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NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Reactor Safeguards
440th Meeting

Docket Number: (not applicable)

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

APRIL 3, 1997

The contents of this transcript of the proceedings of the United States Nuclear Regulatory Commission's Advisory Committee on Reactor Safeguards on April 3, 1997, as reported herein, is a record of the discussions recorded at the meeting held on the above date.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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440th MEETING

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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THURSDAY

APRIL 3, 1997

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ROCKVILLE, MARYLAND

The Advisory Committee met at the Nuclear
Regulatory Commission, Two White Flint North, Room. T2B3,
11545 Rockville Pike at 8:30 a.m., Robert L. Seale,
Chairman, presiding.

COMMITTEE MEMBERS:

ROBERT L. SEALE	CHAIRMAN
DANA A. POWERS	VICE CHAIRMAN
GEORGE E. APOSTOLAKIS	MEMBER
JOHN J. BARTON	MEMBER
THOMAS S. KRESS	MEMBER
WILLIAM J. SHACK	MEMBER

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1 ACRS STAFF PRESENT:

2 John T. Larkins, Executive Director
3 Roxanne Summers, Technical Secretary
4 Sam Duraiswamy
5 Carol A. Harris
6 Richard P. Savio
7 Paul Boehnert
8 Noel Dudley
9 Medhat M. El-Zeftawy
10 Michael T. Markley
11 Amarjit Singh
12

13 ALSO PRESENT:

14 Jack Strosnider
15 Sherry Bernhoft
16 Ronald M. Young
17 Tad Marsh
18 Tim Martin
19 Loren Plisco
20 Eileen McKenna
21 Tony Pietrangelo
22
23
24
25

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

(8:36 a.m.)

CHAIRMAN SEALE: The meeting will now come to order. This is the first day of the 440th meeting of the Advisory Committee on Reactor Safeguards. During today's meeting, the committee will consider the following:

Proposed regulatory approach associated with steam generator integrity; the status of the report of the study on the consequences of reactor water cleanup system line break outside containment; report of the Thermal Hydraulic Phenomena Subcommittee; reconciliation of ACRS comments and recommendations; and proposed regulatory guidance related to the implementation of 10 CFR 50.59 requirements; and proposed ACRS reports.

This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act. Dr. John T. Larkins is the designated federal official for the initial portion of the meeting.

We have received no written comments from members of the public regarding today's sessions; however, we have received a request from the Nuclear Energy Institute for time to make oral statements regarding the item on 10 CFR 50.59 requirements.

A transcript of portions of the meeting is being kept, and it is requested that the speakers use one

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1 of the microphones, identify themselves, and speak with
2 sufficient clarity and volume -- that includes the
3 Chairman, by the way -- so that they can be readily heard.

4 I will begin with a few items of general
5 interest.

6 First of all, in connection with the
7 declaration of the national holiday following last Monday
8 night's basketball game, --

9 (Laughter.)

10 MEMBER KRESS: And Sunday's game too.

11 CHAIRMAN SEALE: And true, Sunday's game also,
12 the Lady Vols.

13 Anyway, tonight when the committee goes out
14 for dinner, I will -- I'll buy the drinks.

15 VICE CHAIRMAN POWERS: That is, of course,
16 grape juice and --

17 CHAIRMAN SEALE: That's true, that's true.

18 We have several other things. First of all,
19 tomorrow at noon, Mr. Szabo from the Office of the General
20 Council will be available to discuss with and answer
21 questions from the members of the committee on conflict of
22 interest issues. I think there are some things there that
23 have been of perhaps unclear detailed nature that we
24 hopefully can have a chance to iron out with him.

25 And I would urge those who have questions to

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1 think about how you want to articulate them so that we can
2 be sure that we give a complete statement of the concerns
3 to the -- to him so he can really respond to what our
4 concerns are rather than going through a third party kind
5 of filter to get those answers.

6 He'll be here from noon to 1:15. We'll be
7 breaking at 11:45 for lunch, and that will be -- give
8 everyone a chance to go downstairs, pick up something, and
9 come back.

10 The Severe Accident Research Program, the
11 CSARP people, are having a meeting on May 5th through 8th.
12 I believe there is an invitation that some of us may have
13 gotten. Any people who are interested in attending that
14 meeting should let the staff know so they can make sure
15 that the appropriate arrangements are made.

16 We have two members who will not be with us
17 today. Don Miller is in Korea, I believe. So I guess
18 it's already tomorrow where he is, and so --

19 VICE CHAIRMAN POWERS: As usual, he's way
20 ahead of us.

21 CHAIRMAN SEALE: And Mario Fontana called
22 yesterday and told us that he was having as yet an
23 unresolved battle with the stomach flu or something like
24 that, so he's not able to attend either.

25 MEMBER SHACK: Strawberries.

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1 (Laughter.)

2 CHAIRMAN SEALE: There you go.

3 Later on today, we'll receive some comments
4 regarding the situation on our recent recommendations to
5 the Commission on membership on the committee.

6 Do we have any other issues that I haven't
7 brought up?

8 Yeah, I'm sorry. We have this items of
9 current interest list that has been prepared for us by the
10 staff. There are a few things on there that I would urge
11 you take a look at. We have another plant event thing on
12 -- at Beaver Valley on a valve positioning. It seems like
13 these things have got a human factors wiggle in them or
14 becoming at least way more sensitive to them and so
15 they're reporting with a little bit more detail.

16 A couple of other things. There's a memo on
17 there from Dr. Morrison -- or to the NSRRC concerning its
18 meeting with the commissioners. And I think we're all
19 interested in that because it reflects some of the detail
20 of the developing relationship between that committee and
21 this committee.

22 I think you'll all be interested to hear that
23 Dr. Denny Ross been appointed as director of AEOD. And I
24 guess there are other things that will be following along
25 those lines as we -- as time unfolds.

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1 John, do you have anything else at this time
2 you'd --

3 MR. LARKINS: No.

4 CHAIRMAN SEALE: Okay. Well, -- I did
5 announce that, yes.

6 Well, if that's it, then we'll go on to the
7 proposed regulatory approach associated with steam
8 generator integrity. If you'll remember -- oh, yeah.

9 I mentioned -- I'm sorry. I mentioned that we
10 have some reports this time. In fact, there are four
11 reports that are listed in the staff's list. An A+ on
12 plant specific applications of safety goals. That's
13 hopefully a finish up on one we thought we'd gotten rid of
14 last time.

15 Risk of low power shut down -- or shut down in
16 low power operations, an issue we've talked about
17 recently; the 10 50.59 question; and boraflex degradation.

18 Getting back to the steam generator --

19 MEMBER SHACK: With such a small committee, we
20 ought to be able to make real progress.

21 CHAIRMAN SEALE: Well, that's one of the
22 hopes. And in line with that, it's not clear at this
23 time, but it may be that some of you can get home early
24 this time. So we'll try to, by the end of the day, get a
25 fix on whether or not we'll need to meet on Saturday.

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1 As you know, we've been arguing or paying
2 homage to this issue on the steam generator rule now for
3 some time. It represents clearly a difficult technical
4 issue, as well as a difficult regulatory issue. At the
5 recent regulatory review conference, Commissioner Rogers
6 made remarks about the necessity to be very careful and
7 very deliberate in the development of rules.

8 And he used the case of the life -- or plant
9 license extension rule as the example. If you set the
10 clock forward, I'm very confident that one could take the
11 steam generator question at some point in the future and
12 essentially make the same speech.

13 And I make that comment because we all
14 recognize that that's not in a very simple thing for
15 people to do. And there have been many frustrations of
16 people's initial wishes and desires in trying to put
17 forward a workable alternative approach to steam generator
18 questions.

19 At this time, we had thought we would have a
20 copy of the Commission letter that the staff had prepared
21 on this issue, and we had expected to be able to write a
22 report at the end -- or a letter to the commissioners
23 regarding that letter at the end of this meeting.

24 There has been an 11th hour hang up on getting
25 that letter cleared, and the staff is not able to give us

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1 that letter then.

2 At the same time, we felt that because of the
3 large investment we have in this issue and the continuing
4 interest we have in its resolution, that we should ask the
5 staff to come and tell us what the present status is, when
6 they expect to clear this issue, and when we might be able
7 to act on a letter to the commissioners on the Commission
8 letter they're preparing.

9 Jack Strosnider is here to tell us all of
10 those things, and we appreciate your willingness to do
11 that, Jack.

12 We recognize that you wish you were in a
13 position to perhaps give us a more complete story; but
14 nonetheless, we're glad to have you here.

15 Thank you.

16 MR. STROSNIDER: Thank you.

17 Is the microphone working okay?

18 Okay, I'm Jack Strosnider, Chief of Materials
19 and Chemical Engineering Branch.

20 Now I guess I do need to start off this
21 presentation with a bit of an apology to the committee.
22 As Dr. Seale pointed out, our intent when we scheduled
23 this session was that you would have had the opportunity
24 to see a Commission paper that's being developed talking
25 about an alternative approach with regard to steam

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1 generator tube degradation regulation activities.

2 That is, an alternative to the steam generator
3 rule.

4 We had some detailed discussions with the
5 subcommittee at the last subcommittee meeting about
6 results of the risk assessments and a reg. impact analysis
7 that had been performed. And that -- those were really
8 the driving force for our reconsidering whether a rule is
9 the appropriate vehicle, regulatory vehicle, for pursuing
10 this area.

11 I think the comment is very appropriate with
12 regard to approaching rule making in a very deliberate
13 fashion. One of the things that I've tried to point out
14 to people when we look at what we've gone through with the
15 steam generator rule evaluation is to -- if I can, I'd
16 like to say that it's somewhat of a success story in terms
17 of the regulatory process in that we proposed some time
18 ago that a steam generator rule was the appropriate way to
19 deal with this issue.

20 Having gone through the risk assessment and
21 the supporting reg. impact analysis as part of the rule
22 making process, it's caused us to take a step back and say
23 well, does it really fit the criteria. And that's what's
24 the driving force behind looking at some differences --
25 different approach.

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1 What I'd like to do is just briefly go through
2 a little bit of the background and some of the high points
3 of what we discussed at the subcommittee meeting. And
4 actually, what I'm going to use is some material that was
5 used at the Regulatory Information Conference earlier this
6 week at the break out session on steam generators.

7 So just to go back briefly -- and I think this
8 has been presented -- I know at the subcommittee level,
9 and I think probably the main committee's heard a lot of
10 this before. But just to remind people of our original
11 objectives when we proposed to go to a rule, was to
12 develop both a risk informed and performance based rule.

13 There's some objectives listed here with
14 regard to NDE and inspection activities; trying to
15 eliminate a prescriptive regulatory framework, which we
16 currently have, and go more towards the performance based
17 approach.

18 We wanted to create a framework for
19 degradation specific management. This is something the
20 industry has been pushing. It's something that the NRC
21 staff thinks is a good approach. It basically means using
22 the right NDE technology and the most appropriate repair
23 criteria for different forms of degradation.

24 And we wanted to make sure that we had
25 properly considered risk. The rule would be fairly brief

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1 with some high level requirements, and the details would
2 be in a regulatory guide.

3 Now, we did develop the rule. We did develop
4 the regulatory guide. We've had some discussions about
5 those. I would point out that the rule, as it was
6 drafted, did include basically some requirements, and
7 particularly when coupled with the reg. guide, for
8 licensees to assess the risk at their plants with regard
9 to steam generator tube degradation, potential containment
10 bypass under severe accident conditions, and to take
11 action to reduce that risk if appropriate.

12 So just to comment a little bit more on the
13 regulatory guide, we've had no discussions on this. The
14 industry has suggested that it's much too prescriptive.
15 We've responded no, it just has a lot of detail in it.
16 And I guess we will be talking to the subcommittee later
17 about what's in that regulatory guide.

18 But the intent was -- when we get into
19 performance based regulation, our intent was to get the
20 NRC out of the loop in terms of having to review and
21 approve every alternate repair criteria in detail.

22 So what we were really trying to accomplish
23 with this regulatory guide in terms of degradation-
24 specific management is to create a framework or, as I've
25 said before, a box in which licensees, if they operated

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1 within those constraints, would have the flexibility to
2 develop new repair criteria, inspection criteria, etc.

3 So that's why it turned out to be a fairly
4 lengthy and detailed regulatory guide. We did make
5 attempts to make it as performance based as possible. I
6 will acknowledge there are some areas in it that are
7 somewhat prescriptive because we couldn't figure out how
8 else to handle them.

9 We have, where those areas are in there, tried
10 to reference and build upon some of the industry
11 guidelines in these areas. And this is an area that we'll
12 talk more about, I think, at the next subcommittee
13 meeting. We've been asked to go through the regulatory
14 guide in more detail.

15 And as I mentioned earlier, the regulatory
16 guide did have some guidance in with regard to performing
17 risk assessments and taking actions where necessary to
18 reduce risk.

19 So that's where we were. The first steps were
20 to develop the rule, the draft rule, and the draft
21 regulatory guide. At the same time, we were performing
22 some risk assessment work which is necessary to support
23 the regulatory impact analysis.

24 Here's some of the preliminary conclusions
25 from that work. The risk from normal operation and

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1 design-based type transients was not seen to increase --
2 we didn't see that there would be any increase in those
3 contributions to risk based on the regulatory framework
4 that was being proposed.

5 And very simply, what we're talking about here
6 is spontaneous tube ruptures and tube ruptures that are a
7 result of design basis transients -- for example,
8 postulated main steam line break. The deterministic
9 criteria that were in the regulatory guide basically
10 required maintaining the same margins that we have
11 historically, so we didn't see that that was going to
12 cause any problem.

13 And the performance criteria, the probabilistic
14 criteria, for these conditions were consistent with prior
15 risk assessments and also consistent with operational
16 experience up until this point in time.

17 So our conclusion was that in these areas, we
18 didn't see any increase in risk. We also did some
19 additional risk work as part of our more recent efforts to
20 confirm that.

21 However, we did see that risk from steam
22 generator tube ruptures induced by severe accidents could
23 increase for some alternate repair criteria. What's
24 driving that is basically -- for these scenarios, what we
25 refer to as high/dry -- that is high temperature, dry

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1 secondary side scenarios.

2 You have to be concerned about some additional
3 failure modes -- in particular, creep failure -- of the
4 tubes. And although you may be able to leave deeper flaws
5 in and still satisfy the performance criteria or the
6 margins you're looking for under design basis conditions,
7 when you get to these higher temperatures, those deep
8 flaws may create a different problem.

9 We can't say specifically whether all of the
10 alternate repair criteria are going to pose this risk or
11 not because we don't know at this point in time what the
12 alternate repair criteria might be. You know, the
13 industry is working for different types of degradation to
14 develop repair criteria.

15 For example, if you look at circumferential
16 cracking at the top of the tube sheet, there's efforts to
17 try to refine the sizing capability for that type of
18 degradation. There's also efforts looking perhaps at some
19 voltage-based criteria similar to what we did for stress
20 corrosion cracking at tube support plate locations.

21 So we don't know how deep the flaws might be
22 that could be allowed in service. It depends on what's
23 developed. But, the insights you gain from doing this
24 kind of work is to say well, there is at least a
25 possibility that, you know, if you're going to allow some

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1 deep flaws, and depending how many of them were in
2 service, you might have a new concern under the severe
3 accident conditions.

4 We also concluded though part of the risk
5 assessment involved looking at what we considered
6 representative flaw distributions based on the current
7 technical specification requirements of 40% plugging
8 criteria. We concluded that if they're effectively
9 implemented, that the severe risk -- severe accident risk
10 does not just warrant a backfit to reduce risk.

11 I want to say two things about that. One is,
12 I want to underline the "effectively implemented." What
13 that really means is that people are going beyond just
14 working with what's in the technical specifications with
15 regard to the 40% repair criteria.

16 In fact, what you see is that it's necessary
17 really to look at the end of the cycle, end of the
18 operating cycle, to determine if that 40% repair criteria
19 is really accomplishing the goals it was intended to
20 accomplish. And we refer to this as a condition
21 monitoring.

22 All right, so if licensees implement the 40%
23 repair criteria, and they do that -- and look at the end
24 of the cycle to confirm that it's really being effective;
25 okay, they are determining, in some cases, that they need

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1 to shorten their operating cycles or they need perhaps to
2 plug tubes -- for example, if they don't have a good
3 sizing method, to plug them on detection.

4 All right, so there's some things that
5 actually go beyond just plugging at 40% at the beginning
6 of the cycle and saying my risk is going to be okay. You
7 really need to understand what you're ending up with at
8 the end of the cycle.

9 And I'll say a little bit more about this
10 later because what we're really acknowledging here is that
11 there's a deficiency in the tech specs as they're written,
12 and that's one of the things we want to fix.

13 With regard to not warranting backfit, we
14 basically went through 50.109 analysis and looked at what
15 the savings could be in terms of reducing the calculated
16 risk and determined that it really wasn't cost beneficial
17 to require people to take actions to reduce risk.

18 Okay, I would add another point there also,
19 which is that the 50.109 analysis is basically a generic
20 analysis. That is, you spread the cost savings across all
21 the plants out there and say well, how much could they
22 spend to reduce risk. It becomes a very small amount of
23 money that could be spent when you do that.

24 However, you also have to recognize -- and we
25 see this from our risk assessment and also from review of

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1 the IPE's, that there's a range of risk profiles out
2 there. And basically, if you just look at the frequency
3 of these high/dry events, you'll see that some of them are
4 an order of magnitude or more higher than others.

5 The 50.109 analysis doesn't really address
6 that. And I'll tell you, this is one of the issues that
7 we got into in writing the Commission paper, which -- and
8 that's one of the reasons you don't have it today. But
9 we're trying to deal with -- figure out exactly how we
10 should be dealing with that issue.

11 VICE CHAIRMAN POWERS: Can you tell us what
12 the polls of opinion are?

13 MR. STROSNIDER: I'm sorry, I didn't --

14 VICE CHAIRMAN POWERS: Can you explain the
15 polls of opinion on how to deal with that?

16 MR. STROSNIDER: Well, I guess the one option
17 that's being looked at now is dealing with the IPE
18 reviews. And I think this is perhaps consistent with the
19 way some other generic issues have been dealt with.

20 CHAIRMAN SEALE: I was going to say, that's an
21 awful large receptacle.

22 MR. STROSNIDER: Could be. And that's one
23 option that's being discussed.

24 But like I say, this is all preliminary, and
25 that's why you don't have the paper today. We're trying

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1 to figure out the best way to do that. So I'd really
2 rather wait until we get that all resolved and then come
3 back to you and tell you.

4 But we recognize that it's an issue that needs
5 to be dealt with.

6 CHAIRMAN SEALE: You already have a comment.

7 MR. STROSNIDER: Right.

8 VICE CHAIRMAN POWERS: You're pretty sure that
9 we have nothing to contribute to this debate then?

10 (Laughter.)

11 MR. STROSNIDER: No, no.

12 But you know, we would like to go through the
13 thought process ourself.

14 CHAIRMAN SEALE: Sure.

15 MR. STROSNIDER: Okay, so for plants that
16 propose to change the current tech spec criteria -- that
17 is, to look at degradation specific management; as I
18 pointed out earlier, there could be some increase in risk,
19 so there needs to be an assessment of what that might be.

20 But I think there's a couple other -- the
21 bottom line here about reconsidering the rule, let me just
22 explain that in a little more detail. As I pointed out,
23 the draft rule as we had written it, and the regulatory
24 guide, had these requirements in it requiring performance
25 and risk assessments and taking actions to reduce risk

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1 where appropriate.

2 The 50.109 analysis doesn't support that sort
3 of backfit generically. All right, there are other areas
4 that are in the regulatory guide and in the rule with
5 regard to qualification of nondestructive testing methods,
6 with regard to condition monitoring, as we refer it, and
7 operational assessment which, when we sat down and looked
8 at those and said how are these justified, we concluded
9 that in fact those things -- you don't need a new
10 regulation in order to accomplish those things.

11 You know, you can look at that 50.55(a)
12 regarding code requirements. You can look at Appendix B
13 regarding qualification of NDE methods. And you can look
14 at the guidance in the GDC. And if you go back and look
15 at the plant licensing basis, all right, these things, we
16 feel, are really things that have to be done within the
17 current requirements.

18 As I pointed out, this is an area where we
19 feel that the technical specifications have some
20 deficiency. Because the technical specifications
21 basically look at the beginning of cycle and say plug at
22 40%. They don't say anything about at the end of cycle,
23 whether you've satisfied the factors of safety on
24 structural integrity, whether you've satisfied leakage
25 assumptions that are in your design basis accident

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1 analysis.

2 And those are the things that people are
3 looking at today. The staff is asking those questions.
4 You know, we're pushing this idea of maintaining the
5 licensing basis for the plant. So we think that the
6 technical specifications should include that sort of
7 consideration.

8 And in fact, it's more important what you see
9 at the end of the cycle than what you do at the beginning,
10 and that's the performance-based aspect.

11 VICE CHAIRMAN POWERS: Historically, the 40%
12 thru-wall was based on wastage. And was that 40% chosen
13 so there was a high confidence that if you were not 40% at
14 the beginning of cycle, you would not be clear through at
15 the end of cycle?

16 MR. STROSNIDER: That was the intent.

17 Basically, what was done is to look at the
18 allowable wall thickness for a uniformly thin tube. And
19 then that -- they backed off from that, allowing a total -
20 - I think it was of 20% for growth during the cycle and
21 for NDE uncertainty and came up with -- for most plants,
22 it's about a 40% repair criteria.

23 And also, that original thickness had the code
24 factors of safety in it or basically a factor of safety of
25 three on normal operating pressure and 1.4 on main steam

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1 line break.

2 VICE CHAIRMAN POWERS: Maximum allowable.

3 MR. STROSNIDER: So there was quite a bit of
4 margin there.

5 What you're seeing today are different types
6 of degradation. If you model uniform thinning and compare
7 that to some of the other types of degradation, that's I
8 think probably a fairly conservative assumption. But
9 you're seeing people going to longer operating cycles,
10 you're seeing different crack growth rates, you're seeing
11 much different uncertainties with regard to sizing of
12 defects.

13 The wastage type defects were much easier to
14 characterize with eddy current, for example, than stress
15 corrosion cracking. So there's larger uncertainties
16 associated now. And you know, where it might have been a
17 10% allowance, maybe it needs to be more than that for
18 some of the current forms.

19 And these are the sort of things that we're
20 trying to address in the regulatory guide.

21 VICE CHAIRMAN POWERS: Your difficulty in
22 adopting a similar type of logic, even though you have a
23 different type of degradation mechanism, arises because
24 you have a poor knowledge of the crack growth rates?

25 MR. STROSNIDER: Yeah, and that's a real

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1 difficult area that I think we discussed before.

2 Crack growth rate is a difficult thing to get
3 if you can't size the defects. Because typically, the way
4 we get it is by looking at the progression of defects from
5 one, you know, inspection to the next. Part of what
6 people are being forced into here basically is having to
7 repair or plug these defects on detection because they
8 can't characterize their size and demonstrate that in fact
9 -- you know, that they meet the 40% that's currently in
10 the tech specs or what they'd be at the end of the cycle.

