developing these  
9 requirements.

10 CHAIRMAN SELIN: Commissioner Remick?

11 COMMISSIONER REMICK: Just to make sure  
12 I understand, you say these issues. I read that to be  
13 at least the three that you disagree in part you've  
14 identified. The six issues that you identified as  
15 needing clarification, I'm not sure where the vendor  
16 question -- there are two that have vendor questions.  
17 Are you including those as ones that --

18 MR. McDONALD: Yes.

19 COMMISSIONER REMICK: -- you're  
20 requesting deferral also?

21 MR. McDONALD: Yes.

22 COMMISSIONER REMICK: So a total of  
23 eight. I am concerned what that does to schedules.

24 MR. McDONALD: Well, the questions we've  
25 asked are pretty straightforward and not wrapped up in

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1 the fundament problems in most cases. They are -- I  
2 think they're pretty straightforward and I'm not sure  
3 why a one day meeting and discussion of these things  
4 and resolving should -- could stretch out a schedule.

5 MR. TAYLOR: But we've had very wonderful  
6 progress at periodic meetings with Tom Murley and his  
7 senior staff as a means of final resolution after many  
8 hours and weeks and months of work by NRC staff and  
9 our own staff and I think that's what Pat's  
10 suggesting. We need one really intense session at  
11 that level. Think we can very much accomplish what--

12 COMMISSIONER REMICK: One other thing.

13 Let's see if I've characterized what you  
14 were saying earlier, Pat, and John you said recently.

15 As I understand your position, please  
16 tell me if I'm wrong, the utility requirements  
17 document has utility-specified requirements of vendors  
18 that go beyond NRC regulations. And from that, I  
19 infer that you're saying that those utility requested  
20 requirements of vendors therefore go beyond what the  
21 Commission considers is adequate protection of the  
22 public health and safety, that the designs which will  
23 meet those utility requirements will be codified in  
24 the design certification rule itself, will be  
25 codified.

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1                   In other words, the designs to meet those  
2                   utility requirements will be codified as a rule  
3                   through the design certification rulemaking process,  
4                   therefore those things that are utility requirements  
5                   and go beyond what our regulations currently require  
6                   need not be placed in the regulations in addition.

7                   MR. McDONALD: That's right.

8                   COMMISSIONER REMICK: They'll  
9                   automatically be codified, apparently, as an appendix  
10                  to Part 52. Is that the position you were trying to  
11                  express as to why you don't want additional  
12                  regulations?

13                  MR. McDONALD: Is that the way we'd  
14                  talked about it, do you think?

15                  MR. DeVINE: Yes, I think so.

16                  MR. McDONALD: I think it is.

17                  MR. TAYLOR: Very well said,  
18                  Commissioner.

19                  MR. McDONALD: I think it's well said.

20                  COMMISSIONER REMICK: Good. Okay.  
21                  That's not inconsistent from the standpoint -- in  
22                  other words, these things will be -- the design will  
23                  be codified in a rule which presumably will become an  
24                  appendix to Part 52?

25                  MR. MALSCH: That's not the industry

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1 position. Their position is they currently do not  
2 want those requirements anywhere reflected in the  
3 design certification other than in the fact of the  
4 certified design itself.

5 COMMISSIONER REMICK: No, that's what I'm  
6 saying. But am I correct that the actual design  
7 certification for each of these designs will become an  
8 appendix to Part 52?

9 MR. MALSCH: That's correct.

10 COMMISSIONER REMICK: Yes.

11 MR. MALSCH: But this would also mean  
12 that these additional requirements would not have the  
13 same enforceable status as other requirements in Part  
14 50.

15 COMMISSIONER REMICK: But the design  
16 itself would, the certified design?

17 MR. MALSCH: The certified design itself  
18 would.

19 COMMISSIONER REMICK: Would, yes.

20 MR. MALSCH: But when you come to such  
21 things as possibly renewing the certified design or  
22 backfitting the certified design because of new  
23 information, the initial position would have these  
24 additional requirements not be accorded the same  
25 enforceable status as existing requirements in Part 50

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1 and to that extent they would not be codified like  
2 other regulations.

3 COMMISSIONER de PLANQUE: Because they're  
4 above and beyond.

5 MR. MALSCH: Because they're above and  
6 beyond.

7 COMMISSIONER REMICK: Above and beyond.

8 MR. MALSCH: In that regard, some aspects  
9 of these designs also do not comply with existing  
10 regulations. They are being granted exemptions as  
11 part of the design certification process.

