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NUCLEAR REGULATORY COMMISSION

**Title: BRIEFING ON CODES AND STANDARDS -
PUBLIC MEETING**

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BRIEFING ON CODES AND STANDARDS

PUBLIC MEETING

Nuclear Regulatory Commission
Room 1F-16
One White Flint North
11555 Rockville Pike
Rockville, Maryland

Wednesday, January 22, 1997

The Commission met in open session, pursuant to notice, at 10:00 a.m., the Honorable SHIRLEY A. JACKSON, Chairman of the Commission, presiding.

COMMISSIONERS PRESENT:

- SHIRLEY A. JACKSON, Chairman of the Commission
- KENNETH C. ROGERS, Member of the Commission
- GRETA J. DICUS, Member of the Commission
- EDWARD MCGAFFIGAN, JR., Member of the Commission

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1 STAFF AND PRESENTERS:

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JOHN C. HOYLE, Secretary

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WILLIAM J. OLMSTEAD, Associate General Counsel

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EDWARD JORDAN, Dep. Executive Director for

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Regulatory Effectiveness, Program Oversight,

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Investigations, and Enforcement

8

JOSEPH MURPHY, Special Assistant, RES

9

DR. CARL PAPERIELLO, Director, NMSS

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GILBERT MILLMAN, Program Manager, RES

11

JUNE LING, Associate Executive Director, Codes and

12

Standards, ASME

13

BRIAN SHERON, Director, Division of Engineering,

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NRR

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MARCO MIGLIARO, Past Vice President (Standards),

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IEEE

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SATISH AGGARWAL, Senior Program Manager, Office of

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Nuclear Regulatory Research

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P R O C E E D I N G S

[10:05 a.m.]

CHAIRMAN JACKSON: Well, good morning, ladies and gentlemen.

I am pleased to welcome members of the Staff and June Ling, representing the American Society of Mechanical Engineers; Mr. Marco Migliaro, representing the Institute of Electrical and Electronic Engineers or the IEEE, to brief the Commission on consensus codes and standards.

Codes and standards are an integral part of NRC's regulatory process. NRC endorses codes and standards by reference in our regulations and through regulatory guides. The codes and standards rule, 10 CFR 50.55(a) endorses the ASME Code Sections 3 and 11 and the IEEE Standard 279.

During today's briefing the Staff will focus on the NRC's use of consensus codes and standards, and Ms. Ling will provide an overview of the ASME discussion on codes and standards development and briefly describe some current ASME initiatives, I understand.

Mr. Migliaro will discuss the IEEE standards process, NRC's participation in that process, and any other relevant issues that he wished to bring to the attention of the Commission.

I understand copies of the viewgraphs are available at the entrances to the room. If none of my

1 fellow Commissioners have any opening comments, I would like
2 to ask you, Mr. Jordan, to begin.

3 MR. JORDAN: Good morning, Chairman Jackson, and
4 Commissioners.

5 This morning the Staff representatives and
6 representatives of two of the engineering societies will
7 brief the Commission on activities related to consensus
8 codes and standards.

9 The Staff presentation will focus on its
10 participation in their development and their use in the
11 regulatory process.

12 You have introduced the two representatives from
13 industry. I would like to introduce the members from the
14 Staff that are here -- Brian Sheron, Division of
15 Engineering, NRR; Gil Millman, who is Program Manager,
16 Codes and Standards, from the Office of Research; Dr. Joe
17 Murphy, who is acting for Themis Speis today and Themy
18 indicated to me that he has already participated in his last
19 Commission meeting.

20 [Laughter.]

21 MR. MURPHY: Maybe so.

22 MR. JORDAN: So he has passed the baton on.

23 Carl Paperiello is here, Director of the Office of
24 Nuclear Materials, and the other parties have been
25 introduced and by introducing the members from the NRC,

1 identifying that we are going across the offices -- the
2 offices are represented, materials as well as reactors.

3 Codes and standards have been and continue to be
4 important tools in NRC's implementation of its regulatory
5 mandate. Such standards as a body contain technology which
6 is kept current through periodic revisions based on
7 experience.

8 These codes and standards are used by the industry
9 and the regulator in the process of ensuring and
10 demonstrating the safety of nuclear power plants and other
11 activities licensed by the NRC.

12 Staff participation in the development and use of
13 consensus standards and codes is an NRC-wide activity.

14 The Office of Nuclear Reactor Research is making
15 the presentation today because it is the lead office for
16 coordinating the NRC's codes and standards activities.
17 Research has had this function since the NRC Office of
18 Standards Development was subsumed into the Office of
19 Research in 1981.

20 With increasing economic pressures on both
21 industry and NRC, the use of consensus codes and standards
22 is becoming an even more important element in the regulatory
23 process. In this changing environment and with the move
24 toward risk-informed, performance-based regulations, the
25 Staff expects to work more closely with the technical

1 societies such as the ASME, IEEE, American Nuclear Society,
2 and so on consistent with Commission decisions on the
3 direction-setting issue Number 13, to identify specific
4 areas where there is a need for emphasis on new or updated
5 standards.

6 I'll now turn this presentation over to Dr. Joseph
7 Murphy.

8 MR. MURPHY: Thank you, Ed. Good morning.

9 The presentation this morning will focus on
10 consensus national standards with primary examples directed
11 to engineering standards applied to reactors.

12 We will discuss why the consensus codes and
13 standards are important to the NRC, how they fit into the
14 regulatory framework, Staff participation on the committees,
15 and the current activities that we consider important.

16 Although not part of this presentation, I would
17 like to point out that the Staff is also involved as
18 official members of international standards writing
19 activities. This includes IAEA Advisory Committees, and with
20 regard to the IAEA, NRC has the official leave for the
21 Advisory Commission on Safety Standards and is represented
22 on the Nuclear Safety Standards Advisory Committee, NUSSAC,
23 and the Radiation Standards Advisory Committee, RISAC.

24 In consultation with others we are also involved
25 in preparing the U.S. position for two other advisory

1 committees to the IAEA.

2 Making the presentation for the Staff today will
3 be Mr. Gil Millman. Mr. Millman has recently been assigned
4 to the position in Research of Program Manager for Codes and
5 Standards. He has been involved in a very intensive way
6 with ASME activities on codes and standards for the past 20
7 years.

8 As you have already mentioned, we are pleased to
9 have the speakers with us today from the ASME and the IEEE
10 that you have already introduced, and with that I'll turn it
11 over to Mr. Millman.

12 MR. MILLMAN: Thank you. This morning I'll
13 explain why consensus codes and standards are important to
14 the NRC, how we endorse them in the regulatory process, and
15 how the Staff participates in their development.

16 I will also identify some actions the Staff plans
17 to take that would further promote NRC's use of consensus
18 codes and standards.

19 Consensus codes and standards are important to the
20 NRC because they provide the specificity needed to implement
21 NRC's broad, general design criteria. Additionally, they
22 form a basis for NRC requirements and guidance in the many
23 areas noted.

24 I use the term "form a basis" because NRC still
25 has the responsibility to review each of these standards and

1 make an independent determination that a particular standard
2 suits the purpose it is intended for with regard to the
3 regulatory use.

4 Drawing on the knowledge and experience of
5 thousands of volunteers in the codes and standards process,
6 the codes and standards incorporate many years of accepted
7 good engineering practice and reflect state-of-the-art
8 technology.

9 Additionally, the efforts of these many volunteers
10 provide a tremendous multiplier effect on NRC resources.

11 Next slide, please.

12 The regulatory framework for implementing codes
13 and standards contains components that apply to both NRC and
14 the licensees. In the context of this talk I am going to
15 use the term licensees to be applicants and licensees.

16 First, the part that applies to the NRC. Public
17 Law 104-113, National Technology Transfer and Advancement
18 Act of 1995, requires that federal agencies use consensus
19 national standards -- consensus standards and participate in
20 their development.

21 It also has a provision that says you don't have
22 to use these standards if you can justify why they are not
23 appropriate for an intended use. In that case the head of
24 the agency is required to provide an explanation to OMB
25 identifying why that standard is not being used.

1 OMB Circular A-119, Federal Participation in the
2 Development and Use of Voluntary Standards, provides the
3 guidance to implement the law. The circular has been around
4 for a lot longer than the law. The circular was initially
5 issued in 1982 and provided some general guidance as to how
6 agency staff should participate on the various consensus
7 committees, and this was very valuable information and we
8 have used part of that, the text of that original circular,
9 in a letter which I will talk about in terms of nominating
10 people to committees.

11 In 1993 the circular was revised and it put
12 additional teeth into it.

13 First, it required within 120 days of the issuance
14 of the circular that an agency standards executive be
15 identified. We did that and the NRC Standards Executive is
16 John Craig, Deputy Director of the Division of Engineering
17 Technology, Office of Nuclear Regulatory Research.

18 In addition, the circular provides that there be
19 an annual report identifying how each agency has used
20 standards in that past fiscal year.

21 The report is fairly simple. You just have to
22 identify the standards that you have endorsed and the
23 numbers of people that you have -- that have participated on
24 committees in the process. There are some other reporting
25 requirements but they are equally simple.

1 There is one additional provision in the '93
2 circular that requires some effort. There is a requirement
3 for a five-year review of agency internal standards,
4 "internal standard" meaning like a regulatory guide that
5 provides provisions not endorsing a national standard but
6 contains its own provisions.

7 To review those kinds of standards and make a
8 determination of whether any of those standards, internal
9 standards, could be converted into a national standard that
10 in turn could be endorsed by, say, a regulatory guide I
11 might say that Research is working with NMSS to identify
12 such guides within the NMSS process and working with ANSI to
13 identify some standards development organizations that would
14 work with us to develop those standards.

15 The route for licensees to use codes and standards
16 is, first of all, the regulations, and then regulatory
17 guides. Now there are other regulatory mechanisms for
18 identifying and referencing consensus standards. They are
19 generic letters, standard review plans, technical
20 specifications.

21 With regard to the regulations, there aren't a lot
22 of codes and standards that are endorsed through the
23 regulations but those that are are of course requirements.
24 In particular, the most important one is 10 CFR, 50.55(a).
25 The codes and standards rule picks up the boiler and

1 pressure vessel code, which I will refer to a little bit
2 later.

3 Next slide, please.

4 COMMISSIONER ROGERS: Just before you leave that,
5 was there anything else that came out of Public Law 104.113
6 in addition to what was in the 1993 revised OMB circular
7 that affected us?

8 MR. MILLMAN: No, it was just those three points:
9 use the standards, participate on the committees, and you
10 can take an exemption but you have to report to OMB.

11 I believe those were the only three provisions.

12 Next slide, please.

13 As I noted, endorsement of codes and standards be
14 regulation is not a major path in terms of numbers but it is
15 in terms of importance.

16 What I have identified here is a typical
17 rulemaking path that is outlined in terms of a significant
18 questions of policy, and I say that because it requires the
19 review and approval of the Commission for issuances.

20 Now the EDO does have delegated authority for
21 issuing certain types of rulemakings that are not of a
22 significant question of policy. In such a case the EDO
23 would approve the rulemaking for issuance. The Commission
24 would be notified through a daily Staff note, and the
25 forwarding to the Federal Register would be held for five

1 days while the Commission reviews that action.

2 Now the Administrative Procedures Act requires
3 that there be a notice of proposed rulemaking and that the
4 opportunity for public comment exists, and we do this on an
5 natural basis.

6 The regulatory process here is a two phase
7 process -- first, proposed rule, separated by a public
8 comment from the final rule.

9 Now in the context of this slide, I would like to
10 overlay the concept of a regulatory guide, which is another
11 mechanism for endorsing codes and standards.

12 The regulatory guide takes the same two-step
13 process -- draft regulatory guide, final regulatory guide,
14 separated by the public comment period.

15 The one major difference is the level of approval.
16 The draft regulatory guide is approved, first of all, the
17 Office of Regulatory Research is responsible for issuing all
18 regulatory guides. The draft regulatory guide can be issued
19 for public comment under the signature of the cognizant
20 Research Division Director.

21 The final regulatory guide would be issued under
22 the signature of the Director of the Office of Research, so
23 that is the process of how we endorse codes and standards
24 through a regulation and through a regulatory guide.

25 Next slide, please.

1 MR. MILLMAN: Since some of the discussions that
2 follow pertain to the ASME code, I would like to take a
3 moment to briefly overview the code.

4 The ASME Boiler and Pressure Vessel Code has 11
5 sections, two of which are nuclear sections. The nuclear
6 sections are Section III, which deals with construction of
7 nuclear power plant components; and Section 11, which deals
8 with the inservice inspection, ISI, and the inservice
9 testing, IST of the Nuclear Power components.

10 Section III and Section XI are mandated for use by
11 10 CFR.50.55(a). This has been accomplished since 1971.

12 Addendas to the Boiler and Pressure Vessel Code
13 are issued every three years. Addendas are issued every
14 year.

15 The next element of the Boiler and Pressure Vessel
16 Code is a code case. You might have heard of code cases.
17 Sometimes they are confused with interpretations.

18 A code case is an alternative to the Boiler and
19 Pressure Vessel Code. It is generally specifically written
20 as an alternative to a specific paragraph of the Code. In
21 lieu of doing something for paragraph so-and-so, may I do
22 this -- and they will provide the guidance for doing that.

23 The code cases undergo the exact same approval
24 process within the code as the basic code does itself.

25 The code cases that come out of the Boiler and

1 Pressure Vessel Code are endorsed in three regulatory
2 guides. One guide addresses construction cases, another
3 guide addresses material cases and another guide addresses
4 inservice inspection, inservice testing issues.

5 Code cases are issued four times a year. Now that
6 is one of the reasons that sometimes code cases are written
7 to implement a new provision to the Code, because they come
8 out four times a year, whereas opposed to the Code being
9 revised only once a year. Code cases come out more
10 frequently.

11 An interpretation now is a clarification to the
12 Boiler and Pressure Vessel Code. It is not part of the
13 regulations and NRC is not bound by the interpretations.
14 The interpretations are issued formally twice a year by the
15 ASME. However, once an interpretation is approved by the
16 Committee, that interpretation, the response to the
17 interpretation is sent to the inquirer and is implementable
18 immediately -- so anyone that's aware of the issuance of
19 that letter to the inquirer can issue the interpretation
20 virtually on the spot within a week or two after the
21 interpretation is approved.

22 CHAIRMAN JACKSON: Let me ask a question about
23 that.

24 MR. MILLMAN: Yes.

25 CHAIRMAN JACKSON: How do you keep track of them

1 and to what extent are these interpretations relied upon by
2 our licensees as well as by the NRC?

3 MR. MILLMAN: They are relied upon. They are
4 clarifications to the Code.

5 Generally the Staff and the ASME or in agreement
6 with what the interpretations say, there are very few
7 interpretations that are potential differences between the
8 Staff and the ASME committees.

9 Every once in awhile one does come out, but they
10 are relied upon very heavily. They are relied upon in the
11 field by the inspectors. The licensee may point to an
12 interpretation that would influence the way the Code would
13 be implemented at that utility site, so they are relied on
14 very heavily.

15 CHAIRMAN JACKSON: So what is enforceable?

16 MR. MILLMAN: Generally, I believe the staff at
17 the site would go along with the interpretation. If there
18 is a conflict in that interpretation we now have an
19 inspection manual section that says bring that difference to
20 headquarters for resolution -- it's Part 9900.

21 CHAIRMAN JACKSON: Brian, you wanted to say
22 something.

23 MR. SHERON: Yes. I would just like to add that
24 this issue has come up recently.

25 We have taken a position that interpretations that

1 are made subsequent to the Staff endorsing the Code we do
2 not believe are part of what we had approved.

3 In other words, it's after the fact. As Gil said,
4 I think in most cases we go along. We agree with the
5 interpretations that the Code does provide because it's
6 basically a clarification that sometimes is needed.

7 We have written a letter to our regions. I think
8 I signed it out probably over a year ago in which we told
9 the regions that if in the course of doing an inspection
10 there is a question raised regarding implementation of the
11 Code and an interpretation that it should be referred back
12 to the headquarters office and we would try and resolve it
13 then.

14 So that is basically the position we have been
15 following since this whole issue came up with regard to
16 interpretations.

17 CHAIRMAN JACKSON: Commissioner McGaffigan?

18 COMMISSIONER MCGAFFIGAN: I would like to follow
19 up. This might be the right time to ask a question I was
20 going to ask later and the industry folks should feel free
21 to respond after the Staff, but one of the concerns that we
22 got from ASME in the context of the direction-setting issue
23 paper was that little consideration has been given to the
24 need to streamline and simplify NRC's internal process and
25 regulatory process to be able to endorse nuclear codes and

1 standards within a year after they have been issued by the
2 ASME.

3 It sort of goes to the last couple viewgraphs.

4 Our processes, whether it is a reg guide or a
5 rulemaking, take years. They go on the second page. In
6 their processes you are talking about quarterly updates and
7 there's a difference in time constants.

8 Has the Staff given any thought to how to bring
9 these time constants into better alignment or resolve this
10 concern that ASME has expressed to us in the strategic
11 assessment process?