11 VICE CHAIRMAN POWERS: Recognizing that
12 difficulty, and that you're always going to have a
13 difficulty barring the development of the wonderful
14 detection technique, is it possible that you could develop
15 a data base from -- in some mechanism other than by
16 looking at actual steam generator tubes that would give
17 you confidence in crack growth rates for a range of sizes,
18 or is this one of those things where you just simply
19 cannot reproduce the conditions?

20 MR. STROSNIDER: Well, this is an area that we
21 have had discussions with the Office of Research on with
22 regard to their program, and I believe they are
23 undertaking some work in this area.

24 But one of the points that we have made, NRR,
25 in our reviews, is that we do, based on our experience,

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1 find it very difficult to take laboratory growth rate data
2 and apply it in steam generators. And the problems you
3 get into are understanding exactly what the environment
4 is, for example, in crevices.

5 It depends on the history of the steam
6 generator. It varies from plant to plant. And not only
7 from plant to plant, but even within steam generators in a
8 given plant. And the other part of this is we have
9 successfully done this sort of thing in other areas.

10 Like if you look at BWR internals cracking,
11 you know, there was cracked growth data developed for
12 that. Basically what we use from a regulatory analysis is
13 the plateau crack growth rate. If you plot -- and that
14 plateau growth rate is high, but there's enough margin.
15 If you look at a core shroud, it's probably an inch and a
16 half or more thicker than it needs to be.

17 So you can make those kind of assumptions, and
18 they're not totally prohibitive. If you try to bound the
19 growth rates that you might see in steam generators, it
20 just could be prohibitive. And if you try to think that
21 you know exactly what the growth rate's going to be in a
22 given plant in a given cycle, it's -- you might fool
23 yourself.

24 So we have, to this point in time at least,
25 made most of our assessments based on the actual data

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1 that's taken for a given plant, given steam generator.

2 That's not to say you wouldn't gain some
3 insights, you know, from doing this kind of work. But you
4 know, we've raised some caution with regard to how we'd be
5 able to apply the results.

6 VICE CHAIRMAN POWERS: So what you're saying
7 is any bounding that you got from an external data source
8 would be so bounding that it probably wouldn't be useful
9 to you.

10 MR. STROSNIDER: Well, that's a concern that
11 we've raised, yes; that it's -- we may not have that
12 luxury in this particular problem.

13 CHAIRMAN SEALE: Part of the problem is, as
14 you try to sort this whole thing out, is that the problem
15 multiplies when you say the first word, crack, or
16 circumferential cracks, or axial cracks; and they're not
17 all due to the same mechanism. And clearly, the growth
18 rates that accompany those different kinds of cracks, you
19 have no reason to believe they're going to be the same.

20 So really, the problem is in part the
21 multiplicity of growth environments that you have to -- or
22 crack environments that you have to cope with.

23 MR. STROSNIDER: Right.

24 And if you could develop all that, say, in the
25 laboratory, the problem that I would have as a regulator

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1 applying it is where do I go on the curve for this
2 particular plant or, you know, for this particular growth
3 -- for this particular degradation mechanism in this
4 particular plant.

5 And there's --

6 CHAIRMAN SEALE: And then look what fun the
7 risk people have. They'd have to say well, there's 20%
8 due to this particular kind of crack and 20% due to that
9 and so on, and you get into all of those kinds of games.

10 MR. STROSNIDER: Yeah. And you probably
11 recall that's an issue that actually showed up. How much
12 risk do you contribute to each different --

13 CHAIRMAN SEALE: Each different mechanism,
14 that's right.

15 MR. STROSNIDER: So as I said, I like to think
16 of this as somewhat of a success story; at least a
17 learning process in terms of the regulatory process.
18 That, you know, we had some ideas about what we thought
19 ought to be in a rule. We put them in. We went through
20 the process, all right, and we concluded geez, it doesn't
21 fit the backfit -- it doesn't satisfy the backfit
22 criteria.

23 And some of the other things that we needed to
24 accomplish really didn't require a rule. So that's why
25 we're at the point of reassessing whether a rule is really

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1 the appropriate way to go.

2 Another approach would be to implement these
3 requirements through a generic letter. And our current
4 thinking, as I pointed out, we see some deficiencies in
5 the technical specifications. And -- well, let me make
6 one comment to go back to the first slide where we had
7 some goals, what we wanted to do under rule making, and
8 what we want to accomplish here now if we did it by
9 generic letter.

10 Those objectives haven't changed. All right,
11 we still want to provide the framework, we still want to
12 be risk informed and performance-based. The question is,
13 can we do this in a generic letter process? Under either
14 approach, we recognize that there would have to be some
15 changes made in the technical specifications.

16 There would have to be some amendments made
17 there. What we're considering at this point -- and this
18 is preliminary, as I pointed out, but it's our current
19 thinking -- is that we could construct a generic letter
20 which basically points out some of the deficiency in the
21 technical specifications, and we would provide two
22 options.

23 One would be for a plant that is not
24 interested in going to the degradation-specific management
25 arena. And for example, you might have some replacement

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1 generators or some generators out there that are operating
2 well who don't feel they need that.

3 The tech specs would basically be modified to
4 incorporate the condition monitoring and operational
5 assessment sort of strategies that we've laid out. For a
6 lot of plants, those could be fairly simple things we
7 think. All right, like I say, replacement generators
8 where there's very little degradation going on, that
9 shouldn't be a difficult thing to do.

10 All right, for other plants where they'd have
11 a lot of degradation, it could be much more complex. It
12 could require doing in situ testing or, in some cases,
13 even tube pulls to verify what's in the steam generator
14 and convince yourself that at the end of cycle you've
15 maintained your licensing basis.

16 The other thing that we want to provide would
17 be a second option, sort of tech specs which provided this
18 framework for degradation-specific management. And this
19 is the case where people could, if they had this tech
20 spec, develop alternate repair criteria.

21 And as I indicated, our goal was -- or is to
22 try to get NRC out of the review and approval loop on all
23 that. So the idea here would be a reference sort of
24 regulatory guide or some program that basically tells you
25 how to go about doing that.

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1 Now, the one area that we mentioned earlier
2 that we still need to address is the potential increase in
3 risk that might be associated with alternate repair
4 criteria. And I think you see two options there.

5 For a licensee that wanted to adopt the
6 degradation-specific management tech specs, if they can
7 come in and demonstrate that their plant does not have a
8 high risk in this area, all right, and -- or somehow show
9 that the alternate repair criteria they would implement
10 are going to maintain acceptable level of risk, those tech
11 specs could then be approved and they could go forward.

12 That will require NRC review and approval.
13 And that's going to happen one time anyway because there
14 has to be a tech spec amendment here. So at least one
15 time. But the question is, can you demonstrate that up
16 front, or do you have to do it for every repair criteria
17 that somebody wants to implement?

18 VICE CHAIRMAN POWERS: Are you saying --

19 CHAIRMAN SEALE: Dana Powers has a question
20 for you.

21 VICE CHAIRMAN POWERS: Suppose that I have a
22 steam generator that's working just fine. I'm very happy
23 to plug anytime I detect something -- a flaw. Don't
24 really care about how deep it is because I don't have very
25 many, so I'm just perfectly content.

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1 You're telling me I still have to go through
2 and revise my tech specs as a compliance issue?

3 MR. STROSNIDER: Yes.

4 And the reason is, you don't -- well, the
5 reason is, as I pointed out, the real thing that we're
6 interested in is the end of cycle condition of the steam
7 generators. And what we want to see in the technical
8 specifications -- and I should also point out that this is
9 in the administrative section.

10 This is not something the operator has to be
11 concerned about. But what we want to see is that the
12 licensee is looking at the end of the cycle to confirm
13 that that 40% repair criteria was really effective.

14 As I pointed out -- let's take a replacement
15 steam generator with improved materials, etc. This should
16 be a relatively simply thing to do. And we think we've
17 accommodated that in the regulatory guide. All right, for
18 a plant of that type, that assessment could be relatively
19 simple.

20 For a plant that develops active degradation
21 mechanisms, perhaps a large -- you know, many different
22 types growing at high rates, then it's a different story.

23 VICE CHAIRMAN POWERS: Whether it's simple or
24 not, you're asking me to do something I haven't had to do
25 in the past. No matter how easy it is, it's something new

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1 and different. And I guess I don't understand why I'm
2 being asked to do something different when I'm perfectly
3 happy with what I've got.

4 MR. STROSNIDER: The situation that we've seen
5 in operating experience and looking at what's going on at
6 plants -- and again, it's driven largely by the plants
7 that have the active degradation going on -- is that
8 people have had to take actions well beyond, you know,
9 what's currently in the technical specifications in order
10 to keep their steam generators within the licensing basis.

11 And I think at this point, you know, I need to
12 credit the industry in the actions they've taken. If you
13 look at what licensees are actually doing, the technical
14 specifications right now require 3% inspection size --
15 sample size. There's very few people out there that are
16 just doing 3%, okay.

17 The licensees on their own initiative are
18 doing much larger inspections. The industry -- the EPRI
19 guidelines in this area recommend a 20% initial sample
20 size. So there is a deficiency there.

21 If you look at condition monitoring type of
22 assessments where the NRC staff has asked licensees at the
23 end of a cycle, you know, are you comfortable that you've
24 satisfied your licensing basis, there are many cases where
25 the licensees have had to shorten their operating cycles

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1 in order to maintain themselves within the licensing
2 basis.

3 Now, in some cases -- and you know, that's --
4 they do that based on their own understanding of the steam
5 generators and their concerns for safety and reliability.
6 In some cases, the staff has had some influence here.
7 Okay, but the point is that the technical specifications -
8 - we have said in the past that they're out of date and
9 that they need to be updated.

10 That's probably a nice way of saying it. They
11 really aren't effective in maintaining the licensing
12 basis. So when you look as a regulator at what you've got
13 there as technical specifications, they're not really
14 accomplishing, we don't believe, what we really want them
15 to accomplish.

16 Now, let's point out there's some set of
17 plants out there for which the tech specs are being
18 effective. But, you know, if they develop degradation
19 further down the line, you know, we're going to have the
20 same problems. So our thought is that we've got to fix
21 the technical specification so that they make sense for
22 what we're really trying to do.

23 And we don't see that as a big burden on
24 licensees that don't have significant problems.

25 VICE CHAIRMAN POWERS: Do the licensees share

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1 that view?

2 MR. STROSNIDER: I'm not really sure.

3 You know, we'll put this out for public
4 comment. We'll have additional discussions with the
5 industry. My guess is that a plant with replacement
6 generators that's not having any problems, they don't
7 particularly want to go through an amendment process if
8 they don't feel it's necessary.

9 I'd be surprised to hear any other response
10 from them. But we -- you know, we need to pull the
11 framework together and put it out there and get the
12 industry comments on it.

13 Okay, the other thing, talking about the
14 associated risk assessment though is, as I pointed out, we
15 want to provide this framework for degradation-specific
16 management. But we recognized that there could
17 potentially be an increase in risk associated with some
18 alternate repair criteria.

19 And what we're proposing here is to follow the
20 sort of guidance that's provided in the Draft Guide 1061.
21 There's some high level guidance on what's an acceptable
22 change in risk. And we're really going to be piggy-
23 backing on that work consistent with what's being done in
24 other risk informed areas.

25 So there will be, when people want to change

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1 voluntarily to a degradation-specific management approach,
2 some questions asked in this arena. And they'll have to
3 address the risk aspects.

4 So that's sort of a -- just a big picture, you
5 know, overview of why we came around to wanting to
6 reconsider whether a rule is the appropriate approach.
7 And some of our preliminary thinking with regard to how
8 this -- these issues would be addressed through a generic
9 letter or some other regulatory vehicle.

10 What I wanted to do then was just talk briefly
11 about where we're going from here. And as I said, our
12 intent was to have our strategy laid out in a Commission
13 paper that you would have seen by now, and that's what we
14 would have been discussing today. We didn't make it.

15 Being the optimist, I think we're close. You
16 know, we've got a revision that's going back up through
17 management review. And hopefully we'll have that in the
18 near future. But what I'd like to do is -- I don't want
19 to make the same mistake again. I'd like to be sure that
20 that memo's on its way to the Commission, and then we'll
21 call you up and say okay, let's -- here's when we can get
22 together on it.

23 But we do know that we need some additional
24 subcommittee meetings. Some of this was discussed during
25 the last subcommittee meeting, and also NRR staff has met

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1 with Noel Dudley to discuss some of the schedules. And I
2 think tentatively we were looking at some subcommittee
3 meetings around May 13th and 14th.

4 Like I say, that's tentative. But I guess
5 what we want to discuss at that meeting though, there's
6 four areas. We need to resolve outstanding issues that
7 the ACRS has already identified. In that regard, we've
8 been working with Noel. We understand that we'll be
9 getting a list of what those outstanding issues are.

10 We think, we hope, that we address some of
11 them in the last subcommittee meetings we had; but it
12 would be helpful when we have that list. And it would be
13 our intent to prepare some written responses to those
14 issues and provide those to you prior to the subcommittee
15 meeting.

16 CHAIRMAN SEALE: Good.

17 MR. STROSNIDER: We think that would be a more
18 effective way.

19 CHAIRMAN SEALE: We found that to be helpful
20 in other areas, --

21 MR. STROSNIDER: Sure.

22 CHAIRMAN SEALE: -- and we'd like to do that
23 here.

24 MR. STROSNIDER: So that's one issue that we
25 want to address there.

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1 We'd also -- we had a request to walk through
2 the details of the regulatory guide, so we would propose
3 to do that. We have some DPO issues that again we're
4 developing some written responses and committee's heard
5 those and had some interest in those, so we would proposed
6 to discuss those.

7 And then finally, we'd give some more
8 specifics on this generic letter revised approach to the
9 subcommittee.

10 Okay, and I guess then the next -- we were
11 talking -- I think there's a full committee meeting around
12 June 11th and 12th, something like that.

13 CHAIRMAN SEALE: Yes.

14 MR. STROSNIDER: And that we would hope that -

15 -

16 CHAIRMAN SEALE: Well, they're days.

17 MR. STROSNIDER: -- if we've had successful
18 meetings with the subcommittee and we've got the
19 Commission paper up here that we could come back to the
20 full committee at that time. This is a somewhat
21 aggressive schedule. We have -- a lot of the technical
22 work has been completed. Otherwise, we wouldn't be to
23 this point.

24 But when we change our approach from a rule
25 making approach to, for example, a generic letter, we have

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1 to reformat a lot of what we've done. What we've done
2 with the regulatory guide references a rule in it. That
3 would have to be changed.

4 What would normally be perhaps statements of
5 consideration supporting a rule will have to reformatted
6 to go into a CRGR package supporting a generic letter. So
7 there is -- there's a long of that kind of work which is
8 time consuming that we have to do.

9 But nonetheless, these are the goals. This is
10 what we'd like to accomplish. We're, I think, fairly --
11 well, we are confident that at least for the subcommittee
12 meetings on the 13th and 14th, there will be enough
13 substance that we ought to get together and discuss what
14 we have in that point in time. This --

15 If we proceed with this with this approach, we
16 still have the same goal of trying to have this
17 implemented in its final form at the same time we would
18 have had a rule implemented. And that -- we were looking
19 -- the original schedule was sometime in mid '98.

20 One of the things that we'll be looking at in
21 this regard too is, as I pointed out, we'll be sort of
22 piggybacking on 1061. And I think the final issuance
23 of that is late this year or perhaps early next year.

24 CHAIRMAN SEALE: That's correct.

25 MR. STROSNIDER: So we need to see how that

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1 evolves.

2 But we are going to continue to push ourselves
3 to try to meet this schedule as early as possible so that
4 we can get this out for public comment and try to still
5 have this out in a reasonable time frame.

6 I mentioned utilizing 1061. If we do this
7 consistent with the way some of the other application-
8 specific risk informed activities are going, we probably
9 need -- we would need to develop some more detailed
10 guidance in that area -- you know, in that application-
11 specific reg. guide, either stand alone or one that would
12 be in the steam generator reg. guide.

13 We haven't decided exactly where it would go,
14 but that could take some time because that's -- I think
15 you've probably seen some of them on IST and some of the
16 other areas.

17 CHAIRMAN SEALE: Yes, we have.

18 MR. STROSNIDER: And that level of detail is
19 something that we don't currently have and would take some
20 additional work.

21 VICE CHAIRMAN POWERS: When you talk about
22 walking through the reg. guide, do you envision, and I
23 hope you do, walking through with a specific example,
24 either real or hypothetical?

25 MR. STROSNIDER: I think there are two things

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1 I had in mind, actually. The way the question came -- it
2 was raised at the subcommittee was walking through the
3 reg. guide and explaining what's necessary and what's
4 efficient and why it's in there. And I think we need to
5 do that, and we need to support what we think is necessary
6 with examples either from operating experience or we need
7 -- and we also -- from our operating experience.

8 And we also need to show -- you know, we're
9 proposing at this point that these are compliance based
10 issues and we need to show that relationship to existing
11 regulations and why we feel that it is necessary to
12 satisfy the regulations.

13 So that would be our intent is to give that
14 kind of instruction.

15 VICE CHAIRMAN POWERS: Now, I recognize that,
16 when you walk through that with examples, you may have to
17 pick examples from a disparate field because you cover
18 disparate possibilities. But it would also be useful if
19 you had one consistent example running through the whole
20 thing as well.

21 MR. STROSNIDER: That's a good suggestion that
22 might help to pull it together.

23 VICE CHAIRMAN POWERS: Okay.

24 MR. STROSNIDER: Appreciate that.

25 MEMBER KRESS: Is that spelled d-e-s?

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1 VICE CHAIRMAN POWERS: D-e-s?

2 MEMBER KRESS: Desperate.

3 VICE CHAIRMAN POWERS: Desperate.

4 (Laughter.)

5 No, this is disparate.

6 CHAIRMAN SEALE: Okay, does that --

7 MR. STROSNIDER: Yes, that concludes what I
8 wanted to say. And if there's any questions --

9 CHAIRMAN SEALE: Okay, are there any comments
10 from any of the members or questions?

11 Don't leave yet.

12 Bill, do you have any comments?

13 MEMBER SHACK: No.

14 CHAIRMAN SEALE: John?

15 MEMBER BARTON: Not at this time.

16 CHAIRMAN SEALE: Dana, anything further?

17 VICE CHAIRMAN POWERS: Well, I'm still
18 puzzling over why it's a compliance issue when I don't
19 have a problem. And I'll be anxious to see -- understand
20 that, and I think that's what you talk about when you say
21 show a tie with your rules and regulations.

22 I would understand it better when I see that
23 tie.

24 MEMBER KRESS: It's hard to have a compliance
25 issue for part of the reactors and part of the licensees

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1 and not for others, I guess.

2 MR. STROSNIDER: I think that's an accurate
3 statement.

4 MEMBER KRESS: But I guess -- I mean, your
5 approach appears to be let the licensees tell us what
6 they're going to do and we'll --

7 MR. STROSNIDER: Well, it -- to the extent
8 that we feel comfortable doing that, and I guess this gets
9 back to some of the philosophy in the regulatory guide
10 that we presented, we want to give flexibility within
11 that. As we currently see it, we would -- this generic
12 letter would have some sample technical specifications
13 with it, you know, which always -- you know, when that
14 kind of letter goes out, the licensees can follow that.

15 That probably makes it work, you know, the
16 smoothest. But there's always the opportunity to propose
17 other options too.

18 MEMBER KRESS: With respect to the -- one
19 possible option you had of allowing them to use the Draft
20 Guide 1061 process, what's the status of it? That's not
21 an official process yet. Does that have to wait until
22 somewhere down the line?

23 MR. STROSNIDER: Right. My understanding --
24 and there are some people here from the division that
25 might clarify this or correct me if I get it wrong. But I

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1 understand that 1061 -- if it's not up to the Commission,
2 it's supposed to be shortly. And the objective is --

3 MEMBER KRESS: It goes out for public comment
4 and --

5 MR. STROSNIDER: Yeah, it will go out for
6 public comment, and the idea is to finalize it towards the
7 end of this year or I think early next year. And so that
8 really provides the overall framework for dealing with
9 changes in the licensing basis --

10 MEMBER KRESS: Which is what?

11 MR. STROSNIDER: -- in a risk informed way.

12 CHAIRMAN SEALE: Well, I guess -- a couple of
13 comments.

14 First of all, when all is said and done, the
15 regulatory requirements are at the threshold of
16 acceptability in a sense. Either you meet those
17 requirements, or you're not satisfying the regulations.
18 And in the steam generator area, the experience -- the
19 cumulative experience of the people that have them is
20 that, by and large, there are other things that should be
21 done beyond the requirements of the present technical
22 specification list.

23 And the people who are -- have been the most
24 successful in coping with their problems are the ones that
25 have initiated the following additional list of activities

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1 like the end of cycle validation and those kinds of
2 things. And so what you're really talking about is
3 catching up or, let's say, readjusting the minimum
4 threshold to include those things which experience has
5 shown you has been very helpful in addressing steam
6 generator problems.

7 MR. STROSNIDER: I think that's a fair
8 characterization.

9 CHAIRMAN SEALE: And I can understand how
10 that's an appropriate thing to do.

11 With regard to your other comments, and this
12 is a little more general comment, we don't learn about
13 rule making and the problems and difficulties with it by
14 doing the slam dunks. It's the hard ones that we learn
15 on, and this has been a hard one.

16 And so, I think there's some lessons learned
17 in all of this that perhaps our committee ought to be
18 concerned with down the road. One is it's apparent that
19 there's some severe accident issues that may well need to
20 be addressed, and that's bringing kind of a wild card into
21 what has been the previous approach to rule makings and so
22 on.

23 And we need to ask ourselves what that means
24 and how we're going to look at that in the more -- in the
25 case of the slam dunks, if you will.

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1 MEMBER KRESS: It's always the dichotomy
2 between design basis accidents and --

3 CHAIRMAN SEALE: Exactly, exactly. And now
4 we've got a case where that's not such a clean cut line,
5 and that first shows up in a tough one. And that's where
6 we would expect it to who up.

7 MEMBER KRESS: The slam dunks are not that
8 easy.

9 CHAIRMAN SEALE: Well, yeah; but they look
10 easy.

11 The other area is you've run into some very
12 interesting problems with regard to plant-specific risk
13 consequences. That is, the plant-specifics of the
14 evaluation of cost benefit and so on. And that's another
15 area we need to look at.

16 Tom, of course, has already led us through a
17 couple of letters in that area, and we may well want to
18 continue that issue. But as we do that, I think we need
19 to look back on this rule making as an example of the
20 kinds of questions that, in the practical sense, flow out
21 of those particular issues.

22 MR. STROSNIDER: Well, I think those are all
23 good observations. I'd like to point out that this --
24 just in regard to the last comment, that, you know, we
25 have a question at this point. We know that from the

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1 IPE's that there's a risk of -- or a range of challenges.

2 We also know that there's different degrees of
3 steam generator tube degradation in different plants. We
4 don't know how those match up. But then you have to also
5 look at thermal hydraulic response and that sort of thing.
6 We don't have all the information to really make that
7 assessment.

8 We know there's a question. That's what we
9 have to pursue.

10 CHAIRMAN SEALE: Well, I want to thank you
11 again, Jack. I realize this was not an easy one. I also
12 appreciate that you had a few other things on your plate
13 earlier this week, and we're very pleased that you were
14 able to make the time and clearly spend the effort
15 necessary to give us a fairly complete and straightforward
16 status on this.

