

UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

Title: BRIEFING OF SEVERE ACCIDENT POLICY FOR FUTURE
LIGHT WATER REACTORS

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1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION

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4 BRIEFING OF SEVERE ACCIDENT
5 POLICY FOR FUTURE LIGHT WATER REACTORS

6 ***

7 PUBLIC MEETING

8 ***

9 Nuclear Regulatory Commission
10 One White Flint North
11 Rockville, Maryland

12
13 MONDAY, SEPTEMBER 12, 1988
14

15 The Commission met in open session, pursuant to
16 notice, at 2:00 p.m., the Honorable LANDO W. ZECH, Chairman of
17 the Commission, presiding.

18 COMMISSIONERS PRESENT:

19 LANDO W. ZECH, Chairman of the Commission
20 THOMAS M. ROBERTS, Member of the Commission
21 KENNETH ROGERS, Member of the Commission
22
23
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1 STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

2

3 S. Chilk

4 W. Parler

5 V. Stello

6 E. Beckjord

7 T. King

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9 AUDIENCE SPEAKERS:

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11 L. Rubenstein

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1 CHAIRMAN ZECH: Good afternoon, ladies and gentlemen.
2 Mr. Carr will not be present with us this afternoon. The
3 Commission issued its severe accident policy statement August
4 of 1985 and this policy statement provided the general guidance
5 for resolving severe accident issues for future and existing
6 nuclear power plants.

7 Today the Commission will be briefed by the Office of
8 Research on options for the implementation of the severe
9 accident policy for future light water reactors. It's my
10 understanding that the proposed options being discussed today
11 would cover standardized designs currently under review and
12 also cover the 600 megawatt design currently included in the
13 Electric Power Research Institute, EPRI, advanced light water
14 reactor program.

15 The Commission recently issued a proposed rule on
16 design certification and I would be interested in hearing this
17 afternoon how the proposed options consider this proposed rule
18 and how this activity relates to other severe accident
19 programs. Additionally, the Commission would be interested in
20 hearing if these proposed requirements are consistent with any
21 industry activities in this area such as the EPRI advanced
22 light water reactor requirements document.

23 I understand there are copies of the viewgraphs at
24 the entrance to the meeting room. Do any of my fellow
25 Commissioners have opening comments before we begin?

1 [No response.]

2 CHAIRMAN ZECH: If not, Mr. Stello, you may proceed.

3 MR. STELLO: Thank you, Mr. Chairman. There's one
4 point that I think is very important to make at the outset and
5 that's the issue of how to treat severe accident issues for all
6 kinds of advanced reactors. As you are aware, some weeks ago
7 we briefed the Commission on the advanced reactor DOE design
8 and attempting to write rules that would deal with severe
9 accident issues for those reactors would be significantly
10 different than the kinds of rules we would see, would be proper
11 to put in place for the types of reactors that you mentioned in
12 your opening statement.

13 We are not suggesting, nor would we even want to try
14 to limit the application of these rules in such a way where we
15 are trying to cover more than we can. We're taking on a
16 limited set of the reactors as we see in the future and trying
17 to develop some guidance for the industry for that purpose and
18 for that purpose only. I recognize that as other reactor
19 designs are proposed in the future pursuant to the Commission's
20 advanced reactor policy statement, that different rules would
21 be necessary or may be necessary, we can't even say for sure
22 that they would be, but clearly those in the DOE design would
23 be different.

24 So what we are trying to focus our attention on this
25 afternoon is for those particular plants which we are already

1 aware of for which there would be a need for guidance and it is
2 those that we will be addressing this afternoon, and not the
3 broader question. With that brief introduction and point, let
4 me turn to Mr. Beckjord who has some points. We'll get right
5 on with the briefing with Mr. King in a moment.

6 MR. BECKJORD: Mr. Chairman, the proposed
7 implementation of the severe accident policy for future light
8 water reactors addresses a number of considerations that have
9 arisen since the TMI-2 accident. But the end product of this
10 is simple and straightforward and consists of three elements
11 that are the end product of our recommendation.

12 First, a rule that implements the severe accident
13 policy statement and requires a probabilistic risk assessment
14 for each plant that is proposed. Second, a regulatory guide
15 that defines in detail what the purpose, the scope, and the
16 content of the required PRA is. And third, a second regulatory
17 guide that defines the requirements for adequate technical
18 resolution of the TMI and the generic safety issues that have
19 arisen. With that, Mr. King.

20 CHAIRMAN ZECH: Thank you very much. You may
21 proceed.

22 [Slide.]

23 MR. KING: On Page 1 of the handout is the outline
24 I'm going to follow today to briefly talk about the purpose of
25 the presentation today, some background information on the

1 issue we're going to discuss. The benefits of putting forth
2 guidance for future light water reactors in the severe accident
3 area. The options considered for this guidance. Conclusions
4 regarding the options. The scope of the proposed guidance that
5 we recommend. What I call some additional benefits of such
6 guidance and finally the schedule that we propose to follow.

7 [Slide.]

8 MR. KING: On Page 2, briefly the purpose of the
9 presentation. It's to brief the Commission on the staff's
10 proposal as presented in SECY 88-248, for implementation of the
11 severe accident policy statement for light water reactors.
12 This also corresponds to Item 10-A in SECY 88-147, which is the
13 integration plan for closure of severe accident issues. And in
14 the longer term, there's also a followup to an older SECY
15 paper, SECY 86-76, back in February of '86, which was the first
16 paper that dealt with the implementation plan for the severe
17 accident policy statement.

18 [Slide.]

19 MR. KING: On Page 4, by way of background. The
20 current regulations do not require plants to submit a PRA,
21 probabilistic risk assessment, or assessed for severe
22 accidents, except for a few specific areas where the rules do
23 address some severe accidents such as the ATWS and the station
24 blackout area.

25 [Slide.]

1 MR. KING: As a result, the Commission issued the
2 severe accident policy statement in August of '85, which
3 provided general guidance for resolving severe accident issues
4 for future and existing reactors. As a result of this policy
5 statement for existing reactors, the staff is developing
6 guidance for an individual plant examination process to address
7 severe accident issues. Future reactors, the policy statement
8 directed that one technical resolution of the TMI items,
9 unresolved safety issues, medium and high priority generic
10 safety issues be demonstrated with special emphasis on the
11 reliability of decay heat removal in electrical power systems.

12 [Slide.]

13 MR. KING: It went on to state that a probabilistic
14 risk assessment should be completed on future plants, including
15 consideration of severe accident vulnerabilities and directed
16 that the staff issue guidance on the form purpose and role that
17 PRA's are to play in severe accident analysis and decision
18 making for both existing and future plant designs. That would
19 include the minimum criteria of adequacy that the PRA's should
20 meet.

21 [Slide.]

22 MR. KING: The policy statement also stated the
23 Commission's expectation that new standard or custom plants
24 will achieve a higher standard of severe accident safety
25 performance than the prior designs.

1 [Slide.]

2 MR. KING: Therefore, the question that the staff has
3 addressed in our SECY paper and in today's presentation is what
4 form and content should such additional guidance take and how
5 should the expectation of a higher standard of severe accident
6 safety performance be ensured. Later in the presentation, I
7 will summarize the options considered in the staff's
8 recommendation, and also the staff's recommendation itself.

9 [Slide.]

10 MR. KING: On Page 8, we talk about related industry
11 efforts. It's important to mention that industry has been
12 actively involved in the severe accident area and has been
13 attempting to address severe accident concerns for future LWR's
14 for several years and is in the process of recommending
15 solutions to certain severe accident issues.

16 Two main areas in this regard are, one, the Electric
17 Power Research Institute's advanced light water reactor
18 program, which is recommending design solutions to certain
19 severe accident concerns through the ALWR requirements
20 document. And the Department of Energy industry cooperative
21 effort, called the advanced reactor severe accident program,
22 ARSAP, which is in direct support of the combustion engineering
23 system plus standard plant application which is currently
24 before the staff for review.