12 MR. MILLMAN: The Staff has given thought to that
13 very consideration. We haven't come up with a conclusion on
14 how to speed up our process because built into our process
15 is this public comment period and going out for public
16 comment and resolving the comments you are kind of built
17 into a two-year timeframe.

18 COMMISSIONER MCGAFFIGAN: They suggest doing some
19 things concurrently rather than seriatim. The same time the
20 codemaking is being done we would try to get the two
21 processes at least to be parallel.

22 MR. MILLMAN: I believe that the Staff would be in
23 agreement to try and speed up the process. How we would do
24 it is yet to be determined but we agree that the process
25 needs to be speeded up.

1 MR. JORDAN: For the Staff, as the author of the
2 DSI-13 --

3 [Laughter.]

4 MR. JORDAN: -- we certainly do have an interest
5 in developing ways to make those reviews a lot more timely
6 so the implementation phase of that DSI will clearly address
7 that. I recognize it is a problem and feel that we will fix
8 that problem.

9 CHAIRMAN JACKSON: Ms. Ling, you wanted to make a
10 comment.

11 MS. LING: Yes. I appreciate bringing up the ASME
12 request that the endorsement of ASME codes and standards be
13 expedited.

14 I would like to make a comment on a response to
15 your question, Chairman Jackson, on interpretations.

16 Recently we did convey ASME's position on
17 interpretations to your Staff and basically that position is
18 that as Mr. Millman stated, interpretations do not make new
19 rules -- do not establish new requirements.

20 They are intended to purely clarify existing
21 requirements.

22 On that basis ASME is the only official
23 interpreter of the code requirements since we are the
24 developer of the code requirements.

25 But what was also agreed was that should ASME

1 issue an interpretation that was contrary to the intent of
2 the regulatory process in adopting that particular set of
3 requirements, then that is purely within the realm of the
4 regulatory process.,

5 With that again, as Mr. Sheron mentioned, the
6 number of interpretations -- we issue probably I would say
7 in all of our codes and standards activities about 30,000
8 inquiries to our documents a year.

9 When you narrow that down to the official
10 interpretations issued in writing to the Nuclear Sections of
11 the Boiler Code we are probably talking a few hundred per
12 year, and in all of the years of our interpretations there
13 were perhaps maybe less than 10 that fell into the area of
14 where ASME might have issued an interpretation which the
15 regulators felt was contrary to their intent when they
16 adopted that particular requirement.

17 CHAIRMAN JACKSON: Thank you.

18 What in fact is the latest edition of the ASME
19 Boiler and Pressure Vessel Code, and what is the latest
20 edition endorsed by reference in our regulations?

21 MR. MILLMAN: The latest edition referenced in our
22 regulation is the '89 edition for Class I, II and III
23 components. For containment structures, for ISI containment
24 structures it is the '92 edition with the '92 addenda.

25 The latest version out is the '95 edition with the

1 '96 addenda.

2 We are presently in rulemaking, preparing
3 rulemaking to pick up that latest version.

4 CHAIRMAN JACKSON: And when do we expect that that
5 rulemaking might be completed?

6 MR. SHERON: Right now there's two options in
7 terms of how to proceed with a rule.

8 These are being finalized by the Office of
9 Research and I believe it would be presented to the
10 Committee to review generic requirements probably within the
11 next couple months, so hopefully we would get this out by
12 springtime, something for public comment.

13 CHAIRMAN JACKSON: Okay.

14 MR. MILLMAN: Next slide, please.

15 CHAIRMAN JACKSON: I have one last question.

16 Have we made any judgments on the safety aspect of
17 changes to the Code since the last endorsement by the NRC in
18 regulations, since you are talking at least for part of it
19 for components, Class I, II, III. You are going back, going
20 on eight years.

21 Have there been any judgments in terms of safety
22 impact?

23 MR. SHERON: Yes, there's two areas I would point
24 out.

25 One of the things we are doing right now as part

1 of the rulemaking is going through the new, the '95 edition
2 and trying to ascertain which items we think are very
3 important to safety.

4 One is Appendix 8, which was the performance
5 demonstration -- initiative on inservice inspection, and
6 that is one which we would like to see required like
7 immediately -- in other words, not wait for the 10-year ISI
8 update that each plant -- I don't know if you recognize it.

9 Plants have to update their programs every 10
10 years and at that time when they update they would have to
11 adopt the latest version of the Code. We think the
12 performance demonstration program, Appendix 8, is very
13 important in terms of finding flaws and so forth and we have
14 a generic letter out on it right now and we are proposing
15 that in implementing the rule this would be something that
16 licensees would have to implement very soon.

17 An area where we found we had difficulties is the
18 new pipe and design area. The rule has promulgated new
19 piping design criteria for pipes which the Staff has taken
20 objection to. We just don't agree with them.

21 We had a number of technical concerns. These were
22 ultimately sent to the ASME in a joint letter signed by Mr.
23 Beckjord and Dr. Murley several years ago.

24 The ASME is taking this along with other new
25 information and is reassessing. There is I believe a special

1 working group or task group which the NRC is working with
2 them to try and resolve what these differences are, but
3 these are two examples where we have gone through.

4 One we think is very important and we are
5 endorsing it for early implementation. The other is where
6 we have disagreements and we are not endorsing it.

7 CHAIRMAN JACKSON: Well, referencing Commissioner
8 McGaffigan's earlier question and given what you just said,
9 do you, you know, in a systematic way parse the additions or
10 addenda relative to their safety and risk significance and
11 give attention to them on that basis in terms of expediting
12 perhaps portions of them?

13 MR. MILLMAN: Well, up to the '89 edition we were
14 mandating use of the total edition and addenda and even in
15 that '89 edition we did perform a regulatory analysis that
16 distinguished between administrative and editorial type
17 items of a medium cost benefit and items of a very
18 significant cost benefit, which in that particular case
19 happened to be a reactor vessel exam.

20 We did do a regulatory analysis, a full regulatory
21 analysis on the reactor vessel examinations. We are still
22 working on this very next edition and very next amendment
23 and the concept of the backfit rule has come into
24 consideration.

25 Prior -- the '89 edition we didn't worry about the

1 backfit rule. It was an automatic backfit from years 1971
2 on. Now we are considering the impact of that and the Staff
3 is puzzling through how to handle it.

4 CHAIRMAN JACKSON: Doesn't that again suggest that
5 a parsing based on risk significance is all the more
6 relevant?

7 MR. MILLMAN: Well, there's another thought that
8 you have to put into this and that is this is not like a
9 requirement that's being written by the staff.

10 CHAIRMAN JACKSON: Right.

11 MR. MILLMAN: It's written through an engineering
12 society, industries participating, and regulatory
13 authorities are participating, so it's another concept and
14 we have to figure out how that works into the process.

15 MR. MURPHY: I think it's important to point out
16 that there are two options that we're studying right now.
17 In the one case, we're taking the various portions of the
18 Code that are changing and we're looking at each one of them
19 and we're doing a regulatory analysis on it to do just what
20 you said, to assess the safety significance of it.

21 The other option, and one option would be to
22 approve only those we feel have a high safety significance.
23 The other option is more geared to what we have done in the
24 past in approving the Code, changes in their entirety.

25 Whichever option we choose, and they have

1 strengths and weaknesses both ways which we're still
2 analyzing, we will have the benefit of that regulatory
3 analysis that's been done on each portion of the Code, so
4 we'll know what's important and what's not. I think more
5 importantly, we know what's critical to do in a reasonable
6 time frame.

7 Many of the Code changes are relaxations, but
8 some, as Dr. Sheron has indicated, are very important and we
9 need to proceed. So we will have that background. No
10 matter which option we select, we will have the results of
11 that regulatory analysis and that is essentially complete
12 now, so we're moving ahead at a reasonably fast rate.

13 CHAIRMAN JACKSON: I get the impression that
14 Commissioner McGaffigan has a follow-on question.

15 COMMISSIONER MCGAFFIGAN: Well, again, one of the
16 comments we got from NEI, which is slightly different, has
17 to do with increasing margins of safety through selectively
18 picking which Codes we're going to endorse and which not.
19 I'll just read it, you guys probably are familiar with it,
20 "Under such circumstances, it should be expected that
21 codification of practices that go beyond assuring adequate
22 safety, that go instead to achieving operational excellence,
23 will not occur. Industry cannot be expected to contribute
24 through codes and standards activities to the growth of the
25 margin of safety which will be required by the regulator."

1 I'd just be interested in your comment on that
2 because I think it's pertinent to these two options probably
3 that you're thinking about in this Code and in general. Is
4 there an industry perception that our approach to Code
5 development is constantly one where we're increasing margins
6 of safety that get no relief from anywhere else?

7 MR. SHERON: I would say no. I don't think there
8 is a uniform feeling from the industry. What we were
9 concerned about in these two approaches, is one is where you
10 go through let's say the latest edition of the Code and you
11 look at each item and determine if there is a substantial
12 improvement to safety that meets the backfit rule.

13 We find that there is a lot of improvements that
14 may be more administrative in nature. They may enhance the
15 ISI Program administratively, but may not contribute
16 directly to increased safety.

17 What we have heard from some utilities is that by
18 imposing the entire new version of a Code, you are imposing
19 all of these administrative requirements which they may say
20 for us, it is not beneficial to adopt them and you're
21 costing us money because we have to change procedures, we
22 have to retrain our technicians, et cetera, et cetera. This
23 is a burden to us and it's not cost justified.

24 The other side of the coin is that when you start
25 going through these editions of the Code, like the 1995

1 edition, and you start categorizing each one and it's
2 somewhat important, administrative, or you shouldn't do it,
3 what the concern is that then you've created a menu in which
4 a utility can go in now and say, well, I'll adopt this, this
5 and this, but I won't adopt that, and what they wind up with
6 is an ISI program that nobody can trace back to anything.

7 That's a concern on a lot of the staff that you
8 have now this program in which they've picked some parts of
9 the 1989 version, some of the 1995, something in between,
10 and to have that traceability so an inspector goes out and
11 can say, are you following the Code and what is your Code of
12 record. Now there is no Code of record; it's several Codes.
13 That's the other side of the coin and we're trying to deal
14 with that. We're still struggling a little bit.

15 CHAIRMAN JACKSON: So that's what you mean when
16 you say that you haven't totally worked out how the kind of
17 cost benefit analyses that what, 10 CFR 50.109, require,
18 apply in this context and how you go about parsing, but
19 nonetheless, you are looking at the parsing issue and how it
20 relates to the safety?

21 MR. SHERON: Yes.

22 CHAIRMAN JACKSON: Because that's important.
23 Okay, thank you.

24 MR. MILLMAN: Next slide, please.

25 CHAIRMAN JACKSON: Are we still talking about --

1 one last one -- this ASME Section 3 that relates to
2 construction. This is one of those hidden bomb questions.
3 Are all currently operating nuclear plants constructed to
4 that standard?

5 MR. MILLMAN: To Section 3?

6 CHAIRMAN JACKSON: Right.

7 MR. MILLMAN: No.

8 CHAIRMAN JACKSON: So what then applies, what
9 regulations govern plants that are not?

10 MR. MILLMAN: I don't know what the regulation --

11 CHAIRMAN JACKSON: I told you what it was.

12 MR. SHERON: I believe there are a number of
13 different standards that were applied prior to plants that
14 adopted Section 3. We could get you a list. I don't know
15 whether anyone on the staff --

16 MR. MILLMAN: In terms of the standards, it's
17 B31.1, ASME B.31.1.

18 CHAIRMAN JACKSON: You don't have to give the
19 litany here, but the real question I have is -- you've
20 answered the first part of the question, so given that
21 answer, the issue is how broad-based it is and I'm going to
22 come to you in a second and do a we clear. You mentioned a
23 kind of a problem for our inspectors relative to another
24 question, but if now we have this ASME standard and you have
25 plants not built to it, what clarity is there as to what

1 governs their situation. Dr. Shao?

2 DR. SHAO: My name is Larry Shao, Director of
3 Division of Engineering Technology.

4 Depending when the plant was built and
5 constructed, Section 3 was issued in 1963. Before Section
6 3, ASME Code Section 3, there were two codes. One is
7 B.31.1, Power Piping Code. There's another one called 31.7,
8 Nuclear Piping. So if the plant is built before that, it
9 was built to B.31.1 or B.31.7 and when the ASME Code Section
10 3 came out, then all the plants were built to ASME Code
11 Section 3.

12 CHAIRMAN JACKSON: How were they different from
13 ASME Code --

14 DR. SHAO: Actually, B.31.1 was a little bit more
15 conservative than the ASME Code. For instance, the
16 allowable stretch is one-quarter of the ultimate and for
17 Section 3, the allowable stretch is one-third of the
18 ultimate.

19 CHAIRMAN JACKSON: What about B.31.7?

20 DR. SHAO: B.31.7 is essentially the same as ASME
21 Code Section 3.

22 CHAIRMAN JACKSON: Okay. So maybe you could just
23 send the information to the Commission relative to how these
24 things fall out across that line. Okay, thank you.

25 MR. MILLMAN: Slide 9, please. We've addressed

1 much of what's on here. I'll just go to the third bullet.
2 There is this 120-month update that we've talked about. One
3 thing that we haven't mentioned is the fact that 10 CFR
4 55(a) endorses or actually references three regulatory
5 guides, the three regulatory guides that I mentioned
6 previously that endorse the Code cases.

7 In addition, 55(a) incorporates by reference the
8 IEEE Standard 279 which is Criteria for Protection Systems.
9 Other IEEE standards are normally endorsed through the
10 regulatory guide process.

11 Next slide, please.

12 CHAIRMAN JACKSON: Not so fast. Commissioner
13 Rogers?

14 COMMISSIONER ROGERS: I wondered if you'd give us,
15 just very quickly, some examples of limitations and
16 modifications that we've imposed.

17 MR. MILLMAN: The last one we had imposed -- first
18 of all, let me say that we've imposed like eight in 25
19 years, so it's not a whole bunch. The one that comes to my
20 mind off the top is the last one was on containment
21 isolation valves, the method that was being treated in the
22 particular version of the Code, we didn't feel properly
23 addressed the evaluation of leakage data. We required that
24 a specific version of the Code be used rather than the one
25 that it was contained in.

1 Others addressed the examination categories for
2 piping. None of them I would put into a major category.
3 Offhand, I can't think of others.

4 CHAIRMAN JACKSON: Let me ask you a question about
5 your view graph 9, the one on the scope of 10 CFR 50.55(a).
6 You mentioned that it incorporates by reference the IEEE
7 Standard 279 and that other IEEE standards are endorsed by
8 reg guides.

9 Does this mean that -- first of all, has that
10 standard ever been updated or superseded?

11 MR. MILLMAN: It will be. There is action being
12 taken to use IEEE Standard 603 in lieu of 279. That
13 rulemaking is being initiated.

14 CHAIRMAN JACKSON: That's Criteria for Safety
15 Systems?

16 MR. MILLMAN: Right.

17 CHAIRMAN JACKSON: Okay. How old is that
18 standard?

19 MR. MILLMAN: Which one?

20 CHAIRMAN JACKSON: 279?

21 MR. MIGLIARO: Actually, if I can answer that,
22 IEEE 279, the last edition was 1971, but it has been
23 withdrawn for a number of years by the IEEE, so it is no
24 longer an official IEEE standard.

25 CHAIRMAN JACKSON: Okay, but at the moment that's

1 still --

2 MR. MILLMAN: That's the one in effect.

3 CHAIRMAN JACKSON: And you're saying there's a
4 rulemaking to replace 279 by 603. I see there's someone
5 here who wishes to speak.

6 MR. AGGARWAL: Satish Aggarwal from Research.
7 Madam Chairman, I'd like to point out that we have already
8 endorsed IEEE Standard 603 by issuance of effective guide
9 1.1.53. As far as the staff is concerned, this is already
10 replaced but we are now proceeding in the rulemaking to
11 change that particular paragraph to IEEE Standard 603.

12 CHAIRMAN JACKSON: Okay. So 279 is the only
13 electrical standard that is in actual regulatory
14 performance?

15 MR. AGGARWAL: That is correct. That is the only
16 standard.

17 COMMISSIONER McGAFFIGAN: Could I ask a question?
18 On something as simple as that, when did we send that letter
19 saying the staff endorsed the 603 or whatever? When was
20 that action taken?

21 MR. AGGARWAL: That regulatory guide was issued in
22 June 1996.

23 COMMISSIONER McGAFFIGAN: In June of last year?

24 MR. AGGARWAL: Right.

25 COMMISSIONER McGAFFIGAN: I'd urge that we get on

1 with something like that. I doesn't sound like a big
2 package that has to come to the Commission.

3 CHAIRMAN JACKSON: It's more complicated than it
4 seems but it still begs the question in terms of the
5 timeliness with which the changes are made because the
6 question I had was you have these standards that have been
7 endorsed in reg guides and then you have this overall
8 electrical standard, I really don't know because obviously
9 the Commission is not into the details of it, but I note
10 that you have a standard relating to digital computers and
11 one related to criteria for safety systems.