12 COMMISSIONER REMICK: That's right, yes.

13 MR. MALSCH: So, it goes both ways.

14 COMMISSIONER REMICK: Yes.

15 CHAIRMAN SELIN: And if one of the  
16 vendors met the utility document and a second vendor  
17 did not, it's only the first vendor's design in that  
18 case -- I mean, the feature of the first vendor's  
19 design that would be in the rule and not the second?

20 MR. MALSCH: That's right. The actual  
21 certifications go according to the vendor  
22 applications.

23 CHAIRMAN SELIN: But another way, if the  
24 vendors chose not to meet the specifications in the  
25 utility document, we couldn't hold them to that if

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1 they want --

2 MR. MALSCH: That's correct.

3 CHAIRMAN SELIN: Commissioner Remick?

4 COMMISSIONER REMICK: Just one other  
5 thing. I have not seen the ABB/Combustion letter.  
6 I'd ask SECY if he'd see that we get the letter.

7 That's all I have.

8 CHAIRMAN SELIN: Commissioner de Planque?

9 COMMISSIONER de PLANQUE: I have nothing  
10 further. This has just been extremely helpful, so I  
11 would thank you for the briefing.

12 CHAIRMAN SELIN: I would like to make a  
13 couple comments.

14 I've asked some fairly sharp questions.  
15 It does not imply, as your comments do not imply, a  
16 lack of pleasure or agreement or satisfaction with the  
17 way most of this process has gone. I personally would  
18 be disinclined, unless the staff upon having heard  
19 what you said, to take more time.

20 I basically think we've got the  
21 information and, unless the staff said, you know, they  
22 brought up a couple of ideas we hadn't thought of and  
23 we would like to take the time, my inclination would  
24 be to vote and to take a look and say, "Well, 97  
25 percent or three out of -- 94 percent they agree. Do

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1 I agree?" and the other couple of places to see  
2 between the two, unless the staff came forward and  
3 said, "You know, we heard a few things today we hadn't  
4 heard before and we would like to take the time."  
5 Partly that's a process question.

6 I don't like the idea of the industry  
7 being able to come in and in effect intersperse itself  
8 between the staff document and the Commission. Part  
9 of it is the point you've made that in some of these  
10 cases, particularly in ambiguity questions, the loop  
11 just hasn't been closed or one or two of these issues  
12 had come up after the last time you talked. But, as  
13 you've pointed out, many of these are old issues and  
14 you really haven't given us much reason to believe  
15 that our forcing the staff to sit down with you and  
16 say "Try once more" is going to --

17 MR. McDONALD: I would withdraw the  
18 request to force the staff to sit down and withdraw.  
19 We sit down frequently. However we can get redress on  
20 these issues --

21 MR. TAYLOR: Chairman, there is one  
22 difference. We have in many of the other cases, in  
23 fact all the others to my knowledge, had before a  
24 final position was taken by the staff had a management  
25 meeting to get through the final step. In many cases

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1 we yielded to the staff position. We did not have  
2 that opportunity on the issues that we've addressed to  
3 you today. We have not had that opportunity.

4 COMMISSIONER de PLANQUE: Just to clarify  
5 in my own mind on the issues where it was a matter of  
6 clarity, had you not seen the wording that's in the  
7 087 document before it was issued where it's just a  
8 wording subtlety that can be interpreted one way or  
9 the other in the six items that you mentioned?

10 MR. TAYLOR: I didn't. I don't know that  
11 anybody saw that material in advance.

12 MR. SANTUCCI: This is what I understand  
13 the problem was.

14 COMMISSIONER de PLANQUE: Okay. So you  
15 hadn't seen the wording that we're looking at now in  
16 93-087. Okay.

17 CHAIRMAN SELIN: In any event, we thank  
18 you very much for the presentation. As Commissioner  
19 Remick's questions point out in a couple of places,  
20 our understanding of your views or even our  
21 understanding of the staff views is slightly different  
22 from what it was coming in. I hope that was worth  
23 your while coming out from wherever you individually  
24 habitate.

