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NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS**

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

APRIL 27, 2000

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

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

THERMAL-HYDRAULIC PHENOMENA

U.S. Nuclear Regulatory Commission
11545 Rockville Pike
Room T-2B3
Two White Flint Building North
Rockville, Maryland

Thursday, April 27, 2000

The subcommittee met, pursuant to notice, at 8:30
a.m.

MEMBERS PRESENT:

- GRAHAM B. WALLIS, ACRS Chairman
- THOMAS S. KRESS, ACRS Member
- JOHN D. SIEBER, ACRS Member
- ROBERT L. SEALE, ACRS Member

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P R O C E E D I N G S

[8:30 a.m.]

CHAIRMAN WALLIS: The meeting will now come to order. This is a meeting of the ACRS Subcommittee on Thermal-Hydraulic Phenomena. I am Graham Wallis, the Chairman of the subcommittee.

I apologize for my voice. If it runs out, then I will turn to Dr. Kress to take over.

ACRS members in attendance are Thomas Kress, Robert Seale and Jack Sieber. ACRS consultants in attendance are Virgil Schrock and Novak Zuber.

The purpose of this meeting is for the subcommittee to continue its review of the NRC Code Guideline Documents, Draft Regulatory Guide DG-1096, Transient and Accident Analysis Methods, and Draft Standard Review Plan Section 1501, Review of Analytical Computer Codes.

The subcommittee will gather information, analyze relevant issues and facts and formally propose positions and actions as appropriate for deliberation by the full committee.

Paul Boehnert is the Cognizant ACRS Staff Engineer for this meeting.

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

1 previously published in the Federal Register on April 7th,
2 2000.

3 A transcript of the meeting is being kept and will
4 be made available, as stated in the Federal Register notice.
5 It is requested that speakers first identify themselves and
6 speak with sufficient clarity and volume so that they can be
7 readily heard.

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

10 Now before we start, I would like to say that
11 these are important subjects we are going to discuss today,
12 that these codes are the major tool used by the agency and
13 the industry to assess what happens during accidents. It is
14 very important that they be something that the Staff and the
15 industry and people looking in from outside from the
16 professional world can have confidence in and can rely on.

17 I also have a comment. I would like it to be
18 clarified just how these two documents relate to each other.
19 Do they complement each other and in what way, and what is
20 the purpose of each one? Perhaps someone can help with that
21 too.

22 Now I would like to ask Mr. Ralph Caruso of the
23 Office of Nuclear Regulatory Regulation to begin.

24 MR. CARUSO: My name is Ralph Caruso. I am from
25 the Office of Nuclear Reactor Regulation. I am the Section

1 Chief in the BWR and Special Projects Section of the Reactor
2 Systems Branch.

3 I am going to give you a little bit of background
4 first on this Reg Guide. The Reg Guide and Standard Review
5 Plan originated as an action items from the Maine Yankee
6 Lessons Learned Task Force, which looked into Staff
7 practices with regard to the review and approval of codes as
8 well as a number of other activities associated with Maine
9 Yankee about four, five years ago.

10 One of those action plan items was that the Staff
11 needed to document and codify its practices with regard to
12 the review and acceptance of analytical tools. As a result
13 of that lessons learned we developed this Standard Review
14 Plan and Reg Guide. The relationship between the two is
15 complementary. They are to a certain extent linked at the
16 hip. The Regulatory Guide provides guidance to licensees
17 about the expectations of the Staff with regard to
18 submittals by licensees who seek to have analytical methods
19 approved. It is guidance to licensees about the content of
20 their submittals and it provides a method -- not the only
21 method -- but one acceptable method for licensees to prepare
22 submittals that should if it is followed provide an
23 acceptable package to the Staff.

24 The Standard Review Plan provides guidance to the
25 Staff on how to do a review of an analytical code or

1 methodology.

2 Therefore, to a great extent, they mirror one
3 another because a lot of the elements are common between
4 them.

5 Realize that the review process itself is a
6 dialogue. It is a dialogue between the Staff and the
7 licensee concerning the methodology. The purpose of the
8 dialogue is to reach a common understanding which is
9 documented for the benefit of the public, to explain why
10 that methodology is acceptable for the use which the
11 licensee intends to make of the particular code or
12 methodology.

13 This dialogue is conducted generally in public
14 through requests for additional information from the Staff
15 to the licensee and with responses from the licensee to the
16 Staff. These RAIs and responses are all placed on the
17 public docket and depending upon the code very often we have
18 public meetings. We have presentations to the ACRS. We
19 have a number of different interactions that are part of
20 this dialogue.

21 Right now the schedule for issuance of this draft
22 Reg Guide, Reg Guide and Standard Review Plan is to have it
23 issued for public comment sometime in the next couple of
24 months. Our procedures require us to seek public comment on
25 these Reg Guides and Standard Review Plans before we put

1 them in place and the process for seeking public comment
2 includes providing it to the ACRS, asking for your comment,
3 talking to the CRGR and asking for its comments.

4 Right now we have just sent it to ACRS. We have
5 sent it to the CRGR, and we are trying to schedule a meeting
6 with the CRGR I believe some time next month, in May.

7 We think that this is an important document. We
8 want to have a discussion about this document with the ACRS
9 and with the industry especially. We don't think that there
10 is anything in the documents that is different from our
11 current Staff practices. Some licensees, some individuals
12 might take exception to that statement on my part because
13 they have not been working closely with us recently in our
14 review processes.

15 Our review processes over the past couple of
16 years, starting with the AP600, have changed a little bit,
17 in that we are doing more reviews inhouse. We are becoming
18 more involved in the details of the methodologies, and we
19 are starting to use techniques taken from the CSAU
20 methodology and applying them in a lot of different areas,
21 so some licensees may think that this is a new position. We
22 don't consider it to be a new position. We really consider
23 it to be a codification of existing ongoing Staff practices,
24 but we think it is important to have a dialogue with all the
25 interested stakeholders so that the documents that we

1 ultimately settle on are accepted by and can be used by all
2 the individual stakeholders.

3 As I said, the schedule is for CRGR review and
4 public comment. I am not sure when the CRGR review is
5 scheduled, but we hope to go out for public comment some
6 time in the next couple of months.

7 CHAIRMAN WALLIS: May I ask you, Ralph, you said
8 this is describing current Staff practices. There is no
9 change. But it seems to me that in the risk-informed world
10 you might be asking slightly different questions of these
11 codes and that some sort of qualitative assessment of how
12 well they look compared with data may not be adequate. When
13 it's risk informed you have to tie that uncertainty into --
14 what you then if you are uncertain about something, what
15 does this make you think about the risk involved, so does
16 risk-informed have any influence at all on your thinking.

17 MR. CARUSO: I don't disagree. I think it depends
18 entirely upon the application of the code. For risk
19 informed applications it may very well be necessary to have
20 licensees do more rigorous uncertainty quantifications, but
21 that is not something that I would necessarily require from
22 every methodology upfront, because you have to tailor the
23 degree of documentation, the degree of purity to the
24 application. For some applications something that is simple
25 and that everyone agrees is overly conservative might be

1 acceptable and you just have to tailor the individual
2 applications and the reviews, the individual reviews, to the
3 application.

4 One thing I would like to make clear is these Reg
5 Guides and -- the Reg Guide especially is the first step in
6 this process. The structure that Norm Lauben set up
7 involves an overall framework document and we intend to
8 develop over the long term a number of additional
9 supplemental modules to handle different codes, different
10 types of codes, different situations, so realize that the
11 document that he has come up with is not intended to cover
12 every possible code that could exist.

13 We have to write additional supplemental modules
14 to handle other applications.

15 DR. ZUBER: Zuber is my name -- Z-u-b-e-r.

16 I need two clarifications from you. When you
17 submit when we have a meeting like this, does it mean that
18 it has gone through a quality check or -- wait, I must be
19 the management, not you -- did it go through an approval
20 methodology at NRR and if you could clarify what that
21 methodology is before you submit it here.

22 SPEAKER: I was going to address this --

23 DR. ZUBER: That is fine. I am asking the
24 management because --

25 DR. SEALE: Please, one at a time and use a

1 microphone.

2 MR. CARUSO: We have an internal review process
3 for letters before they are issued for public comment and it
4 is reviewed by various levels of management. The documents
5 were discussed between NRR and Research and they were
6 reviewed internally by the people who were involved in
7 developing them and who have been involved in this whole
8 issue for quite a number of years.

9 DR. ZUBER: Yes, I understand that people who are
10 involved will discuss it, but what is the management level
11 up to where this is supposed, this is okay as far a manager
12 approve it --

13 MR. LAUBEN: Dr. Zuber, there are -- excuse me,
14 Norm Lauben from the Office of Research.

15 There are several levels in this whole process,
16 and in fact Joe Staudenmeier and myself have reviewed some
17 PERT -- P-E-R-T -- charts and so forth that look at this,
18 but the responsibility for Regulatory Guides is with the
19 Office of Research. What that means is that the Office of
20 Research prepared draft Regulatory Guides that are then
21 reviewed at the Division level by the user office.

22 This means that we send the draft Regulatory Guide
23 from our division, of which Ernie Rossi is the Division
24 Director, to Gary Holahan, who is the Division Director and
25 all appropriate people in those divisions review these

1 documents.

2 Okay, now, after it's been approved at the
3 Division level by NRR and RES, we then come here as one of
4 the first steps to see whether ACRS wants to review this at
5 this time or defer and do by what they call "negative
6 consent" -- they'll say we don't want to review this at this
7 time and by negative consent you can go forth with this
8 document or these documents.

9 Then, okay, these two documents, since there are
10 normally slight differences between Standard Review Plan and
11 Regulatory Guide procedures, we have tried to adapt the
12 procedures in a common way because we believe that these two
13 documents are so closely tied that they need to be reviewed
14 in parallel.

15 Therefore, the next review after ACRS has said
16 "negative consent" or "yes, we want to review this" and
17 "yes, we want you to incorporate the materials in this
18 Regulatory Guide," the next step is to go to OGC and CRGR,
19 OGC being the legal department, CRGR being the Committee for
20 Review of Generic Requirements.

21 OGC is obvious. They want to make sure that the
22 documents are legal. CRGR, their principal purpose for
23 reviewing these documents is to make sure that they follow
24 the backfit rule, and that backfit practices are followed in
25 these documents.

1 After CRGR and OGC approval and incorporation of
2 ACRS comments or incorporation of ACRS statement of negative
3 consent, then it goes out for public comment. After it
4 comes back from public comment there is a discussion among
5 the user office and the preparer's office and OGC and
6 whoever is important to resolve any public comments that
7 might be here.

8 Is that far enough along in the process --

9 DR. ZUBER: That is more than I asked for.

10 MR. LAUBEN: That is more than you asked for?

11 Okay.

12 DR. ZUBER: And I appreciate that.

13 MR. LAUBEN: But the point is that at this point
14 it's the Division levels in Research and NRR and then ACRS.

15 DR. ZUBER: The reason I asked, I thought they
16 both came out of NRR --

17 SPEAKER: Gary Holahan, I would presume, because
18 that is the level that it comes from.

19 DR. ZUBER: Okay, good, good, good. What I didn't
20 understand is how much of the experience of NRR within this
21 let's say 10 or 15 years was fed into this.

22 MR. LAUBEN: Okay -- a lot. We have had three
23 drafts of this document, one as early as May of last year,
24 and we actually gave ACRS an early copy of that with the
25 acknowledgement that the May version was not complete.

1 We didn't consider it complete, but we felt that
2 in the interest of dialogue with ACRS and NRR that we should
3 have this very early draft document circulated amongst NRR,
4 RES and ACRS.

5 Okay. In November we had a more formal, nearly
6 complete, version of the Reg Guide that was provided to the
7 ACRS, commented on by the ACRS in the meeting of November
8 17th, '99 and we have incorporated those comments to the
9 best of our ability at that time into the document.

10 Now this more recent one here then is not greatly
11 changed but it does have a few -- I am giving my
12 presentation.

13 [Laughter.]

14 MR. LAUBEN: Which is all right --

15 DR. SCHROCK: I have a general comment before you
16 really start on your presentation. Is it appropriate for me
17 to do that now?

18 CHAIRMAN WALLIS: Yes. I don't think it should be
19 too long.

20 DR. SCHROCK: No, it won't be too long.

21 CHAIRMAN WALLIS: Thank you.

22 DR. SCHROCK: Well, my concern is simply that
23 there is an awful lot of history involved in what the
24 existing practices are, and my concern is that there is a
25 clear lack of evolution in the standards regarding this

1 process in the agency, and that takes several forms.

2 Probably the most important one is the first one,
3 which is the dismal quality of documentation which is
4 supplied both for discussion at ACRS meetings and
5 documentation describing codes.

6 There have been a lot of approvals in the past
7 which cover certain features of codes, certain purposes of
8 the codes, et cetera, and it is very clear from more recent
9 reviews that the quality of the information that was
10 available to whomever did the review at the time that such
11 approvals were given was inadequate, that in fact you have a
12 lot of approvals out there that should embarrass you if they
13 were examined in the clear light of day.

14 This is pretty harsh criticism and I am trying to
15 make it that way to underscore the fact that here is a real
16 opportunity for NRC to take a step forward in the quality of
17 the way its work is carried out, and if you fail to do that
18 with this opportunity you are going to regret it in the
19 future, so I think you need to give more consideration to
20 this Reg Guide from the standpoint that you really are on
21 some pretty shaky grounds with some of the approvals that
22 exist and that if they had to be examined, under good, sound
23 engineering practices they may not stand up. You don't
24 really know whether they would or whether they wouldn't, I
25 think, in many cases.

1 So there needs to be some thinking in NRR,
2 throughout the agency, that as years go by there has to be
3 some evolutionary improvement, not that you constantly go
4 back to the fact that there were prior approvals and you
5 don't want to re-examine, open an old can of worms, and
6 re-examine issues that you don't really have to at this
7 moment. It isn't productive to do it that way, and many of
8 the discussions that we have had in the last couple of years
9 have led me to this very clear conviction that there is
10 resistance to this within the agency, within the industry,
11 and we are not moving forward.

12 I must stress that. We are not moving forward
13 with an evolutionary gain in the quality. If you don't
14 clarify to the industry in very specific terms the kind of
15 quality that has to be incorporated into these
16 communications, you are not going to make it.

17 That is all that I wanted to say.

18 DR. ZUBER: May I must make one comment? I
19 absolutely, 100 percent support his comments.

20 Two things. If NRR or NRC or the industry doesn't
21 look at this problem with more responsibility, then it
22 behooves to the professional people in the field to inform
23 the public and let it go from there, and I am documenting
24 this and I will make it available.

25 SPEAKER: There is a switch. A little red light

1 should come on. When the red light comes on, you're on.

2 MR. LAUBEN: There is one thing that those of us
3 who have to write these things have to worry about a lot,
4 and that's called the backfit rule. The minute it starts to
5 sound like you are imposing a new requirements, whether it
6 be evolutionary or brand new, we have to run the gauntlet to
7 see whether it is going to pass muster in this regard.

8 You are going to have to take those kinds of
9 subjects up at a much higher level than I can --

10 DR. ZUBER: I will. I mean whatever this
11 committee does, I will on my own initiative.

12 MR. LAUBEN: You understand what I am talking
13 about?

14 DR. ZUBER: I understand very well. Let me say
15 something --

16 DR. SEALE: Very good point, by the way. I
17 appreciate your pain.

18 DR. ZUBER: Let me say this. We are moving, we
19 are now in a different era than we were 25 years ago. We
20 have now an industry -- the boundary conditions, the climate
21 has changed and you cannot approve the criteria or use the
22 criteria that fitted one age and apply it to another, and
23 this is the point I am making in a document I am sending.

24 I am going to publish it, but I am sending it
25 first to Graham.

1 If you try to hang up your arguments to the
2 backfit rule, you are addressing the wrong problem. You
3 have to look at the future.

4 MR. LAUBEN: I have to. I can't do it --

5 DR. ZUBER: I am not saying you. NRC or any
6 regulatory commission which does a job in a responsible way.

7 CHAIRMAN WALLIS: We have these boundaries. If
8 there wasn't a Reg Guide before --

9 MR. LAUBEN: Excuse me?

10 CHAIRMAN WALLIS: There hasn't ever been a Reg
11 Guide in this area.

12 MR. LAUBEN: That's right.

13 CHAIRMAN WALLIS: So you have the advantage that
14 people can't cite it against you if you want to write
15 something down.

16 MR. LAUBEN: No, no -- yes, but when I write a Reg
17 Guide -- oh, here. This is the kind of discussion we should
18 be having, by the way, rather than my presentation. I
19 wanted to get through that in a hurry, but there are a
20 couple of slides I would like to show before my presentation
21 even, if I could find them -- there we go.

22 One, Graham, I hope helps a little bit in
23 answering your question that you made in your introduction,
24 which has to do with how do these things relate to one
25 another, and I just have to show the regulatory relationship

1 between all of these things.

2 If you look at what this Reg Guide and Standard
3 Review Plan are trying to address is something that comes
4 from 50.34 and that is the licensing application content of
5 PSARs and FSARs to meet Appendix A and 50.46. Appendix A is
6 the general design criteria.

