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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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BRIEFING ON CODES AND STANDARDS

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PUBLIC MEETING

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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

STAFF AND PRESENTERS:

JOHN C. HOYLE, Secretary
WILLIAM J. OLMSTEAD, Associate General Counsel
EDWARD JORDAN, Dep. Executive Director for Regulatory Effectiveness, Program Oversight, Investigations, and Enforcement
JOSEPH MURPHY, Special Assistant, RES
DR. CARL PAPERIELLO, Director, NMSS
GILBERT MILLMAN, Program Manager, RES
JUNE LING, Associate Executive Director, Codes and Standards, ASME
BRIAN SHERON, Director, Division of Engineering, NRR
MARCO MIGLIARO, Past Vice President (Standards), IEEE
SATISH AGGARWAL, Senior Program Manager, Office of Nuclear Regulatory Research

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

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

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

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

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

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

[Laughter.]

MR. MURPHY: Maybe so.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

committees to the IAEA.

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

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

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

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

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

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

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

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

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

Next slide, please.

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

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

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

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

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

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

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

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

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

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

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

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

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

Next slide, please.

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

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

I believe those were the only three provisions.

Next slide, please.

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

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

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

days while the Commission reviews that action.

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

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

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

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

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

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

Next slide, please.

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

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

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

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

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

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

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

The code cases that come out of the Boiler and

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

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

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

CHAIRMAN JACKSON: Let me ask a question about that.

MR. MILLMAN: Yes.

CHAIRMAN JACKSON: How do you keep track of them

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

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

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

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

CHAIRMAN JACKSON: So what is enforceable?

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

CHAIRMAN JACKSON: Brian, you wanted to say something.

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

We have taken a position that interpretations that

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

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

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

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

CHAIRMAN JACKSON: Commissioner McGaffigan?

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

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

It sort of goes to the last couple viewgraphs.

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

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

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

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

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

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

[Laughter.]

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

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

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

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

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

They are intended to purely clarify existing requirements.

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

But what was also agreed was that should ASME

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

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

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

CHAIRMAN JACKSON: Thank you.

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

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

The latest version out is the '95 edition with the

'96 addenda.

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

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

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

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

CHAIRMAN JACKSON: Okay.

MR. MILLMAN: Next slide, please.

CHAIRMAN JACKSON: I have one last question.

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

Have there been any judgments in terms of safety impact?

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

One of the things we are doing right now as part

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

CHAIRMAN JACKSON: Right.

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

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

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

Whichever option we choose, and they have

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

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

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

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

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

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

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

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

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

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

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

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

MR. SHERON: Yes.

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

MR. MILLMAN: Next slide, please.

CHAIRMAN JACKSON: Are we still talking about --

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

MR. MILLMAN: To Section 3?

CHAIRMAN JACKSON: Right.

MR. MILLMAN: No.

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

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

CHAIRMAN JACKSON: I told you what it was.

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

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

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

governs their situation. Dr. Shao?

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

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

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

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

CHAIRMAN JACKSON: What about B.31.7?

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

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

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

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

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

Next slide, please.

CHAIRMAN JACKSON: Not so fast. Commissioner Rogers?

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

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

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

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

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

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

CHAIRMAN JACKSON: That's Criteria for Safety Systems?

MR. MILLMAN: Right.

CHAIRMAN JACKSON: Okay. How old is that standard?

MR. MILLMAN: Which one?

CHAIRMAN JACKSON: 279?

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

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

still --

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

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

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

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

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

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

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

COMMISSIONER McGAFFIGAN: In June of last year?

MR. AGGARWAL: Right.

COMMISSIONER McGAFFIGAN: I'd urge that we get on

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

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

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

MR. OLMSTEAD: Or some more complexity.

CHAIRMAN JACKSON: Well, sometimes clarity involves complexity.

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

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

CHAIRMAN JACKSON: Yes.

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

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

CHAIRMAN JACKSON: What's in the regulation.

MR. OLMSTEAD: And in the reg guides.

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

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

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

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

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

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

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

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

MR. OLMSTEAD: Absolutely.

COMMISSIONER McGAFFIGAN: And has anybody ever

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

MR. OLMSTEAD: Yes.

COMMISSIONER McGAFFIGAN: Or can we step back.

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

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

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

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

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

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

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

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

CHAIRMAN JACKSON: Right.