17 We won't be doing a letter this time, but
18 we'll be checking with you on your suggested subcommittee
19 and meeting dates and get back to you on that.

20 MR. STROSNIDER: I'd thank the committee. We
21 appreciate your patience.

22 CHAIRMAN SEALE: Not at all, not at all.

23 All right, I understands the folks from the
24 industry -- could you give your name and --

25 MS. BERNHOFT: My name is Sherry Bernhoft,

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1 Wisconsin Public Service.

2 And I want to say first off I think we agree
3 with the staff that it is appropriate to look at end of
4 cycle conditions. I know that question was posed. That
5 really is appropriate for managing your steam generators.
6 And I think, looking at the reg. guide, we see one hole in
7 there.

8 And a lot of what's in the reg. guide now is
9 based on everything we've learned from voltage-based
10 applications. And I think the reg. guide has an
11 appropriate way to do condition monitoring knowing that.
12 We have to allow for a bounding type analysis and a plug
13 on detection type approach.

14 And given that, there would be no objection
15 to, as Jack proposed, for doing end of cycle conditions.

16 CHAIRMAN SEALE: Very good.

17 Any other comments? Anyone else like to make
18 a comment?

19 Thank you very much. We appreciate your help.

20 Okay, I guess that's it. We'll get to other
21 issues now. We have a little gap or a little window of
22 time here, and -- oh, yes, I need to remind everybody of
23 that.

24 We have here a report that Dr. Catton sent in.
25 It's on the subcommittee meeting we had back in March --

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1 yeah, the end of March. And he has sent in a list of
2 comments and suggestions there, and I'd like to ask
3 everyone on the committee to read through that.

4 Also, --

5 MEMBER KRESS: That's the meeting we had out
6 at LA?

7 CHAIRMAN SEALE: No, this was the one we had
8 here last week.

9 MEMBER KRESS: Last -- the one on long term
10 cooling?

11 CHAIRMAN SEALE: Yes.

12 MEMBER KRESS: Okay.

13 CHAIRMAN SEALE: Yes.

14 MEMBER KRESS: I'm supposed to give a summary
15 of that meeting today.

16 CHAIRMAN SEALE: Yes, and I'd like for you to
17 include anything in here you might want to --

18 MEMBER KRESS: Yeah, it's a little late, but I
19 can do that.

20 CHAIRMAN SEALE: Okay. In the meantime, I
21 think we ought to go ahead and send a copy of this to the
22 staff so they have access to that as well.

23 Okay. This next topic is on the consequences
24 of reactor water cleanup system line break outside
25 containment.

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1 Mr. Barton is the Chairman of the subcommittee
2 on this historic issue, and so, John, it's all yours.

3 MEMBER BARTON: Thank you, Mr. Chairman. This
4 issue does predate my membership on the committee, so I'd
5 appreciate some background also when the NRC staff
6 presents this this morning.

7 My understanding is that the staff is working
8 on a report, which is not available at this time. And so
9 instead of being briefed on a report today, we are going
10 to get I believe a status report of where the staff stands
11 on this issue. I think one thing that the committee would
12 appreciate is if the staff will address when the report
13 will be issued so that we can maybe followup at that time.

14 Background on the cleanup system line break
15 generated from, I believe, the review of the advanced
16 boiling water reactor, I understand that this issue was
17 satisfied in that design and remains a question with the
18 existing fleet of boiling water reactors.

19 At this point, I'd like to turn the session
20 over to Tad Marsh to introduce the topic and also the
21 presenter for today's session.

22 Tad?

23 MR. MARSH: Thank you. Yes, Mr. Chairman, I
24 want to introduce myself. My ame is Tad Marsh, and I'm
25 the Branch Chief of the Plant Systems Branch. This issue

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1 predates me as well, so we're all kind of catching up on
2 this problem and question and what the basic issues are
3 and how we're going to resolve them.

4 Our intent today was to give you the complete
5 report, the background, the results, the study techniques,
6 etcetera. And unfortunately, we are not able to do that.
7 What happened was this: the report is basically done. It
8 had been through a management review, and when we got up
9 to senior management level, some questions were raised
10 about the probabilistic assessments and the lack thereof,
11 the presence thereof, and what sites were there, because
12 that was a component in the initial question. So we are
13 looking at that aspect of the problem.

14 To the best of my estimate, we would be able
15 to give you the report absent the probabilistic component
16 fairly expeditiously. I mean, I would say within a week
17 or so, if that is my management's choice. I would want
18 them to be comfortable giving you that level of report
19 without all of the pieces.

20 If we were to wait for the probabilistic part,
21 it may take some more time, a couple weeks more. I'm not
22 sure at this point. But I'd like to come before you next
23 month, if I can, to give you the results. And I think the
24 probabilistic part will be done by then, at any rate.

25 So --

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1 MEMBER KRESS: We'd prefer to wait for that.

2 MEMBER BARTON: For the complete report.

3 MR. MARSH: All right, sir. Fine.

4 As I say, this probably does predate me, and
5 it arose, in conversation with my staff and section
6 chiefs, it arose during the time of the ABWR review and it
7 dealt with the number of isolation valves in the RWC
8 study in the RWC system. It was driven in part by
9 concerns the agency had at that time, '92-'93 timeframe,
10 with motor-operated valves and then how well they are able
11 to do their job when called upon, because of blowdown
12 loads and things, which is interesting because at that
13 time I was Chief of the Mechanical Engineering Branch,
14 which had the motor-operated valve problem. So I guess
15 all things kind of go around in a circle.

16 Since that issue arose, motor-operated valves,
17 I'm sure you know about 89-10 and what the staff had done,
18 and I think you know about one of the supplements that was
19 issued through 89-10 dealing specifically with RWC
20 isolation valves -- HPSI, RCSI, and RWC isolation valves
21 -- to address the staff's concerns at that time coming
22 from research that was being done at Idaho National
23 Engineering Lab.

24 So that the agency did some things about these
25 valves in particular. Nonetheless, the ACRS asked what

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1 about the consequences of an unmitigated RWCU break
2 outside of containment, and to what extent is it bounded
3 by existing safety analyses, and what are the consequences
4 to health and safety of the public.

5 To give you an overview today, Ron Young, who
6 is doing the study and has been doing the study for the
7 last year or so, will be giving you a snapshot as to where
8 we are. So let me introduce Ron Young and have us get
9 started.

10 MR. YOUNG: I'm Ron Young, Reactor Systems
11 with the Special Projects Section of the Plant Systems
12 Branch at NRR. And perhaps today is yet another first,
13 because this is my first appearance in front of the ACRS
14 as well. So --

15 MEMBER KRESS: Welcome.

16 VICE CHAIRMAN POWERS: Well, we really ought
17 to ask the Jay Carroll question.

18 MEMBER KRESS: Can I ask the Jay Carroll
19 question?

20 VICE CHAIRMAN POWERS: Yes. One of our former
21 members had a routine question for first-time rookies like
22 yourself, and that is: what in the world makes you think
23 that you're qualified to speak before this august body?

24 (Laughter.)

25 It was his way of asking for something about

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1 your background and experience before you start. We
2 really are interested.

3 MR. YOUNG: I see. Well, it's just a minute
4 or two. I'll make this brief like the presentation. I
5 have been with the Commission for a number years in
6 varying positions. Prior to work with the Commission, I
7 obtained my B.S. degree in nuclear engineering from North
8 Carolina State University at Raleigh and --

9 MEMBER KRESS: Good school.

10 MR. YOUNG: I'm glad that's a plus. And
11 really a very good experience. I then went to work for
12 General Electric's Nuclear Energy Division, San Jose,
13 California, and was there for about three years doing a
14 variety of work. Part of it was related to their, at that
15 point, engineering training program. So it was an
16 excellent program, and I had an opportunity to see several
17 different areas in some depth, and decided at the
18 conclusion of that that I really wanted to do more study.

19 And I kept my contacts with N.C. State. At
20 that time, Dr. Raymond Murray, who was very helpful in
21 providing the support, I did return to N.C. State
22 University at Raleigh and obtained an M.S. in nuclear
23 engineering as well. From there, I went to Oak Ridge
24 National Lab, where I was on staff there doing --

25 VICE CHAIRMAN POWERS: Now, that's definitely

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1 a minus.

2 (Laughter.)

3 MR. YOUNG: It seems that I should have quit
4 while I was ahead.

5 (Laughter.)

6 MR. MARSH: You didn't go there, Ron.

7 VICE CHAIRMAN POWERS: But you did leave, so
8 that --

9 (Laughter.)

10 MR. YOUNG: Yes, but I thought it was a plus.
11 I had seen the industry, the production work with the
12 vendor, and there was a research environment. And having
13 left there, I did come to work, of course, with the
14 Commission, and as I said, have been there for a few
15 years. I have been in areas like the operations center.
16 I was ops. officer for two years. I worked on generic
17 communications. I was in the old I&E organization, so I
18 got to see what then I think were integrated design plant
19 trips.

20 I have been, more recently, with the expansion
21 program on the 12th floor with Frank Lespy's group doing a
22 variety of work, and really had a real opportunity, just
23 before leaving that area, to come to plant systems to be
24 assigned as a technical assistant, among several, to Ashok
25 Thadani. And that gave me a really great view of the

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1 agency as a whole and the kind of work that goes on at
2 that level.

3 And consequently, here recently, then, I
4 started working -- I think it's been a couple of years
5 I've been in Plant Systems Branch working with the
6 advanced design, so it has been a real plus, again, in
7 seeing the ABWR, the System 80+, from that perspective.
8 And consequently, I inherited -- and let me emphasize, I
9 inherited -- the present project, which has been an
10 arduous task, to say the least, with very formidable
11 obstacles which I don't think, in the words of Martin
12 Luther King, if I can use that, I've overcome.

13 (Laughter.)

14 VICE CHAIRMAN POWERS: This was an arduous
15 task.

16 (Laughter.)

17 MR. YOUNG: That brings me I think to my
18 present position, which is appearing before you for the
19 first time, again, on this arduous task to give an
20 overview.

21 So let me proceed then with, again, just a
22 very brief overview of the reactor water cleanup study.
23 I'd like to briefly address the background, study
24 approach, key issues, and finally the status. And Tad has
25 already given some information with regard to the history

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1 and how this has evolved.

2 I might add that this has really had a long
3 history in terms of its involvement. I have become
4 educated as I have worked on the project in a variety of
5 issues. The fact that it's beyond design basis, it's
6 multidisciplinary, it crosses so many different lines,
7 that I've had to work with the staff, and just obtaining
8 data from the licensee has been somewhat time consuming as
9 well.

10 But the initial -- or given that history,
11 rather, the motivation for the study originated with the
12 ACRS's review during the design review process of the
13 RWCS, of the reactor water cleanup system, ABWR. And one
14 of the areas that was identified was the isolation
15 capability on the supply line, which penetrates primary
16 containment for the system.

17 And there, of course, was the postulation of a
18 break in that line in secondary containment which, if
19 occurred, then would result in an adverse environment
20 adversely affecting the safeguards equipment that is
21 typically housed in the secondary containment for BWRs.
22 In particular, if you're aware that usually at the lower
23 elevations, there is the ECCS equipment and the like.

24 So consequently, the ACRS requested that we
25 extend that consideration on these two current operating

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1 plants as to whether the scenario was, indeed, applicable
2 for current plants as well. And hence, we have the study.

3 With regard to study approach, the staff
4 obtained agreement from three representative BWR plants to
5 voluntarily participate in the study. And I might mention
6 that, as you may have probably already concluded, I got
7 several refusals, simply because it was not a regulatory
8 mandate. It wasn't a regulatory requirement, although we
9 have participants -- have participated now -- include
10 Browns Ferry Unit 2, which is a BWR-4, Susquehanna Unit 1,
11 which is also a BWR-4, and finally, Grand Gulf Unit 1,
12 which is a BWR-6.

13 And together, those plants employ,
14 respectively, the Mark I, II, and III containment designs.
15 And that was another stipulation of the ACRS's scenario,
16 or at least request, that we perform this evaluation for
17 the three containment designs for BWRs.

18 Additionally, the staff simulated the reactor
19 water cleanup system pipe break using the thermal
20 hydraulic RELAP5/MOD3 computer code, and also determined
21 containment environmental conditions using the CONTAIN
22 computer code. And namely, such time-dependent behavior
23 as relates to pressure, temperature, and humidity.

24 Of course, I think it is that the RELAP5
25 generates tables of enthalpy and mass flow rate, which are

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1 then input to CONTAIN. And I think there are also some
2 boundary conditions that go along with that, which then
3 gives us the sub-compartment environment conditions that
4 would exist given the postulated break.

5 MEMBER KRESS: When you say "containment
6 environment," do you mean the reactor building?

7 MR. YOUNG: The secondary containment
8 compartments, yes. Yes. We are postulating the break
9 occurs in one of the compartments of the reactor water
10 cleanup system, and just beyond the outermost containment
11 isolation valve is the scenario.

12 Supplement to that information was in-house
13 and external database searches to gain other information.
14 And in particular, I utilized, to the extent possible, the
15 full text retrieval system of ZI Index, which was helpful
16 in searching on LERs, SERs, event reports, anything we
17 thought might be pertinent to the study.

18 In terms of key issues, the pipe break study
19 attempted to address those that, for the most part, were
20 proposed by the ACRS in recommending the study. We looked
21 at issues such as reactor core coverage and cooling, which
22 gets involved in the inventory makeup capability,
23 secondary containment environment, which again we have
24 touched on. That was the time-dependent behavior of such
25 parameters as pressure temperature and humidity.

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1 In addition, I also considered radiation and
2 flooding, so those were some of the issues. We added, as
3 time went on, an evaluation of the presence of what I call
4 third valve actuation capability. That is, for those
5 plants that we have studied, we tried to assess whether,
6 indeed, they had a backup isolation valve on that supply
7 line which was like the solution that was arrived at for
8 the ABWR system.

9 MEMBER KRESS: Did the study go as far as core
10 melt and release of fission products?

11 MR. YOUNG: No. We did not go that far, and
12 that has been one of the questions raised in terms of the
13 probability risk assessment. But without giving away all
14 of my secrets here in terms of the study, we, as I said,
15 did the RELAP5 calculation. And in terms of the thermal
16 hydraulic response of the primary system, it does not
17 indicate necessity for going beyond to severe accident in
18 terms of core melt.

19 The result that we saw was that the vessel
20 level could be maintained and adequately recovered and
21 maintained, given the initial scram on low level by the
22 motor-operated condensate and condensate booster pumps
23 alone.

24 And I might also say that in that regard,
25 there is a precedent. Out of my literature search, I

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1 found that TVA -- and I'm sure the vendor has done similar
2 analyses as well -- but for that case, and this goes back
3 a few years, I guess maybe to the mid '80s, TVA was
4 training its operators on this very scenario. And their
5 analysis showed that, indeed -- had the same observation,
6 and that is that the feedwater system, the condensate and
7 condensate booster pumps, were sufficient to keep up with
8 the break. And, therefore, there was not the need to
9 consider ECCS equipment.

10 MEMBER KRESS: This would be considered the
11 same as a small break LOCA, then?

12 MR. YOUNG: Well, really, given the size of
13 the pipe, if the break regime for that still applies --
14 and there used to be a break point for each of the LOCA
15 sizes. This is a six-inch pipe. And as I understand it,
16 anything equal to or greater than six inches is considered
17 a large break. So we are definitely in the medium to
18 large break regime.

19 One other factor that has come into play since
20 I think the study was initiated is it has become an
21 integral part -- at least I consider it to be an integral
22 part of the overall study -- and that is the results that
23 we presently have as it relates to the implementation of
24 Generic 89-10, and the EPRI MOV performance prediction
25 program, all of which are aimed at assuring the

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1 reliability closure of safety-related mode-operated valves
2 under design basis flow conditions. And that would
3 include, of course, the containment isolation valve for
4 the supply line in the RWCS.

5 And because of that, we've attempted to fold
6 that into the study, and that there is an issue, if you
7 will, that is dealt with where that is brought to bear and
8 we try to make use now of those results. So the bottom
9 line being is that if the worst happens, we have assurance
10 that those valves will reliably close given the guidelines
11 of the EPRI MOV performance prediction program, the
12 comparable program sponsored by the NRC to 89-10. And
13 lastly, the NRC sponsored research itself.

14 So those factors coupled, or taken together,
15 we think give those valves sufficient capabilities of
16 closing that -- that, heretofore, perhaps have been a
17 little more uncertain. But that's an area that I think,
18 if there are in-depth questions, can be adequately dealt
19 with in a very skillful manner by your colleague, Mr. Tom
20 Scarbrough, who is present today, if there are questions
21 on that.

22 I guess that brings me to the final portion
23 which is the status, and I think that has already been
24 touched on, too, earlier. One, the final draft report for
25 the reactor water cleanup system pipe break study has been

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1 completed, as noted, with perhaps just a few things that
2 need to be done, not very time consuming. And it's
3 undergoing the internal review by the NRR upper
4 management. And again, that tends to focus more on the --
5 as far as we know, on the PRA aspects.

6 Then, given that, we plan to give the ACRS the
7 final draft report in early April, which is nearing here,
8 and then the final report itself at the earliest possible
9 date following that. And the staff plans to return and
10 present, or I suppose I'll be returning, and present the
11 final report of the study to the committee at its May 1997
12 meeting.

13 And that concludes my presentation.

14 MR. MARSH: Mr. Chairman, as we say, we do
15 anticipate getting the report to you as early as next
16 week, and we'll let you know should there be any
17 difficulties with doing that.

18 MEMBER BARTON: That'll be the final report
19 with the PRA piece included?

20 MR. MARSH: We'll keep you posted on that
21 component. I understand you do want it to be a complete
22 part and --

23 MEMBER BARTON: Yes. Yes, we do.

24 MR. MARSH: -- I've asked the PRA staff if we
25 could get some qualitative input for the report by next

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1 week, which would allow me to give it to you next week in
2 final form and allow us to meet the May schedule. If I'm
3 not able to do that, I'll be discussing with your staff
4 what you'd prefer. Okay.

5 MEMBER BARTON: That's fine. We'll await the
6 final report and reschedule the briefing on this committee
7 for either May or June. Hopefully in May.

8 MR. MARSH: Okay.

9 MEMBER BARTON: Any other committee members
10 have questions?

11 Thank you.

12 MR. MARSH: Thank you.

13 CHAIRMAN SEALE: Appreciate it.

14 MEMBER KRESS: Is that it?

15 CHAIRMAN SEALE: That's it. Now don't steal
16 our microphone, please.

17 (Laughter.)

18 We've had that problem with others, so you're
19 not -- it's nothing personal.

20 The next -- let's see, I guess the rest of the
21 morning we will be involved with a report by Dr. Kress on
22 the meeting of the thermal hydraulic phenomena
23 subcommittee on the 28th of March. And then after that we
24 will reconcile ACRS comments and recommendations on
25 previous letters that we've sent forward.

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1 Tom, are you ready, or did we catch you too
2 soon?

3 MEMBER KRESS: Well, you caught me, but I'll
4 be ready in just a second.

5 CHAIRMAN SEALE: Okay. Appreciate your
6 flexibility.

7 Should we stay on the record for this, or can
8 we let our --

9 MEMBER KRESS: This ought to be on the record.

10 MR. DURAISWAMY: Yes, I think --

11 CHAIRMAN SEALE: This should be on the record.

12 MR. DURAISWAMY: We ought to have it on the
13 record.

14 MR. BOEHNERT: One staff member did want to
15 come to hear this. But if we get it on the record, I can
16 give him the transcript.

17 CHAIRMAN SEALE: Okay. Fine.

18 MEMBER KRESS: All right. This is a report to
19 the full committee, whatever it --

20 (Laughter.)

21 -- is, of the thermal hydraulic phenomena
22 subcommittee meeting we held on March 28, 1997. Those
23 members present at the meeting were myself, Mario Fontana,
24 and Bob Seale. We had three consultants, Ivan Catton,
25 Novak Zuber, and VJ Dhir. Paul Boehnert was there as the

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1 cognizant staff member and designated federal official.
2 And there were, of course, representatives from
3 Westinghouse and from ONRR.

4 This was a mostly closed meeting -- part of it
5 was open -- and the purpose was to give basically
6 Westinghouse and the NRC staff benefit of any early
7 reaction we might have to a proposal by Westinghouse to
8 use what they call a windows approach -- and this has
9 nothing to do with PCs and Windows 95 -- to validating the
10 use of the Westinghouse COBRA/TRAC code for application in
11 evaluating the long-term cooling performance of AP600 for
12 a design basis LOCA.

13 Now, I'll remind the members that the long-
14 term cooling period occurs after you've already had the
15 full blowdown through the ADS-4 valve, and it includes the
16 period where your gravity draining and injecting from the
17 IRWST to the DVI line, and then when the IRWST level gets
18 low enough and you're gravity draining and feeding from
19 the sump at a little lower head into the core directly
20 through the direct vessel injection line.

21 Under these type of conditions, things are
22 changing very slowly. The decay heat is pretty low. The
23 steam generation rate is low. Pressure is low.
24 Temperatures are cooling off, actually, most of the time,
25 and the system can be viewed as basically a large pot of

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1 water with the core generating steam at a relatively low
2 level that goes out the ADS-4 valve mostly. There are
3 other open valves -- the ADS-1, 2, 3. There is also a
4 break probably somewhere.

5 So it could go out those lines, but mostly it
6 goes out the ADS-4 valve because of its location and size
7 of the opening. And then it condenses on the containment
8 walls, and this condensate refluxes back, is fed by way of
9 guttering systems and so forth back to the sump, and then
10 is gravity fed to the core.

11 This can go on indefinitely, this reflux
12 cooling process, and so it's a long sequence. It goes a
13 long time. The decay heat is slowly dying away during
14 this process.

15 I also remind the members that the APEX
16 facility at Oregon State University had several tests that
17 were designed specifically just to assimilate this part of
18 accident sequences for AP600. Since these sequences are
19 very long, and things are changing slowly, it is really
20 clear that you are in a quasi-steady state condition.

21 And that a code like COBRA/TRAC, which was
22 originally designed for large break LOCAs with things
23 changing very quickly -- and, you know, I hate to bring it
24 up because -- but it was a key part of our meeting that
25 that is just not the right code to use for these kind of

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1 conditions. It's just an overkill on a grand scale.

2 But the subcommittee rightly came to the
3 conclusion that it is not our position to question
4 Westinghouse's decision on this but to answer the
5 question, is it adequate, is it okay to use this and this
6 windows process, which I'll get back to in a minute, to
7 determine the long-term cooling behavior of AP600.

8 One of the problems with using this kind of
9 code for this type of sequence is it takes a long time to
10 calculate it. And, in fact, we were told by Westinghouse
11 that typically it would take 200 days of computer running
12 time. Now, I don't know what kind of computer they're
13 using, but they said that could be done.

14 But, number 1, it would delay their
15 certification process, because they haven't started it
16 yet, that calculation.

17 Number 2, it would cost a lot of money, which
18 surprises me because, you know, you can just turn on
19 computers nowadays and walk away. But that's what they
20 said.