25 In addition the other standard plants applications,

1 the advanced boiling water reactor and the Westinghouse SP/90
2 are also proposing solutions to selected severe accident
3 concerns as part of the review of their designs.

4 With these activities in mind, we held a workshop in
5 June of this year to explore with the industry and the public
6 the need for additional guidance in the severe accident area.
7 As a result of this workshop, there was a strong consensus that
8 guidance from NRC is desirable. However, there were varying
9 opinions as to the form and content this guidance should take.

10 [Slide.]

11 MR. KING: On Page 9, I'd like to summarize,
12 beginning on Page 9, the benefits of such guidance and what I
13 believe are the reasons there was such a consensus both among
14 the staff and the industry as to the need for such guidance.
15 These could also be thought of as objectives of any guidance
16 that we would put forth.

17 First, such guidance, we believe, would clarify
18 Commission requirements and expectations for the treatment of
19 severe accidents on future LWR's, which would be valuable to
20 both the industry and the NRC staff reviewers. We believe such
21 clarification would promote stability in the design, licensing,
22 and operation of new plants by making licensing requirements
23 predictable.

24 [Slide.]

25 MR. KING: Continuing on Page 10, we believe the

1 guidance would codify current staff treatment of severe
2 accidents in the ongoing standard plant reviews and putting
3 forth such guidance will help avoid having to litigate severe
4 accident requirements at each licensing hearing, whether it's a
5 design certification hearing or a custom plant hearing. We
6 believe that will facilitate the hearings and in the long run
7 would save staff resources.

8 [Slide.]

9 MR. KING: Finally, we believe the guidance will help
10 ensure that enhanced safety is achieved through elimination of
11 significant severe accident vulnerabilities including those
12 vulnerabilities that have been discovered through our past
13 experience, through the probabilistic risk assessments that have
14 already been completed, and through the research programs that
15 have been going on for several years.

16 [Slide.]

17 MR. KING: Beginning on Page 12, the options that we
18 considered for putting forth such guidance. Basically, we
19 considered four options. Generally, these options had
20 increasing specificity in the rule when going from options one
21 through four. The first option we considered was to utilize
22 what's already available in the proposed 10CFR Part 52, the
23 proposed rulemaking on early site permits design certification
24 and combined licenses.

25 If you recall, Part 52 has some general words in it.

1 I will just quote them since they're very short. It requires
2 applications to include a design-specific probabilistic risk
3 assessment, together with a consideration of any severe
4 accident vulnerabilities that the PRA exposes and a realistic
5 assessment of the degree to which the design conforms to the
6 Commission's safety goals for plant operations.

7 Our option one would utilize those words and develop
8 some reg guides to describe, provide additional guidance on the
9 content of the PRA and the severe accident assessments and
10 acceptance criteria that would be required to meet those, that
11 general words in Part 52.

12 [Slide.]

13 MR. KING: The second option is on Page 13. That
14 would be a general rule or rules. It would require a PRA and a
15 severe accident assessment. It would be directed toward
16 identifying and correcting significant vulnerabilities
17 resulting from the severe accident assessment. It would cover
18 both severe accident prevention and mitigation. The words in
19 the rule would be more specific regarding the intent of the
20 severe accident assessment than the words that are currently in
21 the proposed Part 52.

22 Again, there would be reg guides to provide
23 additional guidance on an acceptable way to meet that rule.
24 One item in option two which I should emphasize is that the
25 primary acceptance criteria in option two would be a cost

1 benefit, on a cost benefit basis. We're looking at
2 vulnerabilities and determining whether something needs to be
3 done about them.

4 [Slide.]

5 MR. KING: Page 14 is options 3 and 4. Option 3 is
6 basically the same as option 2 in terms of the Rule, except the
7 Reg Guides would -- acceptance criterion in the Reg Guides
8 would not be based solely on cost benefit analysis. They would
9 require future designs to resolve any significant severe
10 accident concerns identified to date through our previous
11 experience, PRA assessments and R&D programs. They would also
12 require an assessment for vulnerabilities unique to the design
13 through the PRA.

14 Option 4 is what we call the prescriptive rule. The
15 rule itself would have more detail in it concerning the severe
16 accident assessment and the acceptance criteria than any of the
17 other three options. That's the primary difference between
18 Option 4 and the other options. These four options are really
19 four basic concepts for putting forth guidance.

20 The exact nature of what would go into the Rule and
21 the Reg Guides in either of these options, would certainly have
22 to be decided when the technical work is completed. We're not
23 prepared today to propose exact Rules or Reg Guides. You might
24 ask, why isn't there an Option 5, which would be, do nothing
25 now -- address severe accidents on a case-by-case basis in the

1 individual licensing actions. We believe that the
2 direction in the severe accident policy statement and the
3 benefits of putting forth such guidance at this time --
4 additional guidance beyond the policy statement have such
5 advantages that we did really not consider -- seriously
6 consider an option that says do nothing else beyond the policy
7 statement at this point.

8 [Slide.]

9 MR. KING: On page 15, conclusions regarding the
10 options; Options 2 and 4 are not believed to be attractive inc
11 comparison to 1 and 3, for the basic reasons that option 2 has
12 heavy reliance on cost benefit analysis. Guidance for
13 application of cost benefit analysis to future reactors, needs
14 development and we're afraid that even if it developed, there
15 is a potential for -- using cost benefit in the acceptance
16 criteria, relying heavily on it; there's a large potential for
17 diverting attention to pencil-sharpening numbers and not really
18 solving the problem.

19 Option 4, the prescriptive rule -- we're concerned
20 that it limits flexibility. We believe that putting details in
21 the Reg Guide allows more flexibility to update the guidance to
22 account for new information. It's in the framework and intent
23 of the rule. Option 4 would take a step in the wrong direction
24 in allowing this flexibility. Therefore, we do not consider it
25 one of the favorable options.

1 [Slide.]

2 MR. KING: Option 1, which is reliance on the words n
3 the proposed 10 CFR 52, is workable, however, we feel it has
4 some disadvantages.

5 [Slide.]

6 MR. KING: The Rule itself, the words in the Rule
7 itself, lack focus on the importance of severe accidents in
8 future reactor designs, and lacks focus on the intent of what
9 we're trying to achieve with this proposed rule.

10 The words emphasize the procedure aspects and not the
11 performance requirements. Right now, the way 10 CFR 52 is
12 worded, those words would only be applicable to designs which
13 utilize 10 CFR 52 in the licensing process. Custom plants, or
14 plants not utilizing the one-step licensing options, would not
15 be covered.

16 [Slide.]

17 MR. KING: Page 18, Option 3 -- we believe that
18 Option 3 provides all the benefits that I mentioned earlier in
19 the presentation and appears to be stronger than the other
20 options, in that the Rule more specifically addresses the
21 severe accident concerns by documenting the purposes and intent
22 of the severe accident assessments in the rule, yet maintaining
23 flexibility by putting the details of the assessment in the
24 acceptance criteria and Reg Guides.

25 It is applicable to all standard and custom LWR

1 applications.

2 [Slide.]

3 MR. KING: Therefore, our recommendation is to pursue
4 Option 3.

5 [Slide.]

6 MR. KING: On page 20, to summarize the scope of th
7 guidance that we have in mind under Option 3, as Mr. Stello
8 mentioned, the proposed Rules and Regulatory Guides would be
9 limited to LWR designs not significantly different than current
10 generation LWRs, such as the three large standard plant
11 concepts that are currently under review, as well as the 600
12 megawatt electric smaller plants currently included in EPRI's
13 ALWR program.

14 We believe that for designs such as these, the severe
15 accident issues are sufficiently known to allow us to develop
16 detailed guidance at this time.