12 We know that a number of licensees are making
13 digital upgrades to various systems in their plants,
14 presumably they have interactions that cross these
15 boundaries of these various standards. So I think there's
16 some lack of clarity, at least that I have, in terms of how
17 the replacement of one standard in our regulation plays off
18 of the various standards that may be endorsed in the reg
19 guides and how they all interact with each other. To me, I
20 don't know what it all means, so maybe you can provide some
21 more clarity to the Commission.

22 MR. OLMSTEAD: Or some more complexity.

23 CHAIRMAN JACKSON: Well, sometimes clarity
24 involves complexity.

25 MR. OLMSTEAD: Right. I think one of the things

1 that complicates this is that the Federal Register abhors
2 incorporation by reference.

3 CHAIRMAN JACKSON: Yes.

4 MR. OLMSTEAD: So we have to play a lot of little
5 procedural devices in order to get these codes into the
6 regulations and that takes time. So the endorsing process
7 through the reg guides is quicker, but our change in the
8 regulations lags that because we can't just incorporate the
9 reg guide by reference and then change the reg guide because
10 the Federal Register won't approve that.

11 I think a lot of the problem you're having is the
12 kind of procedural devices we have to go through in order to
13 get it actually in the Code of Federal Regulations which is
14 saying something different than that's what the staff is
15 enforcing because what they're enforcing is what they've
16 approved.

17 CHAIRMAN JACKSON: What's in the regulation.

18 MR. OLMSTEAD: And in the reg guides.

19 CHAIRMAN JACKSON: The reg guides don't have
20 enforceability.

21 MR. OLMSTEAD: That's right but they do have
22 interpretive force. We have to treat those, particularly
23 under this new rulemaking process, we have to send that down
24 to OMB and to the Congress, and do all these other things
25 just as we do the regulations.

1 We have to be real careful with this incorporation
2 by reference problem because the Federal Register wants the
3 public to be able to read this and know what the current
4 edition is. They don't want us using in the reg guide
5 process to endorse a standard that's not here.

6 CHAIRMAN JACKSON: Let me ask a question to you
7 and put it this way. Does our method of endorsement matter
8 in regulatory space and how does it matter?

9 MR. OLMSTEAD: It matters because we have to be
10 careful to comply with the Office of Federal Register
11 requirements for our regulations.

12 CHAIRMAN JACKSON: No. I'm talking about from the
13 point of view of how we carry out our regulatory program.

14 MR. OLMSTEAD: No. That is an ultimate safety
15 decision, I think. We will find a way to get it in the
16 regulations, depending on what the safety decision is. I'm
17 just telling you, historically it's been a problem to get it
18 into the Code of Federal Regulations because of the
19 incorporation by reference problem, but I don't think it's a
20 safety problem.

21 COMMISSIONER MCGAFFIGAN: Could I ask, is this a
22 problem that other regulatory agencies face as well that try
23 to use codes?

24 MR. OLMSTEAD: Absolutely.

25 COMMISSIONER MCGAFFIGAN: And has anybody ever

1 gone to the Congress and said, do you really mean it here?

2 MR. OLMSTEAD: Yes.

3 COMMISSIONER MCGAFFIGAN: Or can we step back.

4 MR. OLMSTEAD: I think the whole purpose of
5 passing this Act was referenced a little bit earlier, that
6 says agencies will incorporate the industrial codes and
7 standards, was an effort by Congress to address this problem
8 and we're hopeful that in working with OMB, we'll get some
9 relief on that, but we're in the process --

10 COMMISSIONER MCGAFFIGAN: So it isn't a statutory
11 problem any longer; it's a problem with OMB and what they -
12 -

13 MR. OLMSTEAD: And working out with the Office of
14 Federal Register how we're going to incorporate industrial
15 codes and standards when they change as rapidly as they do
16 because the Federal Register process is a slow process. I'm
17 not trying to make it more complex.

18 CHAIRMAN JACKSON: No, you're just trying to
19 explain it the way it is and as far as we all understand. I
20 guess my issue really has to do with given the speed of
21 changes and our method of endorsement, what operational --
22 operational in the sense of our carrying out our program --
23 what happens in enforcement space, how we interact with our
24 licensees, et cetera, what impact does this have? Reg
25 guides are that, are they not, they're guides?

1 MR. SHERON: They're an acceptable way to
2 implement a regulation.

3 CHAIRMAN JACKSON: So if there is an issue or some
4 disagreement with a licensee, then we fall back on the
5 safety argument. Is that the whole point to come around the
6 fact that something may or may not be codified in the
7 regulation?

8 MR. SHERON: Ultimately, we have to make a
9 decision whether there is a violation the regulations or
10 not, if there is a different way of doing something. That's
11 why we issue the reg guides, to provide guidance on an
12 acceptable way for the utility to meet the regulation.

13 I don't think, though, that this causes a big
14 problem. The utilities are not, I don't think, anxious to
15 go changing their in-service inspection and testing programs
16 very rapidly because it is very expensive to do it.

17 CHAIRMAN JACKSON: Right.

18 MR. SHERON: I think they would like to see some
19 quantum step changes made and then they would go and
20 implement a whole new program.

21 CHAIRMAN JACKSON: I see. Commissioner Rogers?

22 COMMISSIONER ROGERS: Yes. Is there a problem
23 with our holding up really finalizing everything with
24 respect to a rule that would incorporate by reference a
25 standard because we can't get it published in the Federal

1 Register with just a reference to that? In other words, is
2 there a disconnect there that we have everything in place,
3 we know what we want, it's a reference to that standard, the
4 rule would so state, but it can't be published in the
5 Federal Register because of this other problem?

6 Knowing that, does that hold us back from making
7 it clear what our rule actually is?

8 MR. OLMSTEAD: Not for the simple changes. For
9 the ones the staff comes in and says, all we want to do is
10 update the standard here, we don't see any problem, we have
11 a mechanism to do those rule changes very fast. As a matter
12 of fact, those don't even come to the Commission; they're
13 approved by the EDO and the rulemaking process can be done
14 in 90 days.

15 But for those where there is some disagreement
16 within the staff about what sections of the Code to apply,
17 you're going to have commentors coming in with disagreements
18 with the staff and that's going to have to be resolved.
19 Those are the cases I thought we were focused on which is
20 why we're not taking the whole Code and just updating the
21 reference, we're actually picking and choosing what portions
22 of the Code we want to incorporate. Those are the more
23 difficult cases.

24 CHAIRMAN JACKSON: Well, with us having slowed you
25 down, we're going to ask you to speed up.

1 MR. MILLMAN: We've covered page 10, Endorsement
2 of IEEE Standards. The consensus process, I'll cover very
3 rapidly.

4 The consensus process, Slide 11, is something we
5 live with when we're writing these consensus standards.
6 It's administered by ANSI, it's implemented by the
7 particular SDO and the consensus process, taken as a whole,
8 is intended to provide the majority view but it protects the
9 individual vote.

10 I have to say that vigilance is required on the
11 part of all participants to ensure that the process is
12 implemented squeaky clean. One of the items, balance of
13 categories of interest, what we talk about there is within
14 the Consensus Committee, there are designers, constructors,
15 regulatory inspectors, insurance. Within that regulatory
16 block, there's only one or two people. Within the utility
17 owner block, that's usually up to the max of one-third of
18 the committee.

19 So although you're talking about balance of
20 interest, in terms of the number of votes in any one of
21 these blocks, the NRC is a single vote in the process and
22 that needs to be clear.

23 CHAIRMAN JACKSON: That's interesting. So what
24 then does substantial agreement mean?

25 MR. MILLMAN: Substantial agreement means two-

1 thirds vote within the Consensus Committee, but understand
2 that the balance of interest plays a part in this.

3 CHAIRMAN JACKSON: That's why I asked the
4 question.

5 MR. MILLMAN: Yes, I understand. Next slide,
6 please.

7 Nomination process for staff committee members,
8 generally speaking, a letter comes in asking for staff
9 participation or we initiate the letter. The important
10 thing about this letter is, which is signed out by the
11 Director of the Office of Research, the letter nominates an
12 agency representative and in that letter, it uses the words
13 from the OMB circular which states, "Staff participation
14 does not connote agency agreement with committee decisions."

15 So although the individual is there doing his best
16 to put forth the agency view, the agency is not necessarily
17 committed to what comes out of the decision process. The
18 letter that goes out from Research is a nomination letter.
19 The SDO votes on all nominations for acceptance. Next
20 slide, please.

21 Staff, committee member responsibilities, these,
22 again, are defined by OMB Circular A-119, "Be An Active
23 Participant." Participate on the basis of equality. That
24 means don't let the agency's influence dominate the process.
25 That's something we cannot permit to happen for this to be a

1 fair process.

2 Views expressed should not be inconsistent or in
3 conflict with established agency views. To do this, it
4 means a lot of homework on the part of the committee
5 representatives, that they're able to understand what the
6 views are and to express them.

7 Now, down at the level of developing the
8 standards, there may not be a specific agency position. For
9 example, on the Code cases on risk informed, we know that
10 the agency is moving forward to risk informed, but we
11 certainly don't know every step of the Code case what the
12 agency position would be, so the staff makes best judgments
13 along the way.

14 Page 14, I'll pass. That's just an organizational
15 chart showing where the consensus committees are. The
16 committee items that are identified as committee are the
17 consensus committees where the balance of interests actually
18 takes place. Slide 15, please.

19 This is just an example of the ASME Section 11
20 committees. It's a very intense four days of meetings which
21 is where all these committees meet. The process starts out
22 at the working groups on Mondays and works up to the
23 subcommittees on Thursdays. There has to be a lot of
24 coordination on the part of the committee members to
25 understand what's happening at the lower committee so we can

1 establish some valid actions as the process moves forward.

2 Next slide, please.

3 The IEEE board and committees are similar to the
4 ASME structure. The regulatory guides that endorse the IEEE
5 standards that went final during this last year, those IEEE
6 standards came out of The Power Engineering Society. All
7 the standards that are in draft right now -- not the
8 standards, rather, but the regulatory guides that are in
9 draft endorsing the IEEE standards on computer software came
10 out of The Computer Society. Next view graph, please.

11 This next view graph will provide a summary of
12 staff participation on the various SDOs. As you can see,
13 the ASME has the most people, the most staff on the various
14 committees. I should indicate what "other" is. There is 12
15 other societies in there -- excuse me, seven other societies
16 -- The Association for Advancement of Medical
17 Instrumentation, The National Council on Radiation
18 Protection and Measurements, The Instrument Society of
19 America, plus others. We have one or two people on each of
20 these committees.

21 Now, this totals 166, but it doesn't represent 166
22 individual people. For example, I'm on an ANSI committee as
23 well as an ASME committee, so I'm counted twice. Next
24 slide, please.

25 This next slide shows the distribution of staff

1 participation from the various offices. This totals 142.
2 You can see from this chart that there's broad agency
3 participation. We estimate that this 142 staff represents a
4 little under 10 FTEs. Next slide, please.

5 Section XI and other documents within the ASME
6 process are living documents. The committee meets four
7 times a year and changes are made on a regular basis based
8 upon improvements in knowledge, improvements in technology,
9 and this list provides an example of some of these revisions
10 that are important to the NRC. I'll just go through a
11 couple.

12 The very first one, the Section XI Code case for
13 thermal annealing reactor vessels is an important Code case
14 and was developed to assist a utility request for thermal
15 annealing.

16 What the Code case does is provide the stress
17 allowables that must be met during the thermal anneal to
18 ensure the continued integrity of the reactor vessel. This
19 particular Code case was developed on an expedited basis
20 within the Code with considerable help from the NRC and
21 utilities.

22 Look down at the very last one, the operation and
23 maintenance of the O&M Code for pumps, valves and snubbers,
24 the O&M Code was originally put forth in 1990. It's been
25 modified since. We've got a lot of dedicated people from

1 the staff and from industry working on this process and they
2 haven't seen their document endorsed in the process yet.

3 The next amendment to 55(a) will incorporate the
4 O&M Code. The version that will be incorporated is a 1995
5 edition with the 1996 addenda. This Code would replace the
6 rules for IST that are presently in Section 11 and are
7 presently what is enforced. Next slide, please.

8 Current activities that are ongoing, as Dr. Sheron
9 previously mentioned, the Section III revision that we have
10 a problem with, dealing with the seismic design of piping,
11 is being revisited by the ASME, looking at new information
12 to determine whether those rules should be modified.

13 Both Section XI and O&M have active code cases
14 being developed or code cases being developed actively for
15 risk-informed ISI and IST.

16 As you know, the Staff is working with pilots to
17 implement risk-informed ISI and IST programs. These code
18 cases will come out, I presume. At some point they will be
19 evaluated for endorsement relative to the results of the IST
20 programs.

21 CHAIRMAN JACKSON: Of the pilots?

22 MR. MILLMAN: Of the pilots, that is correct.

23 IEEE is just initiating a program to look at risk-
24 informed criteria for design and application but that is
25 just a start and that's just being considered at this point.

1 Digital upgrades, electromagnetic and radio
2 frequency and interference and software reliability are all
3 being considered in the context of criteria for replacements
4 and upgrades and new applications.

5 Next slide, please.

6 Finally -- to the summary.

7 The first bullet really reflects the state of
8 activities. The NRC continues to rely heavily on the use of
9 consensus codes and standards and the Staff continues to
10 participate actively with SDOs on current issues.

11 The second bullet is supportive of direction
12 setting issues -- 12 on risk-informed performance-based
13 regulations and 13 on the role of industry.

14 The Staff plans to increase interactions with SDOs
15 regarding the development of new codes, standards and
16 guides, especially those which will facilitate the
17 transition to risk-informed, performance based regulations.

18 Finally, to address implementation of the Public
19 Law and the circular, RES will prepare an action plan to
20 ensure NRC compliance with Federal law and policy guidelines
21 for participation in the development and use of codes and
22 standards. The action plan will be submitted to the
23 commission for approval for implementation.

24 COMMISSIONER ROGERS: When?

25 MR. MILLMAN: The action plan would have to be

1 coordinated with all other offices and this is an agency-
2 wide program. I would think that between six to nine months
3 we would have some sort of a program that could move forward
4 to the Commission that would have been considered by the
5 other offices.

6 CHAIRMAN JACKSON: Why don't you come back with a
7 date that you think makes sense?

8 MR. MILLMAN: That's fine.

9 CHAIRMAN JACKSON: Yes?

10 COMMISSIONER MCGAFFIGAN: And could I ask Mr.
11 Jordan a question on his paper on DSI-13? The financial
12 resource requirements involved that have been guesstimated
13 as to what would be involved in carrying out the preliminary
14 review of the Commission were pretty substantial. I am
15 trying to understand, given that you have 142 people,
16 approximately 10 FTEs, why in order to do what you want to
17 do in terms of additional code work, why are -- I think the
18 estimates were 20-25 additional FTEs -- that that would be a
19 two or threefold expansion on what we are doing now. Am I
20 misreading the resource estimates for DSI-13?

21 MR. MILLMAN: No, and it is front-end loaded. If
22 we were to implement that fully we would change the way we
23 do business and so it would be in the manner of developing a
24 process to speed up our interactions and intensify the
25 interactions, identify the codes and standards and guides

1 that we believe need updating because the updating process
2 for the codes committees is extensive and time-consuming as
3 well, so it becomes an industry burden if there is a focus
4 that the NRC puts on code areas that don't presently have a
5 focus that would need care and feeding.

6 COMMISSIONER MCGAFFIGAN: So it would be the
7 same -- under 42 people but a much larger percentage of
8 their time would be devoted --

9 MR. MILLMAN: The first year or two there would
10 have to be more time dedicated in order to get this moving
11 in the direction and speed we are looking for.

12 CHAIRMAN JACKSON: Dr. Paperiello, I am assuming
13 they don't just have you sitting at the table for
14 appearances sake. Therefore, the question I have for you is
15 where do these issues most impact the programs you are
16 responsible for?

17 DR. PAPERIELLO: I have people that are on these
18 various committees, some of which we really haven't focused
19 on today such as the ANS and the Health Physics Society, the
20 Institute of Nuclear Materials Management.

21 We use a number of codes and one of the things
22 that hasn't been discussed is I would say codes we use but
23 from my knowledge we never endorse. We just see them being
24 used.

25 For example, almost all the procedures that are

1 used for measuring radiation by our licensees are found
2 somewhere in a standard somewhere -- in an ASTM procedure
3 for water and waste-water, there are standards for doing
4 alpha, you know, various types of spectroscopy and the like.

5 We do not really have people on any of those
6 committees. We use them. It's sort of almost that's the way
7 you do business.

8 If we get involved -- to the extent to which we
9 get involved with regulation of DOE many of our standards
10 are going to have to be updated -- almost all of the
11 Division III regulatory guides -- and I would say about half
12 of the Division VIII regulatory guides are out of date. They
13 were written in the '70s and not really changed and our
14 dosimetry has changed.

15 If we change over instead of revising them
16 ourselves, the fact of the matter is they haven't been
17 revised for lack of resources, if we have this done through
18 a consensus standard it's going to involve a considerable
19 amount of work.