7 Right below that is the Standard Review Plan. The
8 Standard Review Plan is not a regulation, by the way. It is
9 a plan but the Standard Review Plan tries to amplify on what
10 50.34 tells it to do, and so if you will, the Standard
11 Review Plan is the thing that we really are or I should say
12 50.34 is the regulation that we are trying to address when
13 we write this Regulatory Guide, okay?

14 Now as you can see, Regulatory Guides -- I have
15 shown a level here -- 50.34 is kind of like a guiding
16 regulation -- 15.46, 50.59, Appendix K become somewhat
17 subsidiary to what 50.34 is, and as I said at the beginning
18 of the Reg Guide, 50.34 is what I am writing the reg -- I
19 can't just write a Reg Guide for nothing. It has to be
20 related to the rules and regulations of the Commission and
21 this is where and this is why this is there. I don't know
22 if this helps some or not, and, if you will, the focus of
23 what these Reg Guides are, to describe methods appropriate
24 for analyzing the transients and accidents that are events
25 that are outlined very briefly in 50.34.

1 Indeed, there are risk informed things to consider
2 in the future, but that is the reason why there is a whole
3 initiative to risk inform Part 50, all the regulations in
4 Part 50, and one could say, well maybe this is premature
5 because maybe by the time you end up risk informing all of
6 Part 50, 50.34 gets changed and then you might want to say
7 something different or this Reg Guide may appear somewhat
8 different. It may have a lot more risk informed stuff in
9 it. But right now, if you look at 50.34 you have to analyze
10 those events, and the focus of this Reg Guide and the
11 Standard Review Plan to analyze the events that are
12 specified or are outlined in 50.34 and specified in the
13 Standard Review Plan.

14 DR. SEALE: Just one comment --

15 DR. KRESS: Excuse me, Bob. Go ahead.

16 DR. SEALE: It is my impression that you need to
17 do this anyway because at least for the foreseeable future
18 you will have a parallel regulatory process, one perhaps you
19 will develop which is risk informed but you still have
20 accommodate the present system, so you need this thing
21 anyway.

22 MR. LAUBEN: But this is what the focus of what we
23 are doing now is.

24 DR. SEALE: I understand.

25 MR. LAUBEN: It really -- we try to make it

1 applicable to risk informed things, however they will turn
2 out, but indeed the main focus is -- I'm sorry, but it has
3 to do with the traditional things that we have to do right
4 now, the 50.34.

5 DR. KRESS: I think you are right there, because
6 it is hard to take a monkey wrench to the traditional things
7 and make them risk informed and you have to live in both
8 worlds, I think.

9 MR. LAUBEN: That's right.

10 DR. KRESS: But my question, Norm, is neither the
11 Reg Guide nor the Standard Review Plan really constituted a
12 new regulation --

13 MR. LAUBEN: It can't. That is my next slide.

14 DR. KRESS: So where does the regulatory analysis
15 then fit into that, if it is not a new regulation?

16 MR. LAUBEN: The regulatory analysis is -- did you
17 see it, by the way? It was in the back of this -- I don't
18 know. Was it in the back of what you received?

19 DR. KRESS: I think it was.

20 MR. LAUBEN: Regulatory analysis, if you will,
21 very much briefer and very much --

22 DR. KRESS: Qualitative.

23 MR. LAUBEN: Qualitative compared to regulatory
24 analysis that you usually are changing a regulation.

25 DR. KRESS: Right.

1 MR. LAUBEN: And indeed that is the pattern that
2 has been followed for -- you know, I can't tell you why
3 people say you have to do regulatory analysis for these Reg
4 Guide, probably mostly to assure yourself that you are not
5 imposing requirements that are costly to the industry.

6 You need to talk to Joe Murphy or whoever it is
7 that knows more about regulatory analyses than I do.

8 I tried to pattern this one, by the way, after
9 what I saw for --

10 MR. COOPER: I suspect it could be a back door way
11 of imposing new requirements.

12 MR. LAUBEN: It could be.

13 MR. COOPER: If you did that.

14 MR. LAUBEN: And this has to do with the
15 relationships between Reg Guides and Standard Review Plans.
16 It is given in this definition that appears on every Reg
17 Guide and every Standard Review Plan chapter.

18 And I think the key words here -- and this is what
19 Ralph was describing, I think, in general, too. Reg Guides
20 are documents issued to describe and make available to the
21 public, methods acceptable to the staff of implementing
22 specific parts of Commission regulations.

23 Once again, we have to relate this to the
24 Commission regulations. That's why the discussion about
25 50.34 and other regulations.

1 To delineate techniques used by the Staff in
2 evaluating specific problems or postulated accidents, to
3 provide guidance to applicants, and the big word here,
4 regulatory guides are not substitutes for regulation.

5 They cannot be requirements, and compliance with
6 them is not required. Methods and solutions different from
7 those set out in the guides will be acceptable if they
8 provide a basis for defining the requisite to issuance or
9 continuance of a permit or license by the Commission.

10 That's -- so this is guidance to the industry, and
11 it cannot be a requirement. If we want to make something a
12 requirement, it has to be a regulation.

13 DR. ZUBER: So the only thing we can now require
14 is Appendix K.

15 MR. LAUBEN: Appendix K or 50.34.

16 DR. ZUBER: So really the only assurance as of
17 today against misuse is Appendix K.

18 MR. LAUBEN: 50.46, because Appendix K is derived,
19 in part, from 50.46.

20 MR. STAUDENMEIER: Joe Staudenmeier, Reactor
21 Systems Branch, NRR. Actually, these methods have to meet
22 Appendix B quality assurance. In Appendix B, there is a
23 section on design control, and if you look at any reasonable
24 implementation of design control.

25 A lot of people reference NQA-1 or things like

1 that. Part of design control is verification of the methods
2 that you're using, so Appendix B, under Design Control,
3 really requires some sort of verification that the methods
4 you're using are okay, and documentation standards on the
5 methods and things like error control and things like that.

6 MR. LAUBEN: This is exactly why I had the section
7 on quality assurance in the document to show that this,
8 indeed, has to meet the appropriate parts of Appendix B.

9 DR. SEALE: I would think that with a little
10 imagination, you might be able to use that to help you get
11 out of your cost-benefit analysis trap.

12 MR. LAUBEN: I think so, and I think we are, and I
13 think that's why all of the -- if you will, almost
14 everything that we discuss has to do with documentation.

15 DR. SEALE: Yes.

16 MR. LAUBEN: And the concern about documentation
17 is really an Appendix B concern.

18 DR. ZUBER: Now, let me ask you, since you brought
19 documentation up, how can you explain -- I mean, not you,
20 but NRR -- how can you explain that we have to review a
21 document of the kind of -- how can you explain it?

22 Because if you took it out, you would have found
23 the same errors.

24 MR. LAUBEN: Okay, I think that --

25 DR. ZUBER: Let me say two things. Wait. My

1 concern is that this document was approved up to the
2 Division level. See, the problem is that that document went
3 through the quality control all the way to the Division
4 before it was submitted here.

5 MR. LAUBEN: Okay, I'll tell you what; something I
6 have to be embarrassed about, because I think, you know,
7 most of this was my document. I don't want to blame my
8 Division or anyone else.

9 DR. ZUBER: You mean this one?

10 MR. LAUBEN: No, no. The Regulatory Guide -- and
11 it really was only after I read Graham's comment that I
12 realized that what we needed to do was to figure out some
13 way to put into this document, standards that have to do
14 with generic reviews like RETRAN.

15 I think that generic reviews like RETRAN just
16 don't follow the pattern of things like CSAU.

17 And it's very --

18 DR. ZUBER: You applied them to a reactor.

19 MR. LAUBEN: No. The problem is this, as I see
20 it, and this is -- yes, you apply them to a reactor, but
21 when you have a generic code and you try to say this generic
22 --

23 DR. ZUBER: These are fundamental errors.

24 MR. LAUBEN: No, no. The generic code has --
25 that's right, a fundamental error shouldn't be in anything.

1 DR. ZUBER: Okay, my question is, how can this be
2 prevented? What is the procedure to say this doesn't go
3 through?

4 As the Division Director, I don't approve. I'm
5 not blaming you.

6 MR. LAUBEN: No, no, that takes too many steps.
7 It jumps -- you're right, okay? You're right, but it really
8 -- and I don't want to -- because I feel like it's my fault.

9 I really do feel like it's my fault. I should
10 have done a better job, you know? The Division Directors
11 can't do everything.

12 DR. ZUBER: Did you review RETRAN documentation?

13 MR. LAUBEN: I did not.

14 DR. ZUBER: Okay, so, my -- again, I'm not going
15 to put blame. I'm really concerned about the procedure,
16 because next time, a year from now, -- is not going to be
17 here. None of us may be here.

18 What is the guarantee to the public.

19 MR. LAUBEN: Well --

20 DR. ZUBER: Let me just finish. What is the
21 guarantee and assurance of the public that we won't have
22 such errors in the regulation procedures and approval?

23 MR. CARUSO: Let me try to answer this. There are
24 no guarantees, especially when you're talking about these
25 general purpose codes like RETRAN or we're starting to see

1 some people that want us to review some CFD codes, which are
2 extremely general purpose for applications.

3 And reviewing them is very difficult, because the
4 applications are so widespread. What I think we're going to
5 end up doing is, we're only going to review them for
6 specific applications.

7 We're not going to provide general, sweeping
8 acceptance statements that say that these are good for all
9 sorts of different conditions -- transients and situations.

10 But ultimately, the guarantee that you're asking
11 for comes down to the people that do the review. They've
12 got to have knowledge.

13 DR. SCHROCK: This came up in one of the previous
14 meetings, and it seems to me that if you pursue this idea of
15 approving only for very, very limited applications, you're
16 going to be swamped with applications because there are so
17 many different things that they're going to need approval
18 on.

19 If they can't get approval of a tool that cuts
20 across a number of these, I think your workload is going to
21 become unbearable.

22 MR. CARUSO: I understand that, but I have an idea
23 about that. But the difficulty in reviewing general purpose
24 tools for general purpose -- for a large universe of
25 applications is just too difficult because the codes have so

1 much flexibility in them that you end up just drawing a very
2 small box in which you can analyze the uncertainties, in
3 which you can analyze how well --

4 You have to limit the ability of the analyst to be
5 creative.

6 MR. LAUBEN: I'll tell you what, in my mind, you
7 could do, and this puts a bit burden on the code developer.

8
9 But I think that in order to get around this, he's
10 got to do it. And that is, he has to do a series of
11 importance determinations, if you want to call them PIRTs or
12 whatever they are.

13 But he has to do a series of importance
14 determinations for every single transient and every plant
15 type that it is expected that his code can be used for.

16 And that has to be reviewed by a credible group of
17 people. And then he can say here's my general purpose code,
18 and here is its application, and here is the assessment that
19 has been done, and here is the assessment that will need to
20 be done if this is to be approved for a particular
21 application.

22 If you don't do that ahead of time, up front with
23 the code, then all you're doing, really, is just a PR job.

24 DR. ZUBER: I would then put it in writing at the
25 regular --

1 MR. LAUBEN: Thanks to Graham, I thought about
2 this a little bit in the last two days, and realized that
3 this is the kind of thing --

4 DR. SEALE: You have to, and the reason you have
5 to is that if you don't, once you approve that code for use
6 on one thing, then the backfit rule people will come in and
7 say it's been approved, period, and we can apply it to
8 anything.

9 There has never been any attempt dumb-down the
10 regulations, but basically that's what's happened, because
11 we have -- we assume a generic approval on the use of some
12 of these codes which were originally approved to do a very
13 narrow, defined job, and that was it, because that was the
14 best capability we had at the time.

15 MR. LAUBEN: Or sometimes codes are focused on a
16 particular job. TRAC was developed to do large break locas.
17 It was developed that way.

18 DR. ZUBER: And in the same way, and that is the
19 mistake.

20 MR. LAUBEN: Okay.

21 DR. ZUBER: This is the mistake, that these tools
22 which were addressing a problem 25 years ago, are not
23 convenient and useful for this new era.

24 And this is something that a regulatory agency
25 should look ahead, and I'm addressing this problem in the

1 paper I'm --

2 MR. LAUBEN: We will have to get some very
3 specific -- I don't know; it's too big for me to worry about
4 right now, really.

5 CHAIRMAN WALLIS: You have half of your
6 presentation already.

7 MR. LAUBEN: Yes, but the point is that I think
8 that there are ways to specify. I don't think it requires a
9 new Reg Guide, or separate Reg Guide as Graham has said.

10 I think it should be part of this Reg Guide, and I
11 think it should specify the things that are really required
12 for a generic code review.

13 And part of what that includes is probably up
14 front. It's road map kinds of things that we get concerned
15 about, and I think this is important.

16 Road maps for this -- for exactly what this is
17 good for, what it's not good for, what's going to be
18 required on the part of specific applicants and so forth.

19 And that's the only way to handle it.

20 DR. ZUBER: See, we were confronted to review --
21 we just had that claim, a global approval.

22 MR. LAUBEN: Right.

23 DR. ZUBER: You see, a global approval, a code
24 which had the fundamental error, a senior could detect. If
25 it had not been for Graham, this would have probably gone

1 through.

2 And the damage that can do to this technology,
3 ruin the reputation, and rightly so, of this Agency for not
4 doing the correct job.

5 MR. LAUBEN: If you look at the list of transients
6 that the Standard Review Plan spells out to meet 50.34,
7 probably nine out of ten of those transients don't even care
8 about a momentum equation, but they may care a lot about
9 physics, and they may care a lot about fuels.

10 But they don't care about momentum equations. The
11 transients are over in fractions of a second, or tens of
12 seconds, and there's no change in what's going on.

13 DR. ZUBER: But globality implies globality
14 application.

15 MR. LAUBEN: Well, maybe that part of the problem
16 with a general purpose code; that it tries to do so much.

17 DR. ZUBER: And the problem of this Agency is to
18 find out and limit the applications in some many words. And
19 then you can maintain the reputation on doing a responsible
20 job. Otherwise, you're going to lose it, and rightly so.

21 CHAIRMAN WALLIS: I think we need to move on.

22 MR. LAUBEN: Okay.

23 CHAIRMAN WALLIS: Your last slide had the SRP and
24 the guide.

25 MR. LAUBEN: Yes.

1 CHAIRMAN WALLIS: The thing that puzzles me is
2 that while you're up first, it seems to me that the SRP
3 comes first. The Staff says, this is what is required.

4 Then you look at that and say how am I going to
5 describe to industry, how to meet those requirements? The
6 SRP has to come first.

7 MR. LAUBEN: I'm not sure. I'll tell you what, I
8 can't tell --

9 CHAIRMAN WALLIS: How can you write a Reg Guide if
10 you don't know what the SRP is? But you can write an SRP
11 without knowing what the Reg Guide is.

12 MR. LAUBEN: It is chicken and egg. You could
13 also argue it this way, Graham, that I want to give industry
14 the guidance, and I'm going to give them a lot of detailed
15 guidance, you might say.

16 And all the industry needs to know about what I'm
17 doing, is how am I going to review what they have given to
18 me?

19 DR. ZUBER: And you are going to present how
20 you're going to review it.

21 MR. LAUBEN: No, Joe Staudenmeier is going to
22 present how are they going to review it. That's the SRP.

23 CHAIRMAN WALLIS: Your role must be to interpret
24 it to industry in some way which is helpful.

25 MR. LAUBEN: Honestly, I've only been here 32

1 years, but I can't always tell the differences between these
2 things.

3 Like Ralph said, they're joined at the hip, and if
4 you look at this, they are also -- they sound a lot alike.

5 They're made available to the public and so forth,
6 so they know how the Staff is going to review these things.
7 But there's not a great deal of difference between what you
8 read about what a Standard Review Plan is supposed to be --

9 CHAIRMAN WALLIS: I think we'll now let you make
10 your presentation.

11 MR. LAUBEN: Sure. That's okay.

12 CHAIRMAN WALLIS: We'll go on to very interesting
13 general topics.

14 MR. LAUBEN: This is important.

15 CHAIRMAN WALLIS: Could you do your presentation
16 in about 15 minutes and we can come back to the --

17 MR. LAUBEN: I'll tell you what, I'm going to skip
18 right to background and need, and I don't even know if I
19 need to do that very much.

20 The Maine Yankee Independent Safety Assessment
21 Team and Task Group and other groups have identified the
22 need for transient accident methods to have uniform
23 consistency, a documented process to identify and rank
24 phenomena or importance determinations, if you will, which
25 is then used in a code development assessment.

1 Standard Review Plan and regulatory guidance for
2 code development, I think recent RETRAN review indicated
3 that a focused development and assessment process should
4 deal with plant transient identification.

5 But now since having read Graham's comments and
6 thought about it, in addition, we need to have -- as well as
7 the focused proces, we need to have some standards for
8 generic review.

9 And I just think that it's clear that we need to
10 do that.

11 CHAIRMAN WALLIS: And when you do the --

12 MR. LAUBEN: Our problems at Maine Yankee, our
13 problems prior to that with the original RETRAN-2 submittal,
14 all had to do with how do you get your arms around a generic
15 code when there isn't a focus on a known transient or a
16 known plant?

17 So, indeed, we need to address that.

18 CHAIRMAN WALLIS: The interaction between this
19 transient and the regulations, because how well you need to
20 know things depends upon the decisions you're going to make
21 in the regulation.

22 So you can't just say we're going to begin with a
23 transient identification. You've got to say what are we
24 looking for in this transient that gives us information that
25 enables us to enforce the regulations?