17 [Slide.]

18 MR. KING: Guidance for LWR designs is significantly
19 different than current generation LWR designs, would be
20 developed later under our proposal -- only after consideration
21 of the unique attributes of those designs, so as not to inhibit
22 innovation of designs that are much different than what we know
23 of today.

24 The guidance to be developed by the staff will
25 consist of a general Rule or Rules an supporting Regulatory

1 Guides which will do the following.

2 [Slide.]

3 MR. KING: Beginning on page 22, what we envision
4 will be an update of the existing 10 CFR 50.34(f) to make it
5 applicable to future LWRs, and would include a requirement for
6 future LWR designs to do and submit a PRA, as well as to
7 demonstrate technical resolution of unresolved safety issues,
8 high and medium priority generic safety issues and the TMI
9 action items.

10 This assessment and update of 10 CFR 50.34(f) would
11 also include an integrated look at other parts of 10 CFR 50 to
12 ensure consistence and appropriate applicability of future
13 LWRs. The guidance would require severe accident
14 vulnerabilities be assessed on future plants, including
15 specifically addressing those severe accidents events and
16 phenomena judged from previous experience to be of significant
17 risk.

18 [Slide.]

19 MR. KING: It would also provide guidance on
20 acceptance criteria, however, we do not envision that this
21 acceptance criteria will not prescribe design solutions.

22 [Slide.]

23 MR. KING: It will involve an assessment of severe
24 internal and external events, and will build upon and utilize
25 products of other ongoing and related programs as much as much

1 as possible. For example, what's going on today in the
2 individual plant examinations, as well as the information we're
3 receiving through the EPRI and the ARSAP programs.

4 [Slide.]

5 MR. KING: On page 25, it's important to note that we
6 do not view this effort as changing the definition of the
7 adequate level of safety for reactors. This is not an attempt
8 to change the current definition of the design of basis of
9 reactors. Rather, it is viewed as ensuring safety enhancement
10 through increased margin for severe accidents, which we believe
11 was consistent with the Commission's severe accident policy
12 statement to expect future designs to achieve a higher standard
13 of severe accident safety performance.

14 On this particular point, any views the Commission
15 has, we would certainly be interested in hearing.

16 [Slide.]

17 MR. KING: On page 26, we had attached to the
18 Commission paper, to the SECY paper, some draft Rules and Reg
19 Guides. I wanted to point out that these are really examples
20 to illustrate the scope and depth of the kind of guidance we're
21 talking about for these Rules and Reg Guides. They're not
22 intended to represent any final wording at this point. We
23 still have a lot of work to do in this regard, and we come back
24 with final wording, as you can see when we get to the schedule.

25 I mentioned earlier some additional benefits in

1 addition to doing PRA and assessing for severe accident
2 vulnerabilities, we believe that requiring future plants to do
3 a PRA and do the severe accident assessment, may help identify
4 and preserve other assumptions that are related to safe
5 operation.

6 [Slide.]

7 MR. KING: Page 28 lists some examples of these. For
8 example, in doing a PRA, various assumptions are made regarding
9 operators taking action regarding equipment qualification and
10 so forth. What our assessment, what our requirements would
11 involve, would be, the designer would have to keep track of
12 these items, these assumptions and document these to assure
13 that they find their way into the final plant design and into
14 the final operation and maintenance at the plant.

15 [Slide.]

16 MR. KING: Page 29, regarding schedule -- schedule
17 for developing guidance is presently driven by the schedule for
18 review of the three evolutionary standard reactor designs now
19 under way. The Westinghouse SP/90, GE's ABWR and the CE System
20 80+.

21 We want to have these Rules and Reg Guides in place
22 to support the first design certification hearing which is now
23 scheduled for approximately mid-1990.

24 To facilitate the standard plant reviews, and to
25 avoid last minute impacts on these reviews, we plan to work

1 closely with NRR on the development of these Rules and Reg
2 Guides, as well as provide several opportunities for public
3 and industry involvement in the process via workshops.

4 These would be in addition to the formal public
5 comment process that such Rules and Reg Guides would go
6 through.

7 [Slide.]

8 MR. KING: On the last page, we have developed a
9 schedule, so as to have the Rule making and Reg Guides
10 completed, prior to the start of the design certification, as
11 well as providing for two workshops. Basically, for the
12 proposed Rule, we would hope to have proposed Rule for your
13 review in May of 1989, and the final Rule in March of 1990.

14 In summary, what would be provided on these
15 schedules, would be a proposed Rule change and two Regulatory
16 Guides, as we view this activity right now. That completes my
17 presentation.

18 CHAIRMAN ZECH: Thank you very much. Questions? Mr.
19 Roberts?

20 COMMISSIONER ROBERTS: No questions.

21 CHAIRMAN ZECH: Mr. Rogers?

22 COMMISSIONER ROGERS: Well, yes. I have a couple of
23 questions about some things I'm not too comfortable about.

24 With respect to the use of the word, "prescriptive
25 rule," it seems to me we're using it in a little different

1 sense than the way we have been using it recently in talking
2 about, for example, a maintenance rule.

3 In that instance, prescriptive means relating to
4 detailed procedures that the licensees have to follow. Here,
5 it seems to me, we talk about flexibility in connection with
6 the prescriptive rule, but the flexibility, if I understand
7 what I've heard and seen in the documentation so far, is for
8 ourselves -- not necessarily flexibility for the licensee or
9 the designer.

10 In fact, I'm concerned that the approach that we seem
11 to be taking here, if I understand it correctly, could in fact,
12 give some significant problems to designers, if there is --
13 if that flexibility relates to a evolution of requirements or
14 not requirements, but essentially requirements in Regulatory
15 Guides that evolve during the time that the designs are going
16 on.

17 So, I am uncomfortable with what I normally am
18 comfortable with -- namely, a less prescriptive approach,
19 because it seems to me that we are ducking the job that has to
20 be done, which is to set the performance objectives that the
21 designs must meet, and allow the flexibility to the designers
22 as to how they are going to meet them.

23 So, it seems to me in looking over the materials,
24 that we may not know what those performance objectives are.
25 We're leaving ourselves the flexibility to find out what we

1 think they should be, and then to put them out in the form of a
2 Regulatory Guide.

3 My concern is if this is in fact what we are
4 proposing to do here, that we seem to be perpetuating the
5 problem which has existed for a long time, namely, that we are
6 changing the standards which we expect licensees to meet, or
7 those people who are designing plants for licenses.

8 So I am uncomfortable by what we mean by flexibility
9 here because it seems to me that the flexibility relates to a
10 lack of our readiness to be prescriptive in terms of specific
11 objectives that have to be met. So I would like you to comment
12 on that because I think that is a very fundamental question as
13 to where we stand here.

14 One big question mark in front of me is are we ready
15 to do what we are saying that we want to do now? Are we really
16 ready to proceed? I would like to know to what extent options
17 three and four, for example, have been discussed with the
18 industry and DOE people who have been concerned with the ARSAP
19 program.

20 I know you have had talks with industry, you have had
21 a workshop, but the question is what did you talk to them
22 about? They asked for guidance and definition, and have you
23 gotten any response back on now the form that that guidance and
24 definition is beginning to take insofar as it relates to the
25 options that have been developed here for consideration, or did

1 the discussions with the industry people precede that
2 formulation in your own minds as to what the options might be?

3 I would like to hear that. I have the impression
4 that perhaps these options had not by themselves been
5 discussed. I think that the industry has asked for guidance and
6 specificity so they know what the ground rules are that they
7 have to operate under in terms of designing something, and I am
8 uncomfortable if we are not ready to do that but we want to
9 start to go down the road of a process which would define those
10 things through regulatory guides rather than through really
11 putting out the rule with the objectives that have to be met.