20 It ought to be done that way because there is far
21 less expertise relative to the industry today than there was
22 when those guys were written 20 years ago.

23 There are other organizations where we don't
24 interact with very much which we probably should -- for
25 example, the American Association of Physicists in Medicine

1 have probably on the order of 40 to 45 standards, not all of
2 which affect what we do but a number of which do.

3 In some cases we use standards but don't really
4 acknowledge it. It's just as a practical matter. In other
5 cases we just don't use standards which are out there that
6 we probably ought to use. We do things on our own.

7 CHAIRMAN JACKSON: Should we be using standards or
8 are there particularly critical areas where we use standards
9 that we haven't endorsed that we need to take a look at?

10 DR. PAPERIELLO: Oh, I would say anything
11 involving the use of -- where a guide was issued prior to
12 1980 we need to take a look at the area addressed.

13 CHAIRMAN JACKSON: Now has this then been
14 systematically assessed and have the resource estimates for
15 beginning to address some of this been folded into the
16 resource estimates of the Commission?

17 DR. PAPERIELLO: Yes. We have been interacting
18 with the people in Research who put together all these
19 estimates. Yes.

20 CHAIRMAN JACKSON: Okay.

21 MR. MILLMAN: And part of my answer really should
22 have been to broaden the codes effort further into the
23 materials area.

24 CHAIRMAN JACKSON: Okay. I think we should move
25 along to the ASME presentation.

1 MS. LING: Madam Chairman, Commissioners, and
2 fellow attendees, I am honored to be here and to have this
3 opportunity to represent the American Society of Mechanical
4 Engineers.

5 I would like to introduce two other people who are
6 here with me today.

7 The first is an elected officer of ASME, Mr. James
8 Perry. Jim is Chairman of the ASME Board of Nuclear Codes
9 and Standards and holds the title of Vice President, Nuclear
10 Codes and Standards.

11 Also, an ASME staff person is here, Mr. Jerry
12 Eisenberg. Jerry is the Director of Nuclear Codes and
13 Standards at ASME.

14 Next slide, please.

15 MS. LING: A brief overview of ASME. We were
16 founded in 1880. We are a 501(C)(3) nonprofit organization
17 and we are chartered in the state of New York.

18 Currently ASME has about 125,000 members. Most
19 reside in the United States but we do have members in 130
20 countries around the world.

21 We only have individual members. ASME does not
22 have company nor corporate membership.

23 In addition to codes and standards, some of the
24 activities of ASME include education. We are heavily
25 involved in the accreditation of engineering curricula at

1 universities, and we also provide continuing education
2 courses in professional development.

3 In addition to that, our Washington, D.C. office
4 is active in government relations and basically their role
5 is to promote the positions and views of the engineering
6 profession to Congress and to state and local governments.

7 Another major activity of the society are
8 technical divisions. We have about 35 technical divisions
9 in different areas of discipline and a major activity in
10 that arena is technical papers on the emerging technology,
11 international conferences, and regional conferences.

12 All in all, ASME has about 400 staff employees.
13 We have 10 offices around the United States and we are
14 headquartered in New York City.

15 Next slide, please.

16 This is a quick snapshot of codes and standards
17 development within the society. The ASME Council on Codes
18 and Standards is the governing body for all codes and
19 standards and related accreditation programs.

20 We have about 600 published codes, standards, and
21 guides within ASME. They are administered and developed by
22 about 100 consensus bodies. There are about 4,000
23 volunteers who serve on these consensus committees
24 developing codes and standards.

25 We have about 43 engineers serving codes and

1 standards and I would note that many of our documents are
2 used and recognized in other countries and we accredit
3 manufacturers in 57 countries about the world.

4 Next overhead, please.

5 MS. LING: This overhead lists examples of the
6 relationship between USNRC and ASME and I must say it has
7 been a very long and solid relationship since 1963, when the
8 first ASME code on vessels was published.

9 I won't spend time on each of these bullets. I
10 would like to highlight the third one, and that is key to
11 our relationship, and from the questioning this morning it
12 is gratifying to hear that many of the questions and
13 discussions this morning have centered on the timely
14 endorsement of codes and standards, and truly ASME believes
15 this is essential for the entire process and to continue
16 credibility of our program.

17 Next slide, please.

18 CHAIRMAN JACKSON: Tell us -- will you be telling
19 us a little about your own process for establishing new
20 codes and standards and then how long does that process
21 typically take?

22 MS. LING: Okay. The process we have currently
23 for establishing codes and standards is that we would
24 receive a request from any source, whether it be industry,
25 whether it be government or whether it be an individual.

1 That request would be evaluated by the Board on
2 Nuclear Codes and Standards and if it met certain criteria
3 such as, one, that there was a true need for such a
4 standard; two, that codification or standardization was the
5 proper action -- perhaps it might be a singular case or case
6 in which there is not an established response to the
7 problem, in which case standardization would not be the
8 appropriate action; the third key is that there be available
9 expertise out there in the industry and elsewhere to
10 establish the balance of interest that Mr. Millman has
11 stated was so essential to consensus, that there be
12 individuals from the manufacturing arena, the design area,
13 the owner-operator area, the NRC, and Research, and public
14 interest, that we could form a committee that would
15 represent a balance of interests for the particular topic.

16 If those criteria are met, then ASME would engage
17 the project, establish a committee, and work would begin.

18 In the past and currently consensus is a long
19 process. To assure that all views are adequately
20 represented, to assure that the process is open to anyone,
21 and to provide for due process of any agreements the process
22 can take a long time.

23 Right now I would say our quickest time might be,
24 on a code case might be a few months. On revision to the
25 code it might be one year. On the long end we are talking

1 many, many, many years in ensuring that consensus has been
2 reached.

3 We are engaged right now in the process to
4 redesign the codes and standards development process. What
5 we hope to achieve is the ability to develop new major
6 revisions within a one-year period of time.

7 What we hope to do is to streamline the process,
8 but once again adhere to the basic criteria of consensus
9 that the process be open, that there is due process engaged,
10 and that there is a balance of interests and representation
11 of consensus.

12 So with that we have engaged in an effort on
13 redesign recently. We hope to complete that process by the
14 end of this calendar year and we hope to have some pilot
15 programs going on next year under the new development
16 process.

17 CHAIRMAN JACKSON: Okay.

18 MS. LING: Next slide, please.

19 Mr. Millman had spent some time speaking about
20 Public Law 104 and 113. There is also a proposed revision
21 of OMB A-119, which is currently out for public review and
22 comment.

23 I would note that in the revised OMB under the
24 definition of voluntary consensus standards bodies they have
25 incorporated the input of ASME that says again openness,

1 balance of interests, and due process are the essential
2 criteria in developing voluntary consensus standards.

3 I think that is what sets us apart from other
4 standards that might be developed by industry or industry
5 consortia.

6 Next slide, please.

7 This is a list of some current ASME initiatives
8 and the first one I have just mentioned, our effort to
9 redesign the code development process.

10 Under the globalization of codes and standards I
11 would note that within the last 18 months I and many other
12 representatives of ASME have met with other regulatory
13 agencies and industries about the world.

14 I would note that one effort was with Korea and
15 under a royalty agreement with the Korean Electric
16 Association they have taken Section III, Section XI, Section
17 V, Section IX of the ASME Code, have modified it to some
18 extent, and have adopted it as the Korean Electric Power
19 Industry Code.

20 We received word a few months ago that the
21 government has issued an ordinance that as of some time this
22 year all domestic suppliers will need to comply with the
23 KEPI Code, which is based on the ASME code.

24 Additionally, we have met with the Electric Power
25 Generation Division, EMITI, in Japan, and I received word a

1 month ago that as part of that deregulation effort and their
2 reliance on standards for safety in a deregulated world that
3 they will be adopting the ASME Code as well into their
4 regulations for power generation in Japan.

5 In addition to those countries, we have also met
6 with the China NNSA, the Czech Republic, Hungary, Romania,
7 and the Slovak Republic, and as a result of that one of the
8 actions ASME has engaged in is to add a session to our
9 international conference on nuclear engineering, a session
10 that would be based on use of Section XI for VVER reactors.

11 In Eastern Europe there was a high interest in
12 that activity and where they seemed to have a reluctance to
13 gather among themselves they felt an international
14 conference would be a good forum to share experiences and
15 questions.

16 The risk informed nuclear code development Mr.
17 Millman had covered the Section XI code cases that are
18 moving forward within ASME.

19 CHAIRMAN JACKSON: And are you actually
20 coordinating your work with our Staff's --

21 MS. LING: Yes.

22 CHAIRMAN JACKSON: -- efforts in these areas?

23 MS. LING: To the best of our ability, yes.

24 CHAIRMAN JACKSON: And what does that mean?

25 MS. LING: That means that the NRC Staff have been

1 very active in the Section XI working group, subgroup and
2 subcommittees that have developed these code cases and to my
3 knowledge as of this date we would expect those code cases
4 to move forward through our own consensus committee and
5 hopefully through the regulatory adoption -- guide adoption
6 process.

7 CHAIRMAN JACKSON: Okay.

8 MS. LING: The strategic assessment of regulatory
9 activities, Mr. Jim Perry has submitted the ASME comments on
10 that and as far as harmonization of conforming assessment
11 activities we are again working with China, Japan, Korea and
12 assuring that the accreditation of manufacturers on a world
13 about basis is consistent and harmonized.

14 Next slide, please.

15 In conclusion we definitely look forward to the
16 continuous solid and good working relationship that ASME has
17 enjoyed with the NRC Staff for many, many decades.

18 I think there's been a healthy recognition between
19 the two organizations of the respective roles and
20 responsibilities of the two organization -- that, yes, they
21 are different but they both meet the common goal of public
22 safety.

23 The third bullet once again I appreciate much of
24 the discussion this morning regarding how we can work better
25 together to improve the overall effectiveness of the

1 process.

2 I think there are things that ASME can do as well
3 that will improve that.

4 Lastly, I would like to state that there are many
5 people in this room who have put in a lot of blood, sweat
6 and tears into development of consensus within ASME, and I
7 would like to take this opportunity to publicly thank them.
8 Thank you.

9 CHAIRMAN JACKSON: Thank you.

10 Let me just ask two follow-up questions. How does
11 ASME view its interpretations? Do you view them as being
12 part of the codes?

13 MS. LING: Yes, yes.

14 CHAIRMAN JACKSON: And if I go back to the Boiler
15 and Pressure Vessel Code, how would you characterize the
16 major changes made in that code since 1989? would you view
17 them as primarily relaxations?

18 MS. LING: No, I would not. I would view them as
19 reflections of a changing technology and lets us learn and
20 from experience. I think there are some that are relaxation
21 of the Code. In cases where by consensus and that includes
22 the views of all interested parties where they felt that
23 based on experience there could be some relaxation in
24 certain area, and in the same breath based on consensus I
25 would think there might be some tightening up of

1 requirements, again based on experience.

2 CHAIRMAN JACKSON: Since I have you, let me go
3 back to a comment you were making, some comments you were
4 making on one of your slides having to do with this balance
5 of interests or balance of categories of interests.

6 Is it your feeling that it works well or it
7 doesn't -- and I am going to ask you the same question.

8 MR. MILLMAN: It works well most of the time.

9 There are times when clearly there is an item that
10 is of interest to the utility and they -- the utility
11 members would vote in unison and at the same time the NRC
12 has an objection to it, and votes contrary to that item.

13 The NRC vote in that balance of interests is a
14 single vote in that block.

15 CHAIRMAN JACKSON: What's your comment?

16 MS. LING: I think it works well. I think it's
17 probably the best process we have in place to achieve
18 collective engineering judgment on establishing technical
19 requirements.

20 I think that in all cases what happens is that
21 there will be those areas of disagreement. I think that by
22 assuring that you have active participation and by assuring
23 that no one single interest category can dominate a
24 committee, which we do achieve through procedures, that the
25 balance of interests is key, is important. It works well

1 and it is better than anything else we have.

2 CHAIRMAN JACKSON: I agree, but how do address his
3 issue of the weighting in terms of just sheer numbers and
4 how voting might get done?

5 MS. LING: The criteria that we impose on the
6 consensus level is that no more than one-third of the total
7 membership can come from one single interest category.

8 Mr. Millman may be referring to the lower T
9 levels, which are the technical expertise and I would think
10 on a working group level in Section XI you might have a good
11 representation from the utility industry because that is
12 where the technical expertise is, but again you have to look
13 at the entire process, so any revision or any action would
14 go through the consensus committee, on which there is a
15 strict adherence to the balance of interests.

16 It goes through public review and there is also
17 the avenue of due process, so it's a good system. It's a
18 solid system. It's not a perfect system but once again it's
19 the best thing we have.

20 CHAIRMAN JACKSON: Do you agree?

21 MR. MILLMAN: I agree it's the best we have and
22 it's the best I could conceive, and it does work most of the
23 time but like anything it's not perfect.

24 CHAIRMAN JACKSON: On that note, let's hear from
25 Mr. Migliaro.

1 MR. MIGLIARO: Thank you -- also, thank you for
2 inviting me here today.

3 My name is Marco Migliaro and I am the Chief
4 Electrical Engineer in the Nuclear Division at Florida Power
5 & Light.

6 I am here today though to speak about the
7 Institute of Electrical and Electronic Engineers, better
8 known as the I -- Triple E, the IEEE Standards Program and
9 the NRC interfaces with that program.

10 Let me say that I have participated in the IEEE
11 standards development program for approximately 28 years,
12 most of which has been in the area of nuclear power
13 standards.

14 I am a past Vice President of the Institute in the
15 Area Standards. I am a past member of the Board of
16 Directors and I am a past Chair of the Standards Board.

17 I am also a fellow member of the Institute.

18 Next slide, please.

19 If we look at the IEEE, it is the world's largest
20 professional society with 315,000 members in 150 countries,
21 and although we see the words "Electrical and Electronics
22 Engineers" there are many members of the Institute that have
23 degrees in physics, mathematics, medicine, and computer
24 science. In fact, the IEEE is home to some 120,000 members
25 whose interests lie in the fields of computer science and

1 information technology.

2 I would like to point out that Commissioner Rogers
3 is a Senior Member of IEEE.

4 The IEEE has 37 technical societies including
5 aerospace and electronic systems, communication, computers,
6 engineering and medicine biology and power engineering.

7 I have attached a list of those societies with a
8 brief statement about each as an attachment to your handout.

9 If we now look at the institute on a regional
10 basis -- next slide, please -- we see that the IEEE is
11 divided into 10 regions around the world. By far the
12 largest population of members are in regions one through six
13 or within the borders of the United States.

14 However, today 30 percent of our membership
15 resides outside the borders of the U.S. -- that is in
16 regions seven, eight, nine, and ten.

17 Those also happen to be the fastest growing
18 membership areas and we project that by the year 2000 or
19 shortly thereafter a full 50 percent of our membership will
20 be from outside the borders of the U.S.

21 Next slide, please.

22 Looking at the IEEE organization, we are the
23 members, the board of directors, the executive committees
24 and six major boards, each headed by a vice president of
25 which Standards is one.

1 Next slide, please.

2 However, when we talk about Standards, we need to
3 look at two major boards of the institute, the first being
4 the Standards Board. The Standards Board has a number of
5 committees and it's responsible for the Standards program in
6 the IEEE. It is responsible for the interfaces both within
7 and without the IEEE in the area of Standards and it speaks
8 for the IEEE in the area of Standards.

9 One committee, the new Standards Committee, is
10 responsible for approving new Standards projects or
11 revisions if standards exist. Once the work has been done
12 and drafts are available that are submitted to the Standards
13 Board for approval, the Standards Review Committee makes the
14 recommendations for approval. I would like to point out
15 that there is NRC participation in that committee.

16 There are nine other committees of the Standards
17 Board and then the Standards Board has Standards
18 Coordinating Committees and Accredited Standards Committees
19 which actually write standards. However, when we look at
20 standards writing activities, the bulk of that activity
21 falls underneath the Technical Activities Board within the
22 37 societies of IEEE. Today, 24 of those societies actively
23 participate in the Standards program and that is where you
24 will find the Standards Writing Group and those are the
25 people that provide the technical expertise to the IEEE

1 standards.

2 Next slide, please.

3 Very briefly, the IEEE Standards Board has 26
4 members and a number of liaisons, one of which is the NRC.
5 The board meets four times a year and, given the changing
6 membership of the IEEE, one to two meetings a year outside
7 the borders of the U.S. with one of those meetings typically
8 outside the borders of North America.

9 Participation by the NRC dates back to the early
10 1970s. It's extremely beneficial from IEEE's point of view.
11 The NRC liaison is looked to as an expert on the Board in
12 nuclear-related standards issues and, since issues may arise
13 at any meeting, it is imperative that everybody, members and
14 liaisons, attend all the meetings.

15 IEEE has expressed appreciation, most recently in
16 1994, in a letter from Dr. Nagle who was then President of
17 IEEE to Dr. Sellin, who was then Chair of the NRC. The
18 Commission should continue to support this activity.

19 There are approximately 700 active IEEE standards
20 and, at any one time, there are approximately the same
21 number of new and revisions in progress.