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

CHAIRMAN JACKSON: I see. Commissioner Rogers?

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

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

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

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

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

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

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

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

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

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

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

MR. MILLMAN: Substantial agreement means two-

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

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

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

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

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

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

fair process.

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

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

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

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

establish some valid actions as the process moves forward. Next slide, please.

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

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

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

This next slide shows the distribution of staff

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

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

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

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

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

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

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

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

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

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

CHAIRMAN JACKSON: Of the pilots?

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

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

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

Next slide, please.

Finally -- to the summary.

The first bullet really reflects the state of activities. 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.

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

The 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.

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

COMMISSIONER ROGERS: When?

MR. MILLMAN: The action plan would have to be

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

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

MR. MILLMAN: That's fine.

CHAIRMAN JACKSON: Yes?

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

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

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

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

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

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

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

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

For example, almost all the procedures that are

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

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

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

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

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

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

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

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

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

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

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

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

CHAIRMAN JACKSON: Okay.

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

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

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

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

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

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

Next slide, please.

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

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

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

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

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

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

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

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

Next slide, please.

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

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

We have about 43 engineer serving codes and

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

Next overhead, please.

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

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

Next slide, please.

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

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

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

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

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

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

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

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

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

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

CHAIRMAN JACKSON: Okay.

MS. LING: Next slide, please.

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

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

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

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

Next slide, please.

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

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

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

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

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

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

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

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

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

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

MS. LING: Yes.

CHAIRMAN JACKSON: -- efforts in these areas?

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

CHAIRMAN JACKSON: And what does that mean?

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

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

CHAIRMAN JACKSON: Okay.

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

Next slide, please.

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

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

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

process.

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

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

CHAIRMAN JACKSON: Thank you.

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

MS. LING: Yes, yes.

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

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

requirements, again based on experience.

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

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

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

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

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

CHAIRMAN JACKSON: What's your comment?

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

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

and it is better than anything else we have.

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

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

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

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

CHAIRMAN JACKSON: Do you agree?

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

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

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

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

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

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

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

I am also a fellow member of the Institute.

Next slide, please.

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

information technology.

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

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

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

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

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

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

Next slide, please.

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

Next slide, please.

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

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

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

standards.

Next slide, please.

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

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

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

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

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

MR. MIGLIARO: Well, 700 is all standards within

IEEE.

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

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

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

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

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

CHAIRMAN JACKSON: The 279, right.

Thank you.

COMMISSIONER McGAFFIGAN: What about the other 45? You said there's about 75?

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

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

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

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

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

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

Next slide, please.

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

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

Next slide, please.

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

standards.

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

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

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

CHAIRMAN JACKSON: In the ASME process.

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

CHAIRMAN JACKSON: Okay.

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

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

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

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

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

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

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

Next slide, please, number 12.

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

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

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

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

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

CHAIRMAN JACKSON: How old are we talking?

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

CHAIRMAN JACKSON: And --

MR. MIGLIARO: The 1970 edition.

CHAIRMAN JACKSON: And what is the most recent?

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

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

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

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

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

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

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

COMMISSIONER McGAFFIGAN: Okay, sorry.

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

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

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

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

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

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

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

CHAIRMAN JACKSON: And what about your code development?

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

CHAIRMAN JACKSON: It's through sales?

MS. LING: Sales of the codes and standards.

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

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

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

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

CHAIRMAN JACKSON: But you don't sell anything?

MR. MIGLIARO: Yes, we do sell standards.

CHAIRMAN JACKSON: So you sell standards, too?

MR. MIGLIARO: Yes.

CHAIRMAN JACKSON: So that is part of your

financial support base.

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

CHAIRMAN JACKSON: I understood that.

Thank you.

MR. MIGLIARO: Thank you.

Slide number 14.

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

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

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

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

CHAIRMAN JACKSON: Do you present such courses?

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

CHAIRMAN JACKSON: Industrial rates.

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

CHAIRMAN JACKSON: Okay.

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

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

inspectors.

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

Thank you very much for your time.

CHAIRMAN JACKSON: Okay, Commissioner Rogers?

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

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

IEEE standards in regulations in your view?

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

CHAIRMAN JACKSON: Commissioner Dicus.

COMMISSIONER DICUS: No questions, thank you.