12 I am not for our trying to dictate how a plant should
13 be designed, but I am very much in favor of our coming to a
14 clear definition of what we expect designers to meet and not to
15 let that float out to be defined later on through a collection
16 of changing regulatory guides.

17 So I would like to hear your comments on that. I
18 would also like to have a question for the general counsel, and
19 that would be: What would be the status of a regulatory guide
20 that is referenced in a rule? Regulatory guides we can change.
21 There is some process. I'm not sure I understand or know what
22 it is, but I understand that we can do it and that it is easier
23 to do than to change a rule. If we reference a regulatory guide
24 in a rule, does that make it as difficult to change that
25 regulatory guide as it would be to change the rule, so that

1 referencing a regulatory guide in a rule might not give you the
2 flexibility that you are looking for to change the reg guide?

3 I would like to hear something from general counsel
4 on that question, either now or some other time.

5 MR. PARLER: I would be glad to respond now. We do
6 have somewhat of a parallel to the question that you put
7 already in the sections in Part 50, where the Part 50 sections
8 refer to various code requirements. As those Code
9 requirements change from time to time, the regulation has to be
10 changed, so if something is referenced in a regulation, in
11 order to change it and update it you would have to change the
12 regulation.

13 If I may, sir, a different question that is, at least
14 in my judgment from the legal standpoint, a more serious
15 question is whether the reference in a regulation to a
16 regulator guide legally changes the regulatory significance of
17 the guide. Under our approach to licensing and regulation,
18 regulatory guides generally are simply that. They are one
19 approach to follow in order to satisfy the staff's
20 requirements.

21 If an applicant or a licensee wants to follow some
22 other approach, it is free to do so. In other words, they are
23 suggestions. Guides are suggestions. Now, it is not clear to
24 me that one can simply by referencing a regulatory guide in a
25 regulation have the regulatory or the rule advantages of a

1 guide that would not otherwise be present. You can probably
2 tell from my response that there would certainly be
3 considerable uncertainty unless the statement of considerations
4 makes it quite clear what we were trying to accomplish.

5 I will reflect on it further, and if I have any other
6 thoughts on the subject, I will advise you and your colleagues,
7 sir.

8 COMMISSIONER ROGERS: If I could get your responses
9 on some of those questions. I have got some others, and I
10 don't want to just add them to the list.

11 MR. KING: I will try and address the ones you asked.

12 COMMISSIONER ROGERS: Yes.

13 MR. PARLER: Discussion with the industry of the
14 options. At the June 1988 workshop, we did discuss these four
15 options with the industry.

16 COMMISSIONER ROGERS: You did.

17 MR. KING: There was no consensus in favor of any one
18 option. There was a consensus against Option 4. We had other
19 parties, varying views on the first three options, some in
20 favor, some against. So we took that information and we heard
21 some suggestions as to how these rules and reg guides should be
22 structured, and we factored that in into our recommendation for
23 Option 3.

24 Your problem with Option 3 is you are worried that
25 maybe it doesn't define the performance objectives. I think

1 the intent is that it does define the performance objectives.
2 The question is do you put those performance objectives in the
3 rule or in the reg guide? Under Option 3 we have a general
4 statement as to the performance objectives would be in the
5 rule, but the specific objectives themselves would be in the
6 reg guide.

7 Under Option 4 it would be the other way around. The
8 specific performance objectives or acceptance criteria would be
9 in the rule itself.

10 COMMISSIONER ROGERS: Could we have some examples of
11 exactly how that would translate into a statement? I have a
12 little trouble visualizing exactly what we are talking about
13 here when we talk about these objectives. How specific would
14 they be? Would they be numerical numbers? Would they be --
15 what would they be?

16 MR. KING: I can give you our current thinking. We
17 have not nailed everything down at this point as to what those
18 would be or how many there would be. Right now we are thinking
19 of three basic areas that these acceptance criteria or
20 performance objectives would fall in. We know from past PRAs
21 and experience there are a number of items, phenomena or event
22 sequences that are of concern in the severe accident area.
23 Direct containment heating is an example of one.

24 We would require that this reg guide would list those
25 items that are of concern that we know about today and require

1 future plans address those in their designs. In other words,
2 don't send in tomorrow's designs with today's problems. The
3 acceptance criteria that we have in mind would be, one, that
4 there would be a design solution to the problem and that the
5 PRA would have to show that that problem is no longer a
6 significant contributor to risk.

7 At this point we haven't decided whether we would tie
8 a probability number or risk number to that, but that in
9 essence would be the thrust of the performance criteria or
10 acceptance criteria.

11 The secondary is the unique vulnerabilities to the
12 plant. These are different designs in some areas. The PRA
13 would be directed toward looking for the unique features of
14 that plant that could have some severe accident
15 vulnerabilities, and some acceptance criteria would be set up
16 as to whether you need to do something about that vulnerability
17 or not.

18 What we had in mind was an approach -- maybe a
19 parallel would be how we prioritize generic issues -- to look
20 at the contribution to risk, look at the potential person rem
21 dose that you could get from such an event sequence versus
22 potential solutions to that problem in terms of their cost, and
23 you have some decision criteria that would tell you whether you
24 need to do something about that vulnerability or not do
25 something about it, just like we do today on generic issues,

1 whether we do something about it or not do something about it.

2 The third general area is one of documenting the
3 assumptions that are made in the PRA, operator actions,
4 equipment qualification and so forth.

5 So those are the three areas that we have in mind
6 that would be performance or acceptance criteria. Again, there
7 is a lot of work to be done yet in this area to nail down
8 exactly the specific list of those and the specific set of
9 acceptance criteria.

10 COMMISSIONER ROGERS: I noticed in Enclosure 3 of
11 SECY 88-248 there are some sample performance oriented
12 requirements, and there are no numerical values there. There
13 is a statement that ends up by saying neither the single nor
14 multiple failures have more than a very low likelihood of
15 resulting in severe core damage.

16 MR. KING: That's right.

17 COMMISSIONER ROGERS: How is that to be interpreted?
18 How is the very low likelihood to be interpreted?

19 MR. KING: In the Reg Guide we would have to put down
20 what that means. At this point we are not sure whether that
21 should be defined in terms of a risk number or a probability
22 number or should be defined in terms of a relative importance
23 to the overall risk picture of the reactor.

24 The problem with putting probability numbers or risk
25 numbers in the rule is that there is a certain amount of

1 uncertainty when you do a PRA. It is still an evolving art.
2 If you start putting numbers in the rules, in the reg guides,
3 how locked in are you to rigorously demonstrating that you need
4 that number? We have a concern in that area. We don't want to
5 get ourselves in a box trying to demonstrate a number that has
6 a lot of uncertainty associated with it. We would rather use
7 the PRA and the severe accident assessment in a more
8 qualitative sense and a more relative sense to look for these
9 vulnerabilities and set our decision criteria in a more
10 qualitative sense, and then putting specific core melt numbers
11 or whatever numbers you want to put in.

12 COMMISSIONER ROGERS: If you ultimately do come back
13 with some numbers and they are in reg guides and they do take
14 on a status that approaches what would be in a rule, you've
15 done it anyhow. So start changing those numbers, then you're
16 back in to the moving target problem for the designer.

17 MR. KING: Our intent would be, by the time this
18 process is completed, by the time we reach March of 1990, that
19 we would have the performance criteria nailed down. Whether
20 they're in a rule or whether they're in a reg guide or some
21 combination, they would be nailed down. It would stop being a
22 moving target at that point. The reason we prefer a reg guide
23 is beyond March of 1990, there will still be other designs
24 being worked on. We will not have looked at all the designs
25 yet. There will still be some research results coming in.

1 If we get some new piece of information that could
2 effect some of those criteria, it's easier to fold that into
3 the reg guide than into the rule. But the intent would be to
4 not have a moving target. The intent would be to pin things
5 down as best we can by March of 1990, whether it's in a rule or
6 a reg guide or a combination.