22 CHAIRMAN JACKSON: Let me just ask a quick
23 question. How many of the standards are endorsed by NRC
24 regulations and reg guides out of the 700?

25 MR. MIGLIARO: Well, 700 is all standards within

1 IEEE.

2 CHAIRMAN JACKSON: I know that. I am asking you
3 how many are --

4 MR. MIGLIARO: I don't have an exact number but
5 there are about 75 nuclear standards and, out of that, say
6 about half.

7 MR. AGGARWAL: There are approximately 30
8 standards that have been endorsed in the regulatory guides.

9 CHAIRMAN JACKSON: In the reg guides and
10 regulations, or just reg guides?

11 MR. AGGARWAL: No, as I pointed out, the only
12 single standard is 279.

13 CHAIRMAN JACKSON: The 279, right.

14 Thank you.

15 COMMISSIONER MCGAFFIGAN: What about the other 45?
16 You said there's about 75?

17 MR. MIGLIARO: If you give me a minute, I'll get
18 to it in another slide, please.

19 Of the approximately 700 active standards that
20 have broken down, about 45 percent power, 30 percent
21 computer, 10 percent industry application and then 15
22 percent encompassed the balance of all IEEE standards.

23 IEEE standards are recognized world wide and many
24 of them become the base documents for international
25 standardization. There is a number of ways in which these

1 things are done. One, given the example of the LAN or the
2 Local Area Network Standards which, although developed
3 within IEEE, were simultaneously adopted as international
4 IEEE standards.

5 There are also some standards in the nuclear power
6 industry that are used directly by other countries in their
7 nuclear power programs. Examples of those are IEEE 323 on
8 qualification and IEEE 344 on seismic.

9 The IEEE also has a policy to allow cross-adoption
10 of standards and IEEE standards have been adopted by
11 Standards Australia and Standards Council of Canada.

12 Next slide, please.

13 We have heard these words many times before but
14 the five guiding principles of IEEE are the same, due
15 process, consensus, openness, balance and right of appeal.

16 The only thing I would like to point out is that
17 consensus within IEEE is a little bit different in that when
18 we send out a ballot, we ask for 75 percent return to have a
19 successful ballot and, of that 75 percent return, 75 percent
20 must be affirmative in order for the standard to have
21 achieved consensus.

22 Next slide, please.

23 The IEEE standards are voluntary standards. They
24 are developed by volunteers and, in fact, today we have over
25 30,000 persons involved in the development of IEEE

1 standards.

2 Because of our policy of openness and balance, you
3 don't need to be a member of IEEE to participate in
4 standards writing activities. For example, a number of
5 years ago, when IEEE was asked to develop or look into
6 standards on electromagnetic fields, we put out invitations
7 to epidemiologists and biologists to join our committees.
8 So that the input for our standards comes from designers,
9 operators, industry experts, regulators, manufacturers and
10 other interested parties and, in general, IEEE standards
11 reflect state of the art.

12 CHAIRMAN JACKSON: Let me ask Mr. Millman, what is
13 your assessment of the consensus process relative to how the
14 standards developed in IEEE?

15 MR. MILLMAN: The ballot structure is a little
16 different than it is at ASME but there are some other
17 parameters that get into the ASME balloting that haven't
18 been discussed and that is, first consideration ballot, one
19 negative ballot stops the item. So a single voice is heard.
20 Frequently that is the NRC voice.

21 CHAIRMAN JACKSON: In the ASME process.

22 MR. MILLMAN: In the ASME process. In the IEEE
23 process, the 75 percent, I think, would make a significant
24 difference if that's the way it were implemented at ASME.

25 CHAIRMAN JACKSON: Okay.

1 MR. MIGLIARO: Next slide, please. That's slide
2 number 10.

3 Where are all these standards used? They are used
4 for electrical and instrumentation control equipment. I
5 look at these or view these as the brain and the nervous
6 system of the plant. There are field sensors that
7 continuously monitor parameters and conditions in the plant
8 which are relayed and based on what the sensors see, actions
9 are taken, sometimes automatic, to stop, start or shut down
10 plant systems.

11 There is also information fed to the operators
12 either to alert them that a condition is present or to
13 prompt them to take corrective action. This equipment plays
14 a vital role in maintaining safety of plants and they are
15 relied on for safe and economic operation of the plants.

16 Looking at nuclear standards development, let me
17 first say that the IEEE began standards development in the
18 1800s on one of its two founding societies, the AIEE began
19 to write standards. By that comparison, the nuclear power
20 standards are a relative newcomer to the IEEE beginning
21 about 25 to 30 years ago. But over that time, more than
22 100,000 persons have participated in the development of
23 those nuclear standards. Today, we have more than 75 active
24 standards. The scope, equipment areas of those standards
25 are included as an attachment to your handout.

1 We have a number of other documents that are
2 offered from IEEE and I will just go through them briefly.
3 The nuclear power collection -- I have some of these by my
4 side here -- is a compilation bound under one cover of all
5 current issues of nuclear power standards within the IEEE.
6 The Nuclear Power Archives, as the name implies, is a bound
7 edition of all the past revisions of all the nuclear power
8 standards. The Nuclear Science Collection is available.

9 The Nuclear Equipment Qualification Sourcebook,
10 that is a somewhat unique product in that all the documents
11 required for equipment qualification, both the IEEE and the
12 NRC, are bound under one cover.

13 IEEE 500, which was last published in 1984, is
14 reliability data for nuclear power plants. This is a very
15 important standard; however, at this point in time, there
16 really have been no takers on the revision of this document
17 and I think -- I present to you an issue -- I think this is
18 one area where the NRC can take a look at it and maybe take
19 a leadership role in making sure that IEEE 500 does get
20 updated.

21 Next slide, please, number 12.

22 Interfaces with the NRC. I have already stated
23 that we have an interface at the Standards Board level. We
24 have an interface at the society level and you have seen
25 slides of that. Three major societies that the NRC deals

1 with are Power Engineering, Computer and Nuclear and Plasma
2 Sciences.

3 Typically, the votes of the NRC here on working
4 groups, subcommittees and committees. Then there is also
5 NRC representation on the Standards Coordinating Committees.

6 If we look at the regulations -- next slide
7 please -- we have already stated IEEE 279 which has been
8 withdrawn by IEEE is the only standard reference in the
9 regulations. The remainder of IEEE standards are endorsed
10 by regulatory guides. These are very valuable to users
11 because they present the NRC position on a particular
12 standard.

13 Although the NRC actively participates in the
14 working group and the working group members themselves may
15 have information as to how the NRC feels, many of the users
16 in the industry don't have the benefit of attending working
17 group meetings so the regulatory guide is used to convey all
18 those issues to the licensees and they are extremely
19 valuable. However, the shortcomings here are that many are
20 for old revisions and very few cover recent editions of the
21 standards.

22 CHAIRMAN JACKSON: How old are we talking?

23 MR. MIGLIARO: Some go back to the 1970s.

24 CHAIRMAN JACKSON: And --

25 MR. MIGLIARO: The 1970 edition.

1 CHAIRMAN JACKSON: And what is the most recent?

2 MR. MIGLIARO: The most recent additions, without
3 picking a particular one, I would say the most recent
4 addition, because the IEEE policy is to revise or reaffirm
5 their standards every five years, then they could be as much
6 as 20 years behind.

7 COMMISSIONER MCGAFFIGAN: So I might ask whoever
8 spoke earlier, of the 30 that we have endorsed, how many
9 are -- you said you had 75 total, 30 we've endorsed
10 approximately through reg guides. Of that 30, how many do
11 you think we are endorsing old standards or old revisions?

12 MR. MIGLIARO: I would say the bulk, probably 80
13 percent would be endorsing old revisions.

14 CHAIRMAN JACKSON: Going back to the '70s in
15 general?

16 MR. MIGLIARO: No, they would be in the '70s and
17 '80s.

18 COMMISSIONER MCGAFFIGAN: What about the other 45
19 that sort of hang out there and is it important, if we ever
20 got around to it, to having those also considered in our reg
21 guides?

22 MR. MIGLIARO: Sure. My next slide, actually.

23 COMMISSIONER MCGAFFIGAN: Okay, sorry.

24 MR. MIGLIARO: No, it's a good lead-in. Thank you
25 very much.

1 CHAIRMAN JACKSON: Before you get to that, let me
2 just ask you this question. Do you -- do you actively seek
3 NRC endorsement of IEEE standards in these areas?

4 MR. MIGLIARO: The IEEE personally, no. The IEEE
5 does not actively seek the endorsement.

6 CHAIRMAN JACKSON: Okay, and how are your
7 standards development initiatives supported financially?

8 MR. MIGLIARO: Our initiatives are all voluntary.
9 The members on the working groups are usually supported
10 either by themselves or their organizations or their
11 companies.

12 CHAIRMAN JACKSON: So it doesn't come out of your
13 budget, per se?

14 MR. MIGLIARO: It doesn't come out of our budget,
15 no. The only activity that comes out of the IEEE budget is
16 the support of the IEEE staff members, paid staff members
17 that attend these meetings and the support of the editorial
18 staff and the publishing of the documents.

19 CHAIRMAN JACKSON: And what about your code
20 development?

21 MS. LING: It is the same, volunteers. They
22 receive their support elsewhere but the administrative
23 support for the codes and standards framework is through
24 sales of the codes and standards.

25 CHAIRMAN JACKSON: It's through sales?

1 MS. LING: Sales of the codes and standards.

2 MR. MIGLIARO: I would like to add one thing on
3 that. There have been a couple of initiatives where we have
4 done some fundraising to support a particular standard. An
5 example of that was the current impassity or carrying
6 capability of electric conductors. That is a large,
7 voluminous document and years ago, when it was first
8 initiated, all the computer time on that document was
9 supported by a cable company.

10 With companies downsizing, a lot of that is not
11 possible today so some of that work was done through
12 fundraising activities to support the standard.

13 CHAIRMAN JACKSON: So you could have standards
14 developed that are supported by a given company?

15 MR. MIGLIARO: No, they are not supported. In
16 general, they are not supported by a given company. But we
17 had had a fundraising effort that allowed the computer
18 work -- paid for the computer time necessary to generate the
19 final document in the case of the impassity. That is one
20 single case that I can point out to.

21 CHAIRMAN JACKSON: But you don't sell anything?

22 MR. MIGLIARO: Yes, we do sell standards.

23 CHAIRMAN JACKSON: So you sell standards, too?

24 MR. MIGLIARO: Yes.

25 CHAIRMAN JACKSON: So that is part of your

1 financial support base.

2 MR. MIGLIARO: It is part of the financial support
3 for the staff but it is not -- we do not financially support
4 any of the volunteers.

5 CHAIRMAN JACKSON: I understood that.

6 Thank you.

7 MR. MIGLIARO: Thank you.

8 Slide number 14.

9 There had been some recent activity within the NRC
10 in the area of regulatory guides. Three reg guides, as we
11 have seen before, were endorsed, endorsed the latest
12 standards and there have been some draft guides for
13 computer-related standards. This is particularly important
14 as digital systems and digital upgrades begin to go into the
15 nuclear plants. However, that effort is probably below what
16 we would like to see as far as endorsing all of our
17 standards.

18 There is much more that can be done. The issues
19 here, number one, develop regulatory guides for all the
20 nuclear-related standards and the other is then to train
21 your inspectors on the use of these guides so that there is
22 a uniform approach across all the regions.

23 CHAIRMAN JACKSON: What opportunities do you think
24 are available to keep inspectors current on new technologies
25 and the implications that are reflected in standards?

1 MR. MIGLIARO: Well, there can be a number of
2 issues. There can be short seminars, short courses
3 presented to the instructors to give them an idea of the
4 standards development.

5 CHAIRMAN JACKSON: Do you present such courses?

6 MR. MIGLIARO: Yes, we do present those courses.
7 They have been limited recently but they are available and
8 they are available for presentation anywhere. There is
9 normally a fee associated with that to cover the time, of
10 course, of the instructors.

11 CHAIRMAN JACKSON: Industrial rates.

12 MR. MIGLIARO: I won't speak for the rates.

13 CHAIRMAN JACKSON: Okay.

14 MR. MIGLIARO: Finally, active participation by
15 the NRC staff at committee and working group levels must
16 continue. As you have seen, you have about 26 people active
17 on IEEE activities. However, there are 15 that actively
18 work on sponsor committees and actively ballot the documents
19 and we understand that although we see 15 or 26 names, there
20 are actually many, many more people that work and provide
21 input to those persons in the development of comments to
22 particular standards.

23 In summary, I would like to say that the issues
24 are the continued support of the staff by the NRC, IEEE 500
25 update, the issuance of reg guides and training for the

1 inspectors.

2 One brief statement, as we approach the twenty-
3 first century, IEEE has taken a lot of initiatives to
4 restructure itself to its new membership base or its
5 changing membership base and the Standards Group will not be
6 immune from such changes. There are plans not to change the
7 process but there are plans to develop a separate standards
8 association within IEEE. The enabling bylaws have been
9 approved and steps will be taken over the next few years to
10 implement that program.

11 Thank you very much for your time.

12 CHAIRMAN JACKSON: Okay, Commissioner Rogers?

13 COMMISSIONER ROGERS: Well, it seems to me that it
14 is quite apparent that there is really quite a difference in
15 approach here between the two professional societies in many
16 ways and that NRC's use of these is somewhat different in
17 the very large difference in the number of standards, ASME
18 standards or codes that have been -- that are reflected in
19 our regulations. Whereas, with the IEEE, it is more in reg
20 guides.

21 I wonder if you have any comments with respect to
22 that difference, particularly as we see more and more use of
23 digital systems and control systems and so on and so forth
24 as replacements in nuclear power plants and whether,
25 perhaps, there should be a little elevation of the use of

1 IEEE standards in regulations in your view?

2 MR. MIGLIARO: I guess having grown up in the IEEE
3 world, I would like to say that I am pretty comfortable with
4 the way IEEE standards have been issued and reg guides have
5 been issued to endorse those. So I wouldn't see -- I
6 wouldn't recommend any change in that area in particular.

7 CHAIRMAN JACKSON: Commissioner Dicus.

8 COMMISSIONER DICUS: No questions, thank you.

9 CHAIRMAN JACKSON: Commissioner McGaffigan.

10 COMMISSIONER MCGAFFIGAN: Just one question for Ed
11 Jordan.

12 The suggestion on the IEEE 500 update and NRC
13 taking a leadership role. Where in the scheme of things,
14 given DSI 13 preliminary views, would you place that? Or
15 have you had a chance to think about it?

16 CHAIRMAN JACKSON: Don't do like they do in court,
17 now. If you need to think about it, you should think about
18 it, because we're going to hold you to what you say here.'

19 [Laughter.]

20 MR. JORDAN: I'll be careful not to make any
21 promises.

22 Clearly, the object of the DSI 13 is to look
23 across all of the codes and standards activities and target
24 those for which there can be the greatest safety benefit
25 gained based on the staff expenditure and the two good

1 organizations that are represented here certainly represent
2 a fairly large effort that the NRC has been involved in and
3 has some tradition.

4 We do, as Dr. Paperiello said, use a lot of other
5 codes and standards that we don't formally endorse and so I
6 think it's looking across all of those and then coming up
7 with a strategy, coming back to the Commission with
8 recommendations based on the needs and the materials in the
9 reactor area.

10 COMMISSIONER MCGAFFIGAN: That was a good, safe
11 answer.

12 MR. JORDAN: So we promise to study it and bring
13 you back an organized approach with those 25 FTE that we
14 suggested would be required.

15 CHAIRMAN JACKSON: Okay.

16 I would like to thank the staff, everyone,
17 Ms. Ling and Mr. Migliaro for an informative briefing.

18 As noted during the briefing, new federal
19 requirements do place increased emphasis on government staff
20 participation in the development of as well as the use of
21 standards and codes developed through the kinds of processes
22 we have mentioned and have been discussing. ASME and IEEE
23 standards can promote the safe operation of nuclear plants.
24 I think the evidence is there. Therefore, they are and have
25 become an integral part of our regulatory processes and

1 structure.

2 To that end, then, on behalf of the Commission, I
3 want to encourage the staff, the ASME and the IEEE to
4 maintain their good working relationships and to strive to
5 improve the timeliness as well as the effectiveness of the
6 overall process. I think there are, at least from what I
7 have heard, opportunities on all sides.

8 The Commission's overall views on these issues are
9 being expressed through its action on the strategic
10 assessment and rebaselining DSI, the preliminary views of
11 which you have already expressed, Mr. Jordan. And they will
12 provide a framework for going forward.

13 However, as you have just promised in as soft a
14 way as you thought you could get away with, we do need a
15 real framework document and that's true of any of the
16 actions, follow-on actions on the DSIs, that really look at
17 what the resource implications are and a prioritization
18 scheme for working our way through that. Then I would
19 assume that the IEEE 500 would be explicitly treated within
20 that context.

21 So unless there are any further comments, we are
22 adjourned. But I would remind the Commissioners that we do
23 have an affirmation session.