1 I think you have to bring the regulation into this
2 as well, when you assess what kind of transient, what kind
3 of plan you're looking for.

4 MR. LAUBEN: That's right. I hoped that I had
5 given a nexus to the regulations, but that's absolutely
6 true.

7 This should be followed by an importance
8 determination for phenomena, process, parameters, relevant
9 to the chosen plan of plant class, and development and
10 assessments key to the focused determination, i.e., PIRT,
11 minimizes the chance of being sidetracked on issues that may
12 not matter.

13 If you don't do this, we can all get off on things
14 that aren't particularly important to the transients that we
15 really want to focus on, or that we are focusing on.

16 DR. ZUBER: There is one thing that is important
17 to the transient.

18 MR. LAUBEN: If it's not true --

19 DR. ZUBER: Let me say, let me say that there are
20 agents outside of this room who are inimicable to this
21 technology for whatever political or other reasons they
22 have. And I think if you don't maintain a standard which
23 would satisfy a senior, whether the momentum equation is
24 important or not to that transient, is irrelevant.

25 Once, you know, losing your reputation is like a

1 woman losing the virginity, you cannot get it back.

2 MR. LAUBEN: If you present something that's
3 technically indefensible, whether it's important or not,
4 it's still technically indefensible.

5 DR. ZUBER: Absolutely, and this agency may lose
6 its reputation.

7 MR. LAUBEN: That's why it's important to do this
8 road map up front, so that you can determine what's
9 important.

10 And then if the momentum equation is important,
11 then you better get it right.

12 CHAIRMAN WALLIS: But even if it's not important,
13 if you write it down --

14 MR. LAUBEN: If you write it down --

15 CHAIRMAN WALLIS: You should write down something
16 --

17 MR. LAUBEN: You shouldn't write it down if it's
18 not important.

19 CHAIRMAN WALLIS: You shouldn't write it down if
20 it's incorrect.

21 MR. LAUBEN: Yes. Whether it's important or not,
22 you shouldn't write it down incorrectly.

23 CHAIRMAN WALLIS: Right. You're trying to
24 establish confidence.

25 MR. LAUBEN: Good point.

1 CHAIRMAN WALLIS: Confidence is one of those
2 goals.

3 MR. LAUBEN: Okay.

4 CHAIRMAN WALLIS: I think we've said enough about
5 public confidence.

6 MR. LAUBEN: I think you're right. Plans to
7 establish a guide and a companion SRP subchapter, which is
8 now -- which I know what it is now. It's 15.001 or 15.01.
9 Anyway, I don't have to call it subchapter anymore if I can
10 call it 15.01.

11 It has been assessed with the Subcommittee on two
12 previous occasions. Three drafts have been provided. The
13 most recent draft included informal Subcommittee and
14 consultant comments.

15 And Chapter 15.01 had been placed in the Public
16 Document Room and on the NRC public website. There is the
17 accession number, if anyone wants to read it, but you all
18 got copies.

19 The SRP Subchapter will be discussed by Dr.
20 Staudenmeier after this presentation. Guidance of
21 evaluation model development assessment is described in this
22 Reg Guide with emphasis on PIRT-based importance measures,
23 and will be consistent with the risk-informed regulatory
24 practices, so I say.

25 CHAIRMAN WALLIS: My comment was that PIRT is very

1 fine when you start out, but then you've got to close the
2 loop and say how well did we do on all of these things?

3 MR. LAUBEN: But the Guide -- Okay, okay, how well
4 do we -- how well did we do? Okay, you're right, you're
5 right.

6 If it's not addressed adequately, then I do need
7 some specific comments.

8 DR. ZUBER: Let me ask you, since there is such
9 exposure and prominence in this document, what do you think
10 are the shortcomings of PIRT?

11 MR. LAUBEN: Of?

12 DR. ZUBER: PIRT

13 MR. LAUBEN: Probably the fact that it relies on
14 opinion. And very often, when you elicit opinion, even
15 though it may be from a really important expert, okay, a lot
16 of times it's almost a last-minute discussion with the
17 experts about what the people who developed the code have
18 learned.

19 I think that sometimes, albeit they may be very
20 expert, I think they may not have been able to receive as
21 much information as they need to make as reasonable a
22 judgment as possible.

23 There is just always a, if you will -- when
24 something comes down to opinion, which a lot of these things
25 eventually do, that's a possible weakness.

1 DR. ZUBER: No, it is the weakness.

2 MR. LAUBEN: Oh, okay.

3 DR. ZUBER: And a second thing is the qualitative
4 aspect of it. It's qualitative is a -- and let me just go
5 on the record. I was instrumental in bringing the concept
6 in, and let me make a criticism:

7 PIRT was born for one reason only. In the
8 mid-80s, the documents which were provided by Los Alamos
9 were inscrutable. They didn't know what that code had, and
10 then I suggested at a meeting in the -- building. I
11 remember the room.

12 Let's conduct an accident, identify the processes
13 as they evolve from the core or whatever, so that we at
14 least get the table. And then compare what these processes
15 are to the quote/unquote, best estimate code which that
16 would have been.

17 That gave rise to the PIRT, and this is an
18 identification. And the next document that was of
19 consequence was the QMC document, the quality assurance
20 document.

21 This is the ranking process that came only through
22 the -- activity. But the shortcoming of that whole
23 approach was it's an accounting approach to see do we have
24 that capability?

25 The shortcoming is that it's qualitative and

1 subjective. And the point is, my point in bringing it here
2 and I brought about in this document, is that NRR or NRC
3 Research should think how to put some bones, quantitative
4 information, so you can remove this subjective attitude.

5 Because arm-waving can always be arm-waving.

6 MR. LAUBEN: Okay, there have been -- you're
7 probably familiar with them, but there have been a couple of
8 processes in Europe, one by GRS and the other by Daria, that
9 attempt to make these things a little bit more quantitative
10 and a little bit more integrated into the code.

11 And I think they may be even be used as references
12 here. But -- so you're right. How do you make it
13 quantitative?

14 The other thing, though, however, is that if you
15 introduce the concept early, that importance determination
16 is important, then I think that as you iterate through your
17 development and assessment, you may be able to minimize some
18 of the shortcomings.

19 I think that part of the problem, though, is that
20 you guys started with the CSAU at the end when the code was
21 supposedly virtually developed, documented, and frozen.

22 And then you began the process where there was no
23 importance determination made during the process of
24 developing the code.

25 DR. SCHROCK: The PIRT is, you know, a structured

1 way of getting professional opinion synthesized into
2 something. And if it's done properly, it is pretty
3 respectable.

4 But I think you have to face the problem that
5 you've got a lot of folks trying to cut the line here and do
6 PIRTs on the cheap, do PIRTs inhouse, do PIRTs in a number
7 of ways that reach conclusions that want to be reached.

8 And you have to somehow guard against that.

9 MR. LAUBEN: There has to be some independence in
10 the process.

11 CHAIRMAN WALLIS: It's a way to get started.
12 People are going to model condensation. That's fine, but
13 then that's just the beginning.

14 Now you have to say how are we going to model
15 condensation, and when we've done it, how well did we do at
16 modeling. That becomes far more important than the initial
17 PIRT decision, yes, you've got to model condensation.

18 So the quality you're looking for in a code is not
19 that someone figured out they've got to model condensation
20 in a PIRT, but how well did their model actually do for the
21 purposes of predicting reactor transients? That's the real
22 question.

23 DR. KRESS: That brings me back to my favorite
24 subject, Norm. What he's talking about is, you have to have
25 an assessed uncertainty in the code's predictions.

1 MR. LAUBEN: Right.

2 DR. KRESS: And has two parts to it. That's the
3 analytical assessment of uncertainty using things like Monte
4 Carlo and expert opinion to get the part that you can't, but
5 it's also the concept of comparing with the data and how you
6 incorporate into the uncertainty analysis.

7 That's the closure, because the measure of
8 uncertainty is a measure of how good your code is for the
9 given application. And that, to me, is the closure. And
10 that's where you have to reach for this question of closure
11 of how good did PIRT do for us, how good now is the code?
12 That's the answer.

13 DR. ZUBER: I agree with you, except there is an
14 intermediate step to it. Because we have so many -- in the
15 code, so many adjustable constants, how do you address that?

16 You see, the thing is, the code is orchestrated.
17 It's not the first principle. You start saying three
18 dimension of momentum and -- whatever. Finally, you reach
19 something and you try it with some correlations and -- and
20 so on.

21 The question is, and these are adjusted for -- .
22 The question is how do you conduct an uncertainty? How do
23 you know that changing one parameter is not affecting
24 another one, because tuning a code is introducing
25 complementary error.

1 MR. LAUBEN: It's more than just tuning. You just
2 gave me an opening to my favorite subject. Since I've had
3 the privilege of doing some plant analyses in the last few
4 years, getting appropriate, viable, accurate information to
5 put in the code is almost 80 percent of the problem.

6 And once you do, you end up finding that perhaps
7 some of the models in the code are inappropriate. But just
8 getting the right information is extremely important.

9 And that putting it in, and whether or not you're
10 going to tune that information or whatever, I agree that
11 when there are thousands and thousands of pieces of
12 information that go into a plant model, it's not easy. And
13 I'm not sure I can address it.

14 DR. ZUBER: If you identify a problem, then you
15 better address it.

16 MR. CARUSO: Do you have any suggestions for how
17 to deal with that?

18 DR. ZUBER: Yes, I do. It's in my paper.

19 CHAIRMAN WALLIS: You have to speak into the
20 microphone.

21 DR. ZUBER: Yes, I do, and you shall have it in my
22 paper.

23 MR. LAUBEN: Did I do this slide yet?

24 MR. BOEHNERT: No.

25 MR. LAUBEN: Okay. In 1998 the following proposal

1 was made to the ACRS, addressing the analysis and methods in
2 Chapter 15, stressing verification, validation,
3 documentation and quality assurance.

4 Describe application of the evaluation model
5 concept, and the reason I say that is if you look at --

6 CHAIRMAN WALLIS: You don't say much about
7 analysis methods in the Reg Guide, do you? That's number
8 one there.

9 MR. LAUBEN: Stress -- okay. You're right.

10 CHAIRMAN WALLIS: And you bring in these expert
11 panels to PIRT they expect panels should be darn sure that
12 the analysis methods are good too. I mean they use expert
13 panels lots of times to make things better.

14 You know, I have given you comments but I think
15 some of these threads, if you start off with a PIRT and it
16 gets kind of dropped, you start off with CSA, it gets kind
17 of dropped -- these threads should go through the whole
18 document. There is a certain kind of quality check, which
19 is expert panel, CSAU process, wherever it is, and it goes
20 all the way through from the beginning to the end. It
21 doesn't just start the process and then get forgotten.

22 MR. LAUBEN: No, no, that's right. The PIRT must
23 inform the whole process. I hope that that was in there,
24 but perhaps it isn't emphasized enough.

25 CHAIRMAN WALLIS: Well, it disappears after page 5

1 of something.

2 MR. LAUBEN: Well, no, I think that there's --
3 okay. I went back to look and what did I see? I saw that
4 in Section 2. --

5 CHAIRMAN WALLIS: Well, you may be getting too
6 detailed but when you are actually assessing, you don't say
7 much about PIRT at all.

8 MR. LAUBEN: Yes. I thought that at the beginning
9 of Section 2.2.3 --

10 CHAIRMAN WALLIS: You come back to the PIRT?

11 MR. LAUBEN: That it does establish the primacy of
12 the PIRT right upfront, okay? Also the Figure 1, the only
13 figure in this, also establishes the primacy of the PIRT.

14 DR. ZUBER: How do you -- you say you use PIRT to
15 establish something. How do you verify that that was
16 correct?

17 MR. LAUBEN: If people are doing assessment, if
18 they are doing development, then they need to show how the
19 development is done in a way that addresses the processes in
20 an order that reflects their ranking. That is number one.

21 DR. ZUBER: They are first -- first -- the ranking
22 is qualitative. You said poor, medium and good. Whatever --

23 MR. LAUBEN: Okay, that -- that's how good,
24 goodness.

25 DR. ZUBER: Okay, fine, but I mean those are

1 qualitative criteria. The problem is what you just said, I
2 have heard this for the last 10 years.

3 This is a circulatory argument because you say
4 PIRT says this is important, then you use a code with a
5 myriad of coefficients, tuning coefficients, and it is again
6 I can predict anything I want. You see, you have to have an
7 independent way -- independent -- to say that is okay for
8 this and this it isn't and ergo I have more confidence I
9 have more confidence in the code.

10 MR. LAUBEN: Okay.

11 DR. ZUBER: Go ahead.

12 MR. LAUBEN: But the other thing is the assessment
13 has to be, needs to be related to the importance
14 determination.

15 DR. ZUBER: Okay, good. Very good point.

16 MR. LAUBEN: That is in there.

17 DR. ZUBER: It is not specified.

18 MR. LAUBEN: Excuse me?

19 DR. ZUBER: It is not specified. What is -- I
20 don't see what is required for a minimum assessment matrix.
21 What would you see? If I drive a car I can say, "You cannot
22 go over 55 miles," period. Now the thing is I am putting a
23 Regulatory Guide and I don't know what are the
24 specifications.

25 What does constitute a minimum assessment matrix?

1 On what is it based?

2 Let me say why is this important, and I wrote
3 about this. People with experience are going away. People
4 without experience, people with political agenda may have an
5 activity in this field. How do you protect the public from
6 misuse? There should be more structure, more prescriptive
7 information in a thing like that.

8 MR. LAUBEN: I hope CRGR doesn't hear that word.

9 DR. ZUBER: That's too bad. That's too bad
10 because this is an activity of the regulatory agency and if
11 they don't want to hear it, the public will hear it.

12 DR. KRESS: Prescriptive is not a bad word.

13 MR. LAUBEN: Okay.

14 DR. KRESS: Not in this committee anyways.

15 MR. LAUBEN: Okay -- not in this committee, right.

16 DR. SEALE: That is really the problem too.

17 DR. KRESS: It is a problem.

18 DR. SEALE: Because it is precisely the
19 utilization of these codes to try to analyze problems for
20 which they are unsuited, because they already have the
21 imperium of approval on them and that is the excuse to do it
22 that gives us the problem we have.

23 MR. CARUSO: It is up to the regulators, I will
24 raise my hand as the regulator, to try to enforce the limits
25 on their application.

1 DR. SEALE: That's right --

2 MR. CARUSO: And I see that occurring all the time
3 and we try to prevent it.

4 DR. SEALE: And you can only do that if you have
5 the appropriate limitations on the approval of the code when
6 you first grant it, otherwise you are accused of ratcheting.

7 MR. CARUSO: Well, that is what we are doing.

8 DR. ZUBER: Let me give you an example.

9 MR. CARUSO: And I agree with Novak. I mean this
10 is a -- but I think it really comes down to a people
11 problem. You have to have knowledgeable people using the
12 codes. You have to have knowledgeable people doing the
13 reviews. If you don't have knowledgeable people doing the
14 reviews then the developers will get around them. They will.

15 MR. LAUBEN: I think that's right. At some level,
16 no matter how -- I agree that one of the important things we
17 have to do in the agency is what they are calling succession
18 planning, they call it. What that means to me at a Staff
19 level is making sure that the body of knowledge is
20 transferred to people who come after.

21 DR. ZUBER: See, that is --

22 MR. LAUBEN: And that is extremely important, but
23 I am not so sure how much Regulatory Guide work we can do
24 that will do that.

25 DR. ZUBER: Regulatory Guide can maintain the

1 quality, ensures a quality. That is all that you can do,
2 but let me say something from the point of view of industry.

3 I can see easily some people in a given agency, I
4 don't want to say this one here, who are putting us in too
5 many details, too much work, inefficiency. I think the
6 industry deserves and efficient regulatory process, actually
7 rightly so.

8 This requires you should do this and this -- tell
9 them what you expect them to do. Let me give you an
10 example. We have spent \$2 billion in addressing the large
11 break LOCA. We have experiments we could select. Okay, if
12 you want to address the large break LOCA address this, this
13 and this experiment. He knows before submitting a report to
14 you he is going to do it.

15 You as a reviewer, you can go through it and say,
16 yes, this is okay. If you leave it to him, he is going to
17 minimize his work and I am telling you why and you don't
18 have a regulatory system. You need prescriptions.

19 MR. CARUSO: Well, prescriptions are good to
20 provide predictability to the licensee but in addition, as
21 you said, we are in a deregulated environment and licensees
22 are trying to be creative, and he may think that he has a
23 method which proves his case without having to jump through
24 all of the prescriptive hoops.

25 Therefore, we have a Reg Guide which is just a

1 guide which he does not have to comply with. If he thinks
2 that he has been very clever and very smart and has a
3 different way of doing it, he can try to make that case and
4 we are bound and obligated to at least listen to him. We
5 can't force him to do what is in the Reg Guide.

6 DR. ZUBER: You don't have to approve it either.

7 MR. CARUSO: And that is true. We don't have to
8 approve it.

9 DR. SEALE: It may not be politically correct, but
10 you are in the business of making value judgments and you
11 have to do it.

12 MR. CARUSO: Absolutely.

13 MR. LAUBEN: Okay.

14 DR. ZUBER: Let me say if deregulation, if you
15 leave it up to the industry or any organization they will
16 try to minimize the effort because those are expenditures.