7 COMMISSIONER ROGERS: That March of 1990 date, now,
8 can you just once again tell me, I know you did tell me -- tell
9 us where that came from. I know it came from the three designs
10 that are up in front of us now, but all of them, one of them --

11
12 MR. KING: One of them would be advanced boiling
13 water reactors, under current schedules, would be the first one
14 to proceed into a design certification hearing. On current
15 schedules, that's the mid-1990. We chose March of 1990 to
16 provide a proposed rule and reg guides to the Commission, and
17 that would allow two months for review and comment prior to
18 formally issuing it as a final rule. The intent would be to
19 have the final rule on the street before the design
20 certification hearings begin for that first plant.

21 COMMISSIONER ROGERS: But the design has got to be
22 pretty well locked up well before that then.

23 MR. KING: That's correct. We have to work over this
24 process, from today right through to mid-1990. We have to work
25 closely with NRR and with the applicants. That's why we have

1 two workshops scheduled in our proposed schedule, as well as
2 the formal public comment process. And regular interactions
3 with NRR so they know what the current thinking is, they can
4 factor that into their reviews. It has to be a very closely
5 coordinated effort.

6 COMMISSIONER ROGERS: I would like you also to say a
7 little bit more about the statement that's in the SECY on Page
8 7, and it's mentioned here, because the language seems to be a
9 little bit different than what we've heard here, from what was
10 in the SECY. And this has to do, this paragraph, the second
11 one from the bottom on Page 7 of the SECY that says we also do
12 not propose to redefine the required level of adequate
13 protection for light water reactors as compared to existing
14 plans. Then there's -- some words go along with that. And yet
15 the last sentence of the paragraph says such an assessment will
16 help ensure that that significant vulnerabilities to severe
17 accidents are identified and that future reactors provide
18 enhanced safety, consistent with the Commission's severe
19 accident policy statement.

20 I'm a little uncomfortable with whether we're saying
21 on the one hand we're not redefining anything, on the other
22 hand we are. That we're looking for something beyond what
23 we've looked for in the past. The severe accident policy
24 statement does express an expectation of a higher standard of
25 severe accident safety performance without defining exactly

1 what that is. But it says there's an expectation of a higher
2 standard and so how do we square that with the statement that
3 we don't propose to redefine the required level of adequate
4 protection for future light water reactors. It seems a little
5 bit to me as if we're contradicting ourselves here.

6 MR. KING: We started with the words in the
7 Commission's policy statement to state an expectation to
8 achieve a higher level of safety. Did not state it as a
9 requirement.

10 COMMISSIONER ROGERS: The difference is between an
11 expectation and a requirement. Is that --

12 MR. KING: We looked at the words in the Commission's
13 policy as wanting an assessment to be made of severe accidents,
14 wanting significant vulnerabilities to be fixed. By that
15 process, an enhanced level of safety would be achieved. That
16 it wasn't coming out and requiring adding, for example, to the
17 design basis accident envelopes some set of severe accidents.
18 So the process we chose to achieve that was the one in this
19 paper and the words we have in here. Again, it's the way we
20 interpreted the words in the Commission's policy statement. We
21 were not proposing an addition of new accidents to the set of
22 what we already call the design basis accident spectrum.

23 COMMISSIONER ROGERS: Well, yes, but then what is the
24 meaning, and I'm not badgering you, I'm just trying to get this
25 out on the table because it seems to me that we're moving and I

1 think probably in the right way, but we're doing it by saying
2 we're not moving. And so I feel a little uncomfortable about -
3 - adrift here along a certain direction without recognizing
4 that's exactly what we're doing. And I, for one, would be
5 perfectly happy to go on the record of endorsing that we are,
6 in fact, looking for a higher standard of severe accident
7 safety performance. That we really mean that and whatever it
8 takes to pin that down. But building pieces of that statement
9 in at the same time dragging along with us the baggage of a
10 statement that says that -- that omits that.

11 MR. STELLO: In the two documents that are already
12 now part of what we're trying to implement, the Commission's
13 advanced reactor policy would certainly suggest an expectation
14 that future designs will have improved safety. The severe
15 accident policy statement I think states that the current
16 generation of current operating reactors are safe. But in
17 dealing with the issues that come out of severe accidents, you
18 will even cause safety to be advanced or to be improved. And
19 it is that policy which is being implemented which produces
20 that very problem that you raised. We are, and the Commission
21 has not proposed in its advanced policy to redefine the level
22 of adequate protection, but has suggested that there are ways
23 to look at severe accidents and implement those in a cost
24 benefit way which will cause further safety enhancements. And
25 I think that is what we propose to do.

1 CHAIRMAN ZECH: Let me just state that EDO has I
2 think stated the Commission views very well. We discussed this
3 issue at some length when we made the severe accident policy
4 statement. I think we worded it very carefully. We did,
5 indeed, expect improvements. We did also state that we
6 believed the current reactors were operating safely and that
7 was an important conclusion I believe to state that.

8 And also though in expecting future reactors to
9 improve, we were careful not to lay a number on or a
10 quantitative number that would perhaps be unrealistic. But it
11 was clear and I think we've been consistent in the severe
12 accident statement and other statements along the same line
13 that we expected improvements to continue. And I think it was
14 worded very carefully, but also very clearly, I think, to show
15 that improvement was expected. But it was also recognized that
16 it was probably not appropriate at that time, at least to lay
17 any kind of a more quantitative expectation on than just that.

18 COMMISSIONER ROGERS: Well, I would hope that somehow
19 we will come to a way to measure, some way, whether that
20 expectation is fulfilled or not. Whether it's quantitative or
21 in some other way, but I think that a statement that has no way
22 of being measured and determined whether it's satisfied or not,
23 doesn't really have very much meaning to me. So I hope we
24 would have some way of really measuring whether we've achieved
25 something.

1 MR. MIZOGUCHI: I think we're trying to measure, but
2 again we're being, at least I think, responsible in measuring
3 it in a qualitative way, but a realistic qualitative way that
4 does show improvement, and I think we can show improvements in
5 a very realistic sort of way, the things that we can measure.
6 But I do think that we were trying to again be realistic in not
7 trying to attempt to quantify with numbers something that
8 perhaps would not be appropriate to do at that time. But I do
9 think we have been, again, consistent and encouraging in
10 expecting improvements, and I think frankly we're seeing those
11 in the operating plants and I think in the advanced plants the
12 designs that we're viewing and looking at, again, it's been my
13 impression that those words that we put in there have been
14 respected and the proposals we're getting at least show an
15 expectation of enhanced safety and that's exactly what we had
16 in mind.

17 COMMISSIONER ROGERS: You always have the problem of
18 when you are on the margin, you know, is it enough?

19 CHAIRMAN ZECH: It is always a judgment call, no
20 question about it, but I think we are trying to show that we
21 are expecting and encouraging and watching very carefully for
22 improved safety and I think we're getting it, personally.

23 COMMISSIONER ROGERS: Well, I would just like us to
24 be as clear on some of these matters as we can be.

25 CHAIRMAN ZECH: I am just trying to say, I guess,

1 another thing -- it is not the Staff. It was a Commission
2 decision. It was our decision, our responsibility. The Staff
3 is I think very faithfully carrying out what we gave them and
4 if we gave them words that were too vague or not appropriate,
5 it is our responsibility, so I just want to make that clear for
6 us.

7 I know you were not here then, Commissioner Rogers,
8 but the Commission did make that decision and I think the Staff
9 is attempting very faithfully to carry out the Commission
10 decision.

11 COMMISSIONER ROGERS: As I said -- I am not beating
12 on the Staff. I am trying to see that we know where we're
13 going and we know once we've gotten there and that we have some
14 measures of those things.