24 [Whereupon, at 11:54 a.m., the briefing was
25 adjourned.]

CERTIFICATE

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

TITLE OF MEETING: BRIEFING ON CODES AND STANDARDS -
PUBLIC MEETING

PLACE OF MEETING: Rockville, Maryland

DATE OF MEETING: Wednesday, January 22, 1997

was held as herein appears, is a true and accurate record of the meeting, and that this is the original transcript thereof taken stenographically by me, thereafter reduced to typewriting by me or under the direction of the court reporting company

Transcriber: Roselle Gershon

Reporter: Jon Hundley

ASME INTERNATIONAL

**PRESENTATION
TO THE
U.S. NUCLEAR REGULATORY COMMISSION**

**June Ling
Associate Executive Director,
Codes and Standards**

January 22, 1997

ASME OVERVIEW

- o Founded 1880**
- o Nonprofit Organization**
- o 125,000 Members in 130 Countries**
- o Wide Variety of Programs**
 - Codes and Standards**
 - Education: Engineering, Professional Development**
 - Government Relations**
 - Technical Divisions-Conferences, Exhibits**
- o 400 Staff Employees in 10 Offices**

ASME CODES AND STANDARDS DEVELOPMENT

- o Council on Codes and Standards**
- o 600 Published Codes, Standards, and Guides**
- o 100 Main Committees (Consensus Bodies)**
- o 4000 Volunteers**
- o ASME Engineering Staff Support**

USNRC-ASME RELATIONSHIP

- o 1963: First ASME Code for Nuclear Vessels**
- o Codes and Standards Development-Broad NRC Participation**
- o Timely Endorsement of Codes and Standards Essential**
- o ASME/USNRC/NBBI: Triparty Meetings**
- o NRC/ASME Pump & Valve Symposium: Technology Transfer**
- o Periodic NRC/ASME Meetings: NC&S Related**

USE OF VOLUNTARY CONSENSUS STANDARDS

- o Public Law 104-113**
- o Proposed Revision of OMB A-119**
 - Openness**
 - Balance of Interest**
 - Due Process**

ASME CURRENT INITIATIVES

- o Reengineering the Code Development Process**
- o Globalization of Codes and Standards: Worldwide Safety**
- o Risk-Informed Nuclear Code Development**
- o Feedback on NRC Strategic Assessment of Regulatory Activities**
- o Harmonization of Conformity Assessment Activities Worldwide**

CONCLUSIONS

- o **Maintain Good Working Relationship: NRC Staff/ASME Reps.**
- o **Recognize Respective NRC/ASME Roles and Responsibilities: Protect Public Health and Safety**
- o **Jointly Improve Timeliness/Effectiveness of Overall Process: Endorsement, Prioritization, Feedback-NC&S Issues**
- o **Important to Continue Level of NRC Staff Support in NC&S Activity**



NRC USE OF CONSENSUS CODES AND STANDARDS

January 22, 1997

**Gilbert C. Millman, Program Manager
Office of Nuclear Regulatory Research**

AGENDA

<u>Time</u>	<u>Subject</u>	<u>Speaker</u>
10:05 am	Introduction and Background	Themis P. Speis, Deputy Director, RES
10:15 am	Staff Presentation	Gilbert C. Millman, Program Manager, RES
11:00 am	Presentation by American Society of Mechanical Engineers	June Ling, ASME Assoc. Executive Director Codes and Standards
11:15 am	Presentation by Institute of Electrical and Electronic Engineers	Marco W. Migliaro Florida Power & Light Past Vice President (Standards), IEEE

TABLE OF CONTENTS

<u>Subject</u>	<u>Pages</u>
Introduction	4
Why Consensus Codes and Standards are Important to the NRC	5
Regulatory Framework	6
Endorsement by Regulation	7
The ASME Boiler and Pressure Vessel Code	8
Scope of 10 CFR § 50.55a	9
Endorsement of IEEE Standards	10
The Consensus Process	11
Staff Participation on Committees	12-18
Examples of Recent ASME Products	19
Current Activities	20
Summary	21
Backup slides	22-29

INTRODUCTION

- **Consensus codes and standards have been an integral part of the regulatory process for almost three decades.**
- **New Federal requirements place increased emphasis on government staff participation and use of standards.**
- **This briefing discusses the way in which codes and standards effectively and efficiently promote the safe operation of nuclear power plants, and overviews the staff's participation in the development and endorsement process**
- **National/International standards**

WHY CONSENSUS CODES AND STANDARDS ARE IMPORTANT TO THE NRC

- **Complement NRC's broad General Design Criteria**
- **Form a basis for NRC requirements and guidance in many areas of the design, construction, inspection, testing, and repairs of mechanical and electrical components, and large civil structures**
- **Incorporate many years of accepted good engineering practice and reflect state-of-the-art technology**
- **Provide for efficient use of NRC resources**

REGULATORY FRAMEWORK FOR IMPLEMENTATION OF CODES AND STANDARDS

- **Public Law 104-113, “National Technology Transfer and Advancement Act of 1995”**
- **OMB Circular A-119, “Federal Participation in the Development and Use of Voluntary Standards”**
- **Regulations, primarily 10 CFR § 50.55a, “Codes and standards”**
- **Regulatory Guides and other regulatory documents**

ENDORSEMENT BY REGULATION

- **Establish NRC position through office reviews and concurrences**
- **Review and recommendation by ACRS and CRGR**
- **Review and approval by EDO**
- **Review and approval by Commission**
- **Issue for and resolve public comments**
- **Second review, concurrence, and approval cycle**
- **Issue final regulation**

THE ASME BOILER AND PRESSURE VESSEL (B&PV) CODE

- **Eleven sections, two of which are “nuclear” sections**
- **Nuclear sections**
 - **Section III (construction)**
 - **Section XI (inservice Inspection (ISI) and testing (IST))**
 - **Mandated in 10 § CFR 50.55a**
- **Code cases are alternatives to B&PV Code**
 - **Endorsed in three regulatory guides**
- **Interpretations clarify B&PV Code**
 - **Not part of regulations**
 - **NRC is not bound by interpretations**

SCOPE OF 10 CFR § 50.55A

- **Incorporates by reference and mandates use of ASME B&PV Code Section III and Section XI**
- **May impose NRC limitations and modifications**
- **Requires 120-month update of ISI and IST programs**
- **Endorses use of selected ASME code cases via three referenced regulatory guides**
- **Incorporates by reference IEEE Std. 279; other IEEE standards are endorsed by regulatory guides**

ENDORSEMENT OF IEEE STANDARDS

- **Recently endorsed in final regulatory guides**
 - **IEEE Std. 338 ----- periodic testing**
 - **IEEE Std. 7-4.3.2 ---- digital computers**
 - **IEEE Std. 603 ----- criteria for safety systems**

- **Eight standards recently endorsed in six draft regulatory guides, include:**
 - **IEEE Stds. 1012 and 1028 - validation and verification, reviews, and audits for digital computer software**
 - **IEEE Stds. 828 and 1042 - configuration management**

THE CONSENSUS PROCESS

- **Administered by American National Standards Institute (ANSI)**
- **Implemented by Standards Developing Organization (SDO), such as ASME or IEEE**
- **Consensus: Due process + “substantial” agreement**
- **Due process**
 - **Openness**
 - **Balance of Categories of Interest**
 - **Fair consideration of views**
 - **Written record**
 - **Right of appeal**

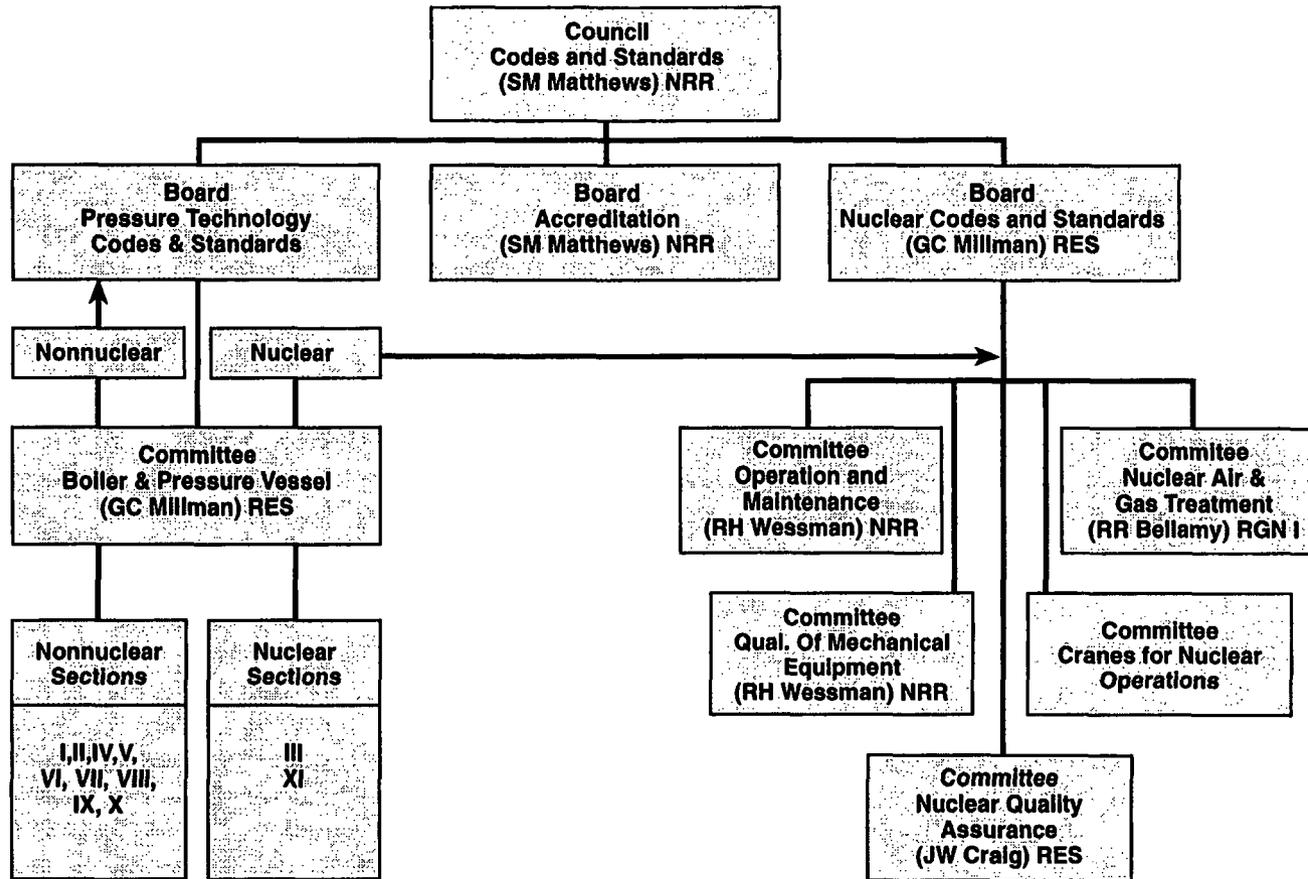
STAFF COMMITTEE MEMBER NOMINATION PROCESS

- **Standards Developing Organization (SDO) or NRC requests participation**
- **In consultation with other program offices, letter to committee chairman (signed by Director, Office of Nuclear Regulatory Research) nominates agency representative**
- **Letter specifies that staff participation does not connote agency agreement with committee decisions**
- **SDO votes on all nominees for acceptance**

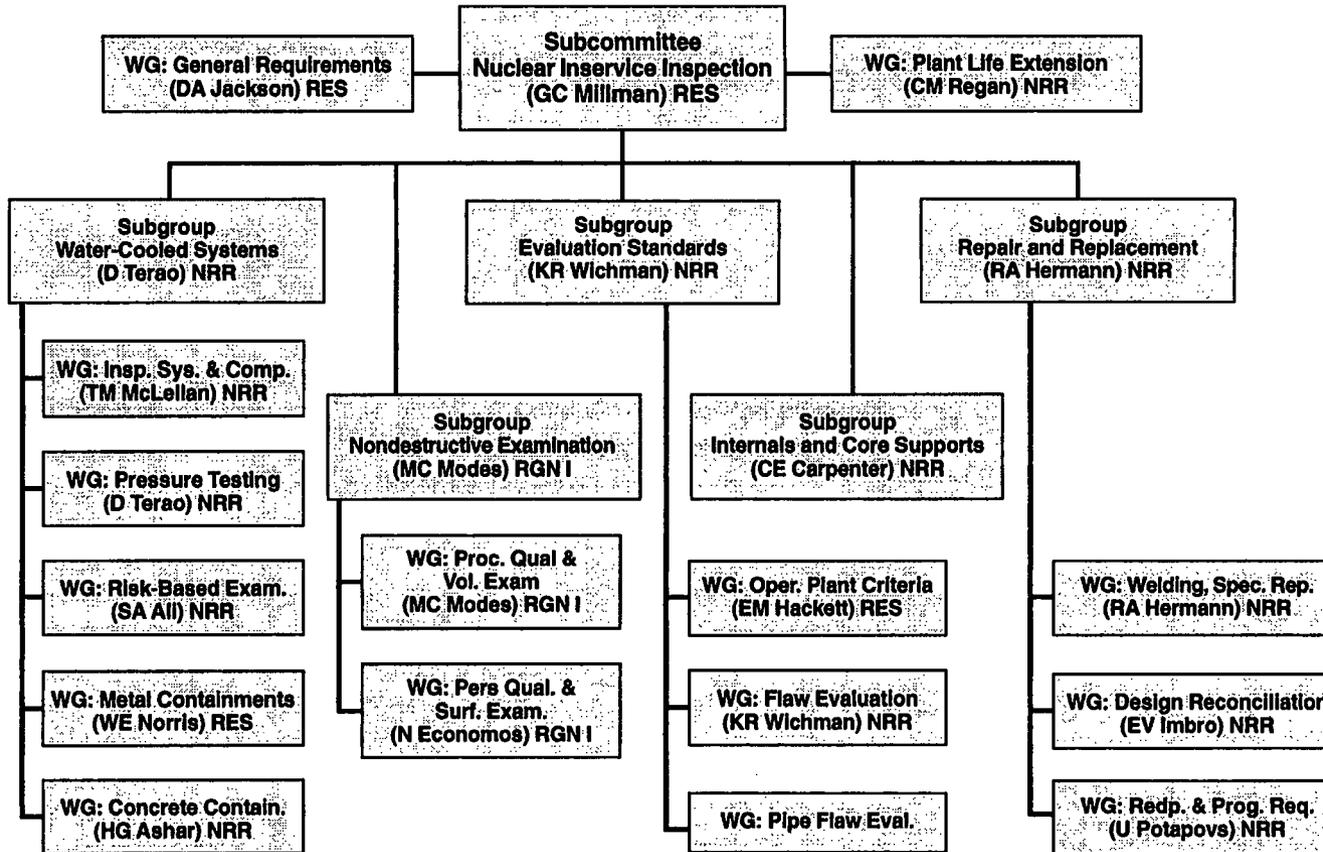
STAFF COMMITTEE MEMBER RESPONSIBILITIES

- **Defined in OMB Circular A-119**
- **Be active participant**
- **Participate on basis of equality with other representatives**
- **Views expressed should not be inconsistent or in conflict with established agency views**
- **May serve as chairperson, or in other official capacity**

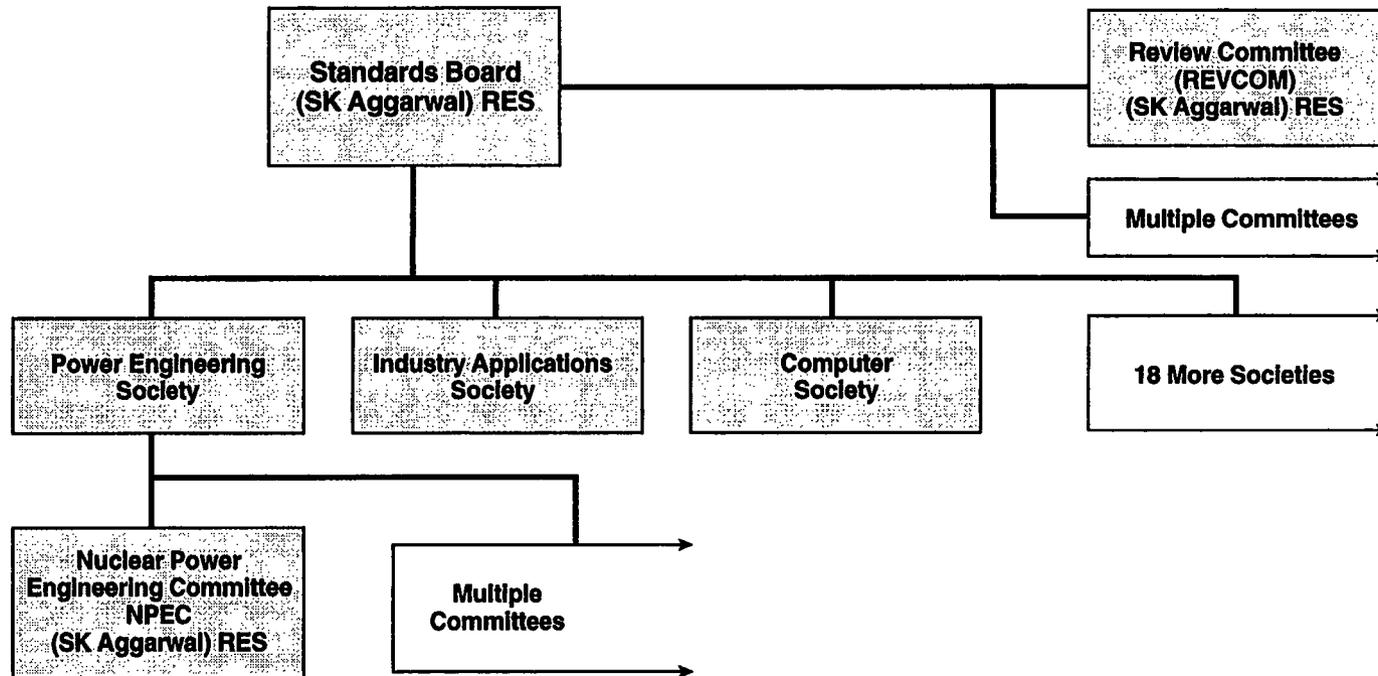
ASME COMMITTEE STRUCTURE



ASME SECTION XI



IEEE BOARD AND COMMITTEES



STAFF PARTICIPATION ON SDOS

Standards Developing Organization	Staff
American Society of Mechanical Engineers	47
American Nuclear Society	39
Institute of Electrical and Electronics Engineers	26
Health Physics Society	12
American Society of Testing and Materials	11
Institute of Nuclear Materials Management	6
American National Standards Institute	5
American Concrete Institute	4
American Society of Civil Engineers	4
Other	12

