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UNITED STATES OF AMERICA  
 NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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546<sup>th</sup> MEETING

+ + + + +

FRIDAY,

OCTOBER 5, 2007

+ + + + +

The meeting was convened in Room T-2B3,  
 11545 Rockville Pike, Rockville, MD, at 8:30 a.m.,  
 William J. Shack, Chair, presiding.

ACRS MEMBERS PRESENT:

WILLIAM J. SHACK	Chair
MARIO V. BONACA	Vice Chair
SAID I. ABDEL-KHALIK	Member-At-Large
GEORGE E. APOSTOLAKIS	Member
MICHAEL CORRADINI	Member
OTTO MAYNARD	Member
DENNIS C. BLEY	Member
DANA A. POWERS	Member
J. SAM ARMIJO	Member
JOHN W. STETKAR	Member

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JOHN D. SIEBER Member

PRESENTERS:

ALEX MARION Nuclear Energy Institute

ANTHONY PIETRANGELO Nuclear Energy Institute

JOHN GAERTNER Electric Power Research  
Institute

CLAIR GODDARD Institute of Nuclear Power  
Operations

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

8:35 a.m.

CHAIRMAN SHACK: The meeting will now come to order. This is the second day of the 546<sup>th</sup> Meeting of the Advisory Committee on Reactor Safeguards. During today's meeting, the Committee will consider the following: a meeting with NEI, EPRI and INPO to discuss industry activities; future ACRS activities and a report of the Planning and Procedure Subcommittee; reconciliation of ACRS comments and recommendations; our draft final report on the quality assessment of selected NRC research projects; and preparation of ACRS reports.

This meeting is being conducted in accordance with the provisions of the Federal Advisory Committee Act. Mr. Cayetano Santos is the Designated Federal Official for the initial portion of the meeting. We have received no written comments or requests for time to make oral statements from members of the public regarding today's session. A transcript of a portion of the meeting is being kept and it is requested that speakers use one of the microphones, identify themselves, speak with sufficient clarity and volume so they can be readily heard.

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And our opening item is the meeting with NEI, EPRI and INPO and Otto is the lead for that.

MEMBER MAYNARD: Thank you, Mr. Chairman.

You know we have frequent meetings with the staff to hear about various issues, initiatives, proposed actions and typically our interaction with the industry is towards the tail end of that and in dealing with differences or with the specific technical issues on some of that.

Today we have, I think, a unique opportunity to hear from the industry not on specific topics but in general overall what's the industry doing, what's their priorities, how are they organized and how do we work together. We have three of the real key organizations that the industry uses to identify, address and deal with a number of these issues with NEI, INPO and with EPRI.

This is not a technical presentation. The idea is not to go into any specific item in detail as to exactly a given position on it. It's more to give us an understanding and a chance to interact with them maybe on how things are selected or what are the priorities and what are the issues that's important to the industry there. So with that, I'd like to go

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ahead and turn it over to Alex Marion to introduce this mornings group.

MR. MARION: Thank you and good morning. My name is Alex Marion. I'm the Executive Director of Operations and Engineering at NEI and we're really pleased to have this opportunity to provide you an overview of how the three industry organizations basically function, what we do, why we do it and how do we do it and we're hoping that we can convey that effectively in the presentations this morning.

We'll begin with Tony Pietrangelo who is the Vice President of Regulatory Affairs at NEI and he'll be followed by John Gaertner who is the Senior Business Operations Manager at EPRI, the Electric Power Research Institute and then finally we'll finish with Mr. Clair Goddard who is Vice President of Systems at INPO. Okay, Tony.

MR. PIETRANGELO: Good morning. It's a pleasure to be back before the Committee. It's been awhile but it's always a pleasure. Why don't we go right to the next slide here, Alex?

I'm going to go over a bunch of topics. There's a slew of slides that we sent you. I may not spend a lot of time on a lot of slides and try to

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focus on a few key ones to give you a flavor of what NEI does and what we're about. So that's the topics we're going to cover on this slide and I'll go on.

We have a large membership, all U.S. nuclear facilities, many international nuclear utilities as well. I was in Spain last week at the Spanish Nuclear Society and there are four utilities that own either all or a part all the nuclear units in Spain and all four are members of NEI and one of the reasons I went over was to discuss a liaison with the Spanish organization.

Their regulatory system follows very much the U.S. Nuclear Regulatory Commission system. So there's a lot we share in common. They just implemented the reactor oversight process in Spain this past year. There is a lot of opportunities to share information and we're interested in getting their operating experience as well as they getting ours. It's just an example of dealing with our international members. We do have a lot of activities.

Obviously, we have all the major NSSS and component vendors, AEs, many universities, labor unions. Now that's kind of a new addition to NEI and

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it's been one that's I think going to prove very fruitful in the future as we move towards new plants and also law firms. So we have a pretty diverse membership.

Organization, we have a board of directors that includes 44 members, again all the utilities, all the major vendors and AEs. But it's really our executive committee that directs policy at NEI. That's about 15 to 18 CEO level people who our President Skip Bowman reports to.

We have about a half dozen major sections at NEI. We have a Communications/Public Relations section. That used to be what was the U.S. Council of Energy Awareness way back when. Our Member Relations and Corporate Services. Government Affairs, that used to be the American Nuclear Energy Council. Our Legal section. NucGen where I work for Marv used to be NUMARC at one time and then our Policy Development section.

So really NEI brought together several different industry organizations in Washington into one organization because I think there was a realization that all the issues we deal with have a technical, legal, public perspective component to

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them. Obviously, different issues have different percentages of those components, but it was, I think, the wisdom at the time that it really took all three of the components to resolve an issue. You couldn't resolve an issue just technically or just politically or just legally. You really needed to have a combined approach. We think it's worked pretty well over the years.

The way we do business is we have a lot of committees, task forces and working groups. Besides the Executive Committee, we have three standing advisory committees. We have a Communications Advisory Committee that gives us policy and direction to that division within NEI, a Government Affairs Advisory Committee that obviously does the same for GA section and then in my division we have the Nuclear Strategic Issues Advisory Committee. That's comprised of all the chief nuclear officers and a steering committee as well as the vendors and AEs and the full group.

Our working groups are typically chaired by an chief nuclear officer who sits on the NSIAC, being we want that CNO to be able to discuss with his peers the issues that that particular working group is

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dealing with. We have examples of all of this later.

The working groups generally stay together for two to five or ad infinitum years.

It depends on the issue. Some issues we're able to resolve quite quickly. Others are kind of long standing issues that sometimes defy resolution. I think we've had our working group on spend fuel for quite awhile as well as one on fire protection for quite awhile. So some issues are just a little bit harder to close than others.

Our issue task forces are really technical groups. That's chaired by an NEI staff person. I think you see a lot of them before you who are working on a specific technical issue and we pull together subject matter experts from our member companies to help us deal with a particular issue. Usually those groups last anywhere from six months to a couple of years and again they give us advice and make some recommendations.

MEMBER APOSTOLAKIS: These -- Are members of these groups paid?

MR. PIETRANGELO: No. We've leveraged the resources of our members.

MEMBER CORRADINI: In terms of the task

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forces though, do you have members on it although led by the NEI staffer?

MR. PIETRANGELO: NEI chairs the task force.

MEMBER CORRADINI: But they're utility and member contributors.

MR. PIETRANGELO: Absolutely yes.

(Off the record comments.)

MR. MARION: If I might add. This is Alex Marion. We provided the Committee a copy of the NEI Resource Directory and in that document you have a listing of all the working groups and all the task forces and I do want to add that at any given time we have anywhere from 3,000 to 4,000 industry folks involved in these advisory committees that range from senior engineers with a technical specialty all the way to chief executive officers.

MR. PIETRANGELO: Okay. Next slide.

This is our NSIAC, the advisory committee that we get a lot of direction from. It's currently chaired by Brew Barron, CNO at Duke. The full committee again has a pretty broad membership, but the steering committee is all the operating utilities' chief nuclear officers. They really give us our

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direction on specific issues.

The other thing mentioned on this slide is our formal initiatives. This is a holdover from the old NUMARC days. An initiative is an industry action that we ask the NSIAC to vote on where if you get 80 percent of the group agreeing to proceed with that action, then it becomes binding on all the other members.