21 But, number 3, which is I think their major
22 reason, is it's not necessary to run this full sequence.
23 That's their major point. They say it's not necessary
24 just because this is truly a quasi-equilibrium condition,
25 and that brings me to their windows process.

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1 The windows approach is simply to look at
2 specific windows of time in the sequence -- short periods,
3 typically the 1,000 to 3,000 seconds long, and to choose
4 these periods within the transient so that they provide
5 the most challenge to the figure of merit. And here the
6 figure of merit is, does the core stay covered?

7 Really, this is like an Appendix K calculation
8 where the figure of merit is the peak clad temperature,
9 but the core never comes uncovered. So all they're really
10 addressing is, what is the potential for the core to
11 become uncovered?

12 They chose windows where the challenge to that
13 is supposed to be highest. Those windows are where the
14 power to flow ratio is the highest during a sequence. And
15 also, there was some consideration of how low the actual
16 core level, water level is during that period. If it's
17 low, it's more of a challenge, too.

18 VICE CHAIRMAN POWERS: Dr. Kress, could I ask
19 you, this WINDAs (phonetic), is that an acronym, W-I-N-D-
20 A?

21 (Laughter.)

22 MEMBER KRESS: Yes, it is. And I'll tell you
23 later what it stands for.

24 (Laughter.)

25 Okay. Rodney Dangerfield.

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1 Anyway, this approach, they intend to use this
2 looking at -- what they do is, in the case of -- they want
3 to use it for validating the code using the APEX test, and
4 they also want to use it for predicting the long-term
5 cooling performance of the AP600 system. Both cases
6 they're going to use the windows approach.

7 And the way they do this is in the case of the
8 APEX Oregon State University test, they select initial
9 conditions from the test data itself. And then they feed
10 these into the code and let it undergo an initial
11 transient to approach the code's quasi-steady state, and
12 then they compare the code's quasi-steady state behavior
13 to that of the test and treat it just like any other
14 validating process then.

15 And the reason you have this initial transient
16 to approach it is because you can't really match initial
17 conditions perfectly. You really have to have initial
18 conditions and first derivatives, and you can't match both
19 perfectly, so they get this little transient to meet it.
20 That transient typically is a short time compared to the
21 1,000 and 3,000 seconds. We saw a couple of them that
22 took almost 500 to 1,000 seconds to reach, but it's
23 generally short.

24 The question arose as to, well, how do you get
25 the initial conditions when you go to use the windows

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1 process for predicting AP600 behavior, because you don't
2 have the test data. And the answer was, well, we have run
3 a great number of sensitivity studies on initial
4 conditions, and we find universally with these sensitivity
5 studies that you get fast convergence on the quasi-steady
6 state.

7 So it doesn't matter what initial conditions
8 you choose. This is a boundary value driven problem. So
9 they can choose almost -- they can guess closely what the
10 initial conditions are for a given window position, and it
11 converges rather rapidly, and then they could use the
12 quasi-steady state behavior as a measure of the behavior.

13 So the question before us was: is this an
14 appropriate procedure for both validating the code and for
15 predicting the long-term performance behavior of the
16 AP600? The consensus of the subcommittee was yes, it's
17 truly quasi-steady state; yes, there is nothing wrong with
18 this approach in validating the code; and there is really
19 nothing wrong with the approach of predicting the AP600
20 behavior.

21 And then there is a "but." There were some
22 undercurrents that flowed, and they went -- I'm not sure I
23 can capture all of them, but they went something like
24 this. In this process, the containment behavior is an
25 integral part of it, and they did not have -- the code

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1 that they used is not a containment code. So what they
2 had to do is run GOTHIC, which is their containment code,
3 and try to feed input into the system for GOTHIC.

4 But it's not an integrated system, so they did
5 -- here is the place where they did sensitivity studies
6 and tried to bound the containment behavior. There were
7 questions about the uncertainties in this and the bounds,
8 and whether they really did --

9 VICE CHAIRMAN POWERS: The containment
10 dictates some of the boundary valves here, doesn't it?

11 MEMBER KRESS: It certainly does.

12 VICE CHAIRMAN POWERS: It's not an initial
13 condition thing.

14 MEMBER KRESS: That's right.

15 VICE CHAIRMAN POWERS: It's a boundary value.

16 MEMBER KRESS: It's a boundary --

17 VICE CHAIRMAN POWERS: It really is a
18 coupled --

19 MEMBER KRESS: It's coupled. It is about as
20 coupled as you get in severe accident space. It is part
21 of the system, and it will matter.

22 Okay. For example, there is the possibility
23 that either the IRWST or the sump may be thermally
24 stratified under these conditions. And now, under those
25 conditions, when you're feeding water, you're using a hot

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1 mean temperature. But you don't know when this may be --
2 you hit the core just at the wrong time with the hot part
3 of this thermally stratified. It could make a significant
4 difference on whether you cover the core, and thermal
5 stratification is not part of GOTHIC or anything, so it's
6 not even dealt with in this, and it hasn't been part of
7 any uncertainty study they've done.

8 MEMBER SHACK: Was it done in any of the OSU
9 tests? Did they try to simulate anything like that?

10 MEMBER KRESS: No. So it's just tiny. It's
11 nothing --

12 CHAIRMAN SEALE: That's one of the questions.

13 MEMBER KRESS: It's a question. It's a
14 question that arose.

15 VICE CHAIRMAN POWERS: It seems to me that the
16 people at Oak Ridge who are looking at the iodine
17 partitioning issue had to wrestle with this thermal
18 stratification and did some mixing analyses and got into
19 arguments with Westinghouse over whether it was all done
20 correctly or not. Is that pertinent here?

21 MEMBER KRESS: The mixing analysis I'm
22 familiar with were mostly for the suppression pool. I
23 don't know if the --

24 VICE CHAIRMAN POWERS: I thought the IRWST
25 came into it, because it released --

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1 MEMBER KRESS: It may have. I'm not sure of
2 that, Dana. It would be worth looking at.

3 VICE CHAIRMAN POWERS: There was some --

4 MEMBER KRESS: You know, it would be -- give
5 you criteria as to whether you are mixed or not, and you
6 could say whether or not the potential exists for
7 stratification, which would be worth looking at. I think
8 that's the way you address those -- that kind of question.

9 VICE CHAIRMAN POWERS: I think Cliff Webber
10 was --

11 MEMBER KRESS: Cliff Webber was involved in
12 that.

13 VICE CHAIRMAN POWERS: Yes. It would be
14 interesting to know if --

15 MEMBER KRESS: Chuck Webber.

16 VICE CHAIRMAN POWERS: Chuck Webber. I'm
17 sorry. They were working on a completely different issue,
18 and I'm sure they were totally unaware of this issue. But
19 it would be interesting what they viewed on that, because
20 my recollection was that they came back with a
21 recommendation that what they had done was what they could
22 do given the time constraints they had. And they felt
23 like a lot more needed to be done for their issue, but it
24 sounds like there may be a bigger issue.

25 MEMBER KRESS: I remember they concluded that

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1 the potential was there for stratification.

2 CHAIRMAN SEALE: It's more of an "our" issue
3 at this point.

4 MEMBER KRESS: So it's an issue we've raised
5 that we told Westinghouse -- see, this was just -- they
6 were wanting our initial reaction, so they're getting
7 issues that we may raise later on when we hear more about
8 this. That was one of them.

9 Another one was -- remember, in the OSU test
10 they had this oscillatory behavior during part of it. And
11 one of our consultants raised the question: since you
12 don't see that particular oscillatory behavior with the
13 code -- you see another one that's numeric, but you don't
14 see that -- is there potential, for example, to get caught
15 in one of these oscillations and dry out the core, and you
16 never recover because it's an irrecoverable position.

17 And how do you know what the extent of the
18 oscillations are, when they're going to occur, and how do
19 you factor that in as an uncertainty? That was another
20 question.

21 And along those same lines, even during the
22 windows, the code predictions didn't always track the APEX
23 behavior, and the subcommittee thought there was a better
24 need for Westinghouse to explain those deviations.
25 Although they didn't seem to be large, they were

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1 significant. There were a couple of times when even the
2 trends were wrong.

3 MR. BOEHNERT: Well, they were non-
4 conservative in a couple of places.

5 MEMBER KRESS: Yes, non-conservative. So that
6 was another undercurrent.

7 VICE CHAIRMAN POWERS: You mentioned numerical
8 induced oscillations in the code calculation. Those
9 things always make me very, very nervous.

10 MEMBER KRESS: Yes.

11 VICE CHAIRMAN POWERS: Because I have seen
12 people try to use numerical oscillations to cool the core
13 and --

14 (Laughter.)

15 MEMBER KRESS: Can you patent that?

16 (Laughter.)

17 Actually, a lot of the plots, during some
18 portions of the sequences, the code really oscillated. I
19 mean, it was really up and down. But these scales were --
20 because this is a long-term sequence, the scales were very
21 compressed, so they looked fast but I'm not sure they were
22 all that fast, because there was really a compressed scale
23 on time.

24 But there were huge oscillations that just --
25 and now, how do you deal with those in validating your

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1 code compared to the smaller oscillations that you saw in
2 the data? And how do you deal with -- if Westinghouse
3 proposed to use a smooth mean and compare that with the
4 data, that would --

5 VICE CHAIRMAN POWERS: Are we not worried that
6 there's a bifurcation that the code is trying to tell us
7 about?

8 MEMBER KRESS: Well, I think --

9 VICE CHAIRMAN POWERS: That's not built into
10 the ultimate physics?

11 MEMBER KRESS: It had to do with level
12 tracking and with node size. That's all we were told.

13 CHAIRMAN SEALE: But you really wonder about
14 those kinds of things when the period is like 15 minutes
15 or something like that. That is apples and oranges.

16 MEMBER KRESS: And they were about 15 minutes,
17 I think.

18 CHAIRMAN SEALE: What?

19 MEMBER KRESS: I think they were about that
20 order of magnitude.

21 CHAIRMAN SEALE: Yes. And that just doesn't
22 make sense. It is --

23 MEMBER KRESS: So we thought there was a need
24 to better understand the oscillatory behavior of the code
25 and how that fits into the validating process. We thought

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1 it also was -- this convergence period I discussed about
2 from the initial conditions, sometimes it was rather long,
3 some of the windows. And the question is: how long do
4 you have to run a window to assure that you've gotten
5 convergence, particularly when you go to AP600 where you
6 don't have data?

7 And so the feeling of the committee was that
8 there was a better need to understand this convergence,
9 and in particular, what are the time constants for the
10 things that we're converging on, like pressure,
11 temperatures of the various location or level? These
12 things are converging as some time constant, and there is
13 a need to understand that time constant with respect to
14 the time constant of the window, or the time length of the
15 window.

16 VICE CHAIRMAN POWERS: Our experimental data
17 doesn't show -- doesn't deal with this convergence to
18 quasi-steady --

19 MEMBER KRESS: No. It's running all along.
20 It's already there. Yes.

21 VICE CHAIRMAN POWERS: And so we're often in
22 hypothetical land here.

23 MEMBER KRESS: Hypothetical space, yes.
24 Absolutely. And none of the tests really did a
25 perturbation and looked at convergence like that. So we

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1 have nothing to go on other than analysis there.

2 Finally, a really strong point that really has
3 nothing to do with the windows concept or the validation
4 or its use for APEX was made by several of the consultants
5 and the members, subcommittee members, and it was made
6 strongest by Novak Zuber, as you can understand. And he
7 wanted to be sure this message got across to -- it was
8 directed at us, the committee, and that is the reason
9 they're in this situation where they have to use windows
10 and they have to use this code was because of a bad
11 decision made years ago on development of thermal
12 hydraulic codes for use in assessment of the behavior of
13 these things.

14 They have chosen an inappropriate code again,
15 and we haven't learned our lesson is what Novak says. And
16 he is particularly concerned about the new code coming
17 out, the new thermal hydraulics program. And he says,
18 "Look, you guys, you are going down the same road again,
19 and we need to be aware of that." And he is raising a
20 flag for us that we need to think about the use of this
21 type of code where we really ought to be interested in
22 small break behavior and the codes are addressing large
23 break. And do you need a 3-field 3-D code to deal with
24 these kind of things?

25 So that was the flag that was raised. It has

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1 nothing to do with the issue, but it's something he wanted
2 to be sure got brought up.

3 VICE CHAIRMAN POWERS: Well, it raises an
4 interesting issue for us, because at some time aren't we
5 going to be asked to give advice on this new code effort?

6 MEMBER KRESS: Yes. And that's what we need
7 to be thinking about.

8 VICE CHAIRMAN POWERS: Do we know when that
9 advice is going to be timely?

10 MEMBER KRESS: No, we already had one meeting.

11 MR. BOEHNERT: Well, we had a meeting, but we
12 need to get with them again. We were talking about --
13 Research was suggesting some time this summer for a
14 subcommittee meeting when they think they're going to have
15 their act together about what approach they're finally
16 going to settle on. But that's still up in the air some.

17 MEMBER KRESS: But it's pretty clear. They're
18 heading off using TRAC as a base.

19 CHAIRMAN SEALE: Yes. And Ivan has made some
20 comments to that issue as well.

21 MEMBER KRESS: And really, you know, for small
22 break LOCAs, you can do a lot better with a different
23 approach I think.

24 VICE CHAIRMAN POWERS: It seems to me we're
25 going to have to spend some time thinking about what are

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1 the thermal hydraulic needs of the agency, and what are
2 the acceptance criteria for a program here.

3 CHAIRMAN SEALE: Yes.

4 VICE CHAIRMAN POWERS: Now that we have --
5 since we have a little bit of window of time between now
6 and this summer, it wouldn't hurt to spend some front end
7 time on that, so that we're not scrambling to answer a
8 question where our answer may be at odds with the answer
9 that the staff has in mind.

10 MEMBER KRESS: I put together -- I think
11 that's a good suggestion. Paul is writing it down.

12 I put together this summary before I got any
13 comments back from our consultants. Just an hour ago I
14 guess, we got something from Ivan Catton on his reaction
15 to the subcommittee meeting, and I'm not sure I reflected
16 everything he said in his. One of them -- I might just
17 quote a couple of his comments. One of them had to do
18 with -- you know, under these conditions, an important
19 parameter is just the flow resistance and the connections.
20 It's gravity feed, so these flow resistances are the thing
21 that has to be overcome.

22 He says, "Hey, you ought to be able to power
23 that directly. You've got all of the data, for the APEX
24 particularly, and why don't you do that and break it down
25 and show us how your code compares with just that part of

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1 it." Because there would seem to be a bias in the level
2 data by -- it would bias low in the calculation. But one
3 of the reasons it could be biased is you've got the darn
4 flow resistances wrong.

5 You know, there is not much but gravity head
6 and flow resistance in this. And so he says, "Why don't
7 you do that, make a blind comparison of those." And I
8 thought that was a good idea.

9 And he also brought up this strong coupling
10 between the containment back pressure and the primary
11 system behavior. And he didn't like the approach to
12 dealing with it, and what he suggests is that a set of
13 containment pressure history curves are needed, in which
14 you can choose a maximum, a minimum, and a best estimate
15 to allow the -- to look at the effect on the behavior.
16 And he says it's -- the present approach doesn't really
17 capture the containment behavior very good.

18 And basically, I guess --

19 MEMBER SHACK: What do they do, stop and
20 recalculate every once in a while?

21 MEMBER KRESS: Yes.

22 CHAIRMAN SEALE: Could I make some comments?

23 MEMBER KRESS: Yes, you may. In fact, I was
24 going to invite the only other member here that was there
25 to -- if he had any elaboration he wanted to make.

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1 CHAIRMAN SEALE: I share a little bit of
2 focusing this that accompanied that windows --

3 (Laughter.)

4 Mario Fontana made the comment that it was
5 like driving tacks with a sledge hammer to use this code.
6 And I would disagree with that, and I disagreed with
7 myself, too, after I wrote down my first observation. I
8 said it's more like local mail delivery with an F-16.

9 (Laughter.)

10 But then I realized that we had built over
11 2,000 F-16s, and so it's more like local mail delivery
12 with the Flying Wing.

13 (Laughter.)

14 The thing that -- and it's a fundamental ACRS
15 issue, I think -- if any of you have slummed with the
16 thermal hydraulics subcommittee very much, one of the
17 things you've been exposed to is Zuber's bathtubs analogy,
18 that an awful lot of these calculations involve
19 connections between reservoirs with various flow
20 mechanisms between them of one sort or another.

21 The equations you get are, interestingly
22 enough, not a hell of a lot different than the ones you
23 get when you start calculating radioactive decays in a
24 chain, particularly where you have bifurcation of beta or
25 alpha decay alternatives, except you don't have the time

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1 constants in it.

2 But Zuber is right. I mean, this is nothing
3 more than a bunch of connected bathtubs, and you could do
4 the analysis that way if you did a couple of extra things.
5 One, evaluate the time constants associated with things
6 like condensation and flow down the walls of the
7 containment --

8 MEMBER KRESS: We asked them what that time
9 constant was and they didn't even know.

10 CHAIRMAN SEALE: Okay.

11 MEMBER KRESS: They haven't looked at that.

12 CHAIRMAN SEALE: See?

13 MEMBER KRESS: Of course it's part of the
14 process.

15 CHAIRMAN SEALE: Sure. And then do some
16 things on the flow in connections and valves, tying the
17 various bathtubs together. If you did that, you could do
18 a calculation that I think we would all have a lot more
19 real intuitive confidence in.

20 Now, the intriguing part about it is that the
21 excuse or the reason given is that this more complex code
22 has a history of acceptability. But not for solving this
23 problem.

24 MEMBER KRESS: We believe that's the main
25 reason that --

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1 CHAIRMAN SEALE: Exactly. Yes. That's
2 garbage. I mean, that is obscene almost, it strikes me.
3 And I realize I'm on the record. But it strikes me as
4 being just the wrong way to do it and the wrong way to
5 rationalize it.

6 MEMBER KRESS: That came out clear from
7 everybody on the committee that was there.

8 CHAIRMAN SEALE: Yes. And, in fact, when you
9 go one step further and you look about and you say, okay,
10 you ought to couple this one monster to another monster
11 called GOTHIC, which is their containment code, and then
12 you realize -- are reminded of the restrictions on GOTHIC
13 with regard to things like stratification, and so forth,
14 you wonder if the name ought to be GROTESQUE instead of
15 GOTHIC.

16 (Laughter.)

17 VICE CHAIRMAN POWERS: Would you guys quit
18 beating around the bush and explain clearly what you think
19 about this?

20 (Laughter.)

21 MEMBER KRESS: Is that American Gothic?

22 (Laughter.)

23 CHAIRMAN SEALE: No, really. It is a real
24 problem, and we really, I think, need to come to grips
25 with some serious recommendations on this. I can't

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1 believe there aren't people in the agency that couldn't
2 take a look at this problem with the reservoirs, identify
3 the two or three connecting links that you could do
4 supporting independent calculations on it, at least get
5 maps of --

6 MEMBER KRESS: But basically, it's just two
7 reservoirs, the core, and either the IRWST or the sump.

8 CHAIRMAN SEALE: Well, you could put three in
9 there, yes. But it's very fundamental.

10 MEMBER KRESS: It's a BWR.

11 CHAIRMAN SEALE: Yes.

12 MEMBER KRESS: Hot boiling steam.

13 CHAIRMAN SEALE: Yes, you're right.

14 VICE CHAIRMAN POWERS: We're discussing what
15 the applicant is doing to make his safety case. And as
16 you noted early in your presentation, Tom, it's not our
17 job to tell the applicant how to do his job.

18 MEMBER KRESS: That's right.

19 VICE CHAIRMAN POWERS: The agency apparently,
20 presumably, will be preparing a safety evaluation report.

21 MEMBER KRESS: Using RELAP5.

22 VICE CHAIRMAN POWERS: So they're going to
23 follow this same lead of delivering mail with the --

24 CHAIRMAN SEALE: Flying Wing.

25 VICE CHAIRMAN POWERS: Well, in this case, I

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1 think it's a B-36.

2 (Laughter.)

3 MEMBER KRESS: That is the indication that we
4 got.

5 VICE CHAIRMAN POWERS: And we don't -- but I
6 was under the impression we had been told that RES had
7 hired, for its staff, three staff members to serve a
8 technical rather than administrative-type functions. And
9 presumably, they are capable of making this a quasi-steady
10 thermal hydraulics code, literally at their desk. I mean,
11 I'm sure you need a computer to do this.

12 MEMBER KRESS: I don't know how you go into a
13 code like RELAP5 and turn off things and say, "Just use
14 the quasi-steady part, but don't do the transient
15 calculation." You don't really need the transient
16 calculation to do a quasi-steady state.

17 VICE CHAIRMAN POWERS: But can I --

18 MEMBER KRESS: It's not a transient problem,
19 really.

20 VICE CHAIRMAN POWERS: Can I write the
21 adequate code out here on this tablet?

22 MEMBER KRESS: I can. In fact, I've got one.
23 I'll be happy to give them to you, but we developed it for
24 use for BWRs. The hard part comes in in coupling
25 containment to it, but that's just another node. But you

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1 have to worry about things like time constants that are
2 hard to get out of it.

3 Like for this draining down the wall, how long
4 does it take the water to get back to the sump, which
5 determines its level, which determines the feed rate?

6 VICE CHAIRMAN POWERS: Correct me if I'm
7 wrong, but isn't that a problem that appears in most
8 standard mass transfer texts for like sophomores in
9 college?

10 MEMBER KRESS: Yes. But you have to know
11 something about the type of film you have on the wall.
12 And Westinghouse assumes it's uniform. Clearly, it won't
13 be with the kind of cooling system they've got. And not
14 only that, you go into gutters and then it's guttered
15 down, and what it does -- in your equations, you have a --
16 it's a time delay. And when you put that into your simple
17 equations -- you remember what time delays were? Delta
18 function? You have to put that into it. And what it does
19 is shift things in time for that part of it.

20 CHAIRMAN SEALE: Yes. But, Tom, the point is
21 that there is controversy with regard to questions like
22 fractional coverage and equilibrium pressure, and so on.
23 And it is a lot easier to examine the implications of
24 those controversies if you have a code that is not
25 cluttered up with all of this other stuff, and has

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1 embedded in it also all of these oscillatory behaviors of
2 one sort or another.

3 So it's a masochistic stream that these people
4 have got, it seems to me. They want to hurt.

5 VICE CHAIRMAN POWERS: Are we trying to
6 formulate a recommendation that goes something like this?
7 We have seen what the applicant is going to submit, and we
8 know you are going to write an SER, NRC staff, and we hope
9 you don't make the following list of mistakes.

10 MEMBER KRESS: That would be a good prototype.

11 CHAIRMAN SEALE: Yes.

12 VICE CHAIRMAN POWERS: I think Bob has hit the
13 nail on the head on the way I would draft the letter,
14 saying that you've got these major uncertainties that are
15 being obscured by a set of physics that in the end you
16 throw away.

17 MEMBER KRESS: That's a good analysis, I
18 think. They didn't want a letter from us at this time.
19 We didn't intend to write one. That message came across,
20 I'm pretty sure, at the subcommittee meeting through
21 Westinghouse and the staff.