25 Thank you very much.

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1 (Whereupon, at 12:31 p.m., the above-  
2 entitled matter was adjourned.)  
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PERTAINING TO EVOLUTIONARY AND ADVANCED LIGHT-WATER REACTOR (ALWR) DESIGN  
PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: JUNE 10, 1993

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**ALWR UTILITY STEERING COMMITTEE**  
**and**  
**NRC COMMISSION MEETING**

**10 June, 1993**

**NRC Headquarters**  
**White Flint, Maryland**



Utility/ALWR

**ALWR UTILITY STEERING COMMITTEE**

**and**

**NRC COMMISSION MEETING**

**10 June 1993**

**NRC Headquarters  
White Flint, Maryland**

Advanced LWR Program

NRC 6/10/93 -1

Utility/ALWR

**R. Patrick McDonald**

**Vice-Chairman  
ALWR Utility Steering Committee**

Advanced LWR Program

NRC 6/10/93 -2

## **ALWR Program Presentation on SECY-93-087 Issues Presentation Outline**

<b>Pat McDonald, USC</b>	<b>Introduction and Overview</b>
<b>Joe Santucci, EPRI</b>	<b>ALWR Program review of SECY</b>
<b>Jack DeVine, EPRI</b>	<b>Discussion of Open Issues</b>
<b>John Taylor, EPRI</b>	<b>Schedule Issues</b>
<b>Pat McDonald, USC</b>	<b>Conclusions</b>

## **Introduction**

- **Objectives of ALWR Program are being reached:**
  - **Stable regulatory basis for ALWRs that provides high assurance of safety and licensability**
  - **Utility-driven design requirements for standardized plants which are reflected in certified designs**
  - **Technical requirements suitable for use as investor bid package that provide basis for strong investor confidence**
- **Progress since last Commission briefing in Sept 1992 has been good, particularly with recent agreements on RTNSS issue.**

## **Basis for Discussion**

- **Utility and NRC objectives and interests in better, safer plants are aligned.**
- **Long agreed upon process: Utilities set design requirements in URD, NRC reviews, approves and endorses via SER. On that basis, Design Certification proceeds with high confidence of codifying requirements that future owner/operators want.**
- **No new regulatory requirements needed. URD requires plants to exceed current regulations and safety goals by wide margin. Many SECY-93-087 policies would treat these margins as regulatory requirements.**

## **Overview on SECY 93-087**

- **Conclusive progress on all Policy issues. Mutually acceptable closure on most.**
- **SECY-93-087 is an excellent summary of both completed issues and a few issues where important work still remains.**
- **Recent action to finish the difficult issues of Regulatory Treatment on Non-Safety Systems and Source Term have been very encouraging and portend more success.**
- **Positions described today are in fact very close to staff recommendations on most issues.**
- **Closure and implementation details are important to achieving design certification in a timely fashion.**

## **Joe Santucci**

**Manager,  
Advanced Reactors Development**

Advanced LWR Program

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### **Policy History - ALWR Involvement**

- **ALWR Program identified "Optimization Issues" very early in the program.**
- **The staff prepared SECY-90-016 list of "Policy Issues" in early 1990 and received Commission guidance in June of that year. Industry commented.**
- **A separate list of "Passive Plant Central Issues" was submitted by the ALWR Program in March 1991.**
- **Additional "issues" continued to be identified by the NRC staff and were released as "draft" positions in February and June of 1992. The ALWR Program commented in May, August and December of 1992.**
- **Some issues were discussed with staff management in January of 1993 in Palo Alto. Additional comments were provided to the staff in February and March during discussions of technical issues.**

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## **Policy History - ALWR Involvement (cont.)**

- **SECY-93-087 issued with no explicit request for comment.**
- **ALWR Program reviewed SECY and decided to comment; USC concurred. NUMARC and three ALWR designers also decided to comment.**
- **Initial ALWR Program comments were sent to NRC staff on May 11. Final comment letter sent to Commission on June 7. Final comments are USC-endorsed and are essentially as stated in initial letter, and are fully consistent with designers' letters.**
- **This briefing was requested because the USC wanted to communicate that, great progress notwithstanding, there remain a few issues closed by the staff which we believe warrant further consideration.**

**Jack DeVine**

**Program Manager  
ALWR Program**

## **Issue Discussion Outline**

- **Three issues for which we disagree in part:**
  - **Seismic Considerations Beyond Design**
  - **Design Reliability Assurance Program**
  - **High Pressure Gas Samples in Post Accident Sampling System**
- **Six issues for which some additional comment or clarification is needed**
- **Two additional issues noted in designer letters**
  - **Emergency Planning**
  - **Core Debris Coolability**
- **Twenty nine issues – no disagreement**

## **Seismic Considerations Beyond Design** (part of issue II.N)

- **Concern is the instability of the decision and potential for unneeded COL expense.**
- **Difference between 0.5g and 0.6g is significant because it goes into an area of much less data.**
- **Elimination of current (IPEEE) methodology in favor of a new process causes unnecessary uncertainty.**