So on the next slide, you'll see an example of different initiatives we've taken over the years, the latest one being heavy load lift. That was passed two weeks ago to deal with a concern about consistency in the licensing basis of how heavy loads are being dealt with at our plants. So it's a recognition that there's some resources necessary to address a particular issue and the way to get the fastest resolution of that is to get the chief nuclear officers to vote and each commit to each other to apply those resources to a given issue to carry out the actions in the initiative. So it's been a very effective tool for us. We kind of regard industry initiatives as our silver bullet for resolving issues.

Next slide.

MEMBER CORRADINI: The management of

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materials issue, if I might ask.

MR. PIETRANGELO: Yes.

MEMBER CORRADINI: That has started a few years ago or has that been ongoing for longer than that?

MR. MARION: It started in 2000. Actually, the work -- This is Alex Marion. We started working on that 2002 and I think the initiative was passed in 2003 and it will be in effect through 2010, 2011 because of the inspection requirements that have been identified and they're being implemented.

MEMBER CORRADINI: So I guess the way you answered it led me to another question which is when you get this 80 percent vote on an initiative is there is a life to the initiative or is it very particular to the particular question at hand so that the materials might have or is an on-going reaffirming that the initiative should continue?

MR. MARION: Some of the -- We've had about what 25 or 30 initiatives over the years and some of them are programmatic, to establish a program or keep that program in place for the life of the plant.

MEMBER CORRADINI: Okay.

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MR. MARION: Other are more action oriented like the materials initiative where we have this extensive inspection program. That has a finite life going in the 2011 as I mentioned earlier and others.

MEMBER CORRADINI: Yes.

MR. MARION: Where we've undertaken vary as well.

MEMBER ARMIJO: Could you expand a little bit on the fuel reliability initiative, what kind of programs are you --

MR. MARION: Fuel reliability initiative, I'll let Clair speak to that. It was something that was an issue by INPO last year.

MEMBER ARMIJO: I can wait.

MR. MARION: That's fine.

MEMBER ARMIJO: Okay.

MR. PIETRANGELO: Usually there's a date certain by which some actions have to be completed. Just as an example, we did an initiative on shutdown risk in 1991. That's been institutionalized in the outage management programs at the member companies with the understanding that the action played out in the initiative would become part and parcel of the

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procedures and the work instructions going forward.

MEMBER ARMIJO: Thank you.

MR. PIETRANGELO: Next slide. We're there. This is just kind of a smorgasbord to give you an example of the issues that our NSIAC looks at when they come in for a day for our meetings. I mean this is just about every issue we're working on and typically we have some that require some action from the CNOs and others are just a status update on what we're doing on a particular issue. And again we use if there's a working group associated with the issue, we have the working group chairman, one of the CNOs, do the presentation before the NSIAC. So it's really a peer-to-peer communication.

MEMBER APOSTOLAKIS: Tony.

MR. PIETRANGELO: Yes.

MEMBER APOSTOLAKIS: What is the impression that the industry has now about risk-informed regulation? I mean, do you think that things are progressing well, they're kind of slow, we're going too fast, should be doing more? What is --

MR. PIETRANGELO: It's mixed. There have been some major activities completed this year in tech spec world with flexible completion times and flexible

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surveillance test intervals. On the other hand, we saw major slowdown in the 50.46 rulemaking which this committee weighed in on and in part led to that. We're still behind it. We think it's the right thing to do over the long term. So we've haven't thrown the towel in on 50.46 and the Commission vote. We were pleased that they didn't kill the issue. So we're going to continue to work on it.

But I think in terms of risk informed regulation across the industry we're saturated right now in terms of the resources we're applying to meet the ASME Level 1 PRA standard, to develop fire PRAs, to put together peer reviews for those fire for those fire PRAs and there's also a pretty large component to maintain the existing models to do things like the significance determination process and the ROP.

But you have resources just on day-to-day activities and then you have these kind of longer term met-the-standard, develop-a fire-PRA, etc. to take additional resources. So we're pretty saturated, but we've always seen it as a balance between improving the tool while at the same time performing applications that tools can at the current time support. So we hope to see a lot of people pick up

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the tech spec initiatives and some of the others as well.

CHAIRMAN SHACK: How about 50.69?

MR. PIETRANGELO: Yes, that's been a tough one. That's been a tough one. We've been seeking a pilot. I think we're pretty close now to having someone come in that has a PRA that meets the Level 1 standard and has completed their peer review and assessment and are ready to go. So, yeah, I think you'll see some activity on 50.69 in the next year or two. We haven't given up on that one either.

MEMBER APOSTOLAKIS: Does the industry have a position or a review regarding the technology neutral, risk-informed, performance-based regulatory framework?

MR. PIETRANGELO: We do. We submitted a paper to the staff in 2002.

MEMBER APOSTOLAKIS: And?

MEMBER CORRADINI: Could you summarize that?

MEMBER APOSTOLAKIS: What is going on now?  
I mean, are you --

MR. PIETRANGELO: Now it's in research's camp. We sent it in as kind of starting point for

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discussion on how would you do this risk-informed, performance-based technology neutral and we went through Part 50 and tried to lift out what we thought would be risk-informed, performance-based rules that aren't very prescriptive.

I mean, this is a pretty short document with the idea being to try to define the safety envelope that the Commission would be comfortable with and then have the individual designs through reg guides try to show how they fit within that envelope.

So by technology neutral, it's really defining the safety envelope that everybody needs to fit into and then let the individual designs demonstrate how they meet those.

MEMBER APOSTOLAKIS: That particular activity is not really one of the highest priority items for the Commission. The industry agrees with that?

MR. PIETRANGELO: Yes. It's a longer term activity.

MEMBER APOSTOLAKIS: But on the other hand, it is promoted as something that would help the international community to have a multi-nation --

MEMBER CORRADINI: Multinational.

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MEMBER APOSTOLAKIS: Multinational regulatory process. So the question is -- Well, that to me sounds a little bit contradictory, I mean, if we are telling the international people "Here is a starting point for developing this agreement" but at the same time in our own shop that's kind of a low priority.

The question, I have to have a question. Right?

MEMBER CORRADINI: Yes.

MEMBER APOSTOLAKIS: The question is --  
(Laughter.)

CHAIRMAN SHACK: That would be a good start. Keep going.

MEMBER APOSTOLAKIS: The question is, Tony, first of all, is NEI favorable towards this multinational thing and do you think that this technology neutral framework should be developed at a faster pace? They are two separate questions.

MR. PIETRANGELO: Yes. Let me take the latter question first. I mean, we put one on to start the discussion. So we think -- It's a long -- Rather than a low priority I'd say it's a longer term priority.

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MEMBER APOSTOLAKIS: Yes.

MR. PIETRANGELO: We have a lot of other things we have to get done here.

MEMBER APOSTOLAKIS: That's the problem.

MR. PIETRANGELO: Yes. It's longer term. In terms of -- But we're supportive of it.

The previous question on the multinational I think you're referring to the MDEP.

MEMBER APOSTOLAKIS: Yes.

MR. PIETRANGELO: The Multinational Design Evaluation Program. I think that has pros and cons. I think clearly the vendors would like to see that come about because it would make their job a lot easier to get design certification once versus having to get it in 14 different countries. So that makes sense from that standpoint.

I'll be perfectly honest with you. I'm a little worried about when you get 14 different nations in the room with different regulatory schemes that the only way to get consensus is you take the most conservative piece of every country's regulatory system and that becomes one and I'm not sure anybody can meet that. So there are pros and there are cons to it, I think.

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But I think it's worthy pursuing. I know that the chairman has talked about it a lot. So we want to interact in that and make sure --

MEMBER APOSTOLAKIS: But you are not involved now.

MR. PIETRANGELO: We are not involved in that.

MEMBER APOSTOLAKIS: You're not involved.

MR. PIETRANGELO: Yes. Okay. Let's go to our mission. I'm not going to spend a lot of time on this. I mean, we're the advocate for the industry in Washington. We're the policy organization. We're obviously pretty pro-nuclear.

(Laughter.)

MEMBER APOSTOLAKIS: Shock.

MEMBER POWERS: A lot of lobbying.

MR. PIETRANGELO: We have a registered lobbyist at NEI. None of the people in our division are lobbyists. The lobbyists reside in our Government Affairs division.

What we do I think a little different than some other trade associations is we have a pretty good technical component within NEI and supported by the rest of the industry and you see it all the time. We

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try to develop guidance documents to implement rules or to resolve issues that make it easier for our members with the kind of principle being if we can get a consensus industry way to implement something versus 104 units to try to figure out the way to implement it there's a huge efficiency in that and I think it's been proven over the years and we can generally take action pretty quick on any given particular issue through groups like the NSIAC that can make it happen at their plant. So it's been very effective. Yes sir.