15 CHAIRMAN ZECH: We don't mind beating on the Staff
16 when we think they're wrong but in this case I do think it was
17 our decision and I think the Staff is again trying to carry out
18 what we gave them and if we didn't give it to them in as
19 definitive a way, then it is our responsibility.

20 But I can assure you that the Commissioners
21 themselves thought very carefully of these words and I
22 personally at this time still think they were appropriate.

23 MR. STELLO: Let me try to use two examples, and Tom,
24 listen very carefully and if I get off track to let me know. I
25 haven't had time really to think about this.

1 One of the issues -- dealing with the containment, we
2 know that that is an issue of uncertainty in how to treat an
3 existing plant. As a matter of policy we would look for the
4 future to say that's clearly an issue we want disposed of. In
5 a qualitative sense we now know we no longer have a challenge
6 to the containment that we need to deal with it. It's gone.

7 In terms of now measuring it, we have done a great
8 deal of study using a number of PRAs to get quantitative
9 indication of what that would mean. Qualitatively, yes, I
10 think it's on its face, getting rid of that problem is very
11 wise to the extent you can and the extent to which that will
12 change risk I think we'll have some measures of that through
13 the PRA, which as a matter of policy we would also include in
14 the regulation which would help do that.

15 So I think if you take that example, you could see
16 how you could make very quickly a qualitative judgment of the
17 advances and because you're going to require the PRA I think
18 you will have some fairly good insights in terms of the
19 quantitative assessments.

20 They're trying to work all that out right now, since
21 we haven't done that work and to give you lots of specific
22 examples I think it would be very difficult.

23 But I think I understand the concern you are raising
24 and we are mindful of that and then the Commission wrote its
25 backfit rule. It says if we are going to backfit that we do in

1 fact do a cost benefit analysis to make the assessment, is in
2 fact the backfit warranted and when we make the assessment if
3 the particular rules, whatever they are, to the extent that
4 that is applicable, then we would be in fact making that
5 judgment as best we know how to decide whether or not that
6 particular rule ought to or ought not to stand or a specific
7 requirement if it is imposed in a particular case.

8 MR. PARLER: Part of that rule, Mr. Chairman, is of
9 course whether you are at the adequate level or at the margin
10 under the rule, as Mr. Stello I'm sure knows, but just for the
11 record here, if you are talking about adequacy, you can't
12 consider the cost of the effort --

13 CHAIRMAN ZECH: That's correct and I'm sure --

14 MR. PARLER: -- or one of the options approaches here
15 would be irrelevant.

16 CHAIRMAN ZECH: Yes. I appreciate that. I'm sure
17 Mr. Stello does too.

18 MR. STELLO: It is for that very reason that we made
19 the observation that we do not plan to redefine in any way the
20 level of adequacy.

21 COMMISSIONER ROGERS: I do not want to debate, turn
22 this into a big debate because I think we really ought to move
23 along, but the language in SECY doesn't exactly say that. It
24 doesn't say "adequate." It says something else and I would
25 like you to just review that again to see whether that's

1 exactly what you mean.

2 It doesn't refer to -- it says we do not propose to
3 redefine the required level of adequate protection and so that
4 could be interpreted a couple of ways, but I think we should
5 not pursue this to a great degree, except that if you look at
6 the timetable of the schedule on which you have got to work,
7 you don't have an awful lot of time and if by the fifth month
8 of 1990 you are going to be ready to use something, you are
9 going to have to come to some of these things that you are
10 going to put in the reg guides before then.

11 You just said that you would have to do that and I am
12 just wondering what is going to happen between now and then
13 with respect to pinning down these measures because they will
14 be in the reg guides, as you have told us that you will have
15 ways of determining these things in the reg guides. When will
16 they start to appear and do you expect to issue supplements to
17 the reg guides after 1990?

18 MR. KING: Well, we would hope within six months from
19 now to have the draft reg guide and rules in pretty good shape
20 and the process that goes on beyond that would be the formal
21 public comment process and then the formal process to get it
22 into a final rule and final reg guides.

23 We hope in the next six months the information that
24 is lacking today, the basic technical information, will be in
25 place in a draft reg guide that NRR people will be aware of and

1 through the workshops the industry will be aware of, so it
2 won't come at the eleventh hour in the review with these
3 plants.

4 Regarding supplements to the reg guides, our intent
5 now is to make these reg guides and rules as complete as
6 possible. If some new piece of information comes up later on
7 down the road, it could result in a supplement. It is an
8 ambitious schedule, I would agree with you.

9 COMMISSIONER ROGERS: All right. That you very much.

10 CHAIRMAN ZECH: Well, let me just say I think that
11 the Staff has addressed this question very well but I am not
12 frankly sure in my own mind whether we really need or whether
13 we really should have another rule on this subject at this
14 time. It seems to me that perhaps reg guides at least for now
15 might be sufficient.

16 Perhaps you could tell me what is the real impetus to
17 get a rule in place and what is deficient about the rules we
18 have in place for severe accident at this time?

19 MR. STELLO: I think one very significant
20 consideration is the fact that as we take plants that are in
21 the review process through the certification and rule-making,
22 it would be very, very helpful to have these issues resolved to
23 the extent we can by rule-making before starting the actual
24 rule-making process or certification by rule-making of the
25 plants.

1 CHAIRMAN ZECH: But I thought you pointed out earlier
2 when you mentioned that we're focusing on -- rather than near
3 term, if you will, advanced reactors and not the broader,
4 longer term --

5 MR. STELLO: That's correct.

6 CHAIRMAN ZECH: -- advanced reactors, as I understood
7 it. So if that is the case, if we are really focusing on not
8 the real long range but the more near term advanced reactors,
9 then is there not sufficient guidance already out and would not
10 a reg guide be sufficient at this time?

11 MR. STELLO: Yes, but it would cause these issues of
12 how to handle -- because there is only a Commission policy
13 statement on the severe accidents -- how to handle those issues
14 would all be subject to part of the rule-making process for
15 each of the individual five plants -- I guess it is five or six
16 cases that would be going through certification, or potentially
17 through certification. As you take each of those through
18 certification without the benefit of this rule, then by
19 definition all of those issues become issues which would be
20 potentially litigated in each and every case.

21 So by having a rule then you would eliminate or
22 reduce the amount of effort it would take to deal with these in
23 individual cases.

24 CHAIRMAN ZECH: Are we sure enough about the future
25 at this time to propose a rule?

1 MR. STELLO: I am hesitant to ever say we are sure
2 about the future.

3 CHAIRMAN ZECH: Just looking at the immediate
4 future.

5 MR. STELLO: In the plants we are looking right now,
6 there are three of them which are in the review process. We
7 have one for sure which we believe will go through
8 certification, two others which I would classify as probably
9 and if the EPRI designs on the 600 megawatt level come forward
10 I suspect that they too will go through the certification.

11 So if they all go through it, then I do think it
12 would be a big benefit to have it, but it is with those
13 assumptions which I don't know how to deal with since we only
14 have as I understand it, confirmation of one certification.

15 Am I right?

16 CHAIRMAN ZECH: Would you step to the microphone,
17 please, and identify yourself to the Reporter?

18 Thank you very much.

19 MR. RUBENSTEIN: Les Rubenstein, NRR.

20 We have a formal request for the ABWR with their
21 fairly rigid schedule to go through the design certification
22 process and we have also shortly behind that the combustion
23 plant. Westinghouse's plant is currently in-house for a PDA
24 and they have not -- although they have said they would be
25 submitting an FDA, they have not formally done so. We also

1 have indications that the two 600 megawatt plants would be
2 coming in.

3 But formally in-house, in the final design stage, we
4 have the ABWR from General Electric and the combustion plant.

5 CHAIRMAN ZECH: Thank you very much.

6 MR. STELLO: One thought that just came to mind is
7 that we also need to deal with the potential possibility that
8 we may have custom plants. If there is a need for building
9 additional facilities and it arises in the near future, the
10 next few years, clearly this would be of significant benefit
11 for that purpose as well.