22 VICE CHAIRMAN POWERS: Well, whether we write
23 one now or not, I mean --

24 MEMBER KRESS: Eventually, that is going to be
25 the essence of what we're saying.

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1 VICE CHAIRMAN POWERS: What I think it would
2 be unfortunate to do is to have people gearing up with
3 RELAP5 and, you know, creating decks and things like that
4 which are really very difficult to do.

5 MEMBER KRESS: I think that's what they're
6 doing.

7 VICE CHAIRMAN POWERS: And have it cast out
8 promptly. I mean, just get into a similar kind of
9 discussion --

10 MEMBER KRESS: This, of course, already has
11 that AP600 deck for RELAP5. I mean, we just intend to use
12 that in the long-term coding, just the way -- using the
13 windows process just the way Westinghouse did.

14 MR. BOEHNERT: They showed us that at the
15 meeting in February.

16 VICE CHAIRMAN POWERS: But are we going to --
17 I get really nervous about having major uncertainties that
18 are obscured.

19 MEMBER KRESS: Yes. And I think that's the
20 issue, what are the uncertainties, and how do you get to
21 them, and how do you deal with them in a code like this.

22 VICE CHAIRMAN POWERS: But it may be in the
23 interest of avoiding a lot of wasted effort. But you need
24 to think about that -- an unsolicited letter that says,
25 you know, "Caution. We're going to have troubles in the

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1 following areas."

2 It might be worth thinking about a letter, and
3 especially -- I mean, it would be a different situation if
4 somebody was coming in with a back-of-the-envelope type of
5 code that you thought he ought to use RELAP. But now
6 you're talking about a heroic effort with RELAP, and you
7 think he ought to be doing something much simpler.

8 MEMBER KRESS: That's a good comment, I think,
9 Dana. I was looking for another one of Ivan's comments
10 that I didn't bring up. He said ACRS should push to
11 develop a new approach to this kind of analysis, those
12 that are slow and quasi-steady state, which includes small
13 break LOCAs and the long-term cooling.

14 Just he says that codes like COBRA/TRAC are
15 lengthy and unnecessary and obscure the results. And it's
16 a disservice to both the industry and public to use this
17 process. He says the ACRS ought to be able to give some
18 good advice in this area. I think that's what he had in
19 mind, just what you were saying.

20 Anyway, it was a good report from Ivan, I
21 thought.

22 Well, that's all I had. If there are no more
23 questions on the subcommittee meeting --

24 MEMBER BARTON: Pretty discouraging.

25 CHAIRMAN SEALE: Well, I just wonder if we

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1 want to pick a fight on it, I guess, is what I'm --

2 MEMBER KRESS: Well, it's pretty clear the
3 windows approach is okay. If they want to use COBRA/TRAC,
4 really, it's their business, and we can't complain
5 technically except about the -- really, I think the big
6 issue is how well they deal with the integration of the
7 containment behavior in this process.

8 CHAIRMAN SEALE: Any other comments? I hope
9 we don't get in trouble with these on --

10 MEMBER KRESS: Have to apologize, you mean?

11 CHAIRMAN SEALE: Yes. Yes.

12 (Whereupon, at 11:12 a.m., the proceedings in
13 the foregoing matter went off the record.)
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A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

(1:20 p.m.)

CHAIRMAN SEALE: We'll reconvene the meeting 15 minutes late. I'm sorry. We were in a meeting with several people's boss so I guess it's understandable all the way around. But we'll now move forward to the Proposed Regulatory Guidance related to the implementation of 10 CFR 50.59 requirements. Mr. Barton?

MEMBER BARTON: Thank you, Mr. Chairman. The purpose of this afternoon's meeting is to discuss the NRC staff's Proposed Regulatory Guidance related to the implementation of 10 CFR 50.59.

Some background: In October '95, Chairman Jackson raised several questions concerning the process for implementing the provisions of 10 CFR 50.59 and the associated oversight by the staff. The Chairman requested the staff to conduct a systematic reconsideration and re-evaluation of the process, due in part to problems experienced at Millstone.

Subsequent to that the Executive Director for Operations established an action plan to examine the existing Guidance and to recommend positions on the regulatory issues. On March 10th the staff briefed the Commission on the proposed 50.59 regulatory process improvements for SECY-97-035, which brings us to today's

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1 staff briefing.

2 Also during the March '97 ACRS meeting, Dr.
3 Seale requested the NRC staff presentation address the
4 systematic abuses of the 50.59 process observed at
5 Millstone and I believe the staff has agreed to provide
6 that during today's briefing.

7 I also understand that the NEI, following the
8 staff's presentation, has requested some time -- an
9 opportunity to speak to the committee regarding the
10 Proposed Guidance.

11 At this time I'd like to turn the meeting over
12 to Tim Martin, Director of Division of Reactor Programs
13 Management. Tim?

14 MR. MARTIN: Thank you, John. My name is Tim
15 Martin and I am the Director of Division of Reactor
16 Programs Management and NRR. With me today is my Deputy,
17 Mary Lou Schlossing, Mr. Frank Akstulewicz, Eileen
18 McKenna, Melinda Malloy, and Dave Solorio of my staff.
19 Also with me is Loren Plisco who has agreed to come over
20 and outline the issues associated with Millstone
21 performance in the area of 50.59.

22 To get this kicked off, what I'd like to do is
23 to turn it over to Loren, have him talk about the
24 Millstone issues, and then we will get into the Commission
25 Paper and what we have determined as a result of our

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1 action plan and looking at both the Regulation and how
2 it's been implemented, and the oversight we have provided
3 in the past.

4 So if there's no objections I'll turn it over
5 to Loren Plisco.

6 MR. PLISCO: Good afternoon. My name is Loren
7 Plisco. I'm currently a Branch Chief in the Special
8 Projects Office in NRR with oversight of Millstone
9 activities. The reason I'm here is, I was the team leader
10 of a special inspection of engineering licensing
11 activities at Millstone and Haddan Neck in March through
12 May of '96, last year.

13 And I was going to spend five minutes to
14 summarize the issues related to 50.59 implementation at
15 Millstone that were identified during our inspection. And
16 I can touch on some of the other similar issues that were
17 identified in Millstone during other inspections, too, if
18 you'd like to talk about some of them. There were some
19 other issues that had to do with the spent fuel pool
20 cooling system.

21 During our inspection we identified a number
22 of issues regarding implementation at 50.59, and they fell
23 into three basic areas, and I'll talk about those. First,
24 in several cases the licensee failed to prepare a written
25 safety evaluation when changes were made to the facility

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1 as described in the Final Safety Analysis Report.

2 We found cases where actual physical changes
3 were made without performing a 50.59. We also found cases
4 where the FSAR had actually been incorrect since
5 construction. Those errors were found and changes were
6 made to the FSAR without doing a 50.59 because some of
7 those issues had been covered in NRC SERs.

8 We've been calling those de facto changes, if
9 I use those words. If you like, I can give a couple of
10 examples of each, or just summarize the general areas. I
11 have some examples I can go over.

12 VICE CHAIRMAN POWERS: Please.

13 MR. PLISCO: In this Category 1 at Millstone
14 Unit 3 we found -- there was an automatic start feature of
15 the turbine driven aux feedwater pump for loss of power.
16 It was apparently a standard NSSS design but it wasn't
17 installed at Millstone Unit 3 and it had never been
18 installed, never intended to be installed.

19 But it was put in the FSAR and I guess when
20 the FSAR was built it was just a boilerplate paragraph and
21 no one picked up that that was never installed. Later on,
22 the -- I'd say five or six years later -- the Utility
23 identified that it wasn't installed. Someone picked it up
24 when they were reviewing the FSAR.

25 They changed the FSAR and they didn't do a

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1 50.59. If you go back and look at the NRC SER it talks
2 about that in the basis of our conclusion. It's hard to
3 tell whether we relied on it, but it's discussed in our
4 SER. So it was clear it should have been covered under
5 50.59 before they went back and changed -- it turned out
6 it was okay; it's just, no one asked the question. But it
7 was okay.

8 Another case had to do with set point
9 controls. At Unit 3 the emergency diesel generator room
10 had a low temperature alarm. They revised the set point
11 through a set point change process but didn't go back and
12 do a 50.59. And that particular set point was discussed
13 in the FSAR.

14 Another example was station blackout at Unit
15 3. The FSAR discussed full load testing that was going to
16 be done during outages and maintenance that was going to
17 be done in accordance with vendor recommendations.

18 The maintenance and the full load testing was
19 not being conducted and hadn't been evaluated as far as
20 50.59 -- or, no one had evaluated whether it was okay not
21 to do that testing.

22 Those are a couple of examples of things that
23 we found. In the same category are some of the issues
24 that came out of the inspections -- the spent fuel pool
25 cooling system where actual changes were made in either --

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1 physical changes or in operating procedures and a 50.59
2 was not conducted when those changes were made.

3 And example was, at Unit 1, the refueling
4 procedures in 1979 when they changed from 1/4 core offload
5 a 1/3 core offload. It was done by changing an
6 operating procedure. No one went back and evaluated under
7 50.59 and looked at the FSAR to see what the FSAR
8 evaluation talked about.

9 Another example had to do with spent fuel pool
10 cooling where some diffusers in the spent fuel pool
11 cooling system were removed by modification in 1988, but a
12 50.59 wasn't conducted. And those diffusers were
13 discussed in the FSAR.

14 Another example which is a little bit
15 different was, an analysis was done in 1989 that changed
16 the maximum temperature in the spent fuel pool, making it
17 a one, because of these changes that were made on the
18 spent fuel analysis.

19 And they raised the operating temperature from
20 125 to 150 degrees. But what wasn't taken into account
21 was the standby gas treatment system took a suction off an
22 area near the spent fuel pool, and that analysis had some
23 assumptions on what the temperatures were coming off a
24 spent fuel pool.

25 And its analysis was still using 125 degrees

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1 and it was an impact on the moisture content, humidity
2 content of the water going to the standby gas treatment
3 system. And it could have had a detrimental effect on the
4 charcoal in the standby gas treatment.

5 And that question wasn't asked so the 50.59
6 wasn't conducted to go back and look at standby gas
7 treatment systems. It was asked from the point of view of
8 the spent fuel pool, but not the impact on other systems,
9 like standby gas treatment system.

10 MEMBER BARTON: I guess what you're leading to
11 is that there was a weakness in Millstone's implementation
12 of a 50.59 process. That's what it sounds like.

13 MR. PLISCO: Right. And I was going to
14 summarize --

15 MEMBER BARTON: The procedure changes to
16 safety systems and modifications. What you're explaining
17 is a weakness in their specific program in implementing
18 50.59.

19 MR. PLISCO: Right. And its specific
20 questions and I was going to summarize those at the end,
21 because I also wanted to balance this. In our inspection
22 we found a lot of 50.59s were done very well. Matter of
23 fact, the majority were done very well. But there were
24 some specific areas where they had holes in the process.

25 And I can talk about that now. It

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1 specifically had to do with -- the way the procedures were
2 set up and processes that were set up, when you do a
3 standard modifications, in most cases the 50.59 process
4 worked fine. You know, if it was laid out very clearly
5 and rigorously and all the right questions were asked when
6 you do a regular modification.

7 The problems came in and were things that
8 weren't really a hardware modification. There were some
9 other process that could change something in the FSAR,
10 like set point controls, temporary modifications,
11 maintenance procedures. As an example I was going to talk
12 about layers.

13 They removed some internals into a check valve
14 during a maintenance procedure, and those check valves
15 will rely on the analysis in the FSAR. But that loop was
16 never closed because the maintenance process didn't ask
17 that 50.59 question. It was only in the -- if you were to
18 really do a modification.

19 So some of these other processes that could
20 potentially change things in the FSARs is where some of
21 the weaknesses were. The standard modification in most
22 cases, was okay.

23 MEMBER APOSTOLAKIS: If a licensee doesn't do
24 a 50.59 anal; is is there a mechanism in place through
25 which the NRC at some point finds out?

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1 MR. PLISCO: Well, there's things that we look
2 at in the inspection that -- I mean, it's always a spot-
3 check process, but there's things we're looking for in our
4 inspection process to see if that question was asked --
5 whether it is a change in the FSAR and whether they should
6 have done a 50.59 analysis.

7 Just like, you know, if some watch's
8 maintenance, you know, if someone has seen the internals
9 being taken out within the body of a maintenance procedure
10 and then that question wasn't asked, well, what's the
11 impact on the design and the analysis? You know, if
12 something had been watching that.

13 MEMBER APOSTOLAKIS: So there really --

14 MR. PLISCO: Yes, a lot of our inspection
15 procedures have those questions in there for the
16 inspectors. You know, are changes being made outside the
17 normal processes?

18 MEMBER APOSTOLAKIS: But.

19 MR. PLISCO: Yes, but there isn't a wholesale
20 review of all these types of changes to see if they're --
21 yes, that's question. There is not.

22 MEMBER APOSTOLAKIS: Now, to what extent is
23 what happened there, unique? I mean, one point of view
24 would be, whatever it is you should do it; you didn't do
25 it, that's a violation. Another point of view is that we

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1 know that the best of our facilities are not operated that
2 way. So to what extent is Northeast Utilities really
3 different from other places?

4 MR. PLISCO: Where I think the differences
5 were is in the category I was going to talk about next,
6 and some subtleties in the next area. In the second area
7 we found cases where they failed to prepare a written
8 safety evaluation that provides sufficient basis for
9 determination that the change didn't involve an unreviewed
10 safety question.

11 In other words, they prepared a safety
12 evaluation but it didn't address the issues. In the areas
13 where we had the most heartburn was, when issues occurred
14 they were emergent design deficiencies. They weren't in
15 the normal process. It was something that was identified
16 as an issue while the plant was operating.

17 The mode that we had problems with was -- it
18 was identified, they made an operability determination,
19 sometimes it required some compensatory measures. And
20 after those steps were taken, they were done. And this
21 was the issue, I think, where we had the most concern.
22 Because the compensatory measures were taken and then the
23 next step to put the plan back in compliance with the
24 design basis wasn't taken.

25 Or it was dragged out for a long period of

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1 time. Or sometimes they just bought off on the
2 compensatory measures being the permanent fix and never
3 addressed the issue. And I think that was the area, I
4 think that gave us the greatest concern, because there
5 were cases where they had longstanding design deficiencies
6 that were in their system that they knew about, that
7 didn't get corrected.

8 A couple of examples I was going to mention:
9 one was, at Unit 2 they had -- their hydrogen monitors,
10 they found during a review of some issues that their
11 design didn't meet the single failure requirements. If
12 they had a loss of one power supply they couldn't reopen
13 the isolation valves to get the hydrogen monitors back
14 online.

15 What they did was revise an operating
16 procedure and have the operators install jumpers during an
17 accident to reopen the valves. And then they thought they
18 were done. I mean, that's when they walked away from the
19 issue. There was some work done to create a modification,
20 but the decision was made by their management not to
21 implement that modification to put them back into
22 compliance.

23 And the 50.59 issue was, if you read a 50.59,
24 they don't address the issue about what the licensing
25 basis requirements are for that system and whether it's

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1 okay to be outside the licensing basis. What the 50.59
2 talks about is, they compare the compensated condition to
3 the degraded condition; which is always going to be
4 better.

5 Because they found the degraded condition and
6 the 50.59 says well, if we put in this temporary mod it's
7 going to be better. So obviously, you know, the chance of
8 an accident, an increase in the probability hasn't
9 occurred because we're putting in this -- it doesn't ask
10 the question, well, with this condition that we're in,
11 even this compensated condition is deficient compared to
12 the original -- what the original licensing basis
13 condition should be. That isn't discussed in the 50.59.

14 And another example similar to that was at
15 Unit 3 where they had a service waterbooster pump logic.
16 They had a problem with an Appendix R issue. They had two
17 valves that were in this same fire area. The way they
18 resolved it was they installed some jumpers, but in the
19 process of installing these jumpers they bypassed an
20 automatic start feature for the service waterbooster
21 pumps, and they didn't address that in the 50.59
22 evaluation.

23 They did have a 50.59 but they didn't address
24 those questions -- some of the other features that were
25 bypassed when they put in the jumpers.

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1 The last area had to do -- it was only one
2 case of this -- where they changed an operating procedure
3 for a system, which really required a change in the Tech
4 Specs, but they didn't request NRC approval for a change,
5 and made the change inappropriately using 50.59.

6 In Unit 3 they changed an operating procedure
7 to close turbine driven aux feedwater pump discharge
8 values during startup and shutdown operations when the
9 Tech Specs required the system to be operable.

10 Part of the logic in their 50.59 was, there
11 was an exclusion and they had a Mech Tech Specs that
12 allowed this. Why they didn't realize that they also
13 needed a Tech Spec change to implement that, I'm not sure
14 why.

15 But like I said, primarily I think, there were
16 holes in the program. It wasn't a, I would say,
17 widespread problems with their 50.59 process. In most
18 cases more modifications were done fine.

19 It was in these other areas outside of
20 modifications -- procedures changes, maintenance, set
21 point changes, some of the examples I talked about -- that
22 weren't as rigorous and didn't ask the type of questions
23 that would get you into the 50.59. And the other issue
24 was handling of emergent and design issues.

25 In summary, what I believe the contributing

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1 cause of their problems was, the process was more heavily
2 focused on modifications and didn't emphasize the other
3 ways the FSAR can be changed. They did an internal review
4 and I think they came up with a dozen process within the
5 plant that can change things or the FSAR, other than
6 modifications.

7 And the evaluations on these emergent design
8 issues that were identified didn't thoroughly review the
9 licensing and design basis questions as I talked about.

10 And the last thing really has to with the FSAR
11 and the issues at Millstone. It really wasn't regarded as
12 an up-to-date design basis document. It was really
13 regarded as an historical document. And I think that's
14 why some of the rigor in those other processes didn't
15 exist.

16 Any questions? That's all I was going to
17 cover.

18 MEMBER BARTON: Any other questions?

19 MR. MARTIN: All right. At this time I'd ask
20 Eileen McKenna to come up and present the results of the
21 Action Plan on 50.59 and what we have presented to the
22 Commission and to be able to respond to any of your
23 questions. Eileen?

24 MS. McKENNA: Good afternoon. My name's
25 Eileen McKenna. I'm a Senior Reactor Engineer in the

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1 Generic Issues and Environmental Projects Branch in
2 Division of Reactor Program Management in NRR. I was the
3 team leader on the work group that carried out the Action
4 Plan for review of the 50.59 implementation. We're here
5 today to brief the committee on the results of our review
6 and the information that's contained in the SECY document
7 97-035.

8 Just as a brief introduction, reminder that
9 50.59 is a process by which licensees can make certain
10 changes to their facility or procedures described in the
11 FSAR, or to conduct tests or experiments not described
12 under certain conditions. That is, when it does not
13 involve a change to the Technical Specification or an
14 unreviewed safety question. In most circumstances they
15 may make the change without prior approval.

16 I've included in your backup slides, the text
17 of 50.59(a) which gives the, when the question of to what
18 activities the Rule applies and the definition of the
19 unreviewed safety question, which has a number of sub-
20 bullets to it.

21 This is what I just had indicated. The second
22 part is the criteria for unreviewed safety questions, the
23 circumstances in which a licensee needs to bring that
24 change to the NRC for approval before implementation.

25 And its focus is on changes in probability of

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1 occurrence of accidents or malfunctions that were
2 previously evaluated, changes in consequences of accidents
3 or malfunctions that were previously evaluated,
4 possibility of creating a new type of accident or
5 malfunction that hadn't been previously evaluated, and
6 lastly, the reduction in margin of safety as defined in
7 the basis of a Technical Specification.

8 Those are the criteria for unreviewed safety
9 question, which along with a change in Tech Spec, defines
10 when those changes need to come for prior approval.

11 Returning to the introduction side --

12 VICE CHAIRMAN POWERS: Those descriptions that
13 --

14 MS. McKENNA: I'm sorry?

15 VICE CHAIRMAN POWERS: With those three points
16 that are on that listing there. You know, when I look at
17 them they seem like they're pretty straightforward and
18 whatnot. What I don't understand is how a change in the
19 probability becomes interpreted as a change in the
20 uncertainty associated with that probability.

21 MS. McKENNA: Okay, I think that the question
22 of uncertainty arises from the phrasing where it says, the
23 proposed change will be deemed to involve an unreviewed
24 safety question if the probability of occurrence of the
25 accident or malfunction may be increased. And that I

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1 think, is where the question of uncertainty arises.

2 If the question is there as to whether it may
3 be increased, by the definition it involves an unreviewed
4 safety question. As opposed to -- for instance, the
5 phraseology that said, if the probability is increased --
6 would I think, tend to move the bound of uncertainty in a
7 slightly different manner. But the phrasing of "may be
8 increased" is where the issue of, if you are uncertain
9 about whether there is an increase does arise.

10 MEMBER APOSTOLAKIS: Now, this is not the
11 probability that has been quantified, is that correct?

12 MS. McKENNA: In many cases it may not have
13 been. As I say, this is operating on what was evaluated in
14 the Safety Analysis Report and probability of occurrence
15 of the accident or malfunction. And some may have been
16 quantified. In other cases, particularly for older
17 plants, they probably were not quantified in any specific
18 detail.

19 That's one of the difficulties I think, with
20 trying to consider it sometimes is, you don't know -- if
21 you can't quantify where you where, it's hard to then
22 quantify whether there's been a change and you have to
23 make that decision on other bases in terms of what you're
24 changing and whether that change could result in an
25 increase in probability. As opposed to trying to actually

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1 calculate what that change would be.

2 But getting back to the Rule, I think the
3 important point is that it is a process for determining
4 the need for approval as a threshold on when they need to
5 get that NRC prior look, rather than a decision as to
6 whether the change is acceptable.

7 And in fact, the change could be perfectly
8 safe, could it in the aggregate, be a better situation
9 than where they are, but it still could trigger one of
10 these questions as an unreviewed safety question and
11 require approval.

12 That's an issue I think, that arises many
13 times, where people are satisfied that what they're doing
14 is safe. I think some of Loren's examples point to that,
15 but they did not take that next step of then deciding
16 whether that change still affected their licensing basis
17 in the manner described in the Rule and requiring
18 approval.

19 Loren had mentioned some of the specific
20 concerns at Millstone. I think we also looked kind of
21 generally of what possible concerns there are with just
22 the Rule the way it's written and what it allows or
23 doesn't provide for.

24 As one example, as I mentioned the focus of
25 the Rule is on the facility and procedures as described in

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1 the Safety Analysis Report. We know that Safety Analysis
2 Reports vary greatly in the content, level of detail of
3 information, and therefore the information upon which
4 50.59 then operates will vary from plant to plant.

5 This concern may or may not manifest itself in
6 any particular plant, because many licensees do apply the
7 process to more than what's in the SAR itself, but the
8 Rule only requires that it apply to what's in the SAR. So
9 there is a potential problem in that regard.

10 The second bullet is that, we've mentioned the
11 unreviewed safety question criteria and the decisions in
12 some cases as to whether a particular changes does trigger
13 one of those criteria is not always clear. I think
14 there's certainly many issues where it would be very
15 straightforward that it does or does not have that effect,
16 but there is a large area in between and those questions -
17 - the ambiguity then, leads to disagreements many times,
18 between licensees and the staff on particular issues.