MEMBER BLEY: Are all U.S. nuclear utilities participants in NEI?

MR. PIETRANGELO: Yes.

MEMBER BLEY: Every one?

MR. PIETRANGELO: Every one. Let's go to slide --

MEMBER BLEY: Is EDF a participant?

MR. PIETRANGELO: I think EDF is a member of NEI, yes.

MEMBER MAYNARD: There's a time limit on some of these actions and stuff. I remember a new immediate issue may come up and it may be done by telecom. You get all the chief nuclear officers or

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all the CEOs depending on what the item is and what the issue is. So it doesn't have to be having a meeting scheduled and coordinating a meeting. A lot of times the immediate items can be handled right over the telephone.

MR. PIETRANGELO: Yes. That's how the heavy loads initiative was done pretty much.

I want to spend a little bit of time on this slide. This is our 2007 business plan. It looks much like our 2006 business plan and also looks a lot like our 2008 business plan. It's not because things never change, but I think the way we like to term it is that we finally found a way to present what we do and our members have really liked this cartoon here because it really shows what we're about and there are two principal core activities that all of our activities revolve around and that's really enhancing the business environment for safe and reliable operation of our existing plants and more recently creating the business environment for new plant deployment. So all of our essential activities which are kind of foundation of what we do, they're not mutually exclusive. They really all support either one of these boxes and that's why we haven't had a big

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debate within NEI about which companies are only do new plants and which aren't interested because there are things we're doing on new plants that actually support existing plants as well from a supply chain standpoint, from a workforce standpoint, political support. There are all sorts of activities that really go into both boxes.

The essential activities, most of the nuclear generation activities resides under enhancing the regulatory environment. We have had an essential activity on use field for quite some time. A national energy policy sustaining the infrastructure, again this is a good example of how this essential activity really goes to both existing plants and new plants. Our communications and public relations people have a branding program targeted to outreach and the most recent essential activity is enhancing community relations and incident response. This really grew out of the tritium initiative that the industry took where you have something that happens at a plant that gets a lot of publicity. There was a need to tackle the issue directly and the NSIAD did that, but there was a larger need to make sure that we're getting out in the community surrounding the plants and interacting with

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the people and you're not just coming when it's bad news. You actually have a relationship already established and a trust and credibility established and really a lot of this we found we already had the relationships established through our emergency planning activities with the local communities. So it's really trying to build on that base and make sure that when something happens at a plant that you're not talking to someone for the first time in the community trying to explain what happens.

MEMBER APOSTOLAKIS: Are these activities also offices within the NEI? I mean, are they --

MR. PIETRANGELO: No, they're not. The offices that were on the previous slide. Yes, so it's matrix across a section.

MEMBER ARMIJO: Just before you leave this on the nuclear infrastructure.

MR. PIETRANGELO: Yes.

MEMBER ARMIJO: In the physical infrastructure what I'm looking for is do you have a position on the nation's R&D infrastructure, particularly lack of material test reactors, fuel testing, hot cells.

MR. PIETRANGELO: I'm going to let John

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address that one when he comes in.

MEMBER ARMIJO: I just was at the Light Water Reactor Fuel Conference in San Francisco and saw the facilities available to the Koreans, the facilities available to the Japanese and the French. The French are building a new test reactor and, compared to that, the U.S. is in a sad state and I was wondering if NEI has any initiatives going on or is thinking about that R&D infrastructure to support a regrowth of this industry.

(Off the record discussion.)

MR. MARION: I can speak to that. This is Alex Marion. EPRI has been reviewing the capabilities that we have within the U.S. to support our research needs. There has been a lot of discussions with the National Labs looking at their capabilities, etc. But I'm not aware that a formal recommendation has been made. I know that something is actively being evaluated.

MEMBER ARMIJO: But if it did because what I'm talking about is something that is a national commitment. It's not just one company builds something. If they did, would the initiative flow through NEI to work the Department of Energy or the

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Federal Government to support a laboratory expansion or a facility?

MR. MARION: Yes, it would.

MR. GAERTNER: Yes, I think the integrated industry effort we would rely on NEI. Of course, at EPRI, we would work to carry out the industry end of that deal.

MEMBER ARMIJO: We encourage you to really look at that because I think at this state, we're in bad state here.

MR. PIETRANGELO: And then at the bottom of this chart is our mission critical functions and this is kind of the thing we do on a daily basis that really helps us achieve our goals and our essential activities and I won't read them to you but I'll tell you that they're all extremely important and we were talking about this internally for next year given that it's an election year in 2009. We'll have a new administration. We have new commissioners, new senior management at the NRC probably in the next couple of years. Just the relationship development piece of that is a pretty big challenge when you have an administration change-over.

So you would probably see in our internal

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plan activities to try to establish better relationships with the new administration. It wouldn't be aimed at particular issues per se, but without that, you can't achieve any of what you want to do in your essential activities. So that's kind of on-going mission critical function for us.

MEMBER SIEBER: If you want to preserve any of the subsets that you're working on now plus the industry including the vendors. You have to make sure that the National Energy Policy isn't destroyed.

MR. PIETRANGELO: Absolutely, and behind that, I mean we recognize that we have to have bipartisan support for nuclear energy on the Hill. Our things take so long to get done that you can't rely on one party or the other to get it done. You really have to have support on both sides of the aisle. So that's just -- We've done a lot better at that in the recent past.

MEMBER SIEBER: Right now, that's an uphill battle in my opinion.

MR. PIETRANGELO: This next slide just lists a couple of the executive task forces we've formed. I'm not going to go into any great detail on these, but in some cases, the executive task force can

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really bring the horse power to an issue to try to get some actions done quickly. Let's go to the next slide.

MEMBER APOSTOLAKIS: Wait.

MR. PIETRANGELO: Okay.

MEMBER APOSTOLAKIS: What are the major improvements, the two top major improvements, to a regulatory process that you think should be pursued?

MR. PIETRANGELO: The two top ones?

MEMBER APOSTOLAKIS: Well, I'm sure there aren't very many.

MR. PIETRANGELO: Let's go to slide after that. We're getting to that.

(Off the record comments.)

MEMBER APOSTOLAKIS: You are? Okay. I asked for two and you gave me four. That's good.

MR. PIETRANGELO: Alex just told me that we've developed a white paper called "The Nuclear Regulatory Process" and we passed in volume at the Regulatory Information Conference and we've been giving copies to anyone who wants one.

MEMBER APOSTOLAKIS: But you really don't give me what needs to be improved. I mean, it's buried there, less stable, less transparent and less

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predictable. That's really what the problem is. You think that we're still less transparent.

MR. PIETRANGELO: No. I think --

MEMBER APOSTOLAKIS: I mean, we put everything on the website. We call people, "Do you have anything to say?"

MR. PIETRANGELO: Let me try to drill down on it just a tad. What licensees like is predictability. They want to comply. They want to know the regulations, how they're going to be interpreted and what they need to do to comply and we have a long history now with most of the plants 25, 30, 35 years.

It gets a little -- And when positions change on what compliance means that causes a lot of consternation in the industry. That can happen through the inspection process. That can happen through the review of an amendment request, generic communications. It can happen in a lot of different mechanisms. It's hard to conduct the day-to-day business when long standing things seem to change.

MEMBER APOSTOLAKIS: But I know that has been a major complaint of the industry in the last 30 years. But I thought that the actions that the agency took the last ten years have made significant

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progress.

MR. PIETRANGELO: Perhaps. No question about it.

MEMBER APOSTOLAKIS: So is it still an issue?

MR. PIETRANGELO: It still is. It still is. We're not supposed to get into technicality. I'm not going to go through a bunch of examples but I'll just give you another on improving the regulatory process. This is a rulemaking process.

MEMBER APOSTOLAKIS: Yes.

MR. PIETRANGELO: Fitness For Duty Rule took ten years and the thing is about 1,600 pages long. Part 52 took a long time. That's about 1,200 pages long. The security rulemaking, we're not done with yet. That's about another 1,200 pages. And now there's an emergency planning rulemaking effort that I think the initial draft is about 1,000 pages. I mean, that's a lot of --

MEMBER APOSTOLAKIS: No.

MR. PIETRANGELO: We worked the whole Part 50, I think, in about 25 pages. Okay.

MEMBER APOSTOLAKIS: I'm really interested in what you're saying, Tony, and maybe we can also

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improve the communication between you guys and us here because I would certainly love to know why you think 1,200 pages is excessive and what should be eliminated.