12 CHAIRMAN ZECH: Of course, we are open for
13 standardized plants, not custom plants.

14 MR. STELLO: Yes, but I don't believe we have
15 precluded.

16 CHAIRMAN ZECH: Well, you haven't precluded it, but
17 it's going to be a -- going to have to make an awful hard case
18 if they're other than standardized plants. During the
19 workshops, what was the views of the applicants? Do they want
20 to propose -- do they want a rule?

21 MR. KING: Yes. All three applicants had
22 representatives there and it was unanimous that they did want
23 to see guidance from NRC in the severe accident area. I think
24 they were pretty much unanimous and that they wanted to see the
25 rule to be as general as possible and allow them as much

1 flexibility as possible in terms of how you would address the
2 various severe accident issues. But it was unanimous that they
3 did want to see some guidance come forth from the NRC.

4 CHAIRMAN ZECH: And so the staff also agrees that a
5 rule is, should I say needed, necessary?

6 MR. STELLO: Useful.

7 CHAIRMAN ZECH: Useful. But not mandatory.

8 MR. STELLO: Not mandatory. It is -- we could go
9 forward, and it is clear we could without a rule.

10 CHAIRMAN ZECH: I guess my only concern is I just --
11 I can't get the feeling that we're really ready perhaps to make
12 the definitive judgments that are necessary for a rule. I
13 recognize the value if we could do that at this time.
14 Certainly that would be helpful, I think, and useful to us as
15 well as the applicants. But I'm just not sure that from what
16 you've told us here today and what I read in this paper that
17 we're really ready to do that and I must give it more
18 reflection myself before I can make such a judgment.

19 It seems to me that reg guides would indeed be
20 helpful, but I recognize that a rule is different from a reg
21 guide and has certain advantages. Could you try to persuade me
22 that you really need a rule or do you want to try to do that or
23 not? How bad do you need a rule?

24 MR. STELLO: It would be useful, but not
25 necessary.

1 CHAIRMAN ZECH: Okay. That's good enough.

2 MR. PARLER: May I comment on that?

3 CHAIRMAN ZECH: Yes, please.

4 MR. PARLER: In order to answer a question like that,
5 at least from my perspective, the answer may be assisted by
6 going out and getting the comments on a particular proposal.
7 Perhaps the proposal could sharpen the situation.

8 CHAIRMAN ZECH: I'm sure it could.

9 MR. PARLER: The make a decision at that point.

10 CHAIRMAN ZECH: Sure. Of course, that's exactly the
11 approach to take. My only question in my mind frankly was is
12 it -- at this stage, is it even worth going out with a proposal
13 because of at least the uncertainty I sense about the readiness
14 we are to put forward a proposed rule at this time. I just --
15 I feel maybe we're not, but certainly I don't want to preclude
16 anything and perhaps just putting something out for proposed
17 comment would be useful and we would gather information that
18 would help us in that decision.

19 But I guess in most proposed rules that I've seen
20 that we've put out so far, I've had a little more confidence
21 that we're really ready to perhaps go ahead with it, and this
22 one, I'm just not as confident that we have in hand the
23 wherewithal we really need to put out a proposed rule that
24 would be useful. But I certainly would agree that the comments
25 perhaps might sharpen up this issue and be helpful, but again,

1 I'm going to, myself, have to reflect on it and decide what to
2 do and I'm sure my colleagues will want to do the same thing.

3 Are there any other additional comments of any of my
4 colleagues?

5 [No response.]

6 CHAIRMAN ZECH: Let's just say that we have been
7 asked by the staff to make a decision on the SECY 88-248, and
8 we've heard the staff's position, and had the chance to
9 question them about it today. As I say, it's currently not
10 clear to me that we're ready to do this yet, but I am going to
11 think about it more myself and ask my colleagues to do the same
12 thing. Perhaps we can respond to the staff's request on this
13 with a decision here in the near future.

14 If there are no other comments, thank you very much.
15 We stand adjourned.

16 [Whereupon, at 3:10 p.m., the briefing was
17 concluded.]

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CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events
of a meeting of the U.S. Nuclear Regulatory Commission
entitled:

TITLE OF MEETING: IMPLEMENTATION OF SEVERE ACCIDENT POLICY FOR
FUTURE LIGHT WATER REACTORS

PLACE OF MEETING: Washington, D.C.

DATE OF MEETING: MONDAY, SEPTEMBER 12, 1988

were transcribed by me. I further certify that said
transcription is accurate and complete, to the best
of my ability, and that the transcript is a true and
accurate record of the foregoing events.

Marilynn Nations

Ann Riley & Associates, Ltd.

IMPLEMENTATION OF
SEVERE ACCIDENT POLICY
FOR FUTURE LWRS

STAFF PRESENTATION TO COMMISSION
SEPTEMBER 12, 1988

PRESENTATION OUTLINE

- ° PURPOSE
- ° BACKGROUND
- ° BENEFITS OF GUIDANCE
- ° OPTIONS CONSIDERED
- ° CONCLUSIONS REGARDING OPTIONS
- ° SCOPE OF PROPOSED GUIDANCE
- ° ADDITIONAL BENEFITS
- ° SCHEDULE

PURPOSE

- TO BRIEF THE COMMISSION ON THE STAFF'S PROPOSAL (AS PRESENTED IN SECY-88-248) FOR IMPLEMENTATION OF THE SEVERE ACCIDENT POLICY STATEMENT FOR FUTURE LWRs.

- CORRESPONDS TO ITEM 10A IN SECY-88-147
"INTEGRATION PLAN FOR CLOSING OF
SEVERE ACCIDENT ISSUES."

BACKGROUND

- ° CURRENT REGULATIONS DO NOT REQUIRE PLANTS TO SUBMIT A PRA OR ASSESS SEVERE ACCIDENTS.
- ° SEVERE ACCIDENT POLICY STATEMENT (50 FR 32138) ISSUED AUGUST 1985 PROVIDED GENERAL GUIDANCE FOR RESOLVING SEVERE ACCIDENT ISSUES FOR FUTURE AND EXISTING REACTORS.

- ° FOR EXISTING REACTORS, THE STAFF IS DEVELOPING GUIDANCE FOR AN INDIVIDUAL PLANT EXAMINATION PROCESS TO ADDRESS SEVERE ACCIDENT ISSUES.
- ° FOR FUTURE REACTORS, THE POLICY STATEMENT DIRECTED THAT:
 - TECHNICAL RESOLUTION OF TMI/USI/GSIS BE DEMONSTRATED

- PRA BE COMPLETED, INCLUDING
CONSIDERATION OF SEVERE ACCIDENT
VULNERABILITIES.
- THE STAFF ISSUE GUIDANCE ON THE
FORM, PURPOSE AND ROLE THAT PRAS
ARE TO PLAY IN SEVERE ACCIDENT
ANALYSIS

AND DECISION MAKING FOR BOTH EXISTING
AND FUTURE PLANT DESIGNS, INCLUDING
MINIMUM CRITERIA OF ADEQUACY PRAS
SHOULD MEET.

- ° THE POLICY STATEMENT ALSO STATED THE
COMMISSION'S EXPECTATION THAT "NEW
STANDARD (OR CUSTOM) PLANTS, WILL
ACHIEVE A HIGHER STANDARD OF SEVERE
ACCIDENT SAFETY PERFORMANCE THAN PRIOR
DESIGNS."

- ° RELATED INDUSTRY EFFORTS:
 - ADVANCED LIGHT WATER REACTOR (ALWR) PROGRAM
 - DOE/INDUSTRY ADVANCED REACTOR SEVERE ACCIDENT PROGRAM (ARSAP).
- ° INDUSTRY EXPRESSION OF SUPPORT FOR FUTURE GUIDANCE AT A JUNE 9, 1988 WORKSHOP.