CHAIRMAN JACKSON: Commissioner McGaffigan.

COMMISSIONER McGAFFIGAN: Just one question for Ed Jordan.

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

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

[Laughter.]

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

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

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

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

COMMISSIONER McGAFFIGAN: That was a good, safe answer.

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

CHAIRMAN JACKSON: Okay.

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

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

structure.

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

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

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

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

[Whereupon, at 11:54 a.m., the briefing was 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: Rosalie Abraham

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

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

ASME CODES AND STANDARDS DEVELOPMENT

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

USNRC-ASME RELATIONSHIP

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

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

CONCLUSIONS

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

Time	Subject	Speaker
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

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

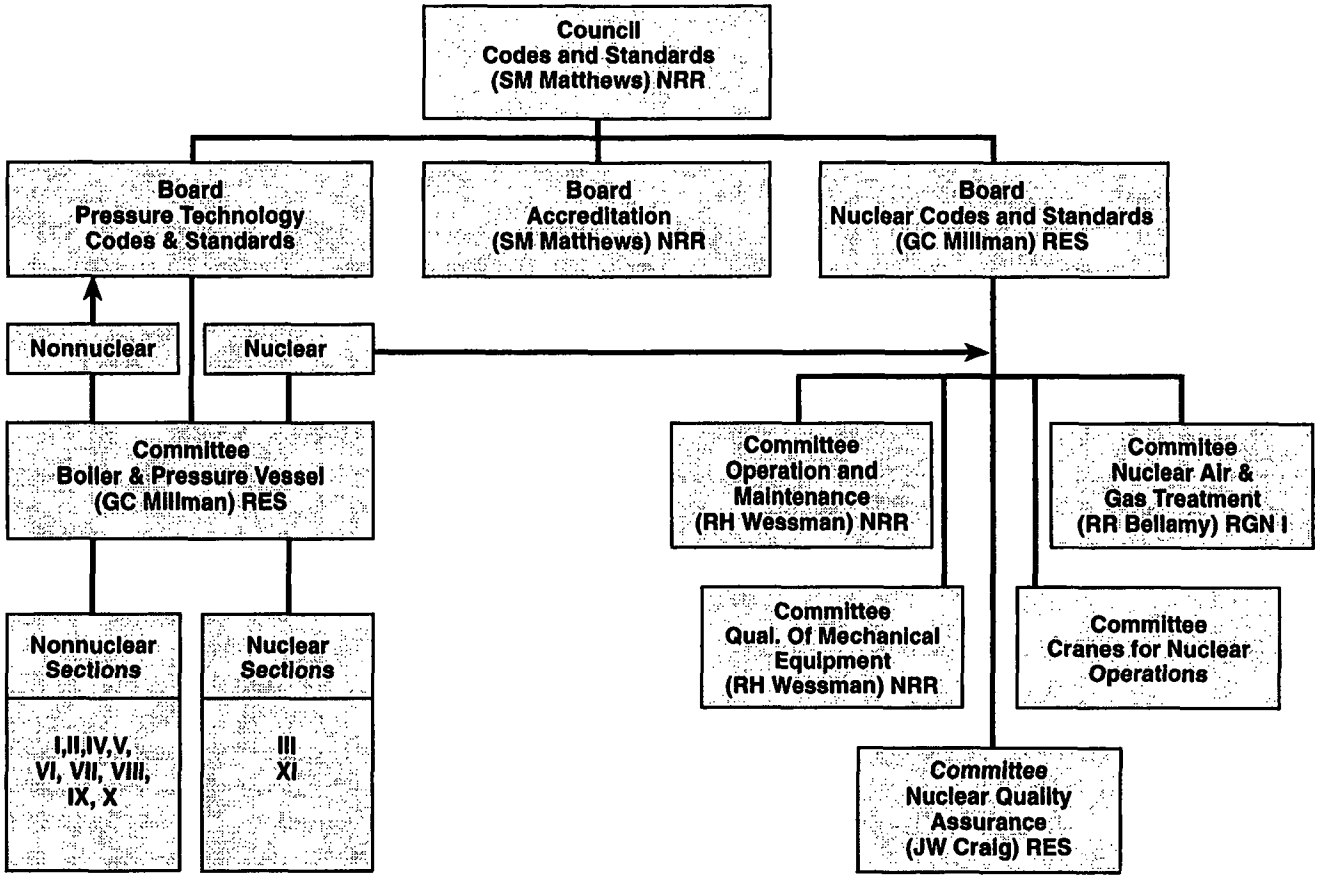
STAFF COMMITTEE MEMBER NOMINATION PROCESS