MEMBER ARMIJO: Where's the substance? Yes, there has to be some substance in those 1,200 pages.

MR. PIETRANGELO: Do you like it when you get a 1,200 page rulemaking?

MEMBER ARMIJO: Absolutely not. Yeah.

MR. PIETRANGELO: And I don't think NRC management likes it in particular either. The thing is in the concurrence process. If you make a change to something in there, then it has to go back and that's why rulemaking tend to take so long. Now I'm sure the Commission doesn't like it.

MEMBER SIEBER: The route itself is short. It's the explanation.

MEMBER APOSTOLAKIS: The route itself is short.

MR. PIETRANGELO: Not always. So I think that's an area where there is some major improvement that can be made.

MEMBER MAYNARD: I agree that there can

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and should be improvement there. It is a little bit of a two-edge sword though. If it is too quick and easy to change the rules, that could create some instability in itself, too.

MR. PIETRANGELO: There are pros and cons but I think the details -- I mean, when we say risk-informed performance-based like the maintenance rule probably had as much positive impact on risk management as any other rule that was done and it's probably a page and a half.

MEMBER APOSTOLAKIS: Yes.

MR. PIETRANGELO: It specifies the outcome, not the how-to. That's what reg guides do. Reg guides do how-tos. It shouldn't be all that detail in the rulemaking and so there are ways to improve it.

VICE CHAIR BONACA: I understand what you say. I'm just intrigued by the use of the words "less stable, less transparent and less predictable" than when. I mean, I think that these characteristics that you quote here have been typical.

MR. PIETRANGELO: Yes.

VICE CHAIR BONACA: Twenty years, thirty years ago. So I'm trying to understand when --

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MR. PIETRANGELO: I can give you a line. I think when the reactor oversight process first came out in late `99, early 2000, we went through a period there about two years that I mean it was a very stable environment and even though the ROP was just being kicked out. I think there were two events that kind of drove us back to where we were 10 or 20 years ago. One was the September 11<sup>th</sup> and then Davis Besse on the back of that and we kind of reverted back some in the regulatory process.

A lot of the security things were not done in the best regulatory process and there were good reasons for it as well. But it's not -- It shouldn't be the day-to-day way to do business the way security was rolled out on this. I know we're trying to catch up now with the rulemaking, the proper way to do it, but that's an example.

VICE CHAIR BONACA: Yes. Okay. I appreciate it.

MR. PIETRANGELO: Okay.

MEMBER POWERS: I'm struggling to understand what a stable definition of compliance would look like. The only one that I can think of that's stable, predictable and transparent is verbatim

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compliance, absolute verbatim compliance. Anything else that has any discretionary capability is going to vary from issue to issue. I don't think you want that.

MR. PIETRANGELO: When you -- Certain regulations get implemented. Some require you to submit something. Some are validated through an inspection when the regulation is first rolled out.

The point is that it's not that things can't changed. Things can change. But there's a process that should be used to make changes, not today I think it's this and yesterday I thought it was that.

If you think it's this today, you should enter that into a regulatory analysis to decide whether there is safety benefit or that's commensurate with the implementation process of it.

So it's not that the staff can't change their mind on an issue. But there's a process that should be followed when a change of position is undertaken.

MEMBER POWERS: But you've been around and complain about 1,200 pages. The two positions align well with each other because as soon as you say there's a process and people have input into this

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process, you're going to get a proliferation of paper.

MR. PIETRANGELO: I am not a fan of 1,200 pages rules. I think when the rule is that prescriptive then even if you want to change something you have to go back into the rulemaking process versus the how-to in a reg guide is a lot easier to change.

MEMBER POWERS: Also not very familiar with 1,200 page rules either.

MR. PIETRANGELO: Well, there's a lot of them recently.

MR. MARION: If I might just add something, this is Alex Marion again, we've had recent discussions with the NRC in really focusing, bearing down, on what the real core issues are with the regulatory process and these discussions have led to a paper that we've developed to identify and screen issues as they arise whether they are initiated by an inspection activity or an issue raised during a license amendment review or whatever. But screen the issue for potential generic implications and then if they are generic, engage the industry and the staff right away to determine what course of action needs to be take.

That's going to have some positive

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influence to this and bring the industry and the NRC closer because one of the things that we found is that we have a different interpretation of some of the terminology as compared to the NRC staff. Backfitting to the industry is a good example where we look at that as any change in NRC's position whether it's been articulated during an inspection that affects the licensing basis of the plant without due process.

The NRC as I understand their interpretation of backfitting is the act of imposing a new position on a licensee. Okay. So it's the act of imposing as opposed to the change. There's a difference there. So we're in to preliminary dialogue to come to agreement on some of the terms and backfitting is one of the key ones and I think that will help improve the situation as time goes on.

VICE CHAIR BONACA: Yes. I'd like a brief comment. On the other hand, September 11<sup>th</sup> created an environment that regulators are responsible for and there you have a situation that it takes years to understand the implications. So probably your comment regarding B.5.b and the fact that as you learn more about what events could be or whatever, you're generating new information that clearly creates

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instability because you have a means of adding requirements as you learn.

That unfortunately is going to be true. Some event is going to happen there that is going to drive us to have some instability. But that's not really what you're referring to.

MR. PIETRANGELO: No. There were good reasons for that that you just stated. But that shouldn't be the notice operandi for how you do the normal regulatory process.

MEMBER APOSTOLAKIS: I'll tell you what. I think it would help relationship building, Tony, if instead of saying less predictable, less this and that --

MEMBER CORRADINI: You say more.

MEMBER APOSTOLAKIS: You say more. We would like to see more predictability. In other words, you grant the other guy that there is some predictability.

CHAIRMAN SHACK: That he's made some progress.

MEMBER APOSTOLAKIS: Okay.

MR. PIETRANGELO: I appreciate that. Thank you.

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MEMBER APOSTOLAKIS: Then we would be men of the `90s relationship.

CHAIRMAN SHACK: Men of the `90s?

(Laughter.)

MR. PIETRANGELO: The rest of the slides here are not as -- I want to leave, make sure we have enough time for John and Clair. Just with that, if you have any questions.

MEMBER APOSTOLAKIS: Is PRA still a tool?

MR. PIETRANGELO: It's still a tool, George.

MEMBER APOSTOLAKIS: Okay.

MEMBER MAYNARD: I think we'll have some time at the end.

MR. PIETRANGELO: Yes.

MEMBER MAYNARD: Have good presentations and maybe have some more open discussion.

MR. PIETRANGELO: Great.

MR. GAERTNER: Thank you. I'm John Gaertner and my current position is Senior Business Operations Manager for the Nuclear Sector of EPRI. But I've spent my entire career in technical divisions of EPRI and I've met many of you in many different capacities, your different capacities and mine,

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throughout the years. So it's a pleasure to speak before you today.

I'm going to give you an overview of the nuclear power sector at EPRI, but I'm going to begin, back up a little bit, and tell you a little bit about the EPRI, what our picture is globally, a little bit how we function and then end with a discussion or at least a listing of many of the activities that we are involved in with our partners, INPO, NEI and others globally. The first slide please.

First of all, EPRI is relatively a young organization founded in 1973. We are a nonprofit corporation in the United States which we means we are owned by the public. So we are required by our charter to be unbiased, objective, nonprofit and we've elected to be an membership organization. So we are a very collaborative organization.

Our membership is participants in the electric power industry and we are entirely voluntarily funded. So everyone comes and gives to us every year of their own volition and because of our nonprofit status, our collaborative research must be to the benefit of our members, to our customers and to the society at large. We spend a lot of time

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protecting our nonprofit status and our charter and sometimes even our own members have some consternation with that because they want to take some of our work and run with it in certain ways and we can't do that.

We have to maintain our objectivity and these very strict rules.

We have over 700 North American members of EPRI at large and that represents over 90 percent of the U.S. electricity generated. But like I said, we're voluntary. So we still have some members that are not participating in EPRI. But that is no true in the nuclear sector. We have full participation in nuclear.

We are also a global organization. We have at this time over 130 international participants and our global penetration or interest is still growing although we're beginning to peak on that a little bit. We're quite global at this time. Next slide please.

At EPRI, we have four major sectors. We divide all of our research into four major sectors. I certainly don't intend to go over the details of this slide, but I do want you to appreciate these four major divisions.

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The first one on the left is entitled Generation and Distributed Resources. In that sector of EPRI, we perform all of the R&D that has to do with electricity generation with the exception of nuclear power. That's taken out. But all other forms of generation are dealt with in that sector.