19 The third area where there's concern about
20 50.59 is the question of applying it to deficiencies that
21 are identified. And I think again, Loren mentioned a
22 number of examples at Millstone, and that is not limited
23 to Millstone by any means, the questions of how you should
24 apply 50.59 when a licensee finds a situation where they
25 did not conform with how they're described in their FSAR.

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1 So those were some of the concerns that led
2 the staff to conduct the review. What we tried to do --
3 I should mention that we did have a work group, ten
4 members from the different Divisions in NRR. We had good
5 support from OGC to help us on this project.

6 And we also had representatives in each of the
7 Regions who were our sounding boards on some of the issues
8 and provided us good examples of issues and problems that
9 they had experienced. And after the work group put
10 together its recommendations we had a lot of internal
11 review among the office and others to help us formulate
12 the positions.

13 What we tried to do was to look at ways that
14 we could enhance implementation of the Rule as written.
15 And so we're focusing on trying to clarify guidance as to
16 how the Rule should be interpreted and how it should be
17 applied in particular instances.

18 There is some guidance that already exists.
19 In our review we tried to do as we could, reaffirm that
20 the existing Guidance is still applicable where necessary;
21 to clarify where our positions may have been unclear in
22 the past or we may have further insights to share; and in
23 some instances to provide a position where we may not have
24 articulated one in the past.

25 We also attempted I think, to -- I think with

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1 a lot of the activities that are going on, to improve our
2 overall oversight process of 50.59 and the role of FSARs
3 in a number of aspects.

4 And when we were looking through this process
5 we also tried to identify where it might be possible to
6 improve the Rule -- by rulemaking actually, change some of
7 the provisions. And we gave some preliminary ideas in
8 this area.

9 In the Paper, as you know there's a companion
10 Paper of, "Millstone Lessons Learned, Part Two Issues",
11 that has some related considerations about issues about
12 the Safety Analysis Report, and all of these issues may
13 result down the road and in consideration of rulemaking,
14 but we're not there yet. I just want to mention that
15 we're looking at both aspects of it: the existing rule
16 and possible improvements.

17 Develop the Paper, address a number of
18 different issues to -- in trying to let out kind of what
19 the concern was; what the staff felt appropriate guidance
20 should be considering the requirement of the Rule; where
21 industry guidance existed and try to indicate what that
22 guidance was, and if there were any differences to
23 identify them; and put this document together with these
24 different issues.

25 At the Commission briefing we did identify

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1 five specific issues that we talked about in a little more
2 detail. I plan to put those up for the committee as well,
3 and of course we can discuss any other issues that are of
4 interest.

5 These were the issues that we had discussed
6 with the Commission. We'll have a slide on each of those,
7 so it won't be too -- the first question, which in some
8 ways is not really a 50.59 question but it is one that has
9 been raised and has a relationship to 50.59 because of the
10 connection with the Safety Analysis Report.

11 The question related to whether licensees
12 could remove certain information from the Safety Analysis
13 Report that perhaps was at a level of detail that wasn't
14 necessary to support future evaluations and reviews, or
15 drawings for instance, that may have excessive level of
16 detail and were difficult to read, and whether they could
17 then be replaced by more simplified drawings.

18 The staff position at least at this point, is
19 that we're not prepared to entertain the idea of removing
20 information -- just basically taking it out of the FSAR.
21 Obviously, the plant may make changes, either under 50.59
22 or other processes such as 50.90, and it is certainty
23 expected that effects of those changes will show up in
24 their next FSAR update and then in that manner the FSAR
25 will be changed, and in some cases information that is no

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1 longer applicable will be removed.

2 This question really dealt with just removing
3 the information without having had the change that
4 prompted it. And I think some of the issues that are
5 talked about in the SECY-97-036, the Part Two, Lessons
6 Learned, that we really need to understand better, make
7 sure that the appropriate information is in the SAR before
8 we entertain whether certain information could be removed.

9 MR. MARKLEY: Eileen, for the benefit of the
10 members, a change per 50.90 would be a license amendment
11 as opposed to a 50.59.

12 MS. McKENNA: I'm sorry.

13 MEMBER APOSTOLAKIS: Say that again?

14 MR. MARKLEY: A 50.90 change would be a
15 license amendment submittal.

16 MS. McKENNA: As I mentioned, 59 process
17 determines when a licensee can make the change without
18 approval. If they do not meet the criteria in 50.59 for
19 those changes, the Rule provides that they need to come in
20 and request a license amendment pursuant to section 50.90,
21 which is the process that applies for any license
22 amendment, Tech Spec changes that they might want to make.

23 MEMBER APOSTOLAKIS: Is what you just said a
24 couple of minutes ago, consistent with what you have on
25 the slide there under "Issue"? Because the way I

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1 understand it is, can they remove information when it is
2 not linked to a change or update?

3 MS. McKENNA: Yes, I think --

4 MEMBER APOSTOLAKIS: But you said, can they
5 remove information when they feel that it's not needed
6 there at all?

7 MS. McKENNA: Okay, makes --

8 MEMBER APOSTOLAKIS: Is that different?

9 MS. McKENNA: I guess I wasn't looking at it
10 as different. Let me back up a second. The FSAR is
11 supposedly a description of the facility that form the
12 basis under which the staff granted the license -- among
13 other information. So whatever is described there is what
14 the staff's belief is to how the facility is designed and
15 operated.

16 Concern with the question then of, if they
17 want to change that information, what process should they
18 apply? If they are changing the facility itself, then
19 that's a 50.59 process; then there was a requirement to
20 update the FSAR to provide accurate information.

21 So that if the facility has been changed, for
22 instance -- part of the facility has been modified in some
23 manner -- then the FSAR -- or perhaps removed; the system
24 may have been removed -- then change in the FSAR to remove
25 the description of that facility would be fully

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1 appropriate.

2 If on the other than, they just decided to
3 remove the description and the system was still in the
4 plant, it poses a couple of concerns. One is that future
5 changes to that system that is no longer in the FSAR, may
6 not follow the 50.59 process.

7 Secondly I think, is the question, if the FSAR
8 loses its value as a document that describes the facility
9 if certain information is no longer there.

10 MEMBER APOSTOLAKIS: Is the word "update"
11 referring to the facility or the SAR?

12 MS. McKENNA: To the SAR.

13 MEMBER APOSTOLAKIS: And that means something
14 in a legal sense?

15 MS. McKENNA: Okay, there --

16 MEMBER APOSTOLAKIS: Like you say, yes, they
17 removed something, that's an update.

18 MS. McKENNA: Okay, there is a provision in
19 the Regulation, 50.71(e), that requires a periodic update
20 of the FSAR, and that update is to include the most
21 current information and reflect changes that licensees
22 have made to their facility under 50.59.

23 MEMBER APOSTOLAKIS: And one last question.

24 MS. McKENNA: Sure.

25 MEMBER APOSTOLAKIS: Do the licensees want to

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1 do this?

2 MS. McKENNA: Some licensees have indicated an
3 interest. I think one of the reasons -- as I mentioned
4 with the drawings as an example -- that there is in many
5 cases, considerable detail and if something changes on
6 that drawing then it involves an FSAR update, and there's
7 a certain review process associated with that. The
8 requirement to periodically update then can become
9 somewhat of a burden. So yes, there is some interest in
10 doing this.

11 MEMBER APOSTOLAKIS: So essentially then, what
12 you're advancing here is that 50.59 Rule that would apply
13 to changing the SAR. The licensee cannot decide that some
14 piece of information is really irrelevant --

15 MS. McKENNA: The second part is the question.

16 MEMBER APOSTOLAKIS: But there's no 50.59 --

17 MS. McKENNA: There is no established process
18 for doing that, and I think one of the concerns is that if
19 you were to apply a 50.59-like process to that, you don't
20 really have the right questions to ask.

21 MEMBER APOSTOLAKIS: Okay. I understand.

22 MS. McKENNA: Yes, okay.

23 CHAIRMAN SEALE: Could I ask another question?

24 MS. McKENNA: Sure.

25 CHAIRMAN SEALE: Does the SAR have to be the

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1 content of a book, or can it include the contents of a
2 computer file?

3 MS. McKENNA: I think it could reference
4 computer files.

5 CHAIRMAN SEALE: The reason I ask --

6 MS. McKENNA: Are you asking whether it has to
7 be a paper document or it can be an electronic document?

8 CHAIRMAN SEALE: The reason I ask is that I
9 can envision quite easily the situation where, when the
10 original SAR was submitted and the license was granted and
11 so forth, the drawings were these incredibly awkward,
12 foldouts that everybody has torn out of repeated numbers
13 of SARs over the years -- inadvertently, I might add.

14 And in the interim, a lot of people have gone
15 to computer systems where it's easy to update, the
16 question of what the current and relevant document is, is
17 easily resolved, and so on. Is that the kind of change
18 that might be included here?

19 MS. McKENNA: I think -- the question is, I
20 think in going from paper to electronic, I think I would
21 not consider to be deletion of information. That's sort
22 of a change in form. If the information were then still
23 available I don't see that that would be any problem.

24 CHAIRMAN SEALE: Only if you tell me that that
25 electronic document is an SAR, or can be a part of the

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1 SAR.

2 MS. McKENNA: That's probably a more general
3 question of--

4 CHAIRMAN SEALE: I'm sure it is.

5 MS. McKENNA: -- you probably have to refer
6 elsewhere. But as I say, there are some movements afoot
7 in terms of electronic submission of information, and I
8 don't see why an SAR would be any different than the
9 general policy with respect to that. But I'm not sure I'm
10 the best person to --

11 CHAIRMAN SEALE: Well, the only thing I can
12 think of --

13 MS. McKENNA: -- speak to that.

14 CHAIRMAN SEALE: -- is that there's a
15 requirement for a certain amount of public access --

16 MS. McKENNA: Yes, and those are the kinds of
17 issues --

18 CHAIRMAN SEALE: -- to the SAR.

19 MS. McKENNA: -- I was thinking of.

20 CHAIRMAN SEALE: And that might be awkward for
21 the junior high school library in the immediate vicinity
22 to maintain an up-to-date copy of the SAR for public
23 reference -- if it's an electronic document.

24 MS. McKENNA: That's correct. And as I say,
25 that's a more general problem or issue, shall we say.

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1 VICE CHAIRMAN POWERS: Bob, you obviously
2 haven't been to junior highs lately. They probably have
3 more access to them. It's people like myself that are
4 computer illiterate that would have a hard time.

5 MS. MCKENNA: What I'd like to do at this
6 point is to move more specifically into some of the
7 specific aspects of unreviewed safety question definition.
8 And I kind of jumped to the margin of safety one because I
9 think in most cases that's the one that has -- poses the
10 most difficulty in interpretation. As I recall the words
11 are -- the unreviewed safety question -- if the margin of
12 safety as defined in the basis for any Technical
13 Specification is reduced.

14 And really two questions there. Well, what do
15 you mean by margin of safety? What do you mean by basis
16 for any Tech Spec? And they're both very difficult
17 questions.

18 The first one I will talk to is the question
19 of the reduction in margin of safety. Unfortunately,
20 you'll not find a -- margin of safety is defined -- you're
21 saying, what is the margin of safety? Well, if you look
22 through your FSAR, your Tech Spec bases sections, you will
23 probably not find in many cases, a phrase that says,
24 margin of safety -- that you can identify that
25 specifically as to what that is. It would be nice, but

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1 that's not the case.

2 Therefore, we have to ask ourselves, what was
3 the rule attempting to address? As I indicate, there are
4 many different margins that arise from design and
5 practice. And what we're focusing on though, are those
6 that really are going back to what the Rule is trying to
7 do; that is, to identify when you were coming outside of
8 the basis on which you were licensed and therefore need
9 the approval.

10 And we're kind of focused on what we're
11 calling acceptance limits; that is, parameters, values,
12 and ranges of conditions in which the licensee plans to
13 operate the plant, and which the staff review during its
14 deliberations on the application.

15 And therefore we're suggesting that, in
16 considering reductions in margin of safety, what should be
17 considered are these acceptance limits and whether they
18 are still met as a result of the change that the licensee
19 is undertaking.

20 In general, we feel that those acceptance
21 limits would be either the value for that parameter that
22 was calculated in the Safety Analysis Report, or if the
23 staff has explicitly stated in its Safety Evaluation
24 Report the basis on which it found that particular
25 acceptance limit to meet its requirements, we can consider

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1 that that would be the point at which they could decide
2 whether there's been a reduction in margin of safety.

3 It really is a question of finding what was,
4 really was that acceptance limit. If it was explicit in
5 the Safety Evaluation Report, we would say that is the
6 value. If it was not explicit, then we feel it's the
7 value in the Safety Analysis Report that the licensee had
8 proposed, that would be that acceptance limit.

9 VICE CHAIRMAN POWERS: And that's interpreted
10 as a bright line? That is, out of other context. One has
11 -- words like significant change, and significant has
12 acquired an interpretation as anything that's over ten
13 percent. But here this is a bright line.

14 MS. McKENNA: Yes, I think that if you look at
15 the words of the -- in the definition of unreviewed safety
16 question it does establish a bright line. In contrast, if
17 you look in the part of the license amendments where there
18 are criteria for when something is a no significant hazard
19 consideration, you do have very similar language but you
20 get some of the, was there a significant reduction in
21 margin language that comes in there?

22 So that maybe there is a little more room in
23 that area for judgment. But here you're quite right, and
24 this is one of the -- I think one of the great
25 difficulties. If it is trying to draw a bright line, that

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1 if it falls on one side of the line the change can be made
2 without approval, but if it moves across that line, then
3 it falls into the license amendment arena.

4 VICE CHAIRMAN POWERS: And it is a, by-and-
5 large, just a point analysis? That is, it's not an
6 analysis with any kind -- be careful there -- in
7 principle, it can be a point analysis; it is not an
8 analysis that takes into account uncertainties?

9 MS. McKENNA: That's correct, yes. In fact,
10 in certain cases there may not actually be an analysis in
11 the quantitative sense. It may be a judgment as to the
12 effects of the change and whether that would result in one
13 of these factors being affected.

14 Was there a question?

15 MEMBER APOSTOLAKIS: Yes. It seems to me that
16 there would be very few changes that the licensee would be
17 allowed to make under these rules. Is that the correct
18 impression?

19 MS. McKENNA: Well, I think there are a few
20 changes -- there are -- I would say that there are few
21 changes that are reducing margins or increasing
22 probabilities or kind of moving in a certain direction
23 that could be made under this, yes.

24 And I think that was by design, from the way
25 the rule was written.

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1 MEMBER APOSTOLAKIS: So if we pick any
2 licensee, any plant, and we look backwards for a couple of
3 years, then how many of these do we expect to see? That
4 there are changes or tasks or whatever, that according to
5 50.59 they didn't have to notify you? I mean, five, ten?

6 MS. McKENNA: No, no, it's quite --

7 MEMBER BARTON: Hundreds.

8 MS. McKENNA: Hundreds, certainly. Yes.

9 MEMBER APOSTOLAKIS: Hundreds?

10 MEMBER SHACK: Because most of them are going
11 the other way.

12 MS. McKENNA: Yes, they're making things --
13 reducing probability.

14 MEMBER APOSTOLAKIS: And the licensee decides
15 that?

16 MS. McKENNA: Yes. And the other point I
17 think, is that there are changes -- going back to the
18 first part of the Rule -- that there are changes they make
19 in the facility that don't affect the facility as
20 described, do not affect the procedures as described; in
21 which case they're not covered by the Rule.

22 VICE CHAIRMAN POWERS: You understand it gets
23 second-guessed. It does have to report all these things
24 sooner or later. This is that he doesn't have prior
25 approval to do that.

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1 MS. McKENNA: Yes. Those that --

2 VICE CHAIRMAN POWERS: It does get a second
3 pass.

4 MS. McKENNA: That's correct. For those that
5 fall under the provisions of -- as change to the facility
6 as described and for which they do an evaluation, that
7 there is not an unreviewed safety question, yes, they do
8 have to submit a report on those.

9 MEMBER APOSTOLAKIS: So if there are hundreds
10 of these, how many other where they actually do have to
11 come to you for prior approval? Same number, higher,
12 lower?

13 MS. McKENNA: No, it's certainly a smaller
14 number.

15 MEMBER APOSTOLAKIS: Smaller number?

16 MS. McKENNA: Yes, yes. And I think there's a
17 couple of reasons. One is that if they find that there's
18 a change they want to make that involves an unreviewed
19 safety question or a Tech Spec change, then it does kind
20 of put a little decision point as to whether they want to
21 proceed with this change and accept the need for the
22 review, or to try to maybe come up with a different change
23 or do something else.

24 MEMBER APOSTOLAKIS: Now, I wonder whether the
25 philosophy that is described in 1.1 would be helpful

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1 here. You know, the new Regulatory Guide that includes
2 risk-informed considerations. I don't have an answer to
3 that, but it seems to me that this kind of approach would
4 benefit from the approach that is described there, and
5 maybe there can be some criteria that are a bit more
6 quantitative, and maybe you can rely on an expert panel.

7 I mean, that's the integrated decision-making
8 approach that we're taking now, to make 50.59 decision.
9 Have you thought about that, or are you familiar with that
10 --

11 MS. McKENNA: Yes, I think I know the document
12 you're talking about.

13 MEMBER APOSTOLAKIS: Or is it too soon for
14 that? Maybe it's too soon.

15 MS. McKENNA: Well, I think there's a couple
16 of factors here. One is that, you know, again, we're
17 talking about changes the licensee can make, basically on
18 its own rather than changes they need to come in and
19 changes -- the other I think is that the Rule as written
20 has certain provisions which do not really address risk
21 other than in the component parts of probability of
22 occurrence or consequences.

23 And again, as was mentioned, the question of
24 the bright line, it doesn't really matter whether it's a
25 small change in a situation where there is a large margin

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1 already existing. That's not the question that the Rule
2 is trying to answer.

3 When it actually comes in for approval that
4 may be a reason why it would be approved very readily, but
5 it's trying to address a different issue. To go to that
6 kind of thing I think, would require broader changes than
7 just guidance on implementation.

8 MEMBER APOSTOLAKIS: Well, this also is risk-
9 oriented, though -- I mean, risk-related. Even though --
10 you said that it addresses risk only to the extent that it
11 talks about probability?

12 MS. McKENNA: Yes. Right.

13 MEMBER APOSTOLAKIS: But that's a limited
14 interpretation.

15 MS. McKENNA: Yes, it is.

16 MEMBER APOSTOLAKIS: I mean, if you reduce the
17 safety margins then you are increasing risk even though
18 you may not have quantified it.

19 MS. McKENNA: Yes. Well that's I think, why
20 part of it has focused on reducing it -- kind of the
21 particular meaning as defining in the basis. There is
22 maybe some reduction in that margin -- if it's still
23 within the bounds that were already found acceptable, so
24 that I think, on an overall basis we're saying there
25 really would not be any reduction in the level of risk the

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1 staff was willing to accept.

2 MEMBER APOSTOLAKIS: I guess if Plato were
3 still alive and he was thinking in terms of an ideal
4 world, he probably would see a situation where we have
5 something like 1061 and there is some guidance as to when
6 you have to go to the NRC and when you don't.

7 And then as part of that process, when you do
8 have to go, then you will see the stuff that 1061 contains
9 right now. Right? That would be really an ideal way of
10 doing business, would it not?

11 MEMBER BARTON: Yes, it would, but the current
12 Rules don't allow you to apply that.

13 MEMBER APOSTOLAKIS: Yes, I know. Right, I
14 know.

15 MEMBER BARTON: Well, that's where we are.

16 MEMBER APOSTOLAKIS: But it would be nice to
17 think ahead, too.

18 MEMBER BARTON: Yes.

19 MS. McKENNA: Certainly.

20 CHAIRMAN SEALE: Or back.

21 VICE CHAIRMAN POWERS: Or back.

22 MS. McKENNA: The second piece of the question
23 on margin of safety is kind of where you look to find what
24 these margin of safeties are. As I mentioned, the Rule
25 language talks about the bases -- as defining the basis

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1 for any Technical Specification. And the questions arises
2 as to whether that means the summary section that is part
3 of the -- I shouldn't say part of -- but when the licensee
4 has Technical Specifications there is a separate section
5 that is called the bases, and --

6 VICE CHAIRMAN POWERS: That's just an
7 unfortunate history of nomenclature, isn't it?

8 MS. McKENNA: Could be -- well, it's hard to
9 say. I think --

10 VICE CHAIRMAN POWERS: I mean, the bases
11 section didn't exist when Tech Specs were originated --

12 MS. McKENNA: Not originally. It was added, I
13 believe, in 1968. And I think there was some feeling that
14 maybe that would be an appropriate place to put some of
15 this summary information as to what were these bases, but
16 I'm not sure it necessarily happened in all cases. But --
17 I've mentioned 50.36 itself says that the Technical
18 Specifications are to be derived from the analyses and
19 evaluations in the Safety Analysis Report.

20 So we're saying that when you're looking to
21 find what is the basis for these technical specifications,
22 that you need to look in your Safety Analysis Report to
23 find that information. In some cases the Tech Spec bases
24 section may present that information, but that failure to
25 find it there should not say that there is no margin of

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1 safety that is otherwise defined.

2 VICE CHAIRMAN POWERS: My experience is
3 there's less in that bases section than --

4 MS. McKENNA: I think particularly for, say
5 the pre-improved standard Tech Specs that's certainly the
6 case. I think they may have done better in the newer Tech
7 Specs; but still may not have everything that's looked
8 for.

9 I just want to touch on two other points on
10 the USQ. I think we've already to some degree, discussed
11 the probability question. It was a question in terms of
12 the "may be increased" language and uncertainty, and staff
13 position is that with the language in the Rule as written,
14 that any increase needs the question of uncertainty about
15 increase in probability of occurrence of the accident, or
16 the malfunction previously evaluated in the SAR does
17 result in an unreviewed safety question.

18 MEMBER APOSTOLAKIS: And the Rule does not
19 specify whether this is aleatory or epistemic, does it?

20 MS. McKENNA: No.

21 VICE CHAIRMAN POWERS: This is not part of the
22 Rule; this is an interpretation.

23 MEMBER APOSTOLAKIS: Interpretation of the
24 Rule.

25 MS. McKENNA: Well, the part of -- what's in

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1 the Rule is the --

2 MEMBER APOSTOLAKIS: The Rule just says
3 probability.

4 MS. McKENNA: -- probability whether -- the
5 question as to whether the probability may be increased,
6 yes. That's in the Rule.

7 VICE CHAIRMAN POWERS: And so the
8 interpretation is such that if the probability increases,
9 even though the part that's increasing is the part on the
10 low side, it's an unreviewed safety question. I mean,
11 it's a peculiar interpretation.

12 MEMBER APOSTOLAKIS: They're probably thinking
13 in terms of a point estimate, anyway.

14 VICE CHAIRMAN POWERS: In fact, they're all
15 point estimates. I don't know of any of them that --

16 MS. McKENNA: Yes, I think that when we say
17 uncertainty it's probably not in the sense --

18 VICE CHAIRMAN POWERS: It's a qualitative.

19 MS. McKENNA: -- that we may think in a PSA
20 analysis. It's I think, more in the predictionary
21 definition as to whether you can determine that there has
22 been an increase. So I think that is somewhat of a, maybe
23 a question that's a little confusing sometimes by using
24 that language.