17 MR. CARUSO: That's right.

18 DR. ZUBER: If you provide them with a reason,
19 then you can ratchet them back and forth -- this costs money
20 to them, delaying their activity. If you set up for the
21 large break LOCA these are the representative experiments,
22 and we have zillions of them, which should be addressed, he
23 can address them.

24 Don't leave it to an argument between you and
25 them, ratcheting inefficiency. Then you will get pressure

1 from industry. Then you will get pressure at the upper
2 management level and we see the results in the written
3 documentation.

4 MR. LAUBEN: I don't think I need to show this.
5 All this is is an outline of what is in the Reg Guide, but I
6 will show it just so you know that it is there, and then I
7 will quickly do a status and summary.

8 Actually I had done this over there, sort of. The
9 DG-1096 on transient accident analysis methods addresses the
10 findings of the Maine Yankee panels and other review groups.
11 The timely inclusion of current ACRS comments is the next
12 step in the process of eventually releasing DG-1096 and the
13 companion SRP subchapter.

14 After incorporation of ACRS comments, DG-1096 and
15 SRP-1501 and the regulatory analysis will be sent to OGC for
16 concurrence and CRGR for review, and after appropriate OGC
17 and CRGR consent the documents will be released for public
18 comment.

19 Incidentally, I talked to the Chairman of CRGR,
20 Joe Murphy, and he said they will not give negative consent.
21 They are going to review this, so they are going to check
22 for all the things that have to do with new requirements.

23 CHAIRMAN WALLIS: Now we are going to hear about
24 the SRP.

25 MR. LAUBEN: Now we are going to hear about the

1 SRP --

2 CHAIRMAN WALLIS: Look --

3 MR. LAUBEN: Oh, excuse me -- unless you want more
4 about it.

5 CHAIRMAN WALLIS: I found the SRP addressed the
6 kind of things that I would look for in a review. I think
7 it does a very good job -- and what I was looking for in
8 your Reg Guide was now we have this thing. What advice
9 should I give to industry about how will you really meet
10 these requirements? I didn't find that in the Reg Guide.

11 The Reg Guide goes in various directions, but I
12 don't get the feeling that this would really help me if I
13 were to try to write a document to satisfy the SRP.

14 That is a general statement I found as my reaction
15 to it, and I don't know if you can put yourself -- maybe
16 this thing should be written by industry or something so
17 they can say what is it that we need to know in order to
18 meet the requirements, or maybe you should work with
19 industry on it or something, but I don't see that it has
20 that sort of flavor, that it is really setting out to help
21 industry and be more explicit about how they can meet these
22 various requirements.

23 DR. KRESS: Let me tell you a problem I have with
24 it, and it is a basic problem with these codes.

25 One thing, everybody emphasizes that you have to

1 have the correct models in there and you are addressing the
2 right phenomena, but every one of the codes is a gross
3 nodding of the reactor system and it is a nodding that is such
4 that the answers are sensitive to that nodding. You get a
5 different answer if you node differently.

6 To me, that is the root of -- besides the fact
7 that some of them have incorrect equations -- this is the
8 root of the problem with these codes because that gives rise
9 to the fact that you have to tune them to fit experiments,
10 scaled experiments, and this gives rise to a lot of tuning
11 knobs that the results are sensitive to it.

12 I think that is part of the whole problem. I
13 think you need to address somewhere in a Reg Guide this
14 question of nodding. I know you say they have to tell you
15 what the nodding is and give you the rationale, but to me
16 that is not sufficient. I think there has to be some
17 guidance on how sensitive the answers are to this nodding and
18 how fine the nodding has to be.

19 We have to get down to that fundamental level
20 somewhere in the guidance.

21 CHAIRMAN WALLIS: Not just nodding. I mean how you
22 formulate your basic equations and the framework you set up
23 can make a difference too.

24 DR. KRESS: Well, I call that nodding also, you
25 know -- that is part of nodding -- but that is the basic

1 problem I see.

2 DR. ZUBER: What you are really addressing is
3 really specifications --

4 DR. KRESS: I think we need prescriptive
5 specifications --

6 DR. ZUBER: -- prescriptive, and I went through
7 this several times and I read it and then I started to look
8 where is this problem addressed, and I couldn't find it.

9 This document to me is, may I use an expression, a
10 "hodgepodge." It is put together very fast because there
11 are some duplications of pages here I could not understand
12 why they were there, and the question is really it was put
13 together in not a very responsible methodology conveyed.

14 I will let the other gentleman make his
15 presentation and then I shall make more comments on the
16 whole thing.

17 CHAIRMAN WALLIS: Novak, you are going to supply
18 more detailed comments which, besides this big statement
19 will actually be helpful in his rewriting it if he is going
20 to rewrite it?

21 DR. ZUBER: I will. I will, and I will suggest
22 some methods to improve the computational efficiency.

23 What really the function of this agency's
24 responsibility is to maintain public safety. That is one to
25 the public, but you are also responsible to ask -- to be

1 efficient in responding to the needs of the industry. There
2 should not be a ratcheting argument between you.

3 So the thing can be addressed. You can reduce the
4 number of computational requirements, make the whole process
5 more efficient and defensible, which I really didn't see in
6 this document nor in the performance of the agency for the
7 last 10 or 15 years.

8 CHAIRMAN WALLIS: Do you have to send out SRP and
9 the Reg Guide together or can one go out first and be
10 approved and then the Reg Guide can be worked on some more?

11 MR. CARUSO: They could be done that way but we
12 would really prefer that they go together because we think
13 they are so linked.

14 CHAIRMAN WALLIS: You say they are joined at the
15 hip. Maybe I am just not smart enough to see the
16 interconnections. I understand one. I have difficulty with
17 the other one.

18 MR. CARUSO: I wonder if part of the problem is
19 maybe we don't have, we haven't developed enough of the
20 detail for individual transients that we promised to do
21 which we just haven't gotten around to doing.

22 Realize that Reg Guide as it sits right now is
23 mostly a framework document to show the general guidance and
24 the general philosophy for the Reg Guide itself and we need
25 to provide specific details for LOCAs --

1 CHAIRMAN WALLIS: If you could sort of stand back
2 from that and say, look, we have had this 30 years'
3 experience. These are the kinds of problems that come up
4 with these codes when they come in. How are we going to
5 write a Reg Guide which anticipates those problems and makes
6 sure that they don't come in? That is the sort of thing I
7 would like to see.

8 MR. CARUSO: That is the purpose of writing it
9 down.

10 CHAIRMAN WALLIS: I don't see the connection.

11 DR. ZUBER: Okay. I am addressing this question
12 but let Mr. Staudenmeier first make his presentation.

13 CHAIRMAN WALLIS: Shall we move on to the next
14 presentation? Some of the committee haven't had a chance to
15 speak. They probably have been thinking very deeply.

16 Shall we move on?

17 DR. KRESS: Yes.

18 CHAIRMAN WALLIS: Okay, please -- Joe
19 Staudenmeier.

20 MR. STAUDENMEIER: I'm Joe Staudenmeier from
21 Reactor Systems Branch in NRR talking about the SRP
22 development for code reviews. This presentation is going to
23 be very similar to the last time we talked about this.
24 There are very few changes I have made to the presentation
25 and it is more --

1 CHAIRMAN WALLIS: It is less than one percent in
2 the document, I believe.

3 MR. STAUDENMEIER: I didn't do a quantitative
4 analysis and I would agree that is a good estimate of it.

5 These, both the SRP and the Reg Guide, came out of
6 Maine Yankee lessons learned to identify some problems
7 observed primarily in the Maine Yankee review but also in
8 other reviews going on around the same time period.

9 AP600 was a big one where ACRS in particular had
10 problems with code documentation assessment and primarily
11 scrutability of the documentation provided by the vendors.

12 The main things we were trying to address with
13 this is adequacy of code documentation, adequacy of code
14 assessment, and another thing brought out in the Maine
15 Yankee lessons learned is inconsistencies in the review
16 process where two applications being reviewed for the same
17 purpose would have vastly different standards applied to
18 them of what was acceptable.

19 DR. ZUBER: Why, because they were reviewed by two
20 people or two groups or --

21 MR. STAUDENMEIER: Primarily it was probably
22 because it was reviewed by two different people, maybe at
23 two different times with different management in place.

24 DR. ZUBER: See, this is a very important lesson
25 to be learned, to see how the whole process is subjective,

1 and one thing to prevent you should have learned from this
2 experience and to address it, how you are going to improve
3 it, how you can eliminate that subjectivity from the
4 process. I hope you will address it.

5 MR. STAUDENMEIER: Yes, I am going to try to
6 address it, and I agree that there is a lot of subjectivity
7 and I have seen many examples of it in the time I have been
8 here.

9 For example, many people come in with analyses
10 using RELAP-5 and lots of times the Staff doesn't review
11 whether the application of RELAP-5 is good or not.
12 Licensees generally submit a statement like we think RELAP-5
13 is good because it has been used in many places in the
14 nuclear industry and therefore we are going to use it too,
15 and without addressing their detailed use in that
16 application.

17 I have seen cases of it where it was vastly
18 misapplied, but that was pretty much by luck that we may
19 catch -- I mean I don't know how many times RELAP-5 gets
20 used and somebody doesn't come by and ask me about it.
21 There's been cases where they come by and do ask me about it
22 and I give my opinion that no, that shouldn't be used for
23 that or they have to do some sort of assessment against some
24 kind of experimental data similar to what they are using it
25 for, but many times it will go right through people who will

1 see RELAP-5, NRC code, used widely in the industry and just
2 sign off and put it through.

3 DR. SEALE: You just said it.

4 DR. ZUBER: This is a problem which hopefully ACRS
5 will address at the high management level of NRC because
6 that kind of laxity, subjectivity is dangerous, because you
7 just brought up if RETRAN had been approved with an error it
8 would have been used because it went through. You can do
9 the same thing with other codes.

10 There should be a systematic way to address these
11 problems. Don't leave it to anybody or to Novak Zuber to
12 evaluate. There should be a procedure. This is the lesson
13 I would have learned from what you just said.

14 DR. SCHROCK: That's right. I commented on the
15 dismal standard of the engineering documentation that you
16 receive for a review or which is presented to committees in
17 general, the dismal level of quality of engineering
18 communications on paper.

19 This needs to address the quality of the
20 documentation somehow. I don't find it here at all. You
21 know, there are a lot of nitty-gritty little details in
22 here. You read any code description -- undefined
23 nomenclature, switches in nomenclature midstream, pages
24 written by different individuals that don't make sense when
25 they are merged together.

1 Just in general you need to find a way of
2 describing what is an acceptable standard of engineering
3 communication that you are going to expect of the industry.
4 In the Reg Guide I think they have to echo this and then you
5 have to follow through on that in the regulatory process or
6 you end up in the quagmire that you have.

7 This RETRAN-3 example is a very clear one. I mean
8 you are on the verge of some kind of approval. I don't know
9 what it may be but the quality of that document as an
10 engineering document is incredibly low, incredibly low.

11 It is not unique but it is incredibly low. I
12 think you have to look at that and say how can you prevent
13 that from clogging up your system of review? How are you
14 going to deal with it to get the message across to industry
15 that sometime in the future we are not going to be able to
16 operate the way we did in the last 30 years.

17 CHAIRMAN WALLIS: You can always put in a sentence
18 that says "Documentation which is dismal is not acceptable."

19 DR. SCHROCK: Is not acceptable.

20 [Laughter.]

21 DR. ZUBER: I think RETRAN-3 they would be really
22 dismal.

23 DR. SEALE: And then you get beat to death with
24 the backfit rule.

25 DR. ZUBER: Well, look, a regulatory agency should

1 not really be restricted by a backfit rule -- it is not
2 about technology. They just ask for inertia to continue
3 bureaucracy to justify their income --

4 CHAIRMAN WALLIS: I thought actually your plan was
5 asking for pretty high standards and maybe you have to read
6 between the lines to see that the documentation better be
7 good?

8 DR. SCHROCK: Well, I don't see here anything that
9 prevents the EPRIs or whoever is submitting a code
10 description from having the kinds of inadequacies that were
11 there. There are the few things I just mentioned, but there
12 are many more, as you know -- there are many more.

13 CHAIRMAN WALLIS: I don't know. Maybe we should
14 come back to this.

15 DR. SCHROCK: All right.

16 CHAIRMAN WALLIS: I think you could look through
17 this SRP and pick out various sentences and say if those had
18 been applied and I think we should stop beating on one code
19 here. Then they would have caught these various things.
20 That is again what you get from lessons learned. You do
21 your reviews. You learn that you have to make certain
22 statements in order to buttress what you need to do, and if
23 they are not in there they should be in there.

24 Now I thought they were in there and Virgil thinks
25 they are not, so perhaps we can work it out.

1 DR. SCHROCK: I guess when we start seeing a
2 document that is respectable coming across then we would
3 know the message had been transmitted, but Graham, I don't
4 believe that it is going to get transmitted by this.

5 DR. ZUBER: I think it needs more specificity,
6 prescription.

7 It would help the industry because that is what's
8 expected. It will greatly help your operations within NRR/
9 NRC and it will keep your image in the public.

10 As it is, it is a bowl of fat. You push it here,
11 it goes there. There is no bone in it.

12 MR. STAUDENMEIER: When you are saying
13 specificity, you mean in regards to documentation that is
14 required?

15 DR. ZUBER: Concerning the documentation,
16 concerning what is a minimum matrix for this kind of
17 transient, did they check it, what is the accuracy. I mean
18 there is a whole thing you have to put -- I would like to
19 address Graham right after his presentation, but let me just
20 ask one question. Maybe you can put it in your
21 presentation.

22 CSAU was developed in 1989. That is 10 years ago.
23 My question to you and to your management, and to RES, what
24 did you learn during these 10 years which was put or was
25 implemented in these two documents?

1 MR. STAUDENMEIER: I guess one thing we learned is
2 that a lot of people didn't follow the lessons learned from
3 CSAU when I went back and looked through them. A lot of
4 this is implementing -- there was a lessons learned section
5 in the CSAU and that is part of what our review did, to go
6 through this.

7 Other things that went into this were I guess
8 lessons learned from various reviewers who were experienced
9 in doing reviews and experience in presenting some of this
10 stuff before the ACRS.

11 I was here for probably almost all the meetings
12 through the AP600 and SBWR reviews and I guess a lot of that
13 helped formulate my views that went into this document.

14 DR. SEALE: Let me ask you, you made the comment
15 earlier that on a sporadic basis perhaps you had been asked
16 to verify that the use of a particular code was proper in
17 the case of analyzing this problem and sometimes you have
18 found that to be wanting. That is, did you -- are you
19 satisfied that the words that you put in here in this
20 document if implemented by the casual -- not casual but the
21 responsible user in NRR, in doing such reviews in the future
22 would prevent those kinds of abuses in the use of these
23 codes in analyzing those problems?

24 MR. STAUDENMEIER: Yeah, I think responsible
25 application of it would prevent a lot of the problems. I

1 think the problem will be getting people throughout even our
2 division to apply this when they are doing reviews.

3 DR. SEALE: Yeah.

4 MR. STAUDENMEIER: Because I mean part of this
5 Maine Yankee lessons learned thing, the finger was pointed
6 at reactor systems, and there has been a lot of pretending
7 by other branches that these things didn't affect them at
8 all. And I would bet that a lot of the other branches may
9 ignore these type of things in their reviews and pretend
10 that it is only a reactor systems problem when they are
11 doing it.

12 DR. SEALE: You know, in a sense, it is a question
13 of how good, or how well you are making the point, so that
14 the lesson is truly implemented by these other people. And
15 you may want to ask yourself if there are things you could
16 do that would make that better.

17 MR. CARUSO: Probably the bigger problem involves
18 issues across disciplines where you have an individual who
19 is responsible for looking at a problem and some of the
20 input or the boundary conditions, or the analysis,
21 supporting analyses come from another discipline, and they
22 just assume that because it was done with RELAP 5, it is
23 acceptable, and they don't come ask. And that is -- I am
24 not sure how to enforce the discipline in that kind of a
25 case, other than to just spread the word -- spread the word.

1 DR. SEALE: That is where traditionally the
2 gray-beards can save your virtue.

3 MR. CARUSO: But if the reviewer even doesn't even
4 know to ask.

5 DR. SEALE: Yeah.

6 MR. CARUSO: If he doesn't think to ask.

7 DR. SEALE: Yeah.

8 MR. CARUSO: If he says, well, it is RELAP, it is
9 NRC approved, it must -- if it is done by NRC, it must be
10 all right. I am not sure how to fight that other than to
11 just try to pass the word to make sure that people are
12 sensitive to those things.

13 CHAIRMAN WALLIS: I am struggling with how
14 explicit and prescriptive you have to be. I mean I think
15 every code I have seen, documentation, the control volumes
16 are not control volumes. They cut the pipe wall, they have
17 vague boundaries, you cannot evaluate what goes in and what
18 goes out. They are not really related to the equations
19 except when you infer a lot of things.

20 How does this ever happen? And you don't want to
21 have to put into a Reg. Guide or something that the control
22 volumes that you use must be real control volumes. That is
23 so elementary.

24 MR. STAUDENMEIER: Yeah.

25 CHAIRMAN WALLIS: And yet that is what you are

1 looking for, so your words should imply that you are going
2 to use standards so the control volumes are control volumes.
3 I mean it is sort of like going back to sophomore year to
4 say you must draw a control volume which is a control volume
5 in just a vague box.