The second sector there is Nuclear Power. That's our largest. Nuclear Power is our largest sector in terms of R&D dollars at Nuclear. And I will go into that R&D in considerable detail in this talk.

The third sector is Power Delivery and Markets. That is primarily the grid and the distribution system. But it also deals with what markets are in there because how your grid is designed and how it's operated and the reliability of that grid depends on how electricity is moved through that grid.

So we do research in the markets area and that's in that sector also.

Finally, we have a sector on the environment which is probably our most academic and purely scientific of our sectors. We do quite a bit of work in the air quality and water quality areas as well as questions of EMF, high voltage safety, occupational health and safety and most recently

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climate change. Next please.

Now back to our nuclear power sector mission, you'll see a clear analogy here with NEI. We work closely with NEI and INPO on identifying what we think the strategic issues are within the industry from the industry's standpoint and so we spend time together to discuss that. Then we go our separate ways and decide how we would carry that out with our own charters. So like NEI, we have a commitment to safe, reliable, environmentally sound and cost effective technology and then we look at that from two perspectives. One is our utilization of our existing nuclear assets and the other is support, the deployment of new nuclear technologies. But because there is considerable overlap in that R&D that is much of the R&D we do is applicable to both. We don't -- Although we look upon them separately, we also often are doing the same task for both objectives. Next please.

I'm going to go back a little bit to our membership within the nuclear sector so that you have an appreciation of how extensive it is. First of all, all of the 26 U.S. nuclear operators are members of EPRI. That has not always been the case, but it is

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today. So we have full domestic participation as full members in EPRI.

We also have ten international members. Our most loyal and our earliest member and our closest ally if you will in R&D has been Electricite de France. However, we also have British Energy. We have all of the Canadian reactors and Romanian reactors through a relationship with a CANDU Owners Group. We have two companies in Japan, TEPCO and Chubu with hopes of expanding our Japanese membership.

We have all of the Spanish utilities through an agreement with UNESA and Brazil and our most recent addition is South Africa. So these are all full members.

We also have many other people who participate on individual programs but are not full members and we also have some parts of the globe in which we are not engaged and that's primarily would be India and the former Soviet public --

MEMBER POWERS: North Korea.

MR. GAERTNER: And then we have some of the smaller ones also. But we have chosen not to engage with those people at this time although we are looking. For example, we've recently had an visit

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from India on ways we might be begin to collaborate with them.

MEMBER APOSTOLAKIS: Are Taiwan and South Korea members?

MR. GAERTNER: Taiwan and South Korea are not members at this time. However, they are participants in many of our programs. But they are not full members at this time. Next please.

As I said, a very important part of the way we work at EPRI is collaboration. So our relationships as Tony said for NEI are very important to us also. On the lower left-hand side, we list, of course, the strong relationship with have among EPRI, INPO and NEI. But we also have other very strong relationships with the Department of Energy and with the NRC Office of Research and I'm going to get into that in some detail later on because we have a very formal relationship with the NRC Department of Research so that we work very closely with them but very carefully through a very clear set of rules.

And we also have a formal relationship with the Idaho National Laboratory. We are a partner in that laboratory, not a managing partner, but a research partner in Idaho National Laboratory.

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VICE CHAIR BONACA: John, the question I have is you still operate with the advisory task forces, do you?

MR. GAERTNER: Oh yes, absolutely, and I'll get into that, how that works.

VICE CHAIR BONACA: That's really a strong link to the nuclear industry.

MR. GAERTNER: Yes. I'm going to get into that in some detail because it's very important to understand why we work on what we do and that's our relationship with our members.

We also have global relationships with research agencies throughout the world. Many of the leading research facilities in Europe and Asia we work very closely with. And then we try to build strong cooperation with the vendors, with NSSS Owners Groups and universities. Particularly recently, we've been able to build a much healthier and stronger relationship with the NSSS Owners Groups.

For awhile there, when the industry was not growing, there tended to be a little bit of competition between what the owners groups wanted to do through their vendors and EPRI, but now I think the resources are scarce. The mission is much bigger and

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there's much more room for everybody and we're working much more closely with them. Next please.

I want to stop just one moment here and tell you about our nuclear strategic plan. Prior to 2002, we were a little bit of a loose cafeteria style, if you will, organization in a way. We had 26, anywhere from 26 to 28, programs depending on what snapshot in time you're looking and they didn't have good cooperation. They operated quite independently.

There was, of course, oversight cooperation but it wasn't as much as we had hoped.

And when our former vice president, Ted Marston came back he wanted to build a much tighter and more strategic organization. So Ted asked me to come back to EPRI. I had left for a number of years.

He asked me to come back and work with him to develop an EPRI nuclear strategic plan. We did that and it has greatly affected our organization and our performance and I'll tell you how in a moment.

But, first of all, our strategic plan, we have clear vision and we know what the strategic goals are of our industry members and we work, as I've said earlier, we developed those along with NEI and INPO. So we have a common vision and a common understanding

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of the industry's strategic goals with these organizations. But then we go our separate way. We have a different mission on what to do to address that vision and those strategic goals.

We have identified from that ten technical areas. So we've been able to pull what was formerly about 26 programs into ten very strategic technical areas and I'll tell you what those are in a minute. Each of those technical areas develops annually an action plan and we actually use the words "action plans" to define each of these ten technical areas.

From that action plan, we develop a three year research portfolio and we work on a three year budget cycle and we also have a process of identifying what we call change initiatives. That is this is where we want to be strategically in this technical area. This is where we are. What change initiatives do we need to direct us more towards that to where we'd like to be and every year we identify these change initiatives and we use whatever discretionary funds we can find to move toward, to fund those initiatives to move in that direction.

MEMBER CORRADINI: So let me ask a question. You use the terminology. You didn't call

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them task forces. What did you call them?

MR. GAERTNER: Action plans.

MEMBER CORRADINI: Action plans. So how are your action plans coordinated with the NEI task force? How is this all -- Or is it?

MR. GAERTNER: They are not coordinated. However, we invite NEI in many of those actions plans that are working on issues, if we're working on the technical end of issues that NEI is working on the policy end or the implementation end, then we invite NEI to participate in our action plan meetings. They don't vote. They're merely there to offer their perspective of those industry issues.

MEMBER CORRADINI: So let me ask a broader question and maybe this is not the right place. So you can defer it. I guess I looked upon the three organizations in some sense as addressing the industry's needs and the industry's needs can be essentially sorted in terms of time and also general categories, policy, technical.

MR. GAERTNER: Operations.

MEMBER CORRADINI: Well, I was going to say operations obviously with INPO, but I was thinking of you used the term community -- You didn't use

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community relations but I interpreted that to be the case which is the population, the general public.

So I have these three bins and then I have time as it rolls out. I'm curious. Where does -- And I expect EPRI is going to be in the longer term. So in terms of how you fit in, if I took an area in terms of materials, I want to pick something that's important, at least, from one group's perspective. You called it management materials issues. If NEI is approaching materials issues, how does EPRI couple into that from an R&D standpoint so that it is seamless put together so that they're not spending money on something you should be spending money on or they're addressing an issue that is more short-term? Do you see where I'm -- I'm struggling with how time fits in and a topic fits in so that it's in some sense coordinated.

MR. GAERTNER: Yes. I'll give you from my seated EPRI how that looks and let's do materials. We've, of course, have been doing fundamental materials research for years. So we have a lot of expertise at EPRI. We have a lot of tools. We have facilities to define and investigate inspection techniques, so forth. We have all that.

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So when a materials -- Let's imagine we have an emergent issue occur in the industry, something like the Wolf Creek dissimilar metal weld issue on the pressurizers. NEI will generally take the lead in mobilizing the industry and the industry either through NEI or through in this case a very high level task force. NIONK \*\*\*9:32:45, it is one of your --

MR. MARION: If I may, let me set the stage here. We mentioned earlier, this is Alex Marion again, that we had undertaken this material initiative in 2003. That provided an overall framework of what the industry activities are going to be going forward relative to addressing materials issues.

Part of that initiative called for an advisory body to be established that reported directly to our chief nuclear officers and that's referred to as Materials Executive Oversight Group and all of the industry groups that are involved in materials issues that are either represented by EPRI or represented by the NSSS Owners Groups are represented in that effort.

Now we provide oversight coordination. We don't deal with the implementation. We rely on the EPRI groups or the NSSS Owners Groups to address the

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implementation aspect. But all within the framework that we've established.