25 Just quickly, I want to mention on the

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1 increase in consequences which is the second part of terms
2 focusing on risk. Again, it has similar language about
3 the consequences of an accident or malfunction previously
4 evaluated may be increased. And again, staff view is that
5 any increase in the radiological consequences therefore
6 does result in an unreviewed safety question.

7 Just note that this is an area where there is
8 a difference between the staff guidance and industry
9 guidance, where we're limiting the question to whatever
10 was previously evaluated in the SAR is basically that
11 bright line as to when there is an unreviewed safety
12 question. Really, that's largely driven by the language
13 of the Rule itself.

14 VICE CHAIRMAN POWERS: And the net effect is,
15 the better the plant the bigger the penalty is here?

16 MS. McKENNA: Could be, yes. I think in some
17 ways that's an unfortunate aspect of this; that it is a
18 very license-specific -- you know, whatever was in your
19 bases before, that's what you're comparing yourself to.
20 The question, if you had a larger FSAR and more
21 information, then by the language of the Rule there may be
22 more changes to which you need to apply the process.

23 And again, yes, you may have more specific
24 information, criteria, that you may end up triggering
25 things. And I recognize that that's an unfortunate effect

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1 of it; I don't know quite how to correct it with the Rule
2 we have as written.

3 The last topic I just wanted to discuss was, I
4 think the one that was mentioned when we were talking
5 about the Millstone-specific issues; that is, well rather
6 than a licensee planning to make a change to something
7 they find, a condition that is different than what was in
8 their FSAR and they need to figure out what to do about
9 it.

10 And the staff has provided guidance that lays
11 out a process for consideration of these issues in
12 general. It's in Generic Letter 91-18 which focuses on
13 considering -- evaluating what the discrepancy is, making
14 prompt decision as to its impact on safety and putting the
15 plant in the appropriate condition to deal with that
16 consideration of whether equipment is operable and
17 reportability, and then the need for corrective action in
18 accordance with Criteria 16 of Appendix B.

19 None of those things I mentioned, as you
20 notice, were 50.59; they were all the process of dealing
21 with the problem and correcting it. But we did find that
22 there are situations where it may come into play, and we
23 listed a couple on the slide.

24 When, when the licensee is dealing with one of
25 these conditions differing from the FSAR, would they need

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1 to do a 50.59 evaluation? The first one is if they have
2 to take -- make other changes to deal with the problem,
3 feel that -- then you are now making another change to
4 your facility which should prompt you to do the 50.59
5 evaluation.

6 The second thing is that the guidance does
7 allow a licensee to essentially accept the new condition
8 that they have found as their licensing basis. Rather
9 than correcting it they may decide that they would accept
10 that condition as is.

11 The guidance says, well that's a change to
12 your facility -- it's kind of one of these -- an indirect
13 change, if you will, that you need to evaluate the fact
14 that that would now be your new basis, compared to where
15 you thought you were in the FSAR, and do an evaluation.

16 And the third point, which was I think, to try
17 to catch some of these longstanding kind of problems where
18 the intention might have been that the condition was going
19 to be corrected and went into the corrective action
20 process and never came out. So we're trying to say, well,
21 if it gets delayed too long, we're considering
22 essentially, that by failing to correct the problem the
23 licensee has in essence, changed its licensing basis, and
24 therefore they should be doing the 50.59 evaluation.

25 VICE CHAIRMAN POWERS: Your second item in

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1 there -- there's some language in your interpretation that
2 says, that's okay provided that the licensee apply for a
3 change in his license quickly. And it has in parens, "in
4 a matter of days".

5 Are we getting -- I mean, I don't think you
6 can apply that quickly.

7 MS. McKENNA: Well, I think that was when --
8 the first bullet is making the determination of when you
9 need to do the evaluation. So I think you're going to
10 second part of, once they've done that evaluation and have
11 determined that there is an unreviewed safety question
12 involved, as to what should happen next.

13 And part of that is that -- you're right, we
14 are trying to say that we don't think you should be in
15 that condition without the staff review for a long period
16 of time.

17 VICE CHAIRMAN POWERS: What I'm thinking of in
18 terms of enforcement action, somebody discovers --

19 MS. McKENNA: Yes.

20 VICE CHAIRMAN POWERS: It's a discovery thing.
21 It defines, sure enough -- and it's not very bad --

22 MS. McKENNA: Right.

23 VICE CHAIRMAN POWERS: -- and it will cost me
24 a lot of money to change it, so I'm going to make an
25 application for an amendment to my license. And he sets

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1 about doing that and it takes him six weeks to put that
2 package together and sends it in and then he finds himself
3 in an enforcement action because he doesn't comply with
4 your "in a matter of days" parenthetical remark -- even
5 though he's done all the right things. I mean, I think
6 that's an unfortunate terminology there.

7 MS. McKENNA: Yes, well I think the intent is
8 certainly that people do the right thing, and that the
9 reporting is an aspect, the corrective action is an aspect
10 which could involve sending in a license amendment to deal
11 with that. The enforcement I think, really arises from
12 basically that -- if they take too long basically, with
13 coming up with that corrective action -- and there may
14 have to be an element of judgement -- does there need to
15 be --

16 VICE CHAIRMAN POWERS: You see, my problem is
17 that I think you've taken that element of judgment away by
18 the way you've written it up. Is that you've now given
19 somebody the basis -- some zealous individual a basis for
20 saying no, this was not done quickly enough. And you've
21 taken the element of judgment away just because of your
22 parenthetical remark.

23 MS. McKENNA: Okay, well certainly we'll
24 consider that point --

25 MR. MARTIN: I'd remind the ACRS that we have

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1 asked the Commission -- recommended to the Commission,
2 that this be sent out for public comment. We recognize
3 that there are areas where this is subject to change.
4 Clearly, there's nothing in the Regulations that says "a
5 matter of days".

6 VICE CHAIRMAN POWERS: I understand.

7 MR. MARTIN: And there's also other places
8 where it's been pointed out that we use the term, "the
9 next reasonable opportunity", and probably meant that to
10 be commensurate with its importance. There are a lot of
11 places where our initial attempt here has room for
12 improvement, and that's why when we get the public
13 comments and move on to developing a guidance which is
14 reasonable and enforceable.

15 VICE CHAIRMAN POWERS: My concern is that you
16 didn't take the opportunity to put that reasonable
17 opportunity clause in for this second one, a license basis
18 change; that you in fact, took the opportunity to say, in
19 parenthesis, "in a matter of days". And I think that's --
20 it's removing an element of judgment and it's beyond your
21 Charter.

22 MR. MARTIN: Understood, and I suspect you'll
23 find that that was more a knee-jerk reaction to Millstone
24 where we had found that they had found it okay to last for
25 years without doing it.

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1 VICE CHAIRMAN POWERS: I understand the
2 sensitivity to it. Not everyone is a cynic.

3 CHAIRMAN SEALE: Well, there's a question too,
4 about what this "first reasonable opportunity" means. I
5 can understand the desire for example, to evaluate two or
6 three different ways of approaching a lisencc amendment to
7 cover a discovered problem that might take some
8 engineering analysis, and what constitutes the definition
9 of "reasonable time" includes an assessment of the
10 availability of the qualified personnel to carry out that
11 evaluation.

12 MS. McKENNA: And I think in our discussion of
13 what we meant by "reasonable opportunity", we did address
14 some of those kinds of issues and I think part of the
15 reasonableness I think, is the question of, are things
16 moving? Are there efforts being made to deal with it
17 rather than having it in the queue when it will be gotten
18 to some day, maybe.

19 And certainly, yes, there may be issues where
20 there are particular personnel that are necessary to deal
21 with a specialized area, and that would be a factor.

22 VICE CHAIRMAN POWERS: As far as your language
23 considering a "reasonable opportunity", if anything I
24 think you're overly generous there. Because I can see the
25 reasons for delay beyond the first opportunity that you

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1 allow, I can see making those last an awful long time.

2 MS. McKENNA: Yes, I mean, like I say, this is
3 a very difficult area to deal with, but I think again,
4 we're looking at this in the context of, where you have to
5 already have made your decisions as to whether your
6 equipment is operable or you wouldn't even be addressing
7 some of these kinds of questions.

8 So that they should be those lesser level of
9 discrepancy, shall we say, that should be dealt with in
10 some manner rather than just linger. But to force them to
11 drop everything to repair something doesn't seem
12 reasonable either, so we're trying to set up some ground
13 rules, if you will, and it certainly does have -- there's
14 going to be some judgment on these things as to whether
15 things -- what's happening is reasonable.

16 MEMBER BARTON: Eileen, are you considering
17 changing -- typically what happened in the past in this
18 situation -- victim plant operation -- and you have an
19 operating plant and they continue operation -- at this
20 point there's discussion with the licensee and the NRC.

21 MS. McKENNA: Yes.

22 MEMBER BARTON: And there's no secret at this
23 point; everybody knows what the issue is. And in the
24 past, NRC has negotiated with the licensee as to what are
25 acceptable timeframes for the situation to be corrected --

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1 next forced outage of reasonable duration, next refueling
2 outage -- and these things have been agreed and end up
3 getting documented in correspondence between the two
4 agencies.

5 Would you see that method changing? Because
6 that is an acceptable -- has been an acceptable method in
7 the past.

8 MS. McKENNA: I think there is some element
9 that's acceptable. The area where it may be different is
10 I think, this question of whether license amendment route
11 is the one that you want to go, as opposed to an exchange
12 of letters. And that's going to be somewhat of a question
13 of whether the unreviewed safety question is involved.

14 But yes, I agree that those kinds of
15 discussions do happen. I think the other point was that
16 there may be -- some of these issues if they were not
17 reported or otherwise manifested themselves, they may not
18 be known to the NRC, and if a licensee is then not
19 reviewing them or -- then we don't even have that
20 opportunity to engage in dialogue.

21 CHAIRMAN SEALE: But the letter that Mr.
22 Barton refers to is the way in which formal notification
23 of the existing of the problem can be given to the NRC,
24 and you may not have established the basis for the
25 licensing amendment that you want to submit. And in that

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1 interim I would think you would want to encourage a free
2 and -- you know what I mean -- a candid exchange of the
3 evaluation of the problem between the licensee and the
4 NRC.

5 MS. MCKENNA: And I think that has been
6 happening. There --

7 CHAIRMAN SEALE: Yes --

8 MS. MCKENNA: -- have a been a number of these
9 problems that have been found in recent months, and there
10 have been those kinds of dialogues where a licensee has
11 found a problem, they're still evaluating what they're
12 going to do about it, and you know, they haven't really
13 hit one of these points, or we're saying, you need to go
14 do your 50.59 evaluation. They're still in the mode of
15 evaluating what's the right corrective action.

16 Now, there have been those kinds of decisions,
17 particularly in some cases there may be an impact on
18 operability, although they still feel they're operable but
19 they're -- you know, you may have heard the phrase,
20 "operable but degraded". And I think that's when you --
21 there are some of these discussions about, well this is
22 the problem we have, these are the kinds of things we
23 could do about it, and how they feel that affects their
24 operations. And those discussions do go on.

25 MR. MARTIN: Eileen, let me jump in here.

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1 MS. McKENNA: Sure, Tim.

2 MR. MARTIN: You know, having been a creature
3 of the Region for many years, first let me bring you back
4 to -- when a licensee identifies a degraded or
5 nonconforming condition, we expect them to promptly move
6 to make sure the plant is safe, the Tech Specs/Regulations
7 are met, and to get in that situation fairly quickly.

8 And then to decide, are they going to restore
9 to the licensing basis of that plant, are they going to
10 try to justify the existing condition, or are they going
11 to do some modifications to move it to a different
12 position?

13 Those decisions can be made in a timely manner
14 and should be discussed with the NRC, because they have
15 justified continued operations, something -- and so those
16 discussions occur with the inspectors and with the first-
17 line management in the Regions.

18 This doesn't get invoked -- you don't even get
19 into 50.59 -- you're in Criterion 16, Corrective Action,
20 the majority of times. But if the licensee then decides
21 that they are going to delay the corrective action beyond
22 some reasonable point, then they basically accepted a
23 modification of the licensing basis -- and it's those
24 cases where we need to be involved in -- or they have
25 decided to change the licensing basis.

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1 Clearly, that's another case where a 50.59
2 review needs to be done to see if they need to come to us.
3 Or if they intend to sit there with those compensatory
4 measures for a period of time -- which are in effect, a
5 temporary mod -- do we need to be involved then?

6 So each one of these cases, normally a
7 degraded and nonconforming condition is handled under
8 Criterion 16 which uses the words "prompt corrective
9 action". The Commission has always interpreted those
10 words commensurate with its importance to safety.

11 There is dialogue with the Regional Inspectors
12 right there on the site and with the management. That
13 certainly will create the expectation for the third part
14 of that. The Region and the Inspector will have some idea
15 of what the licensee had intended to do; what they could
16 do with their resources.

17 What about the availability of the equipment
18 necessary to do these modifications if that's what they're
19 going to do? And it would be only when they decide
20 because of costs or whatever, that they're going to
21 tolerate this for a longer period of time, we're saying,
22 you now have gone over; you've got to do your 50.59 if it
23 involves a degradation in the margins or an increase in
24 probability consequences. That's when you need to come to
25 the NRC.

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1 MS. McKENNA: I think I'd just like to
2 summarize by saying, staff has made its best efforts to
3 put together its positions on these issues. In a few
4 instances we've tried to indicate areas where the
5 Commission may wish to explore rulemaking.

6 The recommendation made to the Commission was
7 to put our Paper out for public comment so we would have
8 the benefit of views from others outside -- these comments
9 would be welcome, and then we would proceed to evaluate
10 comments and decide where to go at that point with respect
11 to guidance or possible rulemaking.

12 With that I will close, unless there are any
13 more questions.

14 MEMBER BARTON: Any more questions from
15 members of the committee? At this time I think we'll hear
16 from the industry.

17 MR. PIETRANGELO: Good afternoon. I'm Tony
18 Pietrangelo; I'm the Director of Licensing at NEI. First
19 of all, I thank the committee for the opportunity to come
20 chat with you on 50.59, and really I kind of look upon
21 this as an opportunity in kind of an introductory fashion
22 to start this discussion, because I have a sneaking
23 suspicion that over the course of the next two, three,
24 five years, we're going to be back here quite often
25 talking about this issue.

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1 Let me start by saying why this is so
2 important, why the staff has spent so much time on this,
3 why the industry is so sensitive to this issue. Each
4 licensee does hundreds of changes each year under the
5 50.59 process, and have been doing hundreds of changes per
6 year since they started commercial operation.

7 I believe the Rule dates back to sometime in
8 the '60s. So it's been in existence for quite some time
9 and hasn't been modified since that time, I don't believe.
10 You're all well aware of the industry guidance document,
11 NSAC-125 that was developed in the late-'80s, so for 20-
12 odd years there hardly was any guidance at all.

13 And then when there was a concern about the
14 consistency of how licensees were implementing the 50.59
15 process, the industry developed NSAC-125, had a lot of
16 interaction with the NRC staff. Even in the SECY, the
17 staff discussed generally they saw an increase in the
18 quality of the evaluations that were done, and then it's
19 largely been a very successful effort.

20 Nonetheless, there's always room for
21 improvement in any guidance document over time with
22 experience, and I think that's where we're at right now.
23 But given that this is such a significant issue to how the
24 whole regulatory process works, this really has to be done
25 very, very carefully.

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1 The staff's taken a lot of time and I think
2 was probably a wise thing to do, because this has so many
3 implications and consequences for how the regulatory
4 process works that you can't afford not to get it right.
5 Because it has ramifications for how the licensee spends
6 its resources every day, and how the staff resources are
7 going to be used over time.

8 So it's just a very, very significant issue
9 that, you know, we are prepared to spend an awful lot of
10 time on over the next -- whatever it takes -- to make sure
11 in working with the staff and the Commission that we get
12 it right.

13 Let me just start with a couple of the issues,
14 and I think for the most part the staff's identified the
15 issues where there has been some disagreement. Where
16 we're coming from at this point is that we've been doing
17 these evaluations as an industry, really since NSAC-125
18 was issued, and in a relatively consistent manner.

19 And a lot of the positions that are outlined
20 in the SECY that Eileen went over are departures from how
21 NSAC-125 has been implemented over the last several years.
22 So it even has some implications for what was done in the
23 past.

24 Let me start with -- I'll use Eileen's slides,
25 slide number 6 -- and I'll give you kind of an example of

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1 the terminology and why it's so important. I think the
2 focus on the margin of safety is the seminal issue,
3 because that will determine how many times you have to
4 decide whether it's a USQ and then perhaps have to go in
5 for a license amendment.

6 And I'll point you to the third bullet; to
7 determine whether the change is unreviewed, focus on the
8 acceptance limits which the NRC accepted. And I think
9 that's what NSAC-125 tries to say -- or has said -- and
10 that's how people have gone forth in implementing the
11 rule.

12 And it makes sense when you even think about
13 the words themselves, unreviewed safety question. If it's
14 still within the limits that were accepted in that review,
15 then you're okay.

16 But then if I move a little bit forward -- and
17 this is kind of where the industry gets confused and kind
18 of where we're at today -- if I move to slide 8 on the
19 increase in probability, the staff position is that any
20 increase, or even uncertainty about possible increase in
21 probability of occurrence, is a USQ.

22 Now, those are two different things in the
23 same presentation. The acceptance limits and any
24 increase. The industry's been doing it one way and
25 there's a new position to do it this way. So what we have

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1 out in the industry right now is just an awful lot of
2 people nervous about whether they're doing the right
3 thing, trying to be in compliance with 50.59 but not sure
4 in which direction we're going on this.

5 And the same thing could be said on, you know,
6 we go to increase in consequences on page 9. Basically,
7 what the staff reviewed against --

8 VICE CHAIRMAN POWERS: Tony, let me understand
9 just a little bit.

10 MR. PIETRANGELO: Sure.

11 VICE CHAIRMAN POWERS: On page 6 they're
12 referring to item 3, which is reduction in margin, and on
13 page 8 they're referring to probability and consequences,
14 which is (i) or (ii) -- it's a different issue.

15 MR. PIETRANGELO: I don't think it's different
16 at all.

17 VICE CHAIRMAN POWERS: And you're tying them
18 together here?

19 MR. PIETRANGELO: Yes.

20 VICE CHAIRMAN POWERS: But I don't think they
21 do, do they?

22 MR. PIETRANGELO: I think they do. NSAC-125
23 thinks it does. You see, that's what I'm saying. And we
24 have to be very careful with this because what you define
25 as the margin of safety, what you define as the operating

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1 margin, what you define as any increase -- I want to go
2 back to --

3 MEMBER BARTON: Is this an area where the NRC
4 and the industry have not agreed? The NRC has not bought
5 NSAC-125 in the theory?

6 MR. PIETRANGELO: Well, that's another
7 question that's -- NSAC-125 has never been formally
8 endorsed by the NRC.

9 MEMBER BARTON: Right.

10 MR. PIETRANGELO: However, since it was
11 promulgated in the late-1980s it has been the practice --
12 most licensees who have been using the guidance to
13 implement 50.59, the licensees are required to, as Dana
14 pointed out to George earlier -- notify the NRC of any
15 changes that were done under 50.59 that were not
16 unreviewed safety questions.

17 So the staff has been aware of all the changes
18 that have been made since NSAC-125 became in use. So
19 while it hasn't been formal endorsement, I think one could
20 conclude that there has been de facto endorsement of NSAC-
21 125.

22 MEMBER APOSTOLAKIS: And it's --

23 MR. PIETRANGELO: Yes, and it's worked fairly
24 well. I think the question, at least that we heard last
25 year about this time, was that it wasn't about the quality

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1 of the process that was done when NSAC-125 was utilized,
2 it was more about what Loren was talking about and what
3 was found at Millstone.

4 They weren't doing it at the appropriate time,
5 or there were cases where there were other things beyond
6 normal modifications, like perhaps in maintenance or
7 operations, that NSAC-125, 50.59 process wasn't invoked.
8 And those are serious questions, and the staff's
9 absolutely correct to be concerned about that. So there's
10 no disagreement there.

11 MEMBER KRESS: So on slide 8 where the
12 statement about the, "may increase risk" in the
13 uncertainty in it, you'd rather see something like,
14 increases in risk can only be within already accepted
15 limits.

16 MR. PIETRANGELO: In fact, in the SECY -- I
17 can't find it -- I think they even proposed that as a
18 potential change in a rulemaking later on. And I don't
19 think -- I think kind of we're headed in that direction
20 ourselves.

21 It's nice to have a threshold and it's
22 appropriately referred to in here as a regulatory
23 threshold -- not a safety threshold. A regulatory
24 threshold is one which requires NRC review and approval
25 before the licensee would be allowed to move forward with

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1 the change.

2 VICE CHAIRMAN POWERS: I guess I'm just -- I'm
3 still puzzled, because my reading of the documentation is,
4 this probability and uncertainty is tied to 59(a), items
5 (i) and possibly (ii). I don't think they say that
6 explicitly but reading the words you might conclude that
7 it would be.

8 It's not tied to this margin of safety issue
9 at all, and there's no reference to it in the margin of
10 safety issue. There it says, what did the NRC accept?
11 That's a bright line, and if the NRC didn't say what they
12 were accepting then it's what you calculated, and that
13 becomes a bright line and there's no discussion of --

14 MR. PIETRANGELO: That's correct.

15 VICE CHAIRMAN POWERS: -- of your uncertainty,
16 as long as -- it's whether you're below or not; it's a
17 point calculation.

18 MR. PIETRANGELO: Right. And that's
19 essentially what NSAC-125 says also.

20 MEMBER APOSTOLAKIS: But if the margin of
21 safety though, is reduced, wouldn't the consequences of an
22 accident or malfunction of equipment important to safety,
23 be increased?

24 VICE CHAIRMAN POWERS: And if you triggered
25 one of them -- I mean, this is not a pick one -- you have

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1 to comply with all three of them --

2 MEMBER APOSTOLAKIS: That's correct.

3 VICE CHAIRMAN POWERS: -- and if you
4 successfully negotiated your way from (i) to (ii) and
5 you're now down to (iii), it doesn't matter whether you --

6 MR. PIETRANGELO: Only one.

7 VICE CHAIRMAN POWERS: You don't have to worry
8 about probability when you get down to (iii). It's a
9 bright line and it's a point calculation. There's a
10 discussion of what methodology to use --

11 MEMBER APOSTOLAKIS: Well, let me put it a
12 different way.

13 VICE CHAIRMAN POWERS: -- and I think it comes
14 back saying, here's the methodology you've used in the
15 past.

16 MEMBER APOSTOLAKIS: If I can make a
17 convincing argument that (i) is satisfied, I don't need
18 (iii). Because (i) says any increase, doesn't that?

19 MR. PIETRANGELO: May increase.

20 MEMBER APOSTOLAKIS: Yes. So if I make sure
21 that neither the probability of occurrence nor the
22 consequences of a malfunction have been increased, then I
23 have not reduced the safety margins. Because if I reduce
24 the safety margins one of those will go up.

25 VICE CHAIRMAN POWERS: You're operating in

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1 your Platonic world again, George.