- 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

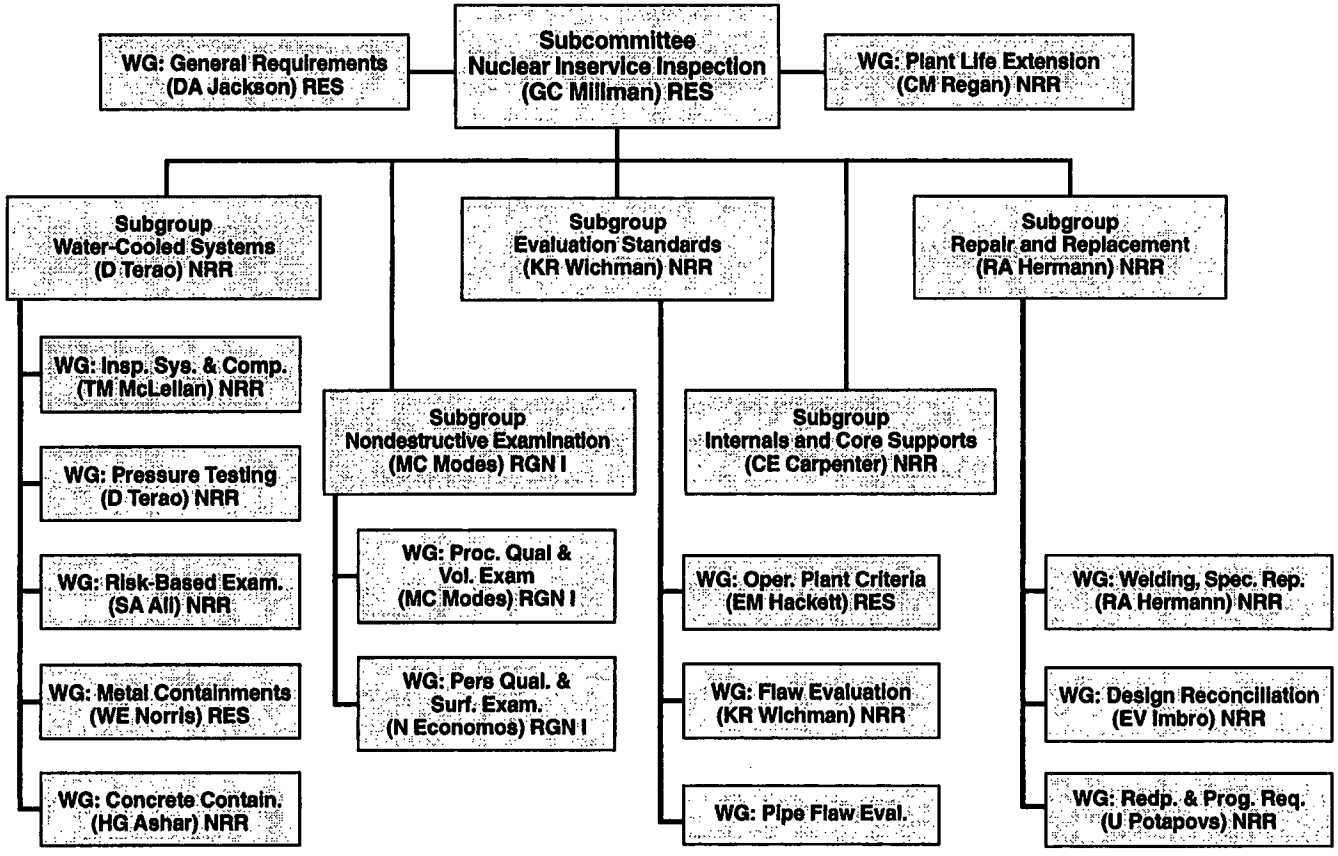
STAFF COMMITTEE MEMBER RESPONSIBILITIES

- 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

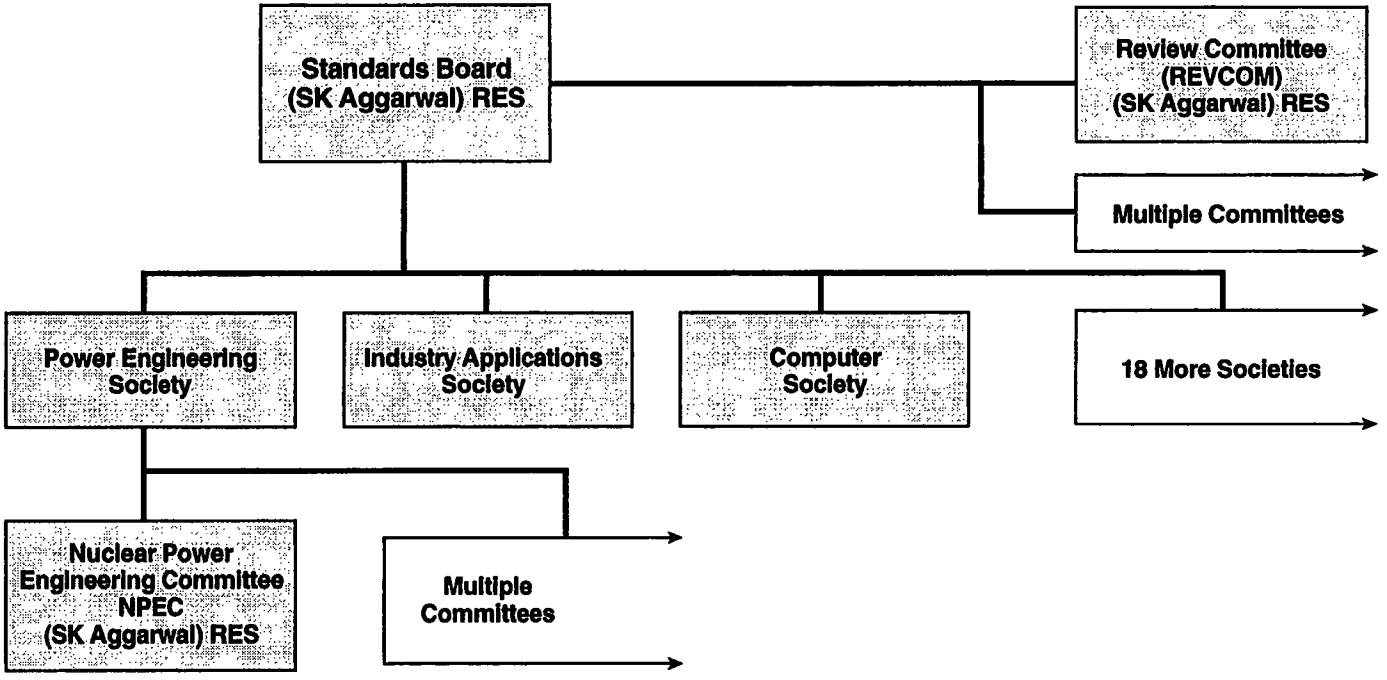
ASME COMMITTEE STRUCTURE



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

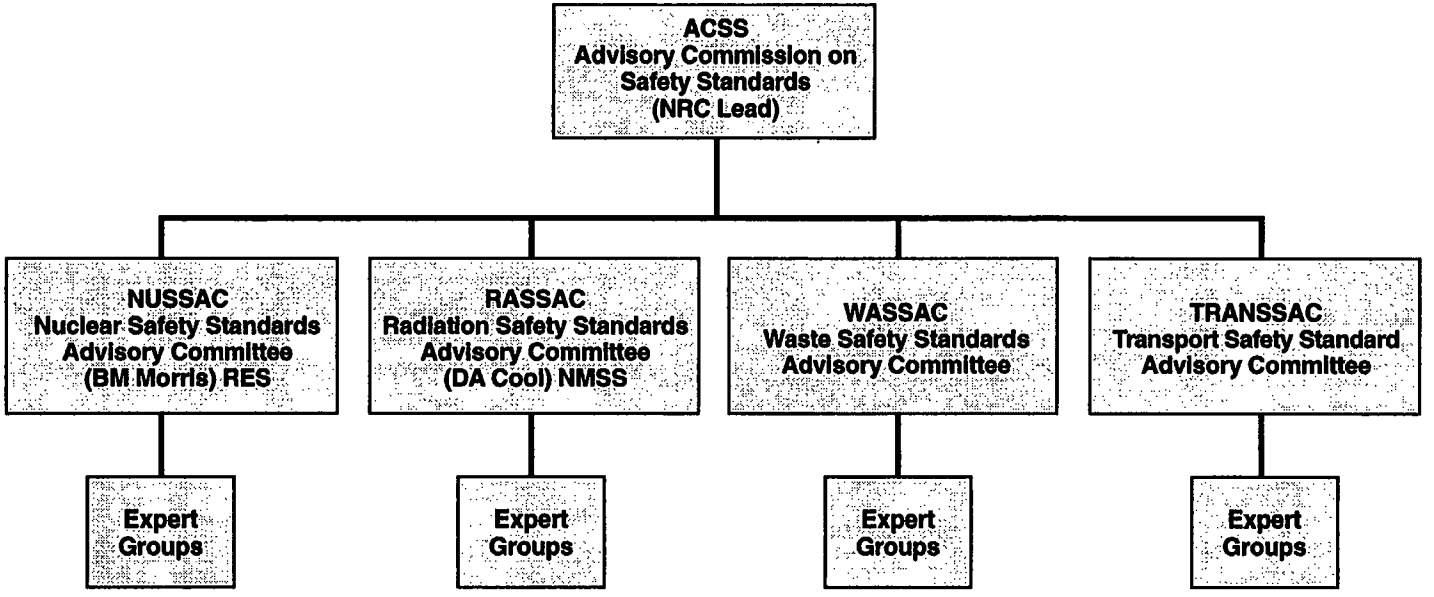
- ASME
  - Section III revision to seismic design of piping
  - Section III rules for nuclear waste transport packaging
  - Section XI Code case for evaluation of through wall flaws in Class 3 moderate energy piping
  - Section XI Code cases for risk-informed ISI
  - OM Code case for risk-informed IST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