Additionally, we have EPRI representation on this advisory committee and EPRI has NEI and INPO representation on their related advisory committees. So we have I think a significant level of coordination.

VICE CHAIR BONACA: One question I have --

MR. MARION: But we don't -- NEI does not necessarily want to influence EPRI's decision making as far as budgets and projects. That's their advisory --

MEMBER CORRADINI: Clearly, they have four bins and only Nuclear is one of the bins.

MR. MARION: That's correct.

VICE CHAIR BONACA: Let me take an example where I'm curious now how it works. I know how it used to work but there is a Nuclear Power Council I think still for EPRI that really decides, makes, certain decisions regarding a location of funding. Say that robust fuel was one of the problems. But the industry was converging on that. INPO had zero effect fuel, coals, and NEI was involved in that.

What is the linkage of this Nuclear Power

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Council that makes these kinds of decisions on the funding for EPRI to NEI and INPO? I mean, is there a linkage there whereby you can influence that through the linkage?

MR. MARION: Yes.

VICE CHAIR BONACA: Or are there some other means?

MR. MARION: There is a linkage. Jay Thayer is the Vice President of Operations. He's on loan to NEI's executive from Entergy is their NEI representative on the Nuclear Power Council.

VICE CHAIR BONACA: Okay.

MR. MARION: Additionally, and I don't know who the INPO representative is.

MR. GODDARD: This is Clair Goddard from INPO and let me just add that INPO is also represented on the EPRI Nuclear Power Council. I have represented INPO. Currently, Rick Jacobs who is our Vice President of Technical is the INPO representative. In addition, Rick and previously me participated on the Materials Executive Oversight Group, associated Action Plan Working Groups, for materials issues in both NSSS systems and in fuel. So that continues.

INPO's role in all of that, of course, is

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to try to influence, but not dictate where the guidelines go and our focus is on excellence, not minimum compliance. And then our role in that after the guidelines are developed and promulgated in the industry is to follow up and make sure that they're being implemented properly and we do that through our plan evaluation activities.

VICE CHAIR BONACA: Okay. So you do have a linkage at that level.

MR. GODDARD: Yes.

MR. GAERTNER: From EPRI's point of view in the fuel reliability area, obviously it was identified as an important issue by NEI. It was taken up with the way in which it would be implemented at the plants is being developed by INPO. What we did at EPRI is working together with these organizations. We identified what were the fundamental technical needs to support that implementation and we identified very strong technical needs and so EPRI over a three year period and we did this through our own advisory structure and with our own funding structure, we are committed to develop four very important technical guidelines that we will then hand over to our membership and they will be totally coordinated with

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INPO's implementation of that fuel reliability initiative. So while we maintain as we must our technical objectivity and we clearly define our technical role, these guys can use that information. That's how we work together.

VICE CHAIR BONACA: Okay.

MEMBER CORRADINI: That helped. Thank you.

MEMBER MAYNARD: I think that one of the real ties is that the funding for NEI, the funding for EPRI, the funding for most of these comes from the same utilities who are providing. They're on the advisory committees and the people making the decisions within NEI to do something if EPRI is the one to do it. So therefore a real linkage and a real tie is there.

VICE CHAIR BONACA: I'm trying to understand more where the decision is made. I mean, yeah, their location of funds comes through Power Council down, but the decision is made at the high level for the whole industry and that involves NEI and that involves INPO that fuel needs to be improved. Okay. So there has to be a program and, you know, at the beginning if I remember it was a funding of \$44 million. That probably increased through the years.

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So that's a major commitment and now I'm trying to understand how now it works, how the decision is made, that strategically you have to have that improvement happening for the whole industry and then it trickles down into the different activities.

MR. GAERTNER: Do keep in mind that 30 percent of EPRI's funding comes from non-domestic membership. So we must be very sensitive. What we're doing, the good news is because it's technical, it may not fit exactly in the -- The implementation may not fit the exact way that INPO has elected to do it in other countries when the policies might be different than the NRC or NEI.

But we try to craft that technical solution so that it's generically useful. It's not always. There may be a greater incentive to do it for domestic than foreign, but that's an important criteria for us.

MR. MARION: And if I may just close and give you a current sense of fuel reliability, there's an executive committee within the EPRI structure that's chaired by Joe Shepherd from South Texas Project. I'm on the executive committee. INPO is represented on the executive committee and the

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chairman of that committee periodically reports to the industry chief nuclear officers of NEI on the status of activities in terms of progress in achieving the fuel performance issue.

VICE CHAIR BONACA: Okay. So that's how you look at it at the highest --

MR. GAERTNER: CNOs is where the current coordination occurs.

MR. MARION: Go on to the next slide, John.

MR. GAERTNER: I told you that there were ten -- that we have through the nuclear strategic plan we had condensed our work into ten very strategic areas and these are the ten. I'm not going to go over them, but in my remaining talk, you'll see that I'm going to mention a number of particular activities and projects that address many of these different areas. I think you'll see in those ten areas really an opportunity to work on almost all the important technical issues that face the nuclear industry. Next please.

Just momentarily a question or a presentation of our leadership team. Our president and CEO is Steve Specker who comes to us used to be

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the CNO of General Electric Nuclear, our Senior Vice President of R&D is Mike Howard. We have a new this week Vice President and CNO within EPRI and that person is Chris Larsen. Dave Modeen has stepped down for personal reasons, but he'll remain within our sector at EPRI and a very important resource. So that may be news to some of you.

And I also have highlighted below the direct reports to the vice president. Four of those we roll our ten technical programs up for management purposes into four larger groups and NDE and advanced nuclear technology which is really new plants, plant technology and materials and chemistry. Next please.

MEMBER MAYNARD: Now fuels in materials and chemistry.

MR. GAERTNER: Fuels is in materials and chemistry, yes.

This is intentionally a very busy slide. I'm going to use it to bring up the point that Mario was raising and that is how does our advisory structure influence the way we do business. It certainly does.

Our Nuclear Power Council which is that red bar up there within our Nuclear sector, that is

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our highest level advisory governance body. There is one member from each of our 36 members nominated and represented. On the Nuclear Power Council, each company gets one vote regardless of size and they set our -- they oversee the activities of all of the underlying programs and committees.

Each of those blue boxes is an action plan working group. That's an advisory committee where technical experts in those areas as well as one representative from the Nuclear Power Council who serves as chairman where they oversee all of the technical work that's being done in each of those technical areas. We meet twice a year, everybody together, hundreds of advisors coming together with a large number of EPRI staff where we review our progress to date on activities. We review the proposed allocation of moneys to new issues and we review the what emergent issues are coming up and how to prepare for those.

The red underlined names which you may not even be able to read and even that's okay because that just shows that these are the 19 programs that we have and then below those we have many technical advisory groups and users groups that function to carry out

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more detailed technical advice to us. So all and all, we have hundreds of member advisors advising us throughout the year and coming together in a very formal structure to be certain that we are working on what the members need and that they're satisfied with our results and so forth.

There is, of course, a little bit of struggle there because throughout this we are not contractors to these people. We are an independent research organization. They are purely advisory. But we work very hard to meet their needs within our charter.

MEMBER BLEY: John.

MR. GAERTNER: Yes.

MEMBER BLEY: Some of these like especially Equipment Reliability and some of the Materials, certainly the issues cross over with those of non nuclear power plants. Is there any trading or joint work or are those organizations really pretty separate?

MR. GAERTNER: In Equipment Reliability, there is quite a bit. It turns out in Materials not so much because our materials are quite unique. Now in the fundamental science of materials, corrosion

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research and so forth there is. But in the issues that we generally face which have a regulatory flavor, we don't. So Materials not so much. Equipment reliability we do.

I forget where I was.

(Laughter.)

MR. GAERTNER: Next slide. Just one other item on that slide. I knew I was holding a thought. Above that Nuclear Power Council, we have a Research Advisory Council which would look at the research in all four of our sectors and whether those are sufficiently balanced and coordinated and then we have an overall board of directors at EPRI. So the Nuclear Power Council although downwardly operates very independently., upwardly is reportable to Research Advisory Council and a board of directors made up of our members. Next please.

Because of the way we're structured we're able to look at issues and technical challenges in a very integrated way. For example, if we are asked to address a materials issue on the primary side of a nuclear power plant, we are able to bring to bear many different programs and expertise on those issues.

For example, we will generally work on the

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NDE and inspection side to determine how to best evaluate in the field that issue and how to go about the inspection all the way to certifying the inspectors and certifying the process for that inspection. We also might look at the radiation exposure implications and come up with radiation exposure procedures to address that. We may look at the implications that that may have on fuel.