BENEFITS OF GUIDANCE

- ° CLARIFY COMMISSION REQUIREMENTS AND EXPECTATIONS FOR THE TREATMENT OF SEVERE ACCIDENTS FOR BOTH THE INDUSTRY AND NRC STAFF REVIEWERS.
- ° PROMOTE STABILITY IN DESIGN, LICENSING AND OPERATION OF NEW PLANTS BY MAKING LICENSING REQUIREMENTS PREDICTABLE.

- ° CODIFY CURRENT STAFF TREATMENT OF SEVERE ACCIDENTS IN ONGOING STANDARD PLANT REVIEWS (I.E., ABWR, ETC.)
- ° AVOID HAVING TO LITIGATE SEVERE ACCIDENT REQUIREMENTS AT EACH HEARING (I.E., FACILITATE HEARINGS) AND IN THE LONG RUN SAVE STAFF RESOURCES.

- ° ENSURE THAT ENHANCED SAFETY IS ACHIEVED THROUGH ELIMINATION OF SIGNIFICANT SEVERE ACCIDENT VULNERABILITIES, INCLUDING THOSE DISCOVERED THRU PAST EXPERIENCE, PRAs AND RESEARCH PROGRAMS.

OPTIONS CONSIDERED FOR
PROMULGATING GUIDANCE

1) UTILIZE GENERAL STATEMENTS PROPOSED
IN 10 CFR 52:

- ° REG. GUIDES COULD BE DEVELOPED
TO PROVIDE ADDITIONAL GUIDANCE
ON PRA, SEVERE ACCIDENT
ASSESSMENTS AND ACCEPTANCE
CRITERIA.

2) GENERAL RULE OR RULES REQUIRING PRA
AND SEVERE ACCIDENT ASSESSMENT DIRECTED
TOWARD IDENTIFYING AND CORRECTING
SIGNIFICANT VULNERABILITIES (COVERS
SEVERE ACCIDENT PREVENTION AND
MITIGATION).

- REG. GUIDES TO PROVIDE ADDITIONAL
GUIDANCE ON PRA AND SEVERE ACCIDENT
ASSESSMENT
- COST/BENEFIT ACCEPTANCE CRITERIA.

- 3) SAME AS OPTION 2 EXCEPT ACCEPTANCE
CRITERIA IN REG. GUIDES WOULD NOT
BE BASED SOLELY ON COST/BENEFIT.
- 4) PRESCRIPTIVE RULE, INCLUDING
ACCEPTANCE CRITERIA.

CONCLUSIONS REGARDING OPTIONS

- ° OPTIONS 2 AND 4 ARE NOT BELIEVED TO
BE ATTRACTIVE IN COMPARISON WITH 1
AND 3.
 - OPTION 2 - HEAVY RELIANCE ON
COST BENEFIT ANALYSIS.
 - OPTION 4 - PRESCRIPTIVE RULE
LIMITS FLEXIBILITY.

- ° OPTION 1 IS BELIEVED TO BE WORKABLE;
HOWEVER, IT HAS SOME DISADVANTAGES,
NAMELY:
 - RULE LACKS FOCUS ON IMPORTANCE
OF SEVERE ACCIDENTS IN FUTURE
REACTOR DESIGNS.

- RULE EMPHASIZES PROCEDURAL ASPECTS AND NOT PERFORMANCE REQUIREMENTS.
- ONLY APPLICABLE TO DESIGNS WHICH UTILIZE 10CFR52.

- ° OPTION 3 PROVIDES ALL THE BENEFITS AND APPEARS TO BE STRONGER IN THAT THE RULE:
 - MORE SPECIFICALLY ADDRESSES SEVERE ACCIDENT CONCERNS.

- APPLICABLE TO STANDARD AND
CUSTOM LWR APPLICATIONS.
- ° THEREFORE, STAFF RECOMMENDS THAT
OPTION 3 BE PURSUED.

SCOPE OF PROPOSED GUIDANCE

- ° PROPOSED RULES AND REGULATORY GUIDES WOULD BE LIMITED TO LWR DESIGNS NOT SIGNIFICANTLY DIFFERENT THAN CURRENT GENERATION LWRs (SUCH AS ABWR, APWRs, AND 600 MWE DESIGNS IN EPRI'S - ALWR PROGRAM).

- GUIDANCE FOR LWR DESIGNS SIGNIFICANTLY DIFFERENT THAN CURRENT GENERATION LWR DESIGNS WOULD BE DEVELOPED LATER IN CONSIDERATION OF THE UNIQUE ATTRIBUTES OF THOSE DESIGNS, SO AS NOT TO INHIBIT INNOVATION.
- GUIDANCE WILL CONSIST OF A GENERAL RULE(S) AND SUPPORTING REGULATORY GUIDES WHICH:

- UPDATE 10CFR50.34(F) TO APPLY TO FUTURE LWRs, INCLUDING A REQUIREMENT FOR A PRA AND TECHNICAL RESOLUTION OF USIs, GSIs AND TMI ITEMS.
- REQUIRE SEVERE ACCIDENT VULNERABILITIES BE ASSESSED, INCLUDING SPECIFICALLY ADDRESSING SEVERE ACCIDENT EVENTS/PHENOMENA JUDGED FROM PREVIOUS EXPERIENCE TO BE OF SIGNIFICANT RISK.

- PROVIDE GUIDANCE ON
ACCEPTANCE CRITERIA; HOWEVER,
DESIGN SOLUTIONS WILL NOT BE
PRESCRIBED.

- ° ASSESSMENT OF SEVERE INTERNAL AND
EXTERNAL EVENTS WILL BE REQUIRED.
WILL UTILIZE PRODUCTS OF OTHER ONGOING
RELATED PROGRAMS AS MUCH AS PRACTICAL.

- ° STAFF DOES NOT VIEW THIS EFFORT AS CHANGING THE DEFINITION OF THE ADEQUATE LEVEL OF SAFETY FOR REACTORS. RATHER, IT IS VIEWED AS ENSURING SAFETY ENHANCEMENT THRU INCREASED MARGIN FOR SEVERE ACCIDENTS.

- ° DRAFT RULES AND REG. GUIDES ATTACHED TO THE COMMISSION PAPER ARE ONLY EXAMPLES TO ILLUSTRATE THE SCOPE AND DEPTH OF WHAT IS ENVISIONED. FINAL CONTENT AND WORDING IS STILL UNDER DEVELOPMENT.

ADDITIONAL BENEFITS

IN ADDITION TO HAVING FUTURE DESIGNS
ASSESSED FOR VULNERABILITIES, SYSTEMATIC
ASSESSMENT OF SEVERE ACCIDENTS WILL HELP
IDENTIFY AND PRESERVE OTHER
ASSUMPTIONS/ACTIONS RELATED TO SAFE
OPERATION, SUCH AS:

- PROCEDURES, TRAINING, DESIGN
FEATURES FOR ACCIDENT MANAGEMENT
- MAINTENANCE
- R&D NEEDS TO REDUCE UNCERTAINTIES
- EQUIPMENT QUALIFICATION NEEDS

SCHEDULE

- ° SCHEDULE FOR DEVELOPING GUIDANCE
PRESENTLY DRIVEN BY THE SCHEDULE FOR
REVIEW OF THE THREE EVOLUTIONARY
STANDARD REACTOR DESIGNS NOW UNDER
WAY:
 - W SP/90
 - GE ABWR
 - CE SYS80+.

SCHEDULE

<u>TASK</u>	<u>PROPOSED RULE</u>	<u>FINAL RULE</u>
WORKSHOP	12/88	11/89
ACRS LTR.	03/89	01/90
CRGR LTR.	04/89	02/90
TO COMM.	05/89	03/90
ISSUE	06/89	05/90