STAFF PARTICIPATION ON SDOS BY OFFICE

Office	NRR	NMSS	RES	AEOD	Regions	OC
Staff	71	21	34	6	9	1

EXAMPLES OF RECENT ASME PRODUCTS

- **Section XI Code case for thermal annealing reactor vessels**
- **Section XI Code case for examination of longitudinal welds in piping**
- **Updates to Section XI performance demonstration criteria for ultrasonic inspections**
- **Section XI Code case for steam generator tube repairs by electrochemical deposition**
- **Operation and Maintenance (OM) Code for pumps, valves, and snubbers**

CURRENT ACTIVITIES

- **ASME**
 - Section III revision to seismic design of piping
 - Section III rules for nuclear waste transport packaging
 - Section XI Code case for evaluation of through wall flaws in Class 3 moderate energy piping
 - Section XI Code cases for risk-informed ISI
 - OM Code case for risk-informed IST

- **IEEE**
 - Risk-informed criteria for design and application
 - Digital upgrades, EMI/RFI, and software reliability
 - On-line maintenance; human factors in maintenance
 - Quality and reliability of off-site power

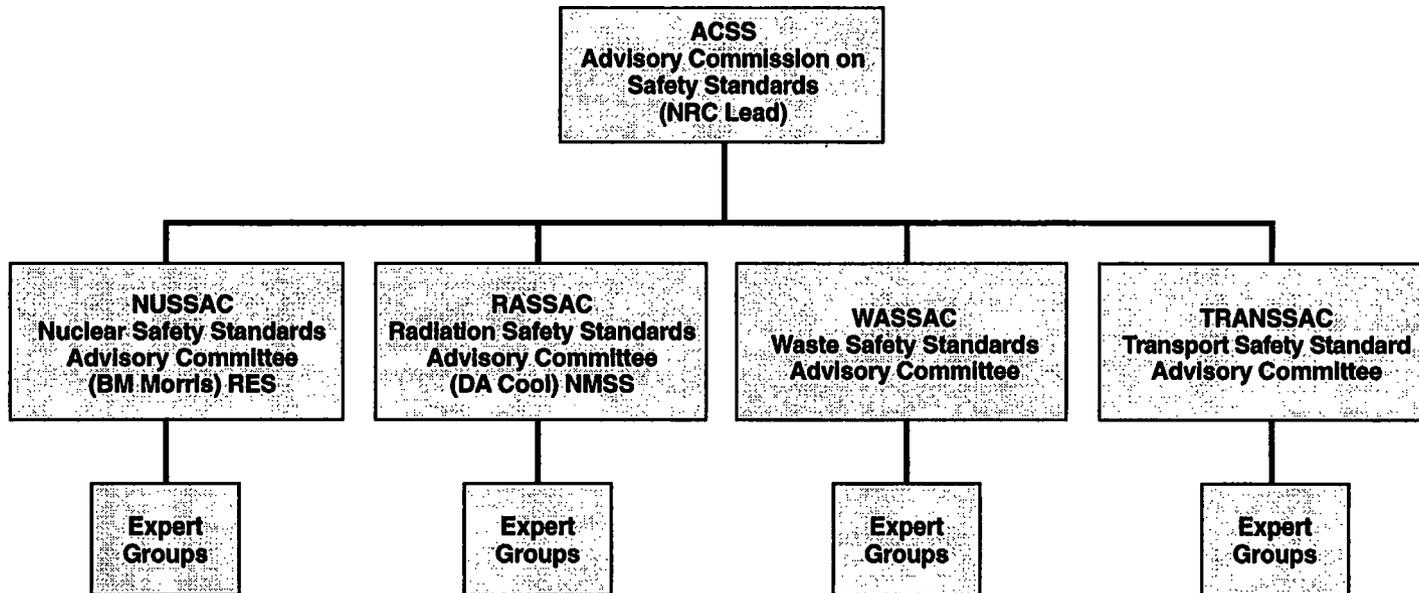
SUMMARY

- **The NRC continues to rely heavily on the use of consensus codes and standards, and the staff continues to participate actively with SDOs on current issues**
- **Staff plans to increase interactions with SDOs regarding the development of new codes, standards, and guides, especially those which will facilitate the transition to risk-informed, performance-based regulations**
- **RES will prepare an Action Plan to ensure NRC compliance with federal law and policy guidelines for participation in the development and use of consensus codes and standards — The Action Plan will be submitted to the Commission for approval for implementation**

BACKUP SLIDES

<u>Title</u>	<u>Page</u>
International Standards, IAEA	23
Public Law 104-113	24
OMB Circular A-119	25-27
Endorsement by Regulatory Guide	28
IEEE Committee and Subcommittee Structure	29

INTERNATIONAL STANDARDS IAEA



PUBLIC LAW 104-113

NATIONAL TECHNOLOGY TRANSFER AND ADVANCEMENT ACT OF 1995

- **Federal agencies shall use technical standards that are developed or adopted by voluntary consensus standards**
- **Agencies shall participate on consensus standards bodies when such participation is in the public interest, and is compatible with agency missions and budget resources**
- **An agency may use technical standards not developed by voluntary consensus standards bodies if the head of that agency transmits to the Office of Management and Budget an explanation of the reason for using such standards**

OMB CIRCULAR A-119

FEDERAL PARTICIPATION IN THE DEVELOPMENT AND USE OF VOLUNTARY STANDARDS

Policy of Federal Government

- **Rely, when feasible, on voluntary standards**
- **Participate on voluntary standards bodies**
- **Coordinate agency participation to ensure:**
 - **effective use of agency resources**
 - **views expressed by agency representatives do not conflict with interests and established views of the agency**

OMB CIRCULAR A-119 (CONT.)

FEDERAL PARTICIPATION IN THE DEVELOPMENT AND USE OF VOLUNTARY STANDARDS

Policy Guidelines

- **Adopt voluntary standards that serve agencies purposes and are consistent with applicable laws and regulations**
- **Give preference to performance based standards**
- **Agency is not committed to use a voluntary standard which, in its opinion, does not meet statutory criteria, or is otherwise inappropriate**
- **Establish Agency Standards Executive**

OMB CIRCULAR A-119 (CONT.)

FEDERAL PARTICIPATION IN THE DEVELOPMENT AND USE OF VOLUNTARY STANDARDS

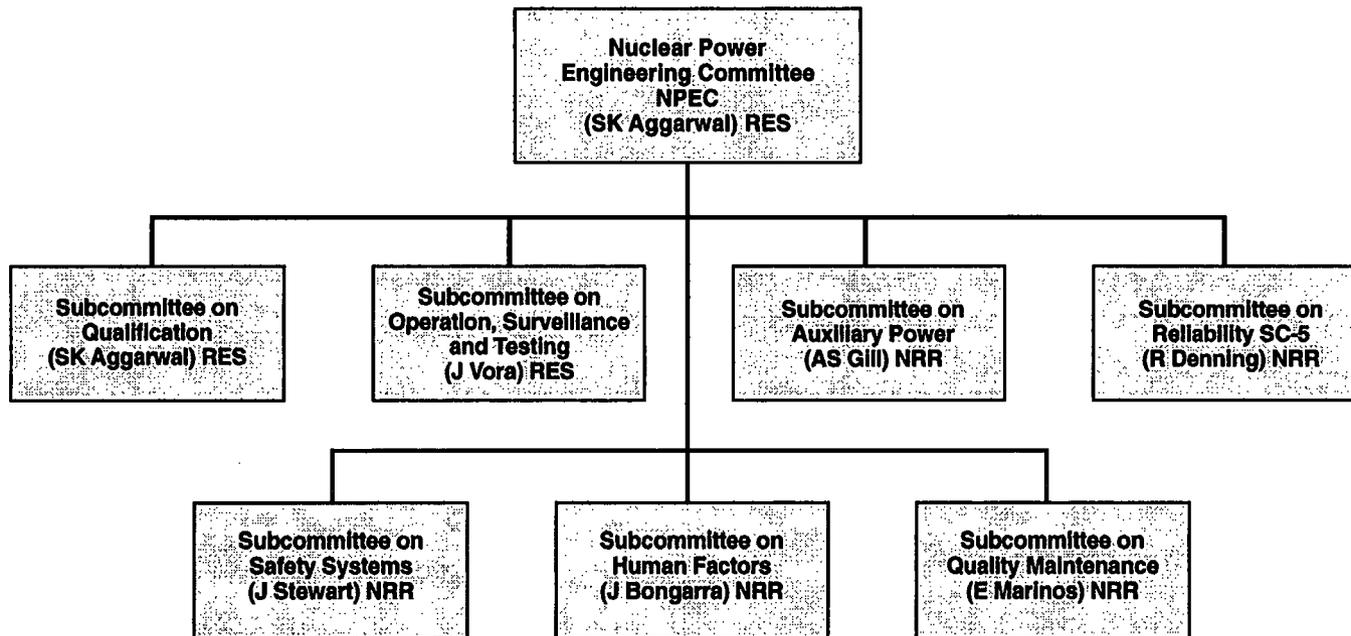
Responsibilities of Standards Executive

- **Ensure coordination of agency views among agency representatives on standards groups**
- **Ensure review of existing agency standards every five years, and replacement of those for which an appropriate voluntary standard can be substituted**
- **Prepare an annual report on the status of agency interaction with voluntary standards bodies**

ENDORSEMENT BY REGULATORY GUIDE

- **Prepare draft regulatory guide and regulatory analysis**
- **Review and recommendation by ACRS and CRGR**
- **Review and approval by cognizant RES and user office Division Directors**
- **Issue for and resolve public comments**
- **Second review, concurrence, and approval cycle**
- **Issue regulatory guide final under signature of Director, RES**

IEEE COMMITTEE AND SUBCOMMITTEE STRUCTURE



**The Institute
of
Electrical and Electronics
Engineers**

Networking the World



The IEEE Today

- 315,000 members in 150 countries
- 37 Societies including
 - Aerospace and Electronics Systems
 - Communications
 - Computer
 - Engineering in Medicine and Biology
 - Power Engineering