2 MR. PIETRANGELO: Yes --

3 MEMBER APOSTOLAKIS: But in the Platonic world
4 that's true.

5 VICE CHAIRMAN POWERS: What you said is true,
6 but there are Technical Specifications and things that I
7 think it would be very difficult to tie to the
8 probability, occurrence, or consequence of an accident.

9 MEMBER APOSTOLAKIS: You mean explicitly?

10 VICE CHAIRMAN POWERS: The Technical
11 Specification exists. And so you do get into (iii) and
12 the probability argument doesn't come in there, as far as
13 I can tell.

14 MR. PIETRANGELO: Let me further confuse you.

15 VICE CHAIRMAN POWERS: I'm not confused.

16 MEMBER APOSTOLAKIS: He was looking --

17 MR. PIETRANGELO: I was looking at George,
18 yes. Given that this -- and I'm going to get back to your
19 DG-1061 question, too. But given that this Rule was
20 promulgated a long time ago -- before your tool, George,
21 PRA was invented -- a lot of this was --

22 VICE CHAIRMAN POWERS: But not in Plato --

23 MR. PIETRANGELO: Right. A lot of this was
24 done and continues to be done, qualitatively.

25 MEMBER APOSTOLAKIS: Sure.

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1 MR. PIETRANGELO: Let me point you to one spot
2 in the SECY -- I don't know if you have SECY-97-035 before
3 you but I can read -- it will be very quick. This is on -
4 -

5 MEMBER BARTON: Where are you?

6 MR. PIETRANGELO: I'm on page 28, and this is
7 in the definition of increase in the probability of
8 occurrence. And the staff accurately states what's in
9 NSAC-125 here about what a change in the increase of the
10 probability of occurrence would be.

11 And the way it's been done in the past is that
12 there's classes of frequencies of events, and for PWRs
13 these are normal operations, incidents of moderate
14 frequency, infrequent incidents, and limiting faults.
15 None of the stuff that happens day-to-day. The stuff that
16 might happen once in a year; the stuff that might happen
17 within 40 years; and then the stuff you never expect to
18 happen.

19 And unless there was some obvious trend in
20 which way those events were occurring, the way that
21 question about an increase in the probability -- or may
22 increase -- was a change from one class of frequency to
23 another. And many people have implemented it that way.

24 Now today we have a new tool -- well actually
25 it's not a new tool; it's quite an old tool now -- but a

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1 lot of folks have been trying to use their PRAs, not to
2 answer the questions that are in 50.59 -- because a PRA
3 analysis is based on a totally different methodology and
4 assumptions than a deterministic analysis.

5 They're using, you know, best-case estimates,
6 whereas in the deterministic analysis it's the single
7 failure criteria, and all that kind of stuff. So they're
8 apples and oranges in terms of the analysis that is
9 applied. But even in our PSA Applications Guide we have
10 an example of using it for 50.59 -- again, not to answer
11 the questions, but use your PRA to try to characterize
12 what the safety significance was of the change.

13 And even if you did pass the regulatory
14 threshold or answer one of those questions "yes", we were
15 encouraging licensees to provide that PSA insight to the
16 staff when they were -- on the license amendment or
17 whatever -- such that they, even though it was an
18 unreviewed safety question they would have the insights of
19 the PSA to determine whether to sign off on the license
20 amendment or not.

21 Now longer term, maybe PSA is the way to go on
22 reviewing these kinds of changes, and I think that's
23 something we're very open to over the long term. But in
24 the short term, when you ask whether 1061 should be used
25 in 50.59 evaluations, I mean, I think that would make a

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1 very complicated situation much more complicated in a
2 heartbeat.

3 MEMBER APOSTOLAKIS: But that's a goal --

4 MR. PIETRANGELO: Longer term, perhaps, that's
5 the way to go. Today though -- I want to get you back to
6 where we're coming from today. Given that this is an
7 extremely complex issue with high sensitivity to all
8 licensees and to the NRC because it's so central to the
9 regulatory process -- and you know, there's many issues we
10 haven't talked about today, about current licensing basis,
11 and 50.71, and updating the FSAR, and commitments -- and
12 these are almost inextricably tied together in the
13 regulatory process.

14 So I think what I heard at the Commission
15 briefing that the staff gave, was that there's significant
16 policy issues wrapped up in this thing; that they do
17 impact a number of these other areas, and that you know, -
18 - and rulemaking may be inevitable. In fact, we heard
19 Commissioner McGaffigan say at the -- if he was a betting
20 man that he'd bet on rulemaking right now.

21 So even -- if that takes place, this is going
22 to take a long time to work through and work out, and
23 again, make sure that everybody's comfortable with the
24 resolution. So I guess my bottom line message today is
25 that in the meantime though, we've got to have some

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1 stability out in the field for licensees who are trying to
2 conduct their business and to address the NRC's concerns.

3 So I think while we go through this process of
4 commenting and perhaps through a long rulemaking process,
5 we need a placeholder to say, this is how we're going to
6 do business in the interim.

7 Now, we've tried to do some things with the
8 staff, trying to pick up some words in the Inspection
9 Guidance 9900, revised NSAC-125 and submitted it as NEI-
10 96-07. You know, that's an option. If there's other
11 things that can be done in the short-term to get that
12 placeholder established, we're more than willing to
13 discuss it with the, you know, the staff and the
14 Commission.

15 But we do need to have some kind of interim
16 stability or placeholder while we take the time that's
17 going to be necessary to work through all these issues to
18 assure that, you know, it's done correctly, that the
19 resources are applied appropriately, and this is done in
20 the most efficient way.

21 So I hope that's been a little bit informative
22 to you, why this is so important. And again, I think
23 we're going to be talking about this issue over the next -
24 - you know, one thing I liked about what Commissioner
25 McGaffigan said was that, hopefully we can do this maybe

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1 faster than traditionally what's taken place with other
2 issues like this.

3 I hope so, too, but it may not. Again, this
4 is such a complex issue and involves so many other things
5 that it's likely to take a lot of time.

6 VICE CHAIRMAN POWERS: Has NEI been
7 contemplating revisions to 125?

8 MR. PIETRANGELO: We did already. In fact, we
9 made NSAC-125 into NEI-96-07 and tweaked a few words with
10 regard to compensatory measures and submitted it to the
11 NRC for endorsement. We were trying to address the two
12 main concerns that were keeping the staff from endorsing
13 NSAC-125.

14 VICE CHAIRMAN POWERS: It's not uncommon for
15 industrial standards for the staff to endorse the
16 exemptions. Did they do your documents -- did they ever
17 endorse your documents with exceptions?

18 MR. PIETRANGELO: Yes, all the time.

19 VICE CHAIRMAN POWERS: And so why don't they
20 proceed ahead? What is the barrier here?

21 MR. PIETRANGELO: Well, I think we're about to
22 enter that. We need to come to some interim solution.
23 Maybe that's -- or -- I don't know whether it's
24 exceptions. As long as there's a clear understanding of
25 the way business is going to be done that is not, you

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1 know, an undue burden, that addresses the concerns that
2 people have with the process today.

3 And again, you know, if you look at the
4 introductory to the SECY, the process is pretty damn good.
5 It's been more of a concern of, that it hasn't been
6 invoked at the right time. So we're very concerned about
7 stability in the short-term. We are keeping an eye out to
8 get on with the process of making improvements over the
9 long-term.

10 So that's all I have for today.

11 MEMBER APOSTOLAKIS: One of the issues that
12 came up when we were discussing 1061 and the other
13 Regulatory Guides, which came up today as well is, what do
14 these traditional foundations of reactor safety philosophy
15 mean in the new system, risk-informed considerations? And
16 today we had the safety margins issue. In the context of
17 RG-1061 it was the safety margins plus defense-in-depth.

18 And I think it would be very useful for the
19 industry to think about how one can go from these two
20 elements of that philosophy, to a risk-informed system,
21 and what does it mean? The safety margins, we keep coming
22 back to it. I mean, they are really undefined, and yet we
23 want to preserve them.

24 MR. PIETRANGELO: Right. Well, it's
25 interesting you asked that, George, because it came up in

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1 a couple of different places in the Reg Info Conference.

2 And --

3 MEMBER APOSTOLAKIS: What Conference is this?

4 MR. PIETRANGELO: The one we just had the last
5 two days -- the Regulatory Information Conference.

6 MEMBER KRESS: You didn't go; you were snowed
7 in.

8 MR. PIETRANGELO: Oh, that's right, you
9 couldn't get out of Boston. You know, there's been a
10 clear focus in the last year or so on the licensing and
11 design basis of these facilities, and you're all aware of
12 the 50.54(f) letter that went out and was talked about.
13 You know, we need to firm up the foundation or get in the
14 basement and look at the stuff.

15 And the risk-informed, performance-based stuff
16 is more esoteric. And we tried to make the point, at
17 least in the PRA breakout session, that that's not so
18 esoteric. That stuff belongs in the basement, too. That
19 it should be part of the foundation, because the ideas
20 focus on safety -- what's important.

21 And PRA can provide a lot of insights into
22 that, and one of the concerns with all the focus on design
23 basis and licensing basis. I mean, most of these were
24 based on assumptions from 30 years ago on what design
25 basis accidents were, and we're smarter than that now.

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1 MEMBER APOSTOLAKIS: But one of the problems I
2 think, that we find is that a lot of people don't make the
3 connection between defense-in-depth and PRA, safety
4 margins and PRA. They think they're two different things.

5 MR. PIETRANGELO: Right, and I'm on your side
6 I think, on that. That we need to bring them closer
7 together because we -- the complementary approach, right?
8 I mean, that's what we've been discussing the last two
9 years in here.

10 MEMBER BARTON: Any further comments?

11 MR. PIETRANGELO: Thank you very much.

12 MEMBER BARTON: Any committee comments? Thank
13 you. Since we are planning to issue a report on -- or
14 letter on this subject, I'd appreciate inputs from each of
15 the committee members.

16 MEMBER APOSTOLAKIS: Can we discuss that
17 letter before anything is put on paper? Or there is
18 something on paper already?

19 CHAIRMAN SEALE: We should.

20 MEMBER BARTON: We should, yes.

21 MEMBER APOSTOLAKIS: I think that would help
22 me a lot. In fact, I know that it would. Not I think --
23 I know that it would help me.

24 MEMBER BARTON: Tim, any more comments from
25 NRC?

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1 MR. MARTIN: None from me.

2 MEMBER BARTON: Okay, thank you.

3 VICE CHAIRMAN POWERS: Well, would you comment
4 on the -- endorsing the revised 125 with exceptions?

5 MR. MARTIN: We're right now waiting for the
6 Commission to give us some guidance on how they want us to
7 proceed, and we have not received their SRM.

8 MEMBER KRESS: So is that one of the options
9 that we're considering?

10 MR. MARTIN: I don't know. And we certainly
11 are sensitive to the fact that the industry and our
12 inspectors need guidance to bridge the period as we are
13 moving to really clarify these issues and probably, I
14 suspect, will end up in rulemaking. But we have not laid
15 out how we're going to do that yet.

16 VICE CHAIRMAN POWERS: And your suspicion that
17 you may end up in rulemaking, what is -- can you give me a
18 thumbnail sketch of what you think that revised Rule will
19 look like?

20 MR. MARTIN: It would be personal speculation
21 --

22 VICE CHAIRMAN POWERS: That's okay.

23 MR. MARTIN: -- but let me go ahead and give
24 it to you. You know, one of the first questions is, what
25 in the hell are we trying to control? And my personal

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1 belief is, we're trying to control the licensing basis of
2 the plant, and we're trying to make sure that the
3 licensing basis is maintained, and where it's going to be
4 changed, that we're involved.

5 Simply focusing on the SAR doesn't get you
6 there. What is the licensing basis needs to be defined;
7 where is it located; how do you maintain it current; what
8 needs to be in Tech Specs; what is the controlled
9 mechanism; do we still need a phrase like unreviewed
10 safety question that has no connection to safety? You
11 know, things like that.

12 There are a lot of opportunities here for
13 improving our communications with our industry and with
14 the public, and we're certainly going to take this
15 opportunity to deal with those. But these are all linked.
16 What should be in the FSAR, what should be in other
17 documents, what's a commitment, which ones are controlled
18 under a 50.59-like process, which ones aren't?

19 So there's a lot of inter-linkage between
20 this, and what we've promised the Commission is, within 90
21 days after they give us the SRM, we'll come in with a plan
22 on how we're going to deal with all these linked issues.
23 And I can't really say much more beyond that because we
24 haven't thought much more.

25 MEMBER BARTON: Thank you. Thank you, Tim.

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1 Mr. Chairman, I'll turn the meeting back over to you at
2 this point.

3 CHAIRMAN SEALE: Thank you. Again, I'd like
4 to apologize for our tardiness at the beginning, and do
5 appreciate your presentations and we also appreciate your
6 remarks, Mr. Pietrangelo. On issues like this, some
7 interactions and discourse is always very helpful because
8 at least it makes sure we're all using the same
9 dictionary. And that's not always obvious.

10 At this time I'll declare a recess until ten
11 minutes after three.

12 (Whereupon, the foregoing matter went off the
13 record at 2:58 p.m. and went back on the
14 record at 3:10 p.m.)
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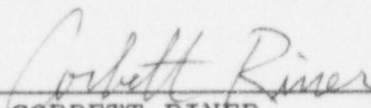
This is to certify that the attached
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Regulatory Commission in the matter of:

Name of Proceeding: 440TH ACRS

Docket Number: N/A

Place of Proceeding: ROCKVILLE, MARYLAND

were held as herein appears, and that this is the original
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CORBETT RINER
Official Reporter
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1

INTRODUCTORY STATEMENT BY THE ACRS CHAIRMAN
440TH ACRS MEETING, APRIL 3-5, 1997

THE MEETING WILL NOW COME TO ORDER. THIS IS THE FIRST DAY OF THE 440TH MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS. DURING TODAY'S MEETING, THE COMMITTEE WILL CONSIDER THE FOLLOWING:

- (1) PROPOSED REGULATORY APPROACH ASSOCIATED WITH STEAM GENERATOR INTEGRITY
- (2) STATUS OF THE REPORT OF THE STUDY ON THE CONSEQUENCES OF REACTOR WATER CLEANUP SYSTEM LINE BREAK OUTSIDE CONTAINMENT
- (3) REPORT OF THE THERMAL HYDRAULIC PHENOMENA SUBCOMMITTEE
- (4) RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS
- (5) PROPOSED REGULATORY GUIDANCE RELATED TO IMPLEMENTATION OF 10 CFR 50.59 REQUIREMENTS
- (6) PROPOSED ACRS REPORTS

THIS MEETING IS BEING CONDUCTED IN ACCORDANCE WITH THE PROVISIONS OF THE FEDERAL ADVISORY COMMITTEE ACT.

DR. JOHN T. LARKINS IS THE DESIGNATED FEDERAL OFFICIAL FOR THE INITIAL PORTION OF THE MEETING.

WE HAVE RECEIVED NO WRITTEN COMMENTS FROM MEMBERS OF THE PUBLIC REGARDING TODAY'S SESSIONS. HOWEVER, WE HAVE RECEIVED A REQUEST FROM THE NUCLEAR ENERGY INSTITUTE FOR TIME TO MAKE ORAL STATEMENTS REGARDING THE

EM ON 10 CFR 50.59 REQUIREMENTS. A TRANSCRIPT OF PORTIONS OF THE MEETING IS BEING KEPT, AND IT IS REQUESTED THAT THE SPEAKERS USE ONE OF THE MICROPHONES, IDENTIFY THEMSELVES AND SPEAK WITH SUFFICIENT CLARITY AND VOLUME SO THAT THEY CAN BE READILY HEARD.

I WILL BEGIN WITH SOME ITEMS OF CURRENT INTEREST.

STEAM GENERATORS



April 2, 1997

Jack R. Strosnider, Chief
Materials & Chemical Engineering Branch
Division of Engineering
Office of Nuclear Reactor Regulation

BACKGROUND OF RULE

- Approach was to develop risk-informed, performance-based rule
- Objectives of Rule:
 - ensure NDE and inspections were consistent with current forms of degradation
 - replace prescriptive regulatory framework with performance-based approach
 - encourage degradation-specific management and provide incentive for improved NDE
 - properly consider risk associated with implementing new framework
- Rule would be brief, with high level requirements
- Details on acceptable implementation of Rule would be described in Regulatory Guide

ROLE OF REGULATORY GUIDE

- Approach to Regulatory Guide
 - codifies acceptance criteria for current ad-hoc approach to regulatory reviews of SG inspection, repair, and structural and leakage assessments
 - performance criteria, based on NUREG-0844 and NUREG-1477 and severe accident evaluation, should demonstrate acceptably low risk maintained
- Regulatory Guide
 - describes framework and criteria licensee's methodology should meet
 - does not prescribe specific repair methods and limits for each method
 - provides industry with guidance on level of quality NRC staff expects
 - provides licensees guidance on acceptable elements of TS referenced program dealing with SG degradation.
- Once the program is in place, licensee can implement and develop alternate repair criteria without NRC preapproval if risk is shown to be acceptably low

PRELIMINARY CONCLUSIONS

- Risk from normal operation and design-based type transients and accidents do not result in increased risk due to above approach
- Risk from SGTRs induced by severe accidents could increase for some alternate repair criteria
- For plants that effectively implement their current repair criteria (e.g., 40% thru-wall, voltage-based), severe accident risk does not warrant backfit to reduce risk
- For plants that propose to change current TS repair criteria (i.e., implement SG degradation specific management (DSM)), risk increase can occur. Licensees will need to assess as part of any relaxation of current criteria
- Based on above, NRC staff is reconsidering whether rule is best vehicle for revised approach to SG regulation

PRELIMINARY CONCLUSIONS (CONT'D)

- Another approach would be to implement above via current regulatory framework, using compliance backfit as basis to impose need for SG program. Reg Guide on inspection and structural and leakage assessments would provide acceptable approach to implementing GL
- Assessment of severe accident risk associated with new alternative repair criteria would follow DG-1061 (Approach for PRA in Risk-Informed Decisions on Plant-Specific Changes to Current Licensing Basis) for general guidance on risk assessment. Staff would modify section in SG Reg Guide to provide detailed acceptable approach for addressing risk assessment
- In summary, current risk assessments do not warrant relaxation of current regulatory approach. Proposed regulatory approach puts responsibility for development and implementation of DSM into licensee's hands and takes staff essentially out of review and preapproval process

**Presentation to the
Advisory Committee on Reactor Safeguards**

REACTOR WATER CLEANUP SYSTEM (RWCS)

PIPE BREAK STUDY

**Background
Study Approach
Key Issues
Status**

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April 3, 1997

BACKGROUND:

- **ACRS identified safety-related deficiencies in RWCS for ABWR**
- **ACRS requested study to investigate unisolable RWCS pipe break for operating BWRs**

STUDY APPROACH:

- **Agreement from three BWR plants to voluntarily participate in study**
- **Simulated RWCS pipe break using RELAP5/MOD3; Determined containment environmental conditions using CONTAIN; conducted in-house and external database searches**

KEY ISSUES:

- RWCS pipe break study addressed several key issues (e.g., reactor core coverage and cooling, secondary containment environment, etc.)
- Recent study-related events for BWRs

STATUS:

- Final draft report of RWCS pipe break study completed and undergoing internal review by NRR upper management
- ACRS will receive final draft report (hardcopy) of study in early April 1997
- ACRS will receive final report of study at the earliest possible date
- Staff will present final report of study to ACRS at Committee's May 1997 meeting



**10 CFR 50.59 REGULATORY PROCESS IMPROVEMENTS
PRESENTATION TO ADVISORY COMMITTEE
ON REACTOR SAFEGUARDS BY
THE OFFICE OF NUCLEAR REACTOR REGULATION**

APRIL 3, 1997

INTRODUCTION

- **10 CFR 50.59 permits licensees to make certain changes without NRC approval**
- **It establishes a regulatory threshold on the need for prior staff approval**

CONCERNS ABOUT 50.59 PROCESS

- **Scope of rule is limited to facility or procedures as described in SAR**
- **Ambiguity exists about when a change involves a USQ**
- **Application to existing conditions**

APPROACH TO RESOLUTION

- **Enhance implementation of rule as written**
 - Reaffirm, clarify, or establish regulatory positions**
 - Improve NRC oversight and inspection guidance**
- **Identify opportunities for improvement**
 - Integration of policy issues**

IMPLEMENTATION ISSUES

- **Deletion of Information from SAR**
- **Margin of Safety Interpretation**
- **Increase in Probability**
- **Increase in Consequences**
- **Degraded or Nonconforming Conditions**

DELETION OF SAR INFORMATION

- **Issue: May SAR information be removed when not linked to a facility change or update?**
- **Staff position is "no" at this time, pending evaluation of the need for changes in guidance or requirements related to content and use of the SAR**

MARGIN OF SAFETY -- REDUCTION

- **Issue: When is a reduction in margin of safety an USQ?**
- **Margins arise from overall design and regulatory process; margins of safety generally not explicitly defined**
- **To determine whether change is "unreviewed", focus on acceptance limits which NRC accepted**

MARGIN OF SAFETY - BASIS

- **Issue: Interpretation of "as defined in the basis for any technical specification"**
- **Section 50.36(b) says Technical Specifications are to be derived from analyses and evaluations in the safety analysis report**
- **The TS Bases summary statements often do not present margins of safety; therefore, the staff concludes the SAR should be used as the "basis for any TS"**

INCREASE IN PROBABILITY

- **Issue: How should rule language of "probability may be increased" be interpreted?**
- **Staff position is that any increase, or even uncertainty, about possible increase in probability of occurrence of accident or malfunction of equipment previously evaluated results in a USQ**

INCREASE IN CONSEQUENCES

- **Issue: How should "consequences...may be increased" be interpreted ?**
- **Staff position is that any increase in radiological consequences above SAR value results in a USQ**
- **Industry guidance would permit increases above previously documented results if still less than NRC acceptance limits**

DEGRADED OR NONCONFORMING CONDITIONS

- **Issue: When is 10 CFR 50.59 evaluation required?**
 - When compensatory actions taken
 - When licensing basis is changed
 - Delay beyond first reasonable opportunity
- **Issue: Effect on Plant Operation if USQ**
 - operating plant may continue operation if equipment is operable and TS met; plant startup requires resolution

POLICY CONSIDERATIONS

- **Scope of Rule (Safety Analysis Report)**
- **Unreviewed Safety Question Threshold**

RECOMMENDATION

- **Publish staff implementation guidance for public comment**

10 CFR 50.59

§ 50.59 Changes, tests and experiments

(a)(1) The holder of a license authorizing operation of a production or utilization facility may (i) make changes in the facility as described in the safety analysis report, (ii) make changes in the procedures as described in the safety analysis report, and (iii) conduct tests or experiments not described in the safety analysis report, without prior Commission approval, unless the proposed change, test or experiment involves a change in the technical specifications incorporated in the license or an unreviewed safety question.

10 CFR 50.59(a) CONTINUED

(2) A proposed change, test or experiment shall be deemed to involve an unreviewed safety question (i) if the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased; or (ii) if a possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report may be created; or (iii) if the margin of safety as defined in the basis for any technical specification is reduced.