We may be looking at an additive, for example, to mitigate a materials problem. Well, that additive might have an effect on the fuel. We'll immediately go to our fuels people and address that. We may use some risk-informed arguments either to strategize an immediate response to that activity or a long-term response and we may have to deal with a radioactive low-waste issue or an equipment reliability issue in association with that. So we do that in a very integrated way within EPRI. We're probably the only organization in the world who can bring to bear so much technology to an issue. Next please.

MEMBER ABDEL-KHALIK: Now how does the issue identification process work?

MR. GAERTNER: It can come about in two

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ways. It can come about within EPRI because we have these, even at the lowest level, meetings with our members. We have technical advisory groups of very detailed technical experts almost at the program level and at the management level. These can bubble up through that structure or they can come about externally and if they do, they're usually brought in at a higher level into the Nuclear Power Council and so forth. For example, it might come from an NSIAC concern, came out of an NSIAC issue, and they said, "EPRI, we'd like you to look into this."

MEMBER ABDEL-KHALIK: But is there an inherent structural self interest that sort of prevents some issues from bubbling up?

MR. GAERTNER: I don't believe so. We've tried to avoid that through our -- We have this nuclear strategic plan process which operates, we have our advisory structure process which operates and we have all of this, our fingers in and our ears open in all these other organizations. I should hope there wouldn't be any institutional bias that would keep an issue from coming up at EPRI.

Now what we can do with that issue, we might be restricted because of our charter. I mean,

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we have to -- If it's a policy issue, we would not take the lead.

MEMBER SIEBER: I think another instance is when the issue affects only one or two plants.

MR. GAERTNER: We even have a way -- If it affects a single plant, that's correct. It's unlikely that they would come to EPRI for that. They would go about the solution.

But we have about 40 percent of our funding at EPRI that comes through our membership subscriptions. The remaining 60 percent is what we call supplemental. That is work that doesn't qualify as broadly generic and didn't get authorized through our advisory structure. But there was interest by a smaller group of utilities or there was interest by a broad group but it didn't really qualify as research.

For example, it might be continuation of a users group on a piece of software and it's not really research, but it's still in their best interest that it be done at EPRI. So we do that work through our supplemental program which is very large. It's slightly more than half of our work.

MEMBER SIEBER: Right. Larger than the subscription part.

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MR. GAERTNER: Pardon me?

MEMBER SIEBER: Larger than the subscription part.

MR. GAERTNER: At this point, it is larger and we're always trying to make our subscription part bigger. But that's a give and take process basically.

MEMBER SIEBER: Right.

MR. GAERTNER: It takes time to sometimes catch up.

MEMBER SIEBER: Well, as a former utility person, it's hard to pay money for something that you don't really need but you could pay a lot when you need it.

MR. GAERTNER: Thank you. Can you say that?

(Laughter.)

MR. GAERTNER: I wanted to -- The remainder of my talk really goes over what are some of the issues we're working on and I think you'll see there are many of the same issues that you heard from NEI and even if you didn't hear from NEI, they're probably involved in them from their perspective along with us because the issues I've chosen here except at the very end are those that I thought might cross your

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desks and so they have some regulatory implications. We do much work that doesn't have regulatory implications at EPRI. But most of what I'll talk about here does.

Of course, we have a very large initiative right now in digital I&C as you well know. We've done a decades worth of work on behalf of the industry on the technical aspects of digital I&C and we're very pleased now to bring to bear that work and that expertise to try to move forward along with NEI and with the NRC on this digital I&C and human machine interface issues.

We've been deeply involved in this inspections of dissimilar metal welds at EPRI. We just completed an extensive finite element analysis and the establishment of acceptance criteria that utilities could use to justify their schedule for inspections on the issues associated with the dissimilar welds concerns at Wolf Creek and that was very successful and NRC just accepted that technical work. We're very proud of that.

We've done a lot of work to support risk-informed regulations, again, mostly with the policy leadership and the leadership of NEI on the interface

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with NRC, but we developed the technical guidelines to support the risk managed tech specs that was just approved by the NRC. We at EPRI are trying to take the lead to work to identify and make progress on a pilot application of 50.69 and so we have been able to get funding available, we've identified a candidate and as Tony said, we hope to make progress on that.

We also have worked on the technical foundation for the risk-informed fire protection. A lot of the PRA we've done and we did it under a memorandum of understanding with NRC Research. So as far as the PRA data and basic requirements as well as some of the tools available such as fire modeling tools we've developed at EPRI.

We're also working on some containment coating issues in relationship to Generic Safety Issue 191.

MEMBER POWERS: Who's doing that work?

MR. GAERTNER: Pardon me?

MEMBER POWERS: Who's responsible for that work in your shop?

MR. GAERTNER: In our shop, Tim Eckard in the Equipment Reliability Group. Tim is a coatings expert.

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We are doing technical work on emergency planning in order to show ways in which the next wave of emergency planning guidelines and requirements can be risk-informed and can be modernized with the better knowledge we now have of source terms and physical scenarios that would actually occur at plants.

We're involved in the BWR steam dryer issue which is an impediment right now for BWRs to move ahead with further power upgrades. We're working to help develop an analysis technique for steam dryers and we also played a large role in developing alpha radiation guidelines when the NRC took issue with the industry's -- with the consistency and quality of some of the radiation monitoring that the industry was doing. Industry came to EPRI and we were working with our members. We have developed new alpha radiation guidelines. So these are examples of the way in which we work keeping in mind that the work we're doing is very technical and very objective and we hand that work over either to the members or to other INPO or NEI, an appropriate organization, to move that forward through regulatory interface or in establishing industry policy. Next please.

MEMBER MAYNARD: I don't know if you need

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to go through each one of these. You might pick out some and then maybe, some of the members, if you have a specific one you might --

MR. GAERTNER: Yes. In fact, I'll take two out of here and then I'll let you ask questions. This is just more issues to give you an idea of the breadth of work. The fuel reliability one we already talked about but that's one we're working primarily with INPO and not closely with NEI just because INPO is responsible for the implementation of that initiative and so we're supporting that with technical guidelines.

The aircraft impact is an interesting one. We took that -- After 9/11 on behalf of the industry, we did quite a bit of detailed technical work on aircraft impacts, detailed finite element modeling, investigation of sizes of the threat and so forth and we did a lot of work for existing plants and we reported that work both directly to the Commission and through NEI to our members. Now we've found that, this recent proposed rulemaking for new plants to address aircraft impact, that information or the work we've done is of potentially great value. And so we are -- The new plant vendors are working.

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What we're doing is we're providing the methodology and we're providing the consistent, the guarantee of consistency and peer review, for that technical work for the new plant vendors. They're doing the work, but we are providing technical assistance and peer review for that work. So that's something -- That's a place where we did the work and it has turned out to be very important on behalf of the industry.

MEMBER ARMIJO: John, could you just expand on the LNT models and the radiation threshold work, what you're doing and where do you expect to go with it?

MR. GAERTNER: That's correct. There was a -- It's called a gray beard group. A number of prominent industry people were called together and asked, "Is there anything we can do?" Apparently, this linear, non-threshold issue as you know is the low level, the health effects are very low levels of radiation, seriously affects the industry as far as the way in which we do maintenance, the exposure of our workers as well as the potential when we have to communicate the impact of nuclear power to the public. It plays a large role in what we say and it looks a

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lot worse than we believe it is. But we operate conservatively under that linear non-threshold assumption.

So this gray beard group got together and said it's time to rethink this. What they asked EPRI to do and what we're doing now is we're doing a very thorough search of what -- this is not the first time this has been done of course. But a very thorough look at what is out there. What is the potential for having a better, more accurate, more favorable model.

So we are doing that at EPRI. This is just the first task. But if that's successful, then we're prepared to move ahead with the industry to propose a less conservative and more accurate model. That's what we're doing.

MEMBER CORRADINI: Have you engaged the NCRP on this because unless you engage it, a national/international group on this, I think it will be tough split?

MR. GAERTNER: Yes. This definitely has to be a very integrated effort and will be.

MEMBER MAYNARD: Okay. Any of the other items on this page?

MEMBER POWERS: I'd just comment that the

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only way to make headway on that is to come up with a biochemical model and so far people haven't found an easy way to do that.

MR. GAERTNER: Okay. I have to take this information because this is not my area of depth. Next please.