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

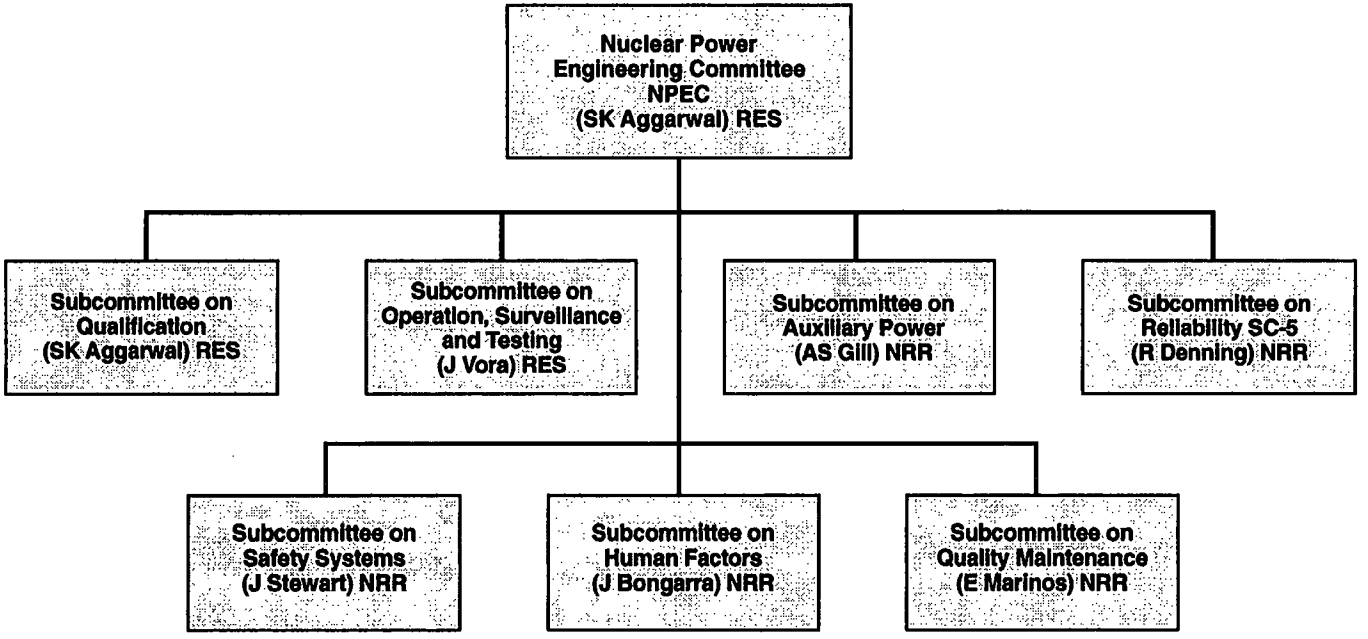
Responsibilities of Standards Executive

- 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