6 DR. ZUBER: Well, Graham, in the document you
7 wrote, I think it is excellent. It is a statement of fact,
8 not a compliment. You shouldn't take it as a compliment, a
9 statement of fact. What, after the CSAU was developed 11
10 years ago, I looked over this period of 10 years, and I
11 found many things which are shortcoming, and the biggest
12 shortcoming, I think the structure -- I would like to say
13 why I think the structure which is in this report, the
14 graph, you have norm figure is inadequate. Actually, it is
15 the wrong thing to do. I think you have to be more
16 explicit.

17 I think the structure, the boxes in CSAU are
18 defensible and rationale because they were addressing a need
19 which was identified then and still is today. The
20 shortcoming of CSAU and a deficiency, definitely after 10
21 years, it is not specific enough. That led to poor
22 documentation. That led to unassessed assessment which is
23 very poor. For example, in step -- it is not here. There
24 is one step which says address noding. I didn't see
25 anything in your document to say this.

1 Frozen code. Last meeting with RETRAN, they were
2 using a code which was not frozen. You cannot approve a
3 non-frozen code. This was one of the greatest experiences.
4 I mean it was not reflected in RETRAN, it is not reflected
5 in the documents we have here.

6 So all of the steps were fine in CSAU, it is
7 inadequate now after 10 years of looking and using this
8 approach. And know what you are doing will affect this
9 industry for the next 25 years, and I think it behooves this
10 agency to do in a correct way, the public and for the
11 industry. I am very serious on this because you need
12 specific, and if you try to argue out of specific because of
13 a backfit rule, this nation doesn't need a regulatory
14 agency.

15 And let me say, the public will realize this and
16 you are going to help only inimical agents.

17 MR. STAUDENMEIER: Yeah, I think this document,
18 being a framework document, I am not sure how specific you
19 can get on details of every little thing that is required or
20 it ends up -- to get the last 5 percent of specificity, you
21 have to expand it.

22 DR. ZUBER: No, no, no.

23 CHAIRMAN WALLIS: Isn't that where the Reg. Guide
24 comes in? I mean you can lay out an SRP which is at a high
25 level for instance, you can require certain quality and

1 certain non-dismal features. But then the Reg. Guide can
2 interpret it and say, what we are looking for in these
3 features are certain things. It becomes more specific in
4 the Reg. Guide, that is the sort of thing I would expect.

5 MR. STAUDENMEIER: Yeah, I think that can happen.
6 And, also, we are planning on adding these appendices in the
7 future for specific classes of transients or accidents where
8 we are going to add specific details that apply to those
9 things in terms of required physical modeling and maybe
10 resolution of profiles and things like that.

11 CHAIRMAN WALLIS: What I look for, as sort of an
12 outsider looking in, I get these thousands of pages of
13 stuff, and I look and I say, well, I infer these guys know
14 what they are doing. So I look at things like control
15 volumes and equations and I see if they have solved some
16 simple examples that illustrate that they know what they are
17 doing. And if they can't establish that, what is the rest
18 of it for?

19 DR. ZUBER: I am telling you what it is for, for
20 two reasons. The management at NRR can be impressed by the
21 amount of work the industry is doing because they are being
22 pressured by the staff. And within that stack of documents
23 you can hide or cover up any gross error, as it was, for
24 example, in RETRAN. That was a 12 inch stack of paper, and
25 it is very difficult to go through.

1 CHAIRMAN WALLIS: Well, it is a real problem, it
2 is a historical document which people have contributed over
3 a decade to the thing. And someone starting before ACRS has
4 to defend page 391, where there is something which, you
5 know, he doesn't understand either. So it is very
6 difficult.

7 DR. SCHROCK: I think one of the problems you have
8 in this is the fact that SAU is a method that is respectable
9 if it is done correctly, but it is very expensive. And in
10 almost every case of application, they are going to be
11 looking for cost-cutting ways of doing an equivalent and you
12 have to somehow deal with this hard issue of the real
13 equivalents. You have said that CSAU is an acceptable way,
14 but you have, in fact, approved some stuff that is, in my
15 view, not very acceptable as substitute for CSAU. So where
16 does that sort of thing get addressed? I don't know. But
17 it is a real problem that you have and I think you need to
18 solve it.

19 CHAIRMAN WALLIS: Would it help if you go through
20 some more presentation?

21 MR. STAUDENMEIER: Possibly. Maybe not. As far
22 as getting -- controlling the quality of things that are
23 submitted, I don't know what we can do about preventing
24 people from submitting bad things. I know the paper Dr.
25 Wallis was --

1 DR. ZUBER: You can.

2 MR. STAUDENMEIER: -- given recently, the portion
3 method, I mean we told EPRI back in December that there were
4 problems with it and spelled out some of the same problems
5 you noted and they still gave it to you anyway without
6 addressing the problems.

7 DR. ZUBER: Well, let me say you are doing --

8 CHAIRMAN WALLIS: The frying pan into the fire.

9 DR. ZUBER: You are doing the job you are expected
10 to do. You are saying this is not good enough. If you
11 don't address, you don't get the approval. This is your
12 job.

13 MR. STAUDENMEIER: I agree. We do have to say
14 when it is not good enough.

15 DR. ZUBER: And now the danger of this is, and let
16 me be frank, they can go at a higher management level, point
17 to -- look how many inches of reports we have produced and
18 your staff is not responsive. Then the pressure gets from
19 upstairs, approve it. And this will be the death bell for
20 this agency.

21 MR. STAUDENMEIER: Yeah. Often the approval
22 standard is, while this may have problems, do you think it
23 is going to cause the reactor to melt though?

24 DR. ZUBER: I am really glad this isn't public.

25 MR. STAUDENMEIER: And lots of times you can

1 agree, you can say, yeah, there are problems, but I can't
2 say that it is going to melt, or I don't think it is going
3 to melt the reactor, and people don't care about --

4 DR. KRESS: That is an inherent problem in the
5 regulatory -- in the regulations themselves.

6 MR. STAUDENMEIER: Uh-huh. People don't care
7 about whether this correlation is technically correct often.

8 CHAIRMAN WALLIS: Even ACRS uses that criterion.

9 DR. KRESS: Yeah.

10 CHAIRMAN WALLIS: I mean you go over a document,
11 it has all kinds of dismal stuff in it, but we don't think
12 the reactor is going to melt.

13 DR. SEALE: It is called a risk assessment.

14 DR. KRESS: But the answer to that is, if that is
15 the case, change the regulation, because it is not an
16 important regulation. And either keep it on the books and
17 comply with it or not. And I think that is -- I think you
18 have to --

19 MR. STAUDENMEIER: I think that is the answer.

20 DR. KRESS: I think you have to have an approach.
21 You are either going to be risk-based, which is one way to
22 go, or this way, which is another way to go, and when you
23 are in this vein, you need to be in that vein all the way I
24 think. You can't mix the two is the problem.

25 MR. STAUDENMEIER: Yeah.

1 DR. ZUBER: Well, I think you could mix it
2 provided you have a more efficient computational tool.

3 DR. KRESS: I think that would help, yeah.

4 DR. ZUBER: I think more than that, that will
5 solve many problems. See, because you said CSAU requires
6 quite a bit of work. Yes, it is true. We realized this
7 when we are developing it. Now the point is how do I do --
8 how can I address that problem to make it more efficient?
9 And there are many ways to do it, and I am addressing some
10 of this in the document for Graham. But I don't think these
11 two methods are incompatible. You can do --

12 DR. KRESS: Yeah, I agree with you. But this more
13 efficient tool is going to do a better job and an easier job
14 of determining whether you exceed the peak clad temperature.
15 That doesn't tell you much about the probabilities of these
16 accidents happening or the fact that they might or might not
17 lead to core melt. So that is where I say the two don't get
18 mixed very well.

19 MR. STAUDENMEIER: I mean when you are saying it
20 is not an efficient tool, back in the '80s when they were
21 doing CSAU, it took a lot of computer time to run those
22 things. But now you could probably run every case that was
23 run in CSAU in a day or something on a modern computer. So
24 it is -- computational speed has caught up and made things
25 that maybe weren't viable for doing all these calculations

1 back in the '80s, to where now it is viable to do that many
2 calculations.

3 CHAIRMAN WALLIS: I would like to get beyond page
4 2.

5 [Laughter.]

6 MR. STAUDENMEIER: Yeah, I don't know. I may not
7 like the questions that are coming from the later pages.

8 CHAIRMAN WALLIS: You don't need page 3.

9 MR. STAUDENMEIER: Okay.

10 CHAIRMAN WALLIS: Now, this is a good question on
11 page 4.

12 MR. STAUDENMEIER: Okay. What will the SRP
13 section do for code reviews? It is trying to standardize
14 and improve the consistency of the previously ad hoc review
15 practice.

16 CHAIRMAN WALLIS: Are you going to have training
17 in reviewing?

18 MR. STAUDENMEIER: Yeah. Well, I think we plan on
19 providing training on this document when it gets issued, to
20 understand -- to make sure that people understand what it
21 means.

22 DR. ZUBER: How can you train something if you
23 don't have a method to train? You see, you have to say this
24 is how to do it, and this is how you proceed. You have to
25 have some standards, some criteria. And unless they are

1 specific, there is nothing to train, because these
2 documents, as they are, are so broad, they can be misused
3 any way somebody wants.

4 MR. STAUDENMEIER: I agree with that. And,
5 hopefully, we can, in the training process, come up with
6 some specific --

7 CHAIRMAN WALLIS: Well, they are not useless, I
8 mean because ACRS, when ACRS gets something that has been
9 reviewed by the staff, and looks at it, and they say, look,
10 it says on page 3 of the SRP that you should evaluate this
11 and you haven't done it. So it is useful to have.

12 DR. ZUBER: Well, you know, this if the first cut.
13 Then you have to go down, you have to say these are the
14 items which you should review under this. And, for example,
15 these are the items you have to review for core
16 documentation. These are the items which will satisfy or
17 not the assessment process. So you have to -- and then the
18 process of reviewing will be helped very much so, and you
19 will have a defensible position. As it is now, you are --
20 you have one idea, the other, Graham the third, here we are.

21 MR. STAUDENMEIER: Yeah. I would say the biggest
22 danger is not that it not specific enough, but that these
23 really aren't regulations, so someone can say, well, it
24 really doesn't have to meet that, and make their judgment
25 that it doesn't have to meet it, and that could be a bad

1 judgment for that case. So I think that is the biggest
2 danger.

3 DR. ZUBER: The biggest danger is somebody says
4 this is not important. Then somebody else, they say, look,
5 you cannot even have the momentum equations, and you become
6 the laughing stock. And it may well be that that equation
7 was not important for that experiment for that run, but a
8 flagrant error in the code is a laughing stock for an
9 agency.

10 MR. STAUDENMEIER: I agree with that.

11 DR. ZUBER: And these you should prevent for your
12 own good.

13 MR. STAUDENMEIER: Yeah, I am responsible for
14 letting the bad momentum equation, myself --

15 DR. ZUBER: Look, I am not addressing people. I
16 won't be in this business --

17 CHAIRMAN WALLIS: I think you used the word "no
18 errors," don't you, somewhere in this document?

19 MR. STAUDENMEIER: I think I said "no known
20 errors."

21 CHAIRMAN WALLIS: No flagrant errors is what
22 Novack said.

23 DR. ZUBER: Gross errors or whatever.

24 MR. STAUDENMEIER: Okay. It has tried to
25 document, review our best practices. In the future it is

1 going to try to provide a road map to other documents with
2 these accident-specific things where you can get into
3 details of what to look for for specific types of accidents
4 that you are reviewing. And the last statement that it
5 doesn't preclude -- that this really isn't something that
6 you could send anyone off with this document and it will
7 guarantee a good review of a computer code.

8 We tried to make the SRP and the Reg. Guide
9 consistent in terms of their organization and areas that
10 they addressed.

11 CHAIRMAN WALLIS: See, that is what would help me.
12 If you have headings like this, which structure your
13 document, then I would turn to the Reg. Guide and say, what
14 does the Reg. Guide say about code theory? It should be
15 more explicit about what you guys are looking for, and it
16 isn't.

17 DR. ZUBER: But this is what the code specificity
18 is, you have to be -- you have to have a structure, and then
19 you have to say how it is issued.

20 CHAIRMAN WALLIS: It follows similar structure to
21 yours, but then give more helpful advice to the submitter.

22 MR. STAUDENMEIER: That is a good comment. I
23 think, in terms of specifics for that, I am not sure if you
24 mean more general things about code theory or if you mean
25 for a specific accident, you need compressible or full

1 equations, or for this other accident, --

2 CHAIRMAN WALLIS: No, you can say in the SRP the
3 code theory should be, you know, consistent with best
4 practice. Very, very general. And it should be as
5 sophisticated as necessary for the application. It should
6 explain principles and the approximations. You do all this
7 stuff. That is very general. But then perhaps people who
8 are going to put together a document might need some other
9 advice about how to meet those requirements.

10 DR. ZUBER: How to interpret them, or what you
11 would be looking at the lower level.

12 CHAIRMAN WALLIS: But if I look at your document,
13 again, I would say, if I really had to do all the things you
14 are asking for in here, I would be scared.

15 MR. STAUDENMEIER: Yeah. If you follow --

16 CHAIRMAN WALLIS: I would be pleasantly scared,
17 because I would say now he is going to make sure that I do a
18 good job. That is the impression I got.

19 DR. ZUBER: You know, my problem is when I read
20 this several times, I could not find information I wanted
21 and then I said, by God, this can be interpreted by any
22 person any way he wants, because so elastic, so porous. And
23 I think to me this is a concern.

24 CHAIRMAN WALLIS: You mean so a D student reading
25 this would say, oh, this isn't really anything, I can get

1 away with anything?

2 DR. ZUBER: Well, students will do and students --

3 CHAIRMAN WALLIS: And the A student who
4 understands it would say, gee, whiz, I had better do all
5 this stuff.

6 DR. ZUBER: No, no. Look, what made me laugh,
7 well, made me laugh is when I was reading PIRT. There was
8 more things written about a jaw boning activity, which PIRT
9 is essentially, and, look, I am responsible, I tell you -- I
10 told you how it was developed, and why it was developed.
11 But now it is being misused. To start, it is okay, but
12 don't focus on that activity, because what I have seen in
13 the last 10 years from the industry, three -- maybe
14 three-quarters of a report are devoted to how good we did on
15 PIRT. The code agrees PIRT.

16 CHAIRMAN WALLIS: That is not true, though, of
17 code documentation. This great stack of stuff you get to
18 review, not much of that is about PIRT.

19 DR. ZUBER: Well, I have seen documents with PIRT
20 quite a bit.

21 MR. STAUDENMEIER: Yeah, I think part of PIRT, the
22 follow-up activity to that is confirmation of the PIRT to
23 confirm that you are -- how sensitive things are to your --

24 DR. ZUBER: Well, you see, that was not done.
25 This is a comment I am make in this document. PIRT was

1 originally an accounting tool. The second thing was the
2 methods to be able to put our hands around the uncertainty.
3 The greatest payoff from PIRT is when it has a quantitative
4 way, because then you can introduce efficiency in the code
5 and in your arguments. And that was not done by NRC,
6 neither by the industry, or by the industry. I think this
7 is a way to improve -- one of the ways to improve the
8 efficiency. It can be a very powerful tool is properly
9 used, but it was not.

10 DR. SEALE: This document is part of the package
11 that not only receives CRGR review, but OGC review, is that
12 correct?

13 MR. STAUDENMEIER: That is correct.

14 DR. SEALE: Have you asked them what the words are
15 that you could put in this document to make your requirement
16 for more sophistication in the case of certain kinds of
17 problem analyses than might have been used in other analyses
18 where this process, or where these codes have been used in
19 the past? Again, protecting yourself against the invocation
20 of the backfit rule as an excuse for not solving the problem
21 with the appropriate detail.

22 MR. STAUDENMEIER: I haven't talked to them
23 specifically about that. I think it would have to be type
24 of error that could be classified as, say, a Part 21 error
25 that would have an impact on your nuclear safety evaluation.

1 DR. SEALE: Well, sure, but it strikes me that you
2 need to ask -- that you really need to ask them to help you
3 avoid this problem because it seems to be a very difficulty,
4 and the improper generalization of license, if you will, to
5 neglect things, and you really need to find a way to make --
6 to protect yourself from that. And I think under the
7 circumstances, your co-conspirator has to be the OGC to
8 accomplish that mission.

9 MR. STAUDENMEIER: Yeah. Well, right now it has
10 been sent to OGC for review.

11 DR. SEALE: But I would ask on that specific
12 question.

13 MR. STAUDENMEIER: And part of it -- well, my
14 experience with OGC is your answer depends on what lawyer
15 you ask over in OGC, to some extent.