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### **Design Reliability Assurance Program** (part of issue II.M)

- **SECY-93-087 considered this a "future" issue.**
- **Do not consider it appropriate to put RAP in Design Certification Rulemaking (Tier I).**
- **Believe DRAP can be dealt with now through review of the Utility Requirements Document.**

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### **High Pressure Gas Samples in Post Accident Sampling System** (part of issue II.I)

- **ALWR Program and all designers disagree with the need for this sample.**
- **Both capital and O&M costs are significant.**
- **This area is also being considered for reduction/elimination because of its marginal safety significance for current plants.**

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## Comment or Clarify

- Any problems here can be worked out between NRC and industry and documented in clarifying correspondence.
- I.F. Intersystem LOCA - Allow change in valve requirements for higher pressure designs. Do not need special treatment for isolation of systems not connected to the primary coolant.
- I.G. Hydrogen Control - Clarify that Passive Autocatalytic Recombiners are acceptable once demonstrated.
- I.N. In-Service Testing of Pumps and Valves - Concern remains over "practical" and criteria for "practicality".

## Comment or Clarify (continued)

- II.H. Containment Leak Rate Testing - Does the NRC position cover, by implication, more than just Type C testing?
- II.Q. Defense Against Common-Mode Failure in Digital I & C - "Position #4" is being interpreted two ways by designers. One way involves the addition of additional equipment.
- II.R. Steam Generator Tube Rupture - Analysis of multiple tube rupture should be "best-estimate", not "design-basis".



## Additional Comments from Designers

- The Design Certification applicants agree with ALWR Program comments above, and in addition identify the following:

**I.H. Core Debris Coolability** - Specify use of Service Level C or, preferably, specific clarification on "shell buckling" (See Westinghouse letter).

**III.G Emergency Planning** - The ALWR Program and the design teams believe Evolutionary plants as well as Passive designs should have the opportunity to demonstrate and utilize the emergency planning criteria (See ABB-CE letter).

## No Disagreement (including "future" issues)

- |                                   |  |  |
|-----------------------------------|--|--|
| I.A. Physically-Based Source Term | II.A. Industry Codes & Standards                 |  |
| I.B. ATWS                         | II.B. Electrical Distribution                    |  |
| I.C. Mid-Loop Operation           | II.C. Seismic Hazard Curves                      |  |
| I.D. Station Blackout             | II.E. BWR Main Steamline                         |  |
| I.E. Fire Protection              | II.F. Tornado Design                             |  |
| I.I. High Pressure Core Melt      | II.G. Containment Bypass                         |  |
| I.J. Containment Performance      | II.J. Level of Detail                            |  |
| I.K. Dedicated Contain. Vent      | II.K. Prototyping                                |  |
| I.L. Equipment Survivability      | II.L. ITAAC                                      |  |
| I.M. Elimination of OBE           | II.O. SAMDAs                                     |  |
|                                   | II.S. PRA Beyond Design Certification            |  |
|                                   | II.T. Control Room Annunciator Reliability       |  |
|                                   | III.A. Regulatory Treatment of Nonsafety Systems |  |
|                                   | III.B. Definition of Passive Failure             |  |
|                                   | III.C. SBWR Stability                            |  |
|                                   | III.D. Safe Shutdown Requirements                |  |
|                                   | III.E. Control Room Habitability                 |  |
|                                   | III.F. Radionuclide Attenuation                  |  |
|                                   | III.H. Role of the Passive Plant Operator        |  |

## **John Taylor**

**Vice President, Nuclear  
EPRI**

Advanced LWR Program

NRC 6/10/93 -19

### **Resolution of Issues** **"Disagree in Part" and "Additional Clarification"**

- **These are not new issues. Industry positions are clear and well-known to the staff.**
- **These issues have potentially major cost or operational implications to utilities, and should be resolved generically.**
- **For these issues, we should expeditiously complete technical discussions with the NRC staff. These need not cause schedule delay; on the contrary, resolution of these issues now is likely to have long range cost and schedule benefits for Design Certification applicants.**

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## **R. Patrick McDonald**

**Vice-Chairman  
ALWR Utility Steering Committee**

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## **Bottom Line**

- **Need well-based, well-understood policies and technical resolutions.**
- **For the most part, the NRC staff and industry have achieved this.**
- **Commission requested to ask staff to work with us to promptly resolve these issues.**

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