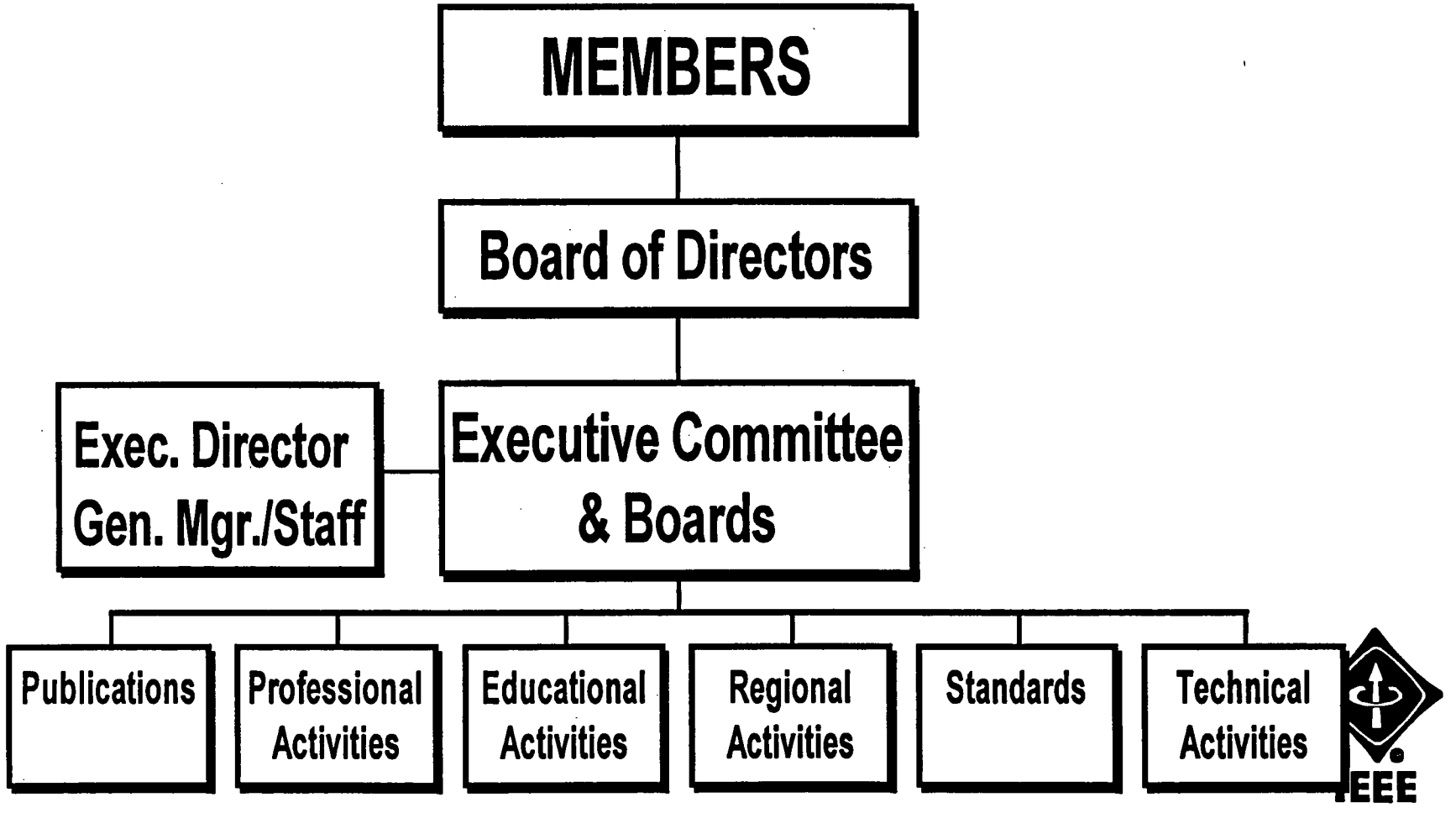
- 315,000 members in 150 countries
- 37 Societies including
  - Aerospace and Electronics Systems
  - Communications
  - Computer
  - Engineering in Medicine and Biology
  - Power Engineering