16 DR. SEALE: Well, you know, it depends on which
17 judge you get as to whether or not you get to go to court,
18 too.

19 MR. STAUDENMEIER: Yeah, so --

20 DR. SEALE: So maybe you need to find the right
21 lawyer.

22 MR. STAUDENMEIER: Yeah, that is something that I
23 can discuss with whoever is assigned to review this package.

24 DR. SEALE: Okay.

25 CHAIRMAN WALLIS: As we said before, all these

1 things are really dependent upon the use by the NRC. If the
2 NRC is going to use conservative assumptions and so on and
3 so forth, then you can let certain things happen in the
4 code. If the NRC is going to use evaluation models which
5 are supposed to be best estimates, they are going to get
6 closer to limits, they are going to allow power upgrades,
7 and so on and so forth, then the requirements on the code do
8 change, and you cannot say --

9 DR. SEALE: Yeah.

10 CHAIRMAN WALLIS: -- that because something is
11 being used for something, it is okay for something else.

12 DR. ZUBER: Graham, I am glad you brought this.
13 This is exactly the point I am making in my paper -- I mean
14 my memorandum to you.

15 CHAIRMAN WALLIS: It can't be, I mean they
16 discovered they can't independent of what you are going to
17 use it for.

18 DR. ZUBER: See, that is exactly what it is, the
19 requirements. See, where we are today was determined by the
20 needs which existed 25 years ago. That code -- that code,
21 TRAC and RELAP addressed a problem which came out of the
22 ASSC hearings. We wanted best estimate code to find out the
23 degree of conservatism. That was the main thing AEC
24 started.

25 Environment has changed now, it is deregulated.

1 You will have competition in the industry. Each company is
2 going to try to increase the power. This is where the codes
3 are inefficient and not good enough to give you confidence
4 that this is correct, because you trust them.

5 CHAIRMAN WALLIS: What has happened to the climate
6 is that the NRC has become less assertive than it was
7 before.

8 DR. ZUBER: Absolutely. And let me be very
9 honest, it lost a great deal of capability. These things,
10 to put together, the need in the future will be for a highly
11 trained staff with efficient tool. If you have efficient
12 tool, the industry cannot complain that you are delaying
13 their regulation. You help the industry, you maintain your
14 responsibility. But you cannot do it with tools which are
15 developed to answer a problem that was posed 25 years ago.
16 The regulation has changed the climate. And if the agency
17 does not address itself to the new climate, you are
18 disservice to the public and to the industry. And this is
19 the point I am making in my report to you, which I shall
20 publish.

21 CHAIRMAN WALLIS: Now, you have two organizations
22 here at page 5 and 6. Two structures. Does one fit right
23 into the other one?

24 MR. STAUDENMEIER: Okay. The organization on page
25 5 is the areas in terms of topic areas that are covered in

1 the SRP. The organization on page 6 addresses the structure
2 that an SRP has to be written in. SRPs are written with
3 these five sections.

4 CHAIRMAN WALLIS: So you somehow weave page 5 into
5 page 6?

6 MR. STAUDENMEIER: Yes. So under these five
7 sections, it should cover these topical areas on page 5,
8 which we think are the important topical areas to cover for
9 the code review.

10 DR. ZUBER: But they have to be identified by a
11 reviewer. The thing has to be clean and auditable. The
12 thing is if it is not -- if it is muddy in the requirement,
13 it will be three times as muddy in the reports you get,
14 documentation, and you have seen this in RETRAN. I think
15 there should be a direct connection. I think this is fine,
16 then you should address, this is how you are going to
17 address it, and you address it at the lower level.

18 MR. STAUDENMEIER: Okay.

19 DR. ZUBER: Because if you put some of this
20 together, I bet you it will be misused, or misinterpreted.

21 CHAIRMAN WALLIS: Now, page 7 is the same as page
22 5.

23 MR. STAUDENMEIER: That is correct. Yeah,
24 acceptance criteria for these topical areas.

25 CHAIRMAN WALLIS: But at least it is consistent.

1 MR. STAUDENMEIER: It is going to address -- using
2 codes that weren't approved for the use that they are being
3 used for when they submit something, there is nothing that
4 requires us to accept use of a code in an area that it
5 wasn't approved for. If somebody sent it in and say they
6 are analyzing something that the code was never approved to
7 analyze, there should be some sort of review on whether the
8 code is okay to do what they are using it for. And there is
9 nothing that says we have to accept it for that use. So
10 that is more a review problem than it is a regulations
11 problem. There is nothing in the regulations --

12 DR. SEALE: In making that --

13 MR. STAUDENMEIER: Or backfit, or anything like
14 that.

15 DR. SEALE: In making that determination, do you
16 -- I can see where you would discriminate between -- well,
17 you might do, say, a small break analysis in a particular
18 case. But there are small break analyses, and then there
19 are small break analyses. The traditional analysis was one
20 which was a bounding analysis, and, in general, you were
21 able to accept less stringent conditions as long as you were
22 -- you had somehow convinced yourself that the result was
23 net conservative.

24 You can have other small break analyses where you
25 are trying to make a risk-sensitive judgment between two

1 alternative ways of addressing a particular problem. There
2 you want best estimate numbers and you may not be satisfied
3 with less stringent analysis methodology. When you say you
4 can't -- or you are forced to use the same technique, do you
5 make the distinction not only between the analysis
6 methodology but the quality of the product that you want to
7 get out at the end of the analysis? Is it bounding or is it
8 best estimate?

9 MR. STAUDENMEIER: I would expect that that
10 distinction would be made. For instance, --

11 DR. SEALE: Well, it up to you to make it, it
12 seems to me.

13 MR. STAUDENMEIER: For instance, if somebody came
14 in -- well, that is -- I don't know what a specific reviewer
15 would do that got it other than myself. I can only speak
16 for myself.

17 DR. SEALE: You had better tweak his antenna. You
18 need to tweak his antenna to make sure he is sensitive to
19 that distinction.

20 MR. STAUDENMEIER: Like, for instance, if somebody
21 used a small break Appendix K model for something other than
22 a small break Appendix K analysis, I mean you could run into
23 a case where everything would be driven by the decay heat
24 assumption and required by Appendix K, but in the realistic
25 thing that would mask other things that were happening.

1 Then if you used a realistic decay heat, and if they were
2 using it for something that didn't require Appendix K decay
3 heat, I think you would expect them to use it in a more best
4 estimate mode.

5 DR. SEALE: I mean, for example, you might want to
6 do a 1.174 type assessment of the difference in risk between
7 this configuration and that configuration. That is clearly
8 not a bounding calculation.

9 MR. STAUDENMEIER: I would say that, and I would
10 say one thing in one terms of 1.174 evaluations, I would
11 doubt if they are rarely ever -- if they are reviewed in
12 terms of thermal-hydraulics calculations. That is usually a
13 PRA review and they just look at PRAs and assume that the
14 thermal-hydraulics is done okay.

15 CHAIRMAN WALLIS: That has always troubled me,
16 because if your physical phenomena are predicted right, then
17 it's illusory to say we understand something about the
18 probabilities of them.

19 MR. STAUDENMEIER: It's troubled lots of people,
20 and I know in AP-600, their PRA MAP was being run by AP600
21 PRA people, and they weren't even consulting the thermal
22 hydraulic people at Westinghouse. We were running some
23 cases at the boundaries of where you had success/failure
24 with TRAC and RELAP and found that MAP was predicting
25 non-conservative heatups in a lot of cases.

1 It usually had to do with the bigger breaks.
2 After you got above a certain break size, MAP assumptions
3 just didn't hold.

4 And after that, we forced Westinghouse to go and
5 talk to their loca people and analyzing it, and they
6 confirmed what we found by using their more detailed thermal
7 hydraulic codes.

8 And there were some strange statements made during
9 that process with Westinghouse PRA people saying that this
10 code just can't be assessed; you can't assess it against
11 experiments, or it's meaningless.

12 And Larry Hochreiter was in the room when they
13 said that, and I thought that he was gong to faint when they
14 said that.

15 I think he didn't want to be there at that time.
16 This was the first he had been -- I think he was --

17 DR. ZUBER: Am I going to drop because he left
18 Westinghouse?

19 MR. STAUDENMEIER: I don't know.

20 CHAIRMAN WALLIS: We can only speculate, I think.

21 MR. STAUDENMEIER: May be he just wanted to
22 transfer all his knowledge to the younger people, I guess is
23 the assessment I would make.

24 CHAIRMAN WALLIS: That's what you have to do, too.
25 I think you -- for this process, you also have to teach the

1 next generation of reviewers.

2 DR. KRESS: I thought he was the next generation.

3 MR. STAUDENMEIER: I'm probably not as young as
4 you think I am.

5 [Laughter.]

6 DR. ZUBER: Information is transferred through
7 cohorts, cohorts which are identified by an event.

8 CHAIRMAN WALLIS: Please speak into the
9 microphone.

10 DR. ZUBER: Cohorts which went through went
11 through the Depression, cohorts which went through the
12 Second World War, through the Vietnam, each one has its own
13 value system and experience.

14 What needs -- but as a regulatory agency you have
15 to transfer this experience. It has to be able to do it,
16 otherwise you have a discontinuity.

17 And I think that this is something which ACRS
18 should really consider in a letter to the management. It
19 should be addressed.

20 MR. STAUDENMEIER: In terms of Larry, I think I
21 would make the choice that he had in terms of tenured
22 professor at a university dealing with students or defending
23 everything you do before the NRC, I think it's not a tough
24 choice to make.

25 [Laughter.]

1 DR. SEALE: Well, we will work on your aging
2 problems.

3 MR. STAUDENMEIER: Okay, future actions: We're
4 going to try and incorporate your comments into the Draft
5 SRP, if you have any.

6 This could be done either before we send it out
7 for public comment, or resolve it in the same timeframe that
8 we resolve the public comments that come back in.

9 We've already sent it off for a parallel review by
10 CRGR. I guess we're optimistic in assuming that there
11 wouldn't be major changes that it would have to go through
12 again.

13 We are, I guess, trying to get it out to the
14 public as soon as possible. If there are any fatal flaws in
15 it, though --

16 CHAIRMAN WALLIS: What do you see as the mechanism
17 for the first one here, incorporate ACRS comments? Are you
18 expecting to get a set of comments from us in detail, or at
19 some higher level? How can we be most helpful?

20 MR. STAUDENMEIER: I think written comments, in
21 detail, on what you feel are most important things that it
22 was missing, would be very helpful.

23 CHAIRMAN WALLIS: These could be individual
24 comments from consultants, let's say, and you can take them
25 as you see them? They're not an ACRS position in any way?

1 MR. STAUDENMEIER: No, not, it doesn't have to be
2 that. In fact, like after we had the last meeting, I went
3 back and reviewed the transcript for issues that people had
4 brought up, in order to try to see if there was something
5 that could be improved or needed to be addressed that was
6 missing.

7 MR. LAUBEN: Joe, excuse me. I think that at some
8 point we are looking for a statement that says you're going
9 to pass on this or that you believe that this is acceptable
10 to go out for public comment?

11 MR. BOEHNERT: Yes, that's correct. This is an
12 operation that we need to make up -- at some point make a
13 pronouncement in writing that this thing is acceptable for
14 issuance for public comment.

15 CHAIRMAN WALLIS: I think that this Committee
16 needs to talk about that in a little while.

17 MR. LAUBEN: I think you do.

18 CHAIRMAN WALLIS: We are.

19 MR. LAUBEN: In fact, I think you did talk to
20 Farouk about some more personal interaction on this subject.

21
22 CHAIRMAN WALLIS: We'll set up a very brief
23 meeting with him.

24 MR. LAUBEN: Okay.

25 CHAIRMAN WALLIS: I don't want to get into the

1 position of ACRS doing this kind of quality control that is
2 management's job.

3 DR. ZUBER: You can do it, you can do it. ACRS
4 can do many things.

5 One of those would be just to point out things
6 which have been revealed in the process of determining
7 uncertainty for the last ten years. What is the experience?

8 How would you suggest addressing it? Let me say
9 one thing: As a member of the public, if I had this
10 document outside, I would write a comment, public, send it
11 to NRC, and put it on the Internet, believe me, it would not
12 be helpful.

13 And my conclusion is that I think that this is in
14 no way to present it to the public. I would personally
15 really put it on the Internet, and say, okay, this is what's
16 coming out. These are the problems you have to face in the
17 future.

18 Because some of the problems I look at are --

19 CHAIRMAN WALLIS: We have to be critical in a
20 helpful way so that we suggest how it could be done better.

21 DR. ZUBER: Yes, yes, I agree absolutely with you.
22 And one of the -- in that report, I'm making several
23 suggestions of what can be done.

24 They cannot be addressed overnight. It takes a
25 planning which was absent for the last quite a few years in

1 NRC. But there is something that needs to be addressed.

2 But in this form, you are tying your feet, you are
3 putting your feet in the -- for the next ten years. And as
4 a member of the public, I would state in public, my
5 opposition in writing to the NRC on the Internet for the
6 public and leave it there.

7 I have done my job. And I'm serious on that,
8 because what you're doing here will affect the industry for
9 the next ten or 15 years. And you're in a good position to
10 put the best foot forward and do a good job, for your
11 benefit and the benefit of the industry.

12 MR. LAUBEN: Then, excuse me. Okay, then I think
13 what this tells me is that it's most important, crucial,
14 that we have an efficient interaction with the ACRS then.

15 Otherwise, if the comments are very general, then
16 we'll be bringing you a rock for the next ten years, and we
17 don't want to do that. And I don't think you want us to do
18 that.

19 DR. ZUBER: Of course not.

20 CHAIRMAN WALLIS: You want to get this thing out.
21 And there's a date on these. You're looking to get this
22 finally out the door at the end of the year or something?

23 MR. STAUDENMEIER: We had originally planned on
24 that by the end of the year.

25 DR. ZUBER: Let me say that it takes a little bit

1 of gray hair to evaluate the consequences, I think. I don't
2 know what the pressures are to have within two months or six
3 months.

4 But I'm sure that what you do today -- and that's
5 going to be decided within the next month -- you'll have a
6 long impact on this industry, beyond my time, certainly, and
7 probably beyond yours.

8 And I think a disposition -- I'm going to give you
9 an advice. I think a better approach, a plan that's thought
10 through, which has a probability of success, even if you
11 delay it for six or seven months, it's a good down payment.

12 MR. STAUDENMEIER: If you have specific ideas on
13 how it should be changed --

14 DR. ZUBER: We've got one specific idea,
15 specificity. What do you require for assessment? What is
16 acceptable to assessment?

17 Your standard is going to be different from a guy
18 who comes after you, or if it's given to me. What is an
19 acceptable standard for documentation?

20 What are the things that had to be considered that
21 Graham brought in his letters? I don't see that.

22 More than that, let me come back. Can I get your
23 viewgraph?

24 MR. STAUDENMEIER: In terms of specificity, Dick
25 getting specific on what's required for assessment, I think

1 the way it was written is if your models have more
2 uncertainty in it, that would be determined by your
3 assessment. That would give you an overall higher
4 uncertainty in your code calculation, so that would kind of
5 be a situation where you would have to choose between how
6 much development time you wanted to put in the model and how
7 much uncertainty you wanted to have in your calculations.

8 And that seems like that would be an economic
9 decision to be made by whoever was wanting to get their
10 calculations approved.

11 And also in terms of getting specific, I think we
12 were try to get more specific in the detailed appendices
13 that would apply to a certain transient class in terms of
14 what kind of correlation --

15 DR. ZUBER: What I'm saying -- I read the document
16 three or four times. Let me say how I arrived at this:

17 About a year ago, I started to write a paper on
18 what needs to be done for the regulation, and this is what
19 I'm informed Paul.

20 Then looking, I started to write and I said to
21 myself, if I want to say something for the future, I have to
22 evaluate where we are today.

23 And I started to ask myself, what lessons did I
24 learn during the last ten years or 15 years, or ten years at
25 least, are relevant for this new age? Because we entered

1 the new age with the regulation.

2 Whoever said this is not the case is either naive
3 or deceptive.

4 Once you establish what lessons you learned are,
5 how do you address them? The situation I am now, because I
6 have just two choices: Either to give an approval or to say
7 this is so bad for this and this reason, publish it,
8 Internet, and just kiss it away, and I may do that.

9 What needs to be done is more thinking, more
10 planning. My reason I brought that document -- and it is
11 addressed -- I started this as a paper.

12 Then looking back, I realized I'm reviewing the
13 past, what are the shortcomings. And then the thing is
14 augmented and augmented and now it's over 45 pages.

15 I'm addressing it now to Graham because I don't
16 want to be told, look, you put this in the public domain
17 without informing us.

18 CHAIRMAN WALLIS: Would you like to share this
19 with the Staff, so that they can have the benefit of your
20 thoughts?

21 DR. ZUBER: Absolutely, absolutely. I said I'll
22 send it to you. That's the reason I didn't put it in the
23 public domain yet, because I want to first inform Graham and
24 this Committee. This is my obligation, NRC, too.

25 What actions they take on it, it's their own

1 decision.

2 Now, this document was not asked for by the ACRS,
3 and I want to have this on the public record.

4 I did it on my own. Therefore, I'm not going to
5 charge ACRS or NRC for the time I put writing it. But if I
6 use the expression of lawyers, it is my intellectual
7 property. Grant me that I may have some intellect.

8 Then I can dispose any way I want with it. And I
9 shall publish it. But I would like to have a feedback
10 dialogue, and that will give me an opportunity to the ACRS
11 and whatever I can help you.

12 My motive was that I didn't see any planning
13 within the NRC for what is needed and how to address this
14 problems which are facing today.

15 MR. STAUDENMEIER: Okay, you're free to submit it
16 also as an official public comment when the thing comes out
17 for public comment, and then we can address it officially.