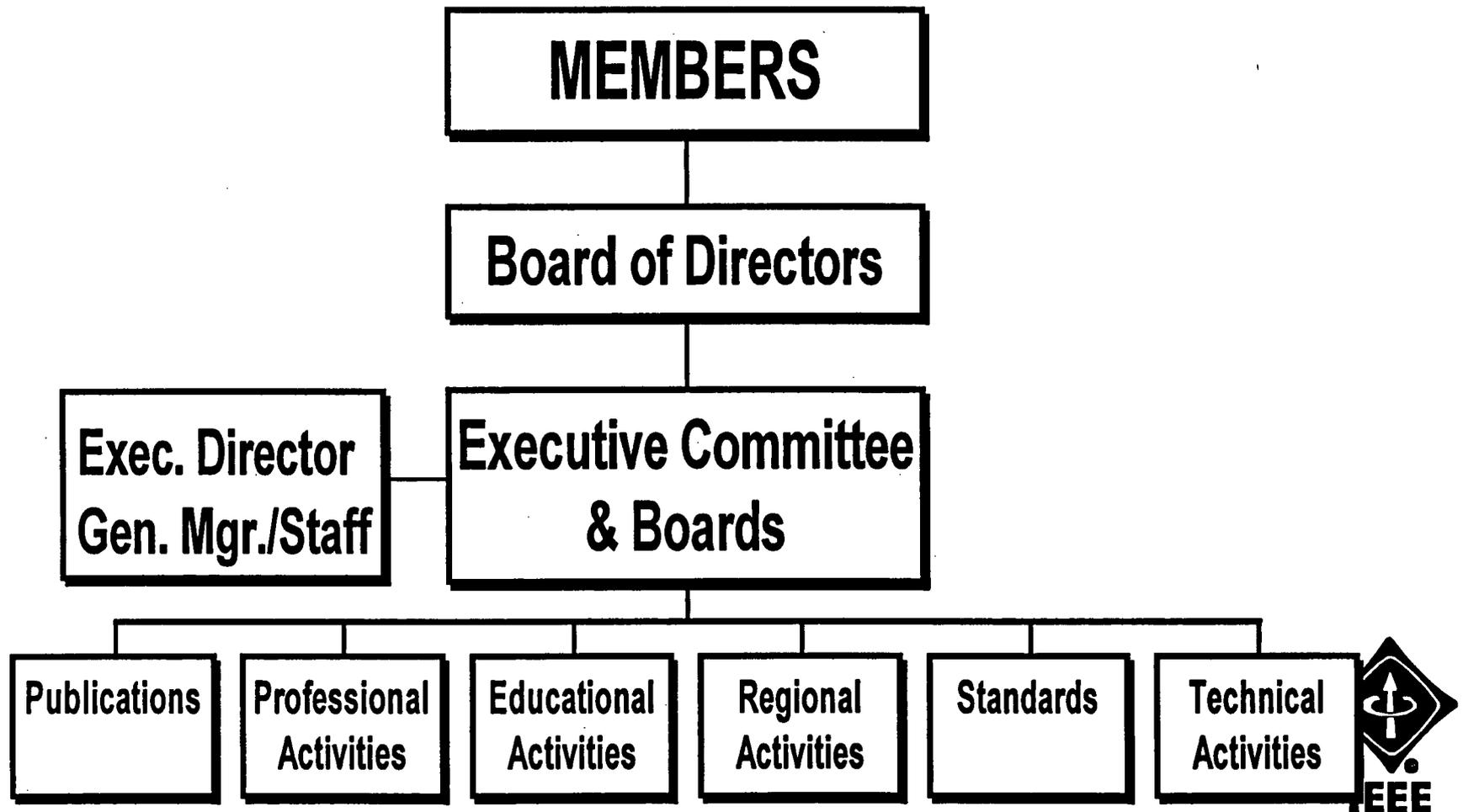


IEEE Regions

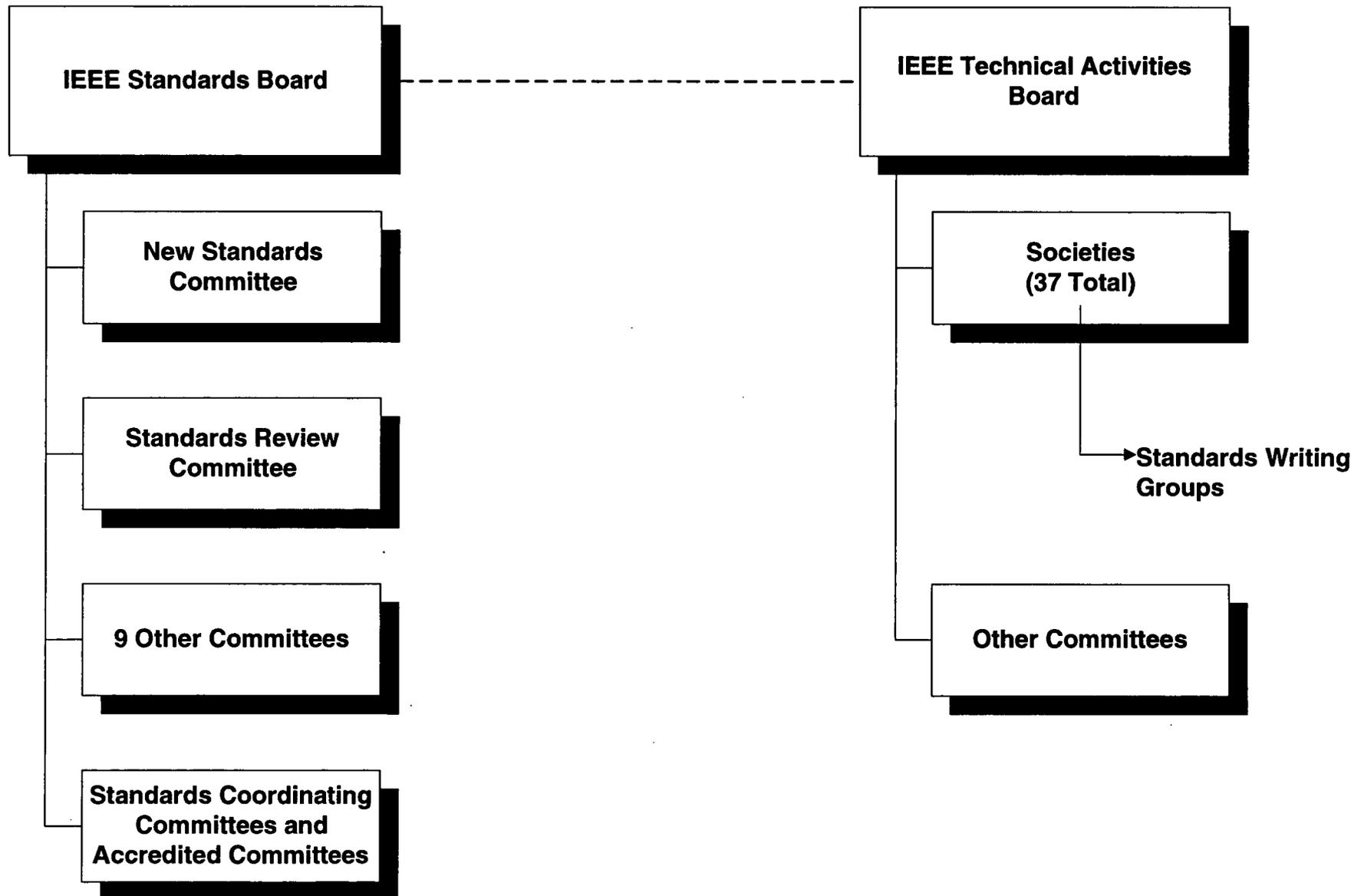


Networking The World

IEEE Organization



IEEE Standards Board Organization



IEEE Standards Board

- 26 Members
 - liaisons
- Meets 4 times a year
 - one to two meetings outside the US
- Participation by USNRC dates back to 1970s
 - is extremely beneficial
 - expert to Board on nuclear related issues
 - Commission should continue to support this activity

IEEE Standards

- **Approximately 700 Active**
 - 45% Power
 - 30 % Computer
 - 10% Industry Applications
 - 15% Other
- **Recognized Worldwide**
 - many become the base document for international standardization

Principles of the IEEE Standards Process

- Due Process
- Consensus
- Openness
- Balance
- Right of Appeal

IEEE Standards Development

- Voluntary Standards
 - Developed by volunteers
 - Over 30,000 persons involved
 - Input from designers, operators, industry experts, regulators, manufacturers and other interested parties
 - Reflect State-of-the-Art

Electrical and I&C Equipment

- The "Brain" and "Nervous System" of plant systems
- Play a vital role in maintaining safety
- Are relied on for safe and economic operation

IEEE Nuclear Standards Development

- Began more than 25 years ago
- More than 100,000 persons have participated over this time
- More than 75 Active Standards
 - Nuclear Power Collection
 - Nuclear Power Archives Collection
 - Nuclear Science Collection
 - Nuclear Equipment Qualification Sourcebook
 - IEEE 500

IEEE Standards Interface with the USNRC

- Standards Board
- Societies
 - Power Engineering
 - Computer
 - Nuclear and Plasma Sciences
- Standards Coordinating Committees

IEEE Standards and the USNRC

- IEEE Standard 279-1971 is in the regulations
- Regulatory Guides (RGs) are used for other standards
 - are valuable to users
 - many are for old revisions
 - few cover recent standards

IEEE Standards and the USNRC

- Recent activity by the NRC is encouraging
 - three RGs endorse the latest standards
 - draft guides for computer related standards
- There is much more that should be done
 - RGs for all nuclear standards
- Active participation by USNRC Staff at committee and working group levels must continue

ATTACHMENTS

IEEE Nuclear Standards

Scope: The scope of IEEE standards may cover some or all of the following: design installation design, specification, qualification, installation, maintenance, inspection monitoring, calibration and testing.

Equipment: Specific equipment covered by these standards includes, but is not limited to:

Batteries	Battery Chargers	Inverters
Switchgear	Digital Equipment	Motor Operated Valves
Computers	Motors	Engine-Generators
Cables	Relays	Motor Control Centers
Control Panels	Heat Tracing	Electric Penetrations
Instruments	Raceways	

Areas: Standards are also available, that are not associated with specific equipment, but do provide recommendations and guidance in the areas of:

Human Factors	Safety Systems
Security Systems	Preferred Power Supply
Single Failure Criteria	Independence
Periodic Testing	Equipment Qualification
Probabilistic Risk Assessment	Reliability Analysis
Preoperational Testing	Seismic Qualification
Post Accident Monitoring	Cable Fire Stops
Calibration	Digital Systems

IEEE SOCIETY INFORMATION

The following pages contain a description of the Societies members can join.

AEROSPACE & ELECTRONIC SYSTEMS

The Society covers the organization, design development, and operation of functional systems for space, air, ocean, and ground environments. These systems include navigation, avionics, mobile electric power and electronics, radar, sonar, military and law-enforcement systems, automotive test simulators and command-and-control.

ANTENNAS & PROPAGATION

The Society covers all areas relating to antenna theory, design, applications, and measurements; propagation, both theory and effects; basic and applied electromagnetics, communications, computational and numerical techniques, personal computers, scattering and diffraction, radar and radar cross sections, interaction of fields with materials, antennas and propagation as related to systems, and EM visualization.

BROADCAST TECHNOLOGY

The Society encompasses virtually the entire spectrum of technologies needed for the various broadcasting services. It amalgamates elements of antennas, electronics, power, communications, signal processing, information theory, computers and audio into a broadcasting perspective that focuses on devices, equipment, techniques and systems for the production, distribution, transmission and propagation of radio and television signals.

CIRCUITS & SYSTEMS

The Society focuses on the theory, analysis, design, and the practical implementation of circuits, and the application of circuit theoretic techniques to systems and signal processing ranging from basic scientific theory to industrial application.

COMMUNICATIONS

The Society embraces all aspects of the advancement of the science, engineering, technology and applications for transferring information between locations by the use of signals. This includes: sources and destination involving all types of terminals, computers and information processors; all pertinent systems and operations to bring about this transfer; guided and unguided transmission media; switched and unswitched networks; and network layouts, protocols, architectures and implementations.

COMPONENTS, PACKAGING, & MANUFACTURING TECHNOLOGY

The Society's concerns are the scientific, engineering and production aspects of materials, component parts, modules including hybrids and electronic systems including selection, application, assembly, packaging, reliability, testing, and control.

COMPUTER

The scope of the Society encompasses all aspects of theory, design, practice, and applications relating to computer and information processing science and technology. It covers computer hardware such as architecture, design, and test technology, computer software such as languages and operating systems, and computer related functions and interactions in larger systems such as computer communications and distributed systems. It also embraces such emerging technologies as multimedia, visualization, and intelligent systems.

CONSUMER ELECTRONICS

The Society has grown to embrace multimedia entertainment, digital high definition, tv, digital radio, advanced games, recreational apparatus, hand held productivity tools, and home office products in addition to the traditional areas of audio, radio, tv, vcr, camcorder, and other home electronics.

CONTROL SYSTEMS

The Society covers the theory, design, and implementation of control systems encompassing components and their integration in the construction of such systems. The interests of the Society range from control theory to control technology to control applications.

DIELECTRICS & ELECTRICAL INSULATION

The Society covers insulation materials, insulation systems, dielectric phenomena and discharges in vacuum, gaseous, liquid and solid electrical insulating materials, and the utilization of these dielectric materials in electrical and electronic circuits and systems under all environmental conditions.

EDUCATION

The Society is concerned with educational methods, technology, and professional development programs within the electrical engineering disciplines.

ELECTROMAGNETIC COMPATIBILITY

The Society is concerned with the design, integration, testing, and analysis of electrotechnology products and systems to control radiated and conducted interference, and strives for the enhancement of EMC through the generation of engineering standards measurement techniques, study of electromagnetic ambient and manmade environments, and education.

ELECTRON DEVICES

The Society's interest spans all aspects of the physics and phenomena of electron and ion devices - elemental and compound semiconductor devices, quantum effect and optical devices, displays and imaging devices, photovoltaics, solid state sensors and actuators, power and high frequency devices, and tubes and other vacuum electronic devices.

ENGINEERING MANAGEMENT

The Society's interest spans research, application, and education relating to management sciences and technologies for individuals and organizations engaged in engineering and technological issues.

ENGINEERING IN MEDICINE AND BIOLOGY

The Society is interested in the application of the concepts and methods of the physical and engineering sciences to biology and to medicine.

GEOSCIENCE AND REMOTE SENSING

The Society is concerned with the theory, concepts, and techniques of science and engineering as they apply to the sensing of the earth, oceans, atmosphere, and space; and the processing, interpretation, and dissemination of this information.

INDUSTRIAL ELECTRONICS

The Society encompasses the application of electronics and electrical sciences related to industrial processes.

INDUSTRY APPLICATIONS

The Society is concerned with the global development and application of electrical systems, apparatus, devices and controls to the processes and equipment of industry and commerce. It promotes the design, manufacture and management of safe, reliable, and economical installations. It encourages industry leadership in energy conservation and environmental, health, and safety issues; the creation of voluntary engineering standards and recommended practices; and the professional development of its members.

INFORMATION THEORY

The Society is concerned with the processing, transmission, storage, and use of information, and the foundation of the communications process. It specifically encompasses theoretical and certain applied aspects of coding, communication and communications networks.

INSTRUMENTATION AND MEASUREMENT

The Society is dedicated to the development and use of analog and digital electrical and electronic instruments, systems, and standards to measure, analytically process, monitor and record physical phenomena in time and frequency domains. Included are equipment with automatic control and stimulus functions and transducers to access other dimensional quantities.

LASERS AND ELECTRO-OPTICS

The Society's scope encompasses lasers, optical devices, optical fibers, associated lightwave technology, and applications in systems with quantum electronic components. Topics span research, development, design, manufacture, applications of materials, devices and system, and science and technology activities that enhance the field of quantum electronics.

MAGNETICS

The Society encompasses all matters involved in the fundamental development, design, and application of magnetic devices including magnetic materials and phenomena.

MICROWAVE THEORY AND TECHNIQUES

The Society covers microwave theory, techniques and applications as they relate to components, devices, circuits, integrated circuits, multi-circuit assemblies, sub-systems and systems involving the generation, amplification, modulation, control, transmission, reception, detection and demodulation of microwave signals in scientific, technical, and industrial activities.

NUCLEAR AND PLASMA SCIENCES

The Society encompasses all phases of nuclear and plasma sciences and engineering including instrumentation including instrumentation for research; detection and measurement of radiation; nuclear biomedical applications; radiation monitoring; particle accelerators; reactor systems; effects of radiation on materials and components; applications of radiation and nuclear energy; plasma dynamics and plasma sources.

OCEANIC ENGINEERING

The Society provides a forum to exchange technical information related to engineering expertise in an ocean environment; e.g., underwater acoustics, autonomous underwater vehicles, remote sensing, neural networks, current measurements, sonar signal processing, marine communications and navigation, oceanographic instrumentation, polar instrumentation, non-acoustic image processing and modeling/simulation.

POWER ELECTRONICS

The mission of the Society is the development and practical application of power electronics technology, which encompasses the use of electronic components, the application of circuit theory and design techniques, and the development of analytical tools toward efficient electronic conversion, control and conditioning of electric power.

POWER ENGINEERING

The scope of the Society embraces planning, research, development, design, application, construction, installation, and operation of facilities systems for generation, transmission, and distribution of electric energy. It includes development of engineering standards involving the field of interest, and technical scientific, literary, educational, and other activities that contribute to this field.

PROFESSIONAL COMMUNICATION

The Society embraces the study, development, improvement and promotion of effective techniques for preparing, organizing, processing, editing, collecting, conserving, teaching and disseminating any form of technical information by and to individuals and groups by any method of communication. It also includes communication tools and processes that contribute to collaborative engineering, as well as technical, scientific, industrial, and other activities that contribute to the techniques and products used in the field.

RELIABILITY

The Society is concerned with the problems involved in attaining reliability, maintaining it through the life of the system or device, and measuring it. Availability, maintainability, product liability, quality and system safety are significant concerns of the Society.

ROBOTICS AND AUTOMATION

The Society is concerned with all aspects of intelligent and interactive connection of perception to action through cognition and planning using kinematics, dynamics, control and simulation of robots and automatic machines.

SIGNAL PROCESSING

The Society addresses the theory and application of filtering, coding, transmitting, estimating, detecting, analyzing, recognizing, synthesizing, recording, and reproducing signals by digital or analog devices or techniques. "Signal" includes audio, video, speech, image, communication, geophysical, sonar, radar, medical, musical, and other signals.

SOCIAL IMPLICATIONS OF TECHNOLOGY

The Society strives for the application of electrotechnology for beneficial uses by humankind, and the application of high professional and ethical standards among IEEE members; and pursues interest in the impact of electrotechnology on society, the impact of society on the engineering profession, the history of electrotechnology's societal aspects, as well as economic, social, and professional responsibility in the practice of engineering.

SYSTEMS, MAN, AND CYBERNETICS

The Society is involved in the integration of the theories on communication, control, cybernetics, and system structure and the application of these to a vast variety of systems including biological, technological and societal systems.

ULTRASONICS, FERROELECTRICS, AND FREQUENCY CONTROL

The Society encompasses the theory, technology, materials, and applications related to the generation, transmission, and detection of mechanical waves and vibration and their interaction with light and electric fields; ferroelectric materials and frequency control.

VEHICULAR TECHNOLOGY

The Society concerns itself with land, airborne, and maritime mobile services; portable commercial and citizen's communications services; vehicular electrotechnology, equipment and systems of the automotive industry; traction power, signals, communications and control systems for mass transit and railroads.

BIOGRAPHICAL SKETCH

Marco W Migliaro was born in Brooklyn, NY, USA in 1948. He received a BEE from Pratt Institute in 1969.

Mr Migliaro has been employed in the electric utility industry, primarily in generating station engineering and design, for more than 25 years and has worked for both utilities and consultants on projects throughout the world. He is currently the Chief Electrical and I&C Engineer for the Nuclear Division at Florida Power & Light. Mr Migliaro is an expert in the area of dc power systems, batteries and uninterruptible power supply (UPS) systems. He has provided consulting services, primarily in the field of stored energy emergency power systems, to a variety of industries. Mr Migliaro has authored more than 35 technical papers and is a contributor to five books. (The majority of the papers and contributions are in his field of expertise.) Mr Migliaro is the editor for the IEEE (Institute of Electrical and Electronics Engineers) *Sourcebook on Lead-Acid Batteries*. He has also developed a number of training programs on stationary battery selection, sizing, installation design, installation and maintenance and has presented these programs throughout the world. Mr Migliaro was a member of the group that developed the IEEE Standards on stationary batteries. These standards, used throughout the world, have recently been endorsed by the Battery Council International. Mr Migliaro was also selected as one of the experts used to develop IEEE Standard 500-1977, *Guide to the Collection and Presentation of Reliability Data for Nuclear Power Generating Stations*. Mr Migliaro was the co-author of the *IEEE Statement on Improving US Participation in International Standards* and presented testimony on the subject at the hearings conducted by the US Department of Commerce, National Institute for Standards and Technology.

Mr Migliaro was elected a Fellow of the IEEE in 1988, for "contributions to the application and standardization of battery technology for industrial and utility power systems." He is a member of the IEEE Power Engineering and Industry Applications Societies. Mr Migliaro is currently a member of the IEEE Standards Board, the IEEE Standards Coordinating Committee on Stationary Batteries and is a Chapter Chairman for two standards in the IEEE Color Book series. He has served IEEE in the past in many capacities including, VP-Standards Activities, Member of the Executive Committee, Member of the Board of Directors, Chairman of the Energy Development and Power Generation Committee and Chairman of the PES Standards Coordinating Committee. He is also a past member of the ANSI (American National Standards Institute) Electrical and Electronics Standards Board.

Mr Migliaro is the recipient of the 1996 IEEE Charles Proteus Steinmetz Award, the IEEE Standards Medallion, the 1994 ANSI Meritorious Service Award, the 1993 IEEE Standards Board Award and two Power Engineering Society Distinguished Service Awards. He is a Registered Professional Engineer in the states of New York, New Jersey, Massachusetts, Pennsylvania and Florida. He is listed in a number of biographical references including American Men and Women of Science, and Who's Who in America.