IEEE Regions

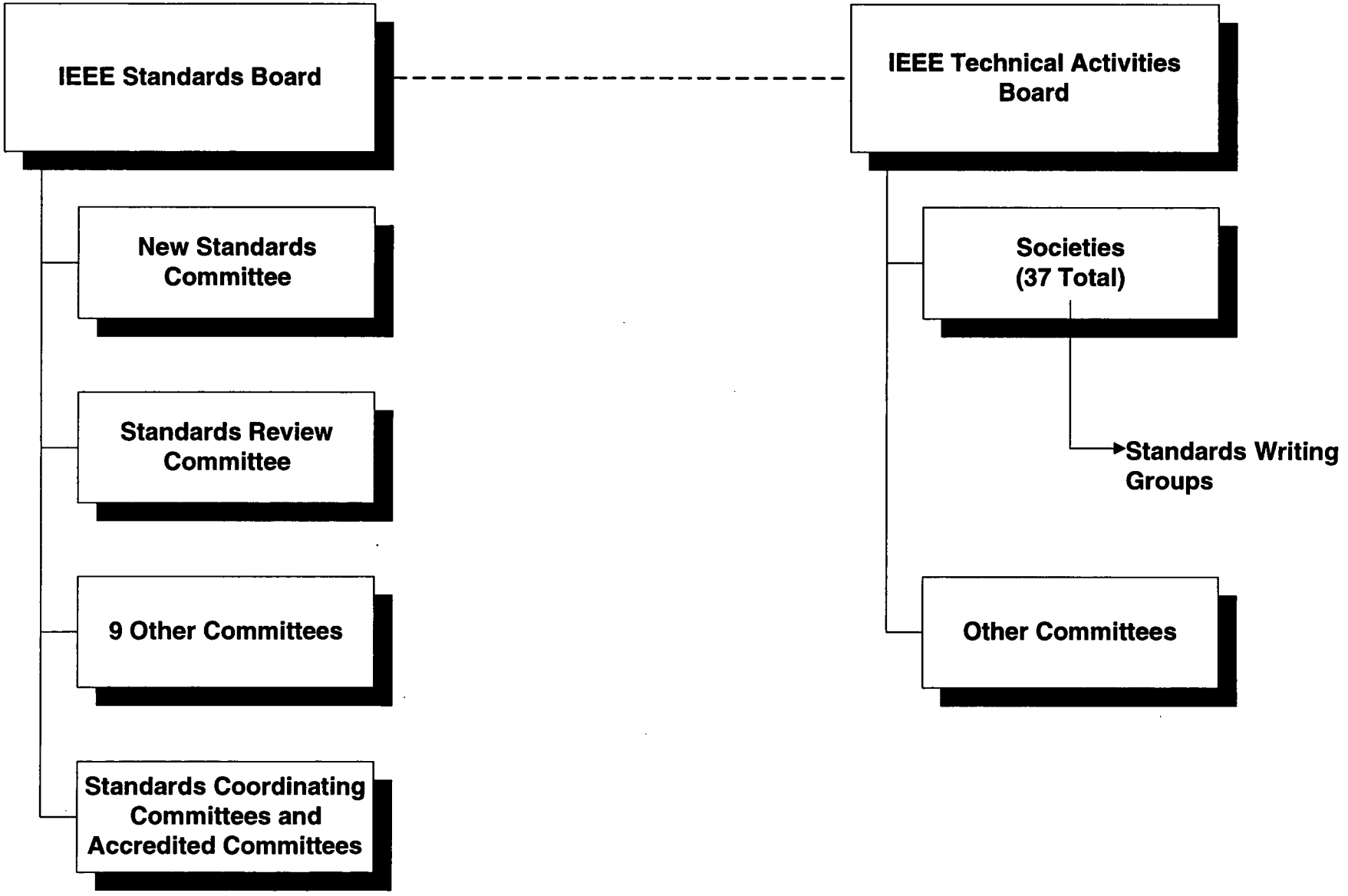
IEEE

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.

CFS:sam
09/06/96

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.