18 CHAIRMAN WALLIS: I think we'd like to see it.

19 DR. ZUBER: Look, as I said, I started to send it
20 for publication. When I started to dig deeper and deeper, I
21 said, well, before you put it out as a paper in a technical
22 journal, I want to give it to the NRC and --

23 CHAIRMAN WALLIS: You're addressing bigger
24 questions than just the SRP.

25 DR. ZUBER: Oh, yes, yes, it's much bigger. It's

1 much bigger because my concern now, I'm concerned that with
2 this option which is premature, not thought through of the
3 implications, it will have a negative impact on this
4 technology and on this Agency. I won't be here at all, but
5 on this Agency and this technology. And I'm just sounding
6 an alarm.

7 CHAIRMAN WALLIS: Are you through with page 8
8 here, or do we want to say something about it.

9 MR. STAUDENMEIER: I was just going to say that
10 the final schedule resolving the public -- we had originally
11 planned on resolving public comments, and we were issuing it
12 for a 75-day public comment period, I believe, is what we're
13 planning on issuing it for.

14 We were going to try to resolve any public and
15 ACRS comments when it comes back. It has to go through an
16 approval process up to the Office Director level before it
17 gets issued for final use, and originally we had planned on
18 getting the final version issued by the end of the calendar
19 year, but obviously if there are comments made that have to
20 be addressed that take longer than that, we'll take the time
21 that's needed to do it.

22 DR. ZUBER: May I give you just an example, just a
23 few minutes? I want to illustrate something.

24 CHAIRMAN WALLIS: Maybe we should come back when
25 we're talking. I think -- do we have industry comments? Do

1 we need to set time aside for industry comments?

2 MR. BOEHNERT: I don't know. Do you care to make
3 any comment?

4 MR. HOLM: After the break, a very short comment.

5 CHAIRMAN WALLIS: So we have time after the break
6 to discuss all of these.

7 MR. STAUDENMEIER: Also, we plan on developing
8 these specific appendices for specific transients or
9 accident types in the future, and that would be an amendment
10 or a change in addition to the SRP, so we'd go through the
11 change process, which is a little more streamlined, once you
12 have an original thing in place to get changes through, than
13 it is to get a brand new SRP in place.

14 CHAIRMAN WALLIS: I wrote some comments, but they
15 were nowhere near as extensive as I wrote on the Reg Guide.
16 And I was more positive about your document than some of my
17 colleagues.

18 The thing that really is key is if you can really
19 do all the things that you say. I assume that if something
20 is said here, it would actually be carried out and the
21 standards will be maintained.

22 The question is whether you have people at NRR
23 that are capable of actually doing that, and whether you
24 will have in the future. It's very, very important. As we
25 know, people can look at a document like this, and as Novak

1 says, even though it looks very tough to someone who really,
2 sincerely wants to do all these things, it might let
3 somebody else --

4 DR. ZUBER: And this is the reason you need
5 specificity. This is one of the lessons I have learned
6 since 1989.

7 CHAIRMAN WALLIS: So we, if we had great
8 confidence in the people at NRR upholding standards and
9 doing all the things that are said here, then it might be a
10 perfectly adequate document.

11 DR. ZUBER: We have laws because not all people
12 are always good.

13 DR. SCHROCK: They're subject to undue pressures
14 sometimes, too.

15 DR. ZUBER: Absolutely.

16 CHAIRMAN WALLIS: Are you going to apply this to
17 your own codes?

18 MR. STAUDENMEIER: Personally, I believe it should
19 be applied.

20 DR. ZUBER: It must be. You can't ask somebody
21 else to do it if you don't do it yourself. How do you know
22 that they are doing the good job? That's the prerequisite.
23 This is a given.

24 MR. STAUDENMEIER: Often that's an economic
25 decision and that's made at a level above my level.

1 CHAIRMAN WALLIS: Then there's the question that
2 Virgil raised. How do past submissions look in the light of
3 this plan? If you were to use this plan to assess some
4 submittals that got approved ten years ago, would they pass?

5 And my impression is that they might not.

6 MR. STAUDENMEIER: I would say that's true; some
7 submissions are very poor. Some in the past are also very
8 good, though. I'd say we get -- there are two different
9 philosophies to submitting stuff to the NRC.

10 The one philosophy is that you work in to your
11 best ability, you stick something in, you get comments and
12 you resolve them, trying to get technical resolution.

13 The other philosophy is to give something very
14 minimal and see what else the NRC asks for, give something a
15 little more, just trying to find the minimum level to make
16 it through the process.

17 And that process actually usually takes longer to
18 get through the process, but it's a different strategy.

19 CHAIRMAN WALLIS: Do they have reviews of the type
20 that consultants here might give? That seems to be very
21 useful for industry when they're submitting something, to
22 run it by people like Virgil and Novak, so that they get to
23 tone it up before it even gets to the NRC.

24 That's not in a negative way. That's --

25 DR. ZUBER: I'm really glad you addressed this,

1 because this is one of the lessons learned from my
2 association. We had this review committee, and they were
3 very, very helpful. I don't see them now in this process.

4 And the danger is that you can always pick up a
5 committee to give you the answer you want. This is the
6 wrong approach.

7 But if used correctly, they can be of great help.

8 MR. STAUDENMEIER: I agree with you. Some people
9 do have their things reviewed in an independent manner,
10 sometimes only within their own organization. They'll pick
11 a panel like a design review panel of what they think are
12 experienced people, and review it within the company.

13 Other people have gone to outside people, even to
14 review their products. Even RETRAN 3-D had a review
15 committee of five people, I think. I think you were
16 provided the report of the review committee.

17 CHAIRMAN WALLIS: We had a chart of the
18 probability of it getting by all those various groups, and
19 it ended up with a probability of ten to minus six or
20 something.

21 MR. STAUDENMEIER: That's right, I remember that.

22 DR. ZUBER: You know what, that document is
23 inscrutable, clearly. It's so poor, people just gave up.

24 CHAIRMAN WALLIS: Are we ready for a break? So
25 we'll take a break until five after 11:00.

1 [Recess.]

2 CHAIRMAN WALLIS: Let's come back into session.
3 We have some comments from Siemens that we look forward to
4 hearing.

5 MR. HOLM: My name is Jerry Holm. I work for
6 Siemens Power Corporation. I guess the first comment I'd
7 like to make is that I think the idea of writing the Reg
8 Guide and the Standard Review Plan is a good one from my
9 perspective.

10 Anything that sets out clear expectations in a
11 uniform review process in the NRC will help us in developing
12 the submittals, so I think the concept is good.

13 I have not yet actually seen the documents. I
14 know they've been put out on Adams, but they have not yet
15 been released for public review, at least as of late
16 yesterday.

17 Based on the presentations, though, I would have
18 one comment about the focus of the Standard Review Plan. I
19 would suggest that consideration be given to focusing on
20 methodology, which in my view includes both the computer
21 code and the application of the computer code.

22 Often the way you use a code is as important, if
23 not more important than the code itself.

24 The past practice of the NRC has been to review
25 and approve the application of a methodology, and we have

1 restrictions on how we can use these codes and methods.
2 They're restricted to an Appendix K small break loca.

3 We don't have approval to use it in a best
4 estimate fashion, and I would expect that the NRC would need
5 to continue that type of review process. That's all I have
6 to say.

7 CHAIRMAN WALLIS: Thank you very much.

8 DR. KRESS: If you don't mind, how do you feel
9 about the great deal of detail and specifications in the Reg
10 Guide, as opposed to general guidance?

11 MR. HOLM: I would like to see enough detail so
12 that I can understand the expectations. How much that is, I
13 think I need to see the documents to make a judgment of
14 that.

15 DR. KRESS: A great detail wouldn't really bother
16 you that much then?

17 MR. HOLM: I don't know what the definition of a
18 great deal of detail is. I don't want to have prescribed
19 that for, say, a certain event, I must use this exact
20 experiment. I'd like to be able to go and choose the
21 experiments.

22 DR. KRESS: That's one of the things that I had in
23 mind, like specifying the experiments you must compare to,
24 would be one of the things I had in mind.

25 MR. HOLM: I would want to consider that. I think

1 that often there are a number of experiments you could
2 choose from, and you may feel that one of them is more
3 appropriate to your particular application.

4 DR. KRESS: Thank you.

5 DR. ZUBER: Let me amplify that. You can look at
6 specification in two ways: it's a responsible company that,
7 of course, doesn't need it. They will do it on their own.

8 People get low standards have to -- must have
9 specification because then you always lower the standards to
10 decrease the costs.

11 So you need specification. The details doesn't
12 have to say you have to use experiments A, B, and C, but you
13 can say loca, large break or something or small break is a
14 set of experiments out of which we would like to see five
15 addressed and they can select any one they want.

16 For example, I would select the experiments of
17 UTPF for the large -- so there are experiments you say I
18 would like to see the exercise against this. But don't
19 leave it without any specification because the -- the
20 standards goes to the lowest level. The lowest level means
21 no expenditures.

22 So a balance has to be found.

23 CHAIRMAN WALLIS: Are we ready to go off the
24 record now? Is there anything else that needs to be said
25 for the record?

1 DR. ZUBER: Well, I want to show my concerns with
2 the documents I just reviewed.

3 CHAIRMAN WALLIS: Do you want this on the record,
4 or do you want this part of the Subcommittee discussion?

5 DR. ZUBER: I made so many comments on the record,
6 I would like to just illustrate why I feel so.

7 CHAIRMAN WALLIS: Okay.

8 DR. ZUBER: When we developed the CSAU our task
9 was to develop a methodology and to demonstrate it. Working
10 with those codes which were not designed to do that, we
11 realized it cost quite a bit of time and effort.

12 What we provided then is a structure which is
13 shown here. It is a framework. Each of these boxes
14 addresses a special need. We realized that you can have an
15 assessment -- any code can be assessed -- and if you
16 decrease the volumes, you have fine nodalization, you
17 improve your agreement with the experiments.

18 On the other hand, you cannot approach such a
19 detail on the large plants. This is the reason you have to
20 have to define nodalization, because once you define
21 nodalization for a plant you have to use the same
22 nodalization in your assessment matrix. This is how you can
23 see that a code is reasonable or not.

24 Each one of these boxes addresses a special need.
25 My concern is, okay, now when I reviewed in writing this

1 document, looking back I asked myself what was my experience
2 during the last 10 years and the experience was the function
3 of this box is the structure is good. The shortcoming, and
4 I think it is a bad flaw not looking 10 years -- we should
5 have done it and I would like to have this redressed -- the
6 specification, the description of each task was too vague.
7 It was too inelastic.

8 When you say provide complete documentation, we
9 didn't define what at that time we thought was complete
10 documentation. The result is after 10 years we were
11 reviewing documents like RETRAN-3D. Because these codes are
12 so complex, they have so many dials, you would have to
13 perform many assessment calculations. My greatest concern
14 is, it was then and now it's even more, how you evaluate the
15 accuracy, the uncertainty when you can adjust so many
16 coefficients. You vary one, you cannot have all these
17 effects on the other coefficients, so to address that you
18 need a large base assessment matrix.

19 The shortcoming I found with Item 7, we didn't
20 specify what constitutes a minimum matrix, but at least it
21 should address. The thing was left open. Good responsible
22 industry companies will have a good matrix; irresponsible
23 will have a short matrix.

24 My concern is that we know the shortcomings today.
25 When we all pass away as cohorts to a system, how is this

1 information going to be transmitted to the next one? Once
2 it is written in imperfect form it will be used in imperfect
3 form for the next generation. I think that is the biggest
4 danger.

5 My concern is that what I show in this document
6 was this. I really didn't see anything which addresses it.
7 For example, in this document what I was looking actually
8 and I couldn't find it, any specifications what is the
9 frozen code tying the nodalization to the assessment. This
10 should be brought out, to come out immediately.

11 For example like here -- this problem has to be
12 addressed. Now you can say how I am going to address it.
13 Then you put thus and so, but this is where the items, if
14 you go through it you have to address them.

15 In a document like this, not only they are not
16 addressed, I don't know where they are.

17 MR. LAUBEN: One second.

18 DR. ZUBER: Yes.

19 MR. LAUBEN: Each one of those items has a chapter
20 that describes where it is --

21 DR. ZUBER: I was looking. Believe me, I was
22 looking yesterday before making these comments. I couldn't
23 find it.

24 The thing is you have to -- I think this is what
25 Graham also said. This is the thing -- then I have to be

1 able to trace it. The problem with RETRAN was in reviewing,
2 I was not able to trace these arguments, any argument. They
3 would change the nomenclature, they would start here then
4 jump somewhere else. Inscrutable.

5 Things like this -- where it says, you know, look
6 here, it has to be precise to help somebody, not only you
7 but to help the industry. Say I address here this item in
8 such and such a way.

9 MR. LAUBEN: May I ask a question? Are you saying
10 where we said that 2.2.3.2, that that wasn't discussed in
11 2.2.3.2?

12 DR. ZUBER: Where does it say you have to use the
13 same nodalization for assessment and experiment and plants?

14 MR. LAUBEN: Okay, all right. You are talking
15 about the specifics of it --

16 DR. ZUBER: It's not the specifics --

17 MR. LAUBEN: Wait, excuse me, you are not saying
18 that these things aren't addressed there. You are just
19 saying they are not addressed specifically.

20 DR. ZUBER: No. Look, they are not more or less
21 addressed specifically than this thing here, because if I
22 want a noding change I have to address it if I make one.
23 Here is the established matrix. It is diffuse.

24 MR. LAUBEN: Okay. I just wanted to make sure I
25 understood what you were saying.

1 DR. ZUBER: I am saying this. This really just
2 tells you the activity items which have to be considered.
3 That is the top level. The level below it you have to say
4 how each item is going to be addressed, and this is where
5 the specificity comes from or comes in and this is the
6 shortcoming of the CSAU as it exists today, and I have seen
7 this through the last 10 years, and this is what I wrote.

8 CHAIRMAN WALLIS: I think as much as possible, if
9 you have a framework like this you should have a section
10 which goes with it, and then you should have what really
11 amounts to a checklist, see? You sometimes have that in
12 your Reg Guides, sometimes not.

13 MR. LAUBEN: Maybe the structure of the Reg Guide
14 needs to be changed in the following way. Maybe the Reg
15 Guide itself should be fairly short and there should be
16 appendices which address each one of the -- do you see what
17 I am saying?

18 DR. ZUBER: Well, let me say, it cannot be shorter
19 than this here.

20 MR. LAUBEN: No, no, no -- I am saying that most
21 of what you are looking for would appear in appendices.

22 DR. KRESS: The details.

23 MR. LAUBEN: The details. The specificity.

24 DR. ZUBER: Look, we had this thing here. Look at
25 the way it was written. Then you have description of each

1 box in the report, in the paper we published. The
2 shortcoming of what we did -- it was incomplete because we
3 didn't specify, for example, the kind of matrix, what we
4 expect in a document.

5 MR. LAUBEN: Section 2 of CSAU was very short,
6 whereas Section 3, the implementation, was quite long and
7 there were long appendices, and maybe this is what --

8 DR. ZUBER: You can address the problem at several
9 levels but the thing is, if I address the noding it is "Box
10 so-and-so" -- then I go through the report. This is what
11 needs to be done for that box, more specific, and then you
12 say how you have done it with the code.

13 It is auditable for you. It is traceable, and
14 these guys know what to expect, and you put efficiency in
15 the system. Now it is inefficient. It is left to his
16 thinking or my thinking what is needed.

17 Now this is what we found what is needed. I would
18 say at this point here if you find that you don't need to
19 specify the same nodalization for assessment and plant, you
20 would have to justify it, and you can say, fine, I don't
21 need -- I can perform assessments with one nodalization,
22 apply different nodalizations for plant, and then you would
23 have to address it and say why.

24 You may have a good argument. You may not have a
25 good argument.

1 See, this was not -- let me say I am not pushing
2 this because I was part of it. I am pushing because we went
3 through an experience and looking back what we have done 10
4 years ago, I see the shortcomings, and I say by God we have
5 to improve that item. By putting something which is so
6 convoluted, like this thing here, I didn't where to start
7 and where to look. I could not really see any specification
8 frozen. I couldn't see any specification on dialization,
9 and nodalization is one of the essential books in this, in
10 any code assessment, assessment to tie the assessment to the
11 plants.

12 It is a basic problem and it is not reflected
13 here. Okay. People in Germany, they could say, well, we are
14 doing it systematically and we addressed it. Another
15 company may not do it. He says, well, it's all there and it
16 goes through the sieve. Once these people who know
17 something about it are gone it is left to some third person
18 without any experience.

19 There are two problems. You have to realize
20 people move through a system -- through future and memory
21 standards change. I have seen standards changing from AEC
22 to NRC when I was there and to NRC where it is today. This
23 is an evolutionary process but you have to plan with
24 documents like we are addressing today, if I project it for
25 five years what is going to be the problem. Don't be tied

1 to something that was decided 25 years ago.

2 This is what planning needs in this agency and
3 this is what I don't see now and this is what I am
4 addressing, Graham, in your document, and which I shall
5 publish.

6 CHAIRMAN WALLIS: While you have that up, Novak, I
7 have looked at the document, I see something like 2.2.4
8 assessment. I look in the document and I see that
9 eventually this leads to a long list of 15 items.

10 DR. ZUBER: Exactly.

11 CHAIRMAN WALLIS: And then if I look at something
12 like the governing equations to numerics, collectability,
13 fidelity, scaleability -- that is all rushed over in a
14 couple of sentences.

15 DR. ZUBER: Okay. Good example. A good example.
16 The other one is PIRT. I had this from how PIRT sits around
17 a table and yackety-yack, but that is not a Regulatory
18 Guide. There is nothing quantitative in that procedure.

19 As I said, in the wisdom of the ACRS and the NRC
20 they can put this in the public documents.

21 MR. LAUBEN: Help me out a little bit, Novak.

22 DR. ZUBER: Yes.

23 MR. LAUBEN: If you are going to improve PIRT,
24 which we discussed the shortcoming and I pointed out that I
25 agree with you, how would you go about improving what we

1 call the PIRT or the --

2 DR. ZUBER: Ranking?

3 MR. LAUBEN: Not ranking but the -- well, anyway,
4 how would you go about improving what PIRT is trying to
5 accomplish? How do you do that?

6 DR. ZUBER: Okay. It is in the document.

7 MR. LAUBEN: Good. I need the document.

8 DR. ZUBER: Let me say -- let me say in writing
9 this thing what is needed, realizing that NRC didn't do its
10 job, and I feel as a professional I would write a paper on
11 that, and in writing it I went and I said what lessons did I
12 learn during the last 10 years? One of them was
13 documentation, number one.

14 Number two was complexity, and complexity leads
15 directly to inefficiency and to the cost of any calculations
16 you are doing now.

17 The third one was uncertainty.

18 Those are the three items which are in my judgment
19 the most important -- and then since I identify them and
20 discuss the deficiency then I discuss what is needed. That
21 is Section 5 in that report or paper, and Section 6
22 describes how to address these problems.

23 Now I don't say that I am providing a panacea, but
24 what I am saying, it has to be addressed, and to address it
25 at such a level as these documents, it is a half

1 whatever-it-is job.

2 CHAIRMAN WALLIS: While you have got this up,
3 Novak, I think in my mind the CSAU diagram helped me much
4 more than this particular one. I think you ought to
5 consider redoing this, and at different levels, to have some
6 sort of a roadmap for the whole process and then have
7 roadmaps for individual parts of it.

8 DR. ZUBER: Absolutely. Absolutely.

9 CHAIRMAN WALLIS: We need more figures like this.

10 MR. LAUBEN: This is fine. As a matter of fact,
11 we did a lot of that during AP600, where we took the CSAU
12 diagram and modified it, but I thought this one had had a
13 lot of exposure here and elsewhere and it was scrutable to
14 people, but we can readjust diagrams. That is not so hard
15 to do.

16 DR. ZUBER: Well, look, I am not an ignoramus in
17 this business --

18 MR. LAUBEN: Excuse me?

19 DR. ZUBER: I am not an ignoramus.

20 MR. LAUBEN: No, you're not.

21 DR. ZUBER: Well, I may be, but not in this
22 business. I was reading and I was looking to find something
23 and I had difficulty finding it. Really I knew what I was
24 looking for and I couldn't find it. Now this is leaving the
25 door open to anyone who wants to argue with the system.

1 I am not saying that the German Siemens is going
2 to do it, but there is always the possibility to do it.

3 CHAIRMAN WALLIS: Novak, are you going to provide
4 comments which we can get from you?

5 DR. ZUBER: Let me say -- okay, definitely -- this
6 process has to be a dialogue, I agree.

7 MR. LAUBEN: It does.

8 DR. ZUBER: But number one is what Graham wrote,
9 what needs to be addressed in the equations, nodalization,
10 quality, equations. These should be really brought out in
11 connection with the box which says "Documentation" and then
12 you have to really document. These are the things that
13 really have to be addressed which they are not.

14 So what I am saying is I write it, publish it, and
15 if I can't have a dialogue I would like to have comments.
16 I'll modify them if I see they are leading to a solution.
17 What I would take into account are Graham's comments on what
18 to put in a code. That is a very good document he had.

19 I am providing methods whereby --

20 MR. LAUBEN: Excuse me. Are you talking about
21 Graham's -- are you talking about his comments he had on the
22 Reg Guide, just the last couple of days?

23 DR. ZUBER: No, no, the one --

24 CHAIRMAN WALLIS: There is an evolving document
25 on --

1 DR. ZUBER: I know, I know, I know --

2 MR. LAUBEN: What document are we talking about?

3 I mean do I --

4 DR. SEALE: I don't think you have seen this --

5 CHAIRMAN WALLIS: Give it to him.

6 DR. ZUBER: But the thing is I think the correctly
7 is "evolving" -- it is an evolving document.

8 You start from there. You can start with what I
9 have you start with, what he has, address the problem in
10 different ways, but it can be done.

11 The net result is you will have specificity you
12 need which will improve the industry, because that's okay, I
13 need to address this, and you have a checklist, they have a
14 checklist, and you can do it, so my first advice, reading
15 these documents, is the first thing you can do is
16 immediately incorporate in the review process and put
17 standards or specificity in a Reg Guide which have to be
18 addressed, and for example on codes it is what he has.

19 CHAIRMAN WALLIS: Novak, I think --

20 DR. ZUBER: That's all I have to say.

21 CHAIRMAN WALLIS: -- we are ready to go off the
22 record. Are we ready to go off the record? Then I would
23 like to close the formal part of this meeting and then we
24 will have a short subcommittee caucus.

25 [Whereupon, at 11:26 a.m., the recorded portion of

1 the meeting was concluded.]
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REPORTER'S CERTIFICATE

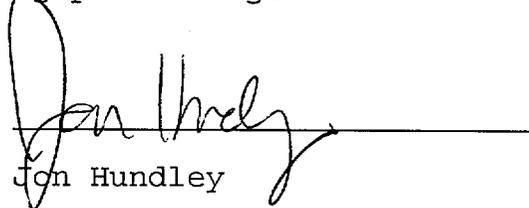
This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

NAME OF PROCEEDING: THERMAL-HYDRAULIC PHENOMENA

CASE NUMBER:

PLACE OF PROCEEDING: Rockville, MD

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.



Jon Hundley

Official Reporter

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DRAFT REGULATORY GUIDE DG-1096
-
**GENERIC TRANSIENT AND ACCIDENT
ANALYSIS METHODS**

**ACRS Thermal-Hydraulics Subcommittee Meeting
April 27, 2000**

**G. Norman Lauben
Safety Margins and Systems Analysis Branch, RES**

PURPOSE

Present the background and content of DG-1096, a regulatory guide for generic transient and accident methods.

OUTLINE

- 1. Background and Need**
- 2. Contents of DG-1096**
- 3. Status and Summary**

BACKGROUND AND NEED

- **The Maine Yankee Independent Safety Assessment Team and Task Group identified the need for transients and accident methods to have:**
 - 1. Uniformity and consistency in the level of documentation and validation,**
 - 2. A documented process in place to identify and rank key phenomena for relevant events, which is then used in the code development and assessment process,**
 - 3. A standard review plan and regulatory guidance for code development, assessment and review.**

- **The recent RETRAN review experience indicated that a focused development and assessment process should begin with plant and transient identification.**
 - 1. This should be followed by an “importance determination” for phenomena, processes and parameters relevant to the chosen plant or plant class and transient or transient class.**
 - 2. Development and assessment keyed to a focused importance determination minimizes the chances of being sidetracked on issues that may not matter.**

BACKGROUND AND NEED (CONTINUED)

- **Plans and status of this guide and the companion Standard Review Plan (SRP) sub-chapter have been discussed with the Subcommittee on two previous occasions.**
- **Three drafts of this guide have been provided to the ACRS for their review and comment.**
- **The most recent draft included informal subcommittee and consultant comments and has been approved at the appropriate division level in NRR and RES.**
- **The draft guide and SRP sub-chapter have been placed in the Public Document Room and on the NRC public web site (Accession #: ML003705431).**
- **The SRP sub-chapter will be discussed by Dr. Staudenmeier after this presentation.**
- **The guidance for evaluation model development and assessment described in this regulatory guide, with its emphasis on PIRT-based importance measures, will be consistent with risk-informed regulatory practices.**

DG-1096 CONTENTS

- **In 1998 the following proposals were made to the ACRS T/H subcommittee regarding the reg. guide:**
 - 1. Address analysis methods for all Chapter 15 transients stressing verification, validation, documentation, and quality assurance.**
 - 2. Describe application of the evaluation model concept which includes all computer programs and other information used to show compliance with analyses required by 10CFR50.34 and 50.36.**
 - 3. Describe an acceptable evaluation model development and assessment process based on principles of CSAU refined over the last dozen years. A key element of this process is a credible Phenomena Identification and Ranking Table which is used to inform the entire process.**
- **The content proposed in 1998 was included in an earlier draft of the reg. guide provided to and discussed with the subcommittee in November 1999. As noted, subcommittee comments were considered in that draft.**
- **An appendix on LOCA analysis and a regulatory analysis applicable to the draft guide and SRP sub-chapter have since been added.**

DG-1096 CONTENTS (continued)

DG-1096 TABLE OF CONTENTS

A. INTRODUCTION

B. DISCUSSION

C. REGULATORY POSITION

1. EVALUATION MODEL CONCEPT

2. GUIDANCE FOR EVALUATION MODEL DEVELOPMENT AND ASSESSMENT

2.1 Quality Assurance

2.2 Evaluation Model Development and Assessment Methodology

2.2.1 Establishment of Requirements for Evaluation Capability and Assessment

2.2.2 Evaluation Model Description

2.2.3 Evaluation Model Adequacy Assessment

D. IMPLEMENTATION

NOMENCLATURE AND DEFINITIONS

REFERENCES

Appendix A ADDITIONAL CONSIDERATIONS IN THE USE OF THIS REGULATORY GUIDE FOR ECCS ANALYSIS

REGULATORY ANALYSIS

STATUS AND SUMMARY

- **DG-1096 on transient and accident analysis methods addresses the findings of the Maine Yankee panels and other review groups.**
- **Timely inclusion of current ACRS comments is the next step in the process of eventually releasing DG-1096 and the companion SRP sub-chapter.**
- **After incorporation of ACRS comments, DG-1096, the companion SRP sub-chapter, and the regulatory analysis will be sent to OGC for concurrence and then to CRGR for review.**
- **After appropriate OGC and CRGR consent, the documents will be released for public comment.**

SRP Development for T/H Code Reviews

Joe Staudenmeier
Reactor Systems Branch, NRR
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Phone: 415-2869

Presentation to ACRS T/H Subcommittee
April 27, 2000

Problems Identified by Maine Yankee ISAT (and ACRS in AP600 and Other Reviews)

Adequacy of Code Documentation

Adequacy of Code Assessment

Inconsistencies in Staff Code Review Process

Activities

Develop Standard Review Plan Section (NRR Lead)

**Develop Standard Format and Content Guide /
Regulatory Guide (RES Lead)**

What will the Code SRP Section do for Code Reviews?

The SRP Section will standardize and improve the consistency of the previously ad hoc code review process.

The SRP Section will document reviewer "best practices" for the key areas of code review.

The SRP Section will provide a roadmap to information in NUREGs and other documents related to T/H safety codes.

The Code SRP Section will not preclude the need for qualified code reviewers.

The Code SRP Organization

Areas of Review are consistent with the Reg. Guide. General principles applicable to all analytical computer codes covering key areas of review:

Documentation

Accident Scenario and Process Identification

Code Theory

Code Assessment

Plant Modelling

Quality Assurance

Confirmatory Analysis

Revisions to Previously Approved Models

Details will be provided for certain accident and accident classes in Appendices for:

Modeling Requirements (Physical and Plant)

Code Assessment

The Code SRP Organization (cont.)

The Organization of the Code SRP Section Follows the Existing SRP Format.

I. AREAS OF REVIEW

Describes the scope of the review

II. ACCEPTANCE REVIEW

Describes the acceptance criteria for each area

III. REVIEW PROCEDURES

Describes the review procedures

IV. EVALUATION FINDINGS

Describes the requirements for documenting the review findings

V. REFERENCES

Code SRP Section Proposed Acceptance Criteria

Documentation Acceptance Review

Accident Scenario and Process Identification

Code Theory

Code Assessment

Plant Modeling

Quality Assurance

Confirmatory Analysis

Revisions to Previously Approved Models

Future Actions

Incorporate ACRS comments into Draft SRP Section and Reg. Guide

Provide for CRGR Review

Solicit public comments on Draft SRP Section and Reg. Guide

Resolve Public Comments

Issue final versions of SRP and Reg. Guide

Develop Appendices for review of analytical codes for specific transient or accident classes.

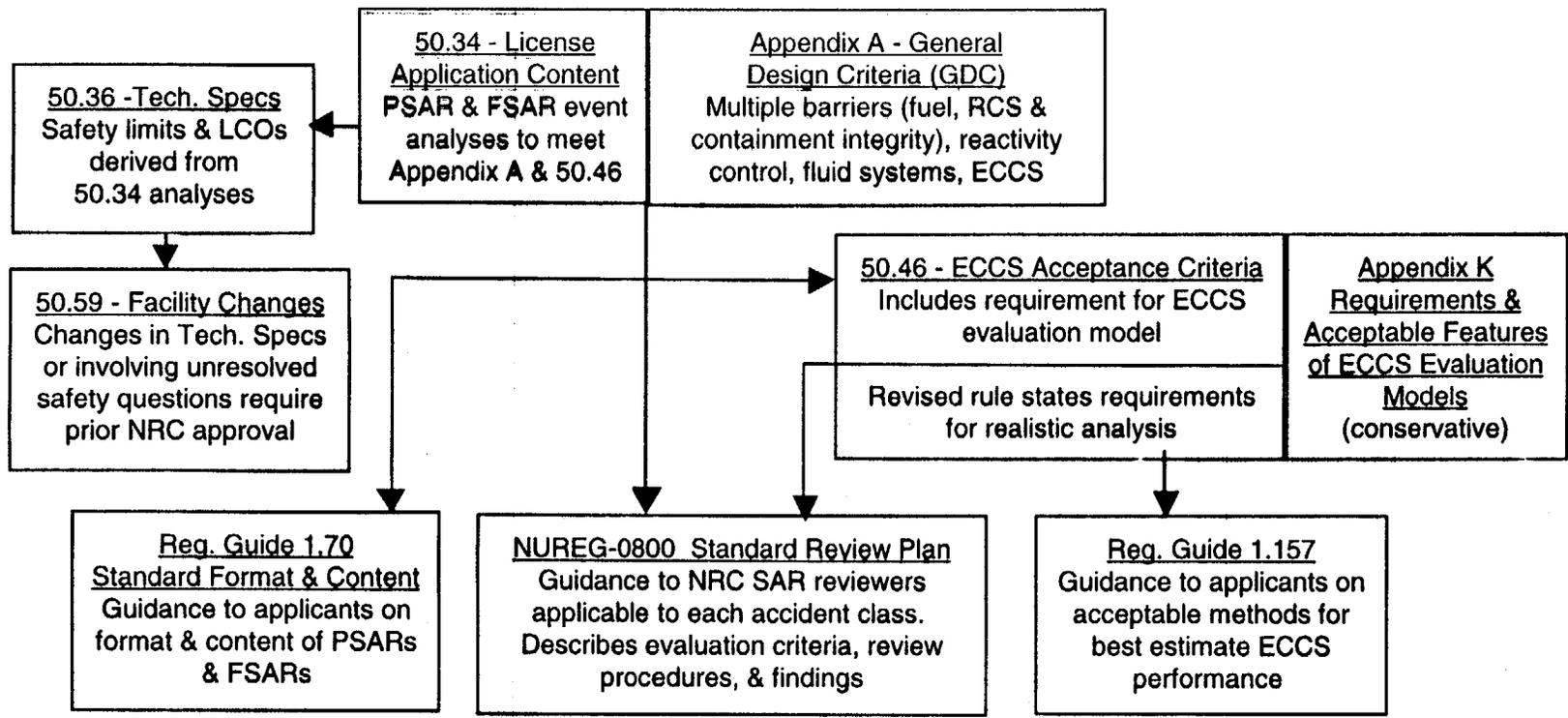
REGULATIONS AND GUIDANCE

10 CFR Part 50 - Regulations providing for the licensing of production and utilization facilities

Regulatory Guides - Documents issued to describe and make available to the public, methods acceptable to the NRC staff of implementing specific parts of the Commission's regulations, to delineate techniques used by the staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutes for regulations, and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission.

Standard Review Plan - Documents prepared for the guidance of the Nuclear Regulatory Commission staff responsible for the review of applications to construct and operate nuclear power plants. These documents are made available to the public as part of the Commission's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Standard review plans are not substitutes for regulatory guides or the Commission's regulations, and compliance with them is not required.

REGULATORY GUIDANCE RELATED TO TRANSIENT AND ACCIDENT ANALYSIS



Ancillary Rules and Guidance

- | | |
|--|--|
| 50.44 - Containment standards for combustible gas control | 50.54 - Information request to assess license conditions |
| 50.58 - ACRS reports | 50.61 - PTS rule |
| 50.109 - Backfit rule | 50.62 - ATWS rule |
| 50.12 - Exemptions | 50.63 - Station blackout rule |
| | Appendix B - Q/A per 50.34 |
| 52.47 - Contents of standard design application | |
| Reg. Guide 1.77 - PWR rod ejection methods and assumptions | |