I have one other subject I want to talk about and that is I want to explain to you how we operate, how we work collaboratively with NRC Research and to do that I'm going to go back a little bit in history and we worked -- many organizations work very collaboratively especially on severe accident management issues in the '70s and '80s. There was a lot of collaborative R&D work, but that died out very much in the '90s. There seemed to be considerable amount of concern about independence and no one had sorted out in what ways we needed to be independent. Of course, we needed, the NRC and industry needed to reach conclusions independently. But how much could they work together?

In the late '90s, I think we sorted that out for a lot of reasons. First of all, there became a greater appreciation that we had common R&D goals. We knew we didn't have enough resources to do

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everything totally independent and in some respects, the risk-informed regulation really encouraged us. We found that it was a detriment to have come to our conclusions so independently because after you've gotten the whole analysis done, you know, after you build the house, it's hard to look at the studs. So it's really good to lay out as much as you can, reach agreement on data, maybe some general methodologies and to validate perhaps some of those methodologies jointly, then to move together independently. And once we sorted that out, I think we are now at a point where RES and EPRI are encouraging increased collaboration. Next please.

So we have a very robust memorandum of understanding with RES and EPRI. The collaboration includes defining what the issues are and what the data needs are and in collecting that data even doing analysis where that analysis has the purpose of either validating the data or doing sensitivity studies or comparing methodologies.

But we don't go so far as doing analysis that will then be presented to the decision maker or that will establish policy. So we don't do regulatory analysis and we don't offer solutions, but we do the

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fundamental data analysis and data collection. Next please.

So what exactly are we working on together? We have -- The top three areas are what we call MOU addenda. We have very clear scopes of work for those first three areas where NRC Research, we have activities and we're bringing those together, in the area of PRA and that includes a number of very important scope and quality issues.

George asked about where we're going with PRA. Well, one thing we're doing is we're absorbing a lot of the change we've done over the last decade because we now have standards, we now have Reg Guide 1.200, we now have to make sure that we have the technology and the products that live up to those high technical standards and we're doing that at EPRI and we're doing that closely with RES.

We're also working closely on fire risk and I told you about that including PRA methods. We're also doing joint training because of the huge number of resources that are needed right now because of everyone interested in the risk-informed fire protection.

The third area is PWR materials as well as

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NDE. I told you some of the work we're doing there and we are working collaboratively also in the NDE area which is primarily how to do inspections of some of these industry concerns.

Other areas that we're working on under our memorandum of understanding but we're working just more generally have to do with the MAAP code. MAAP code is extremely important to the industry because it's the severe accident code that's used by almost everyone. It's used worldwide but it's particularly important that this code have maintained its pedigree, that it has credibility with the NRC and that it be of impeccable quality and so we are working closely with NRC Research to develop documentation, case studies and so forth to demonstrate that quality to the NRC. But we are not -- The NRC is not developing a formal SER and this is all cooperative information exchange.

As I said, we're working extensively in the digital I&C area with RES. Again, we don't have a formal memorandum but we're working in a lot of areas.

We have worked in dry cask storage and transportation risk assessment, very successful joint work there.

And we've done a lot of fuel analysis in

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the past together. It's very expensive to fuel analysis and there are very few facilities to do it. So we work cooperatively there.

We're looking at some potential future topics and those include looking together into the prospects for high burn-up fuel. We're looking at doing further work in seismic together. And there's interest in looking into extending plant life beyond 60 years. We're interested in looking at some of the technical issues like concrete issues and things like that that we've not looked at in the past.

If I could just have one more minute, I'd like to mention the seismic area. We've been doing seismic work at EPRI for a long time, both extensive seismic hazard or extensive seismic PRA work. We've done a lot of testing and we've done a lot of evaluation of earthquake damage that we have extensive databases of that work and when the earthquake occurred in Japan two months ago at the seven Unit TEPCO BWR plant and TEPCO is one of our members, we mobilized immediately and sent people there. We gave them our technology and they are busy employing that technology to get those seven units back online as expeditiously as possible and we're also using that

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extensive information to answer concerns in this country that may have been caused by that earthquake.

Next please.

Two areas that I didn't mention that we're working on is we're getting involved in integrated spent fuel management issues, looking at advanced fuel cycles, very much a research area, and finally we're looking at new plant deployment, both light water reactors and we're interested in next generation plants.

George, you asked about the risk-informed, technology neutral area. We've done work there that we hope will be used by the Department of Energy INL and by NRC when they think about the licensing approach for the NGNP and I believe that although they probably won't use a risk-informed, technology neutral, they won't wait for such an approach, in order to move ahead with the NGNP, I think they're going to use a lot of the principles from that so that the method they're using would be applicable. Next slide please.

MEMBER APOSTOLAKIS: So they are going to build the NGNP.

MR. GAERTNER: Pardon?

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MEMBER APOSTOLAKIS: They will build the  
NGNP?

MR. GAERTNER: EPRI, INL and DOE certainly  
hope so and I believe NRC.

(Laughter.)

MEMBER CORRADINI: And a few members of  
Congress, too.

MR. GAERTNER: The funding horizon is very  
short as you know.

A number of you asked the question "Where  
does EPRI fit in in the timing?"

MEMBER APOSTOLAKIS: With the  
collaboration with the NRC, are you also collaborating  
in the area of human reliability?

MR. GAERTNER: We are in a very -- We are  
-- We have a users group, a human reliability users  
group, and NRC participates in that and that  
collaboration is done through that. But I don't think  
we're doing anything, any active research.

MEMBER APOSTOLAKIS: I thought there was  
going to be a benchmark exercise with EPRI  
participation.

MEMBER BLEY: It's an international  
benchmark and I'm not sure. I know some of your

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contractors are involved in it. Jeff has been --

MR. GAERTNER: It's part of the users group.

MEMBER BLEY: Yes.

MR. GAERTNER: And we're both working on it. But I would say we're working on it together.

MEMBER APOSTOLAKIS: Okay.

MR. GAERTNER: And finally, is where does EPRI fit in within the timing and with the specific tasks? We try to say -- As I've said many times and it's very important is we try to stay very separate from both the policy and the regulatory interface. But we do provide input. Both we can provide scientific and technical foundation that can go into industry policy decisions. We provide technical solutions while issues are being worked. And we provide technical implementation guidelines that we then hand off to the appropriate -- either to our members or to INPO to support implementation.

MEMBER MAYNARD: What I'd like to do right now, this is a longer segment schedule way than what we normally have. We had a break scheduled for after this. What I would like to do is move that break up and take about a 15 minute break right now and then

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come back and finish up with Clair and with questions and stuff. So we'll be back here at 10:25 a.m. Off the record.

(Whereupon, at 10:12 a.m., the above-entitled matter recessed and reconvened at 10:29 a.m.)

MEMBER MAYNARD: All right, now we'll continue and Clair, INPO.

MR. GODDARD: Thank you, Mr. Maynard, and good morning. I'm Clair Goddard, INPO's Vice President of Systems, and unlike my colleagues, this is my first time meeting with this committee to I'm not sure the extent to which my prepared remarks will hit the target for you, so I do trust that you'll ask questions along the way.

MEMBER MAYNARD: Not a problem.

MR. GODDARD: I gathered that already. The specific areas I plan to cover in this overview are a little bit about INPO's history, organizational structure, the relationships we have with the industry and industry support organizations, our cornerstone programs and lastly some of the issues that are high on our list of things we're working on. Next slide, please.

INPO operates from offices in Atlanta,

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Georgia and our office facility also houses the National Academy for Nuclear Training, which operates under the auspices of INPO, to integrate training activities for all US nuclear utilities, and the Atlanta Center of the World Association of Nuclear Operator or WANO is also collated with INPO and I'll talk more about them a little later. Next slide, please.

I know it's no surprise to anybody in the room that INPO was formed by the nuclear electric utility industry in response to the accident at Three Mile Island in 1979. Soon after that accident, Bill Lee, who at the time was President of Duke Power, led a national movement to bring together nuclear operators in a cooperative organization to share best practices and establish standards of excellence for safety. US utilities with operating licenses or construction permits for nuclear plants were involved in INPO's development and soon after the organization was founded, all such utilities became members of INPO.

We were incorporated in October of 1979 and began operation in Atlanta in December of that same year and Dennis Wilkinson, who was the commanding

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officer of the first US nuclear powered submarine the Nautilus, was also our first President. Next slide, please.

Of course, with the clarity of hindsight, we know now that many of the fundamental problems that contributed to TMI's accident were hardware, procedures, training, and attitudes towards safety. The Kemini Commission Report provided for the need to set and policed excellence standards in the industry and that would be self-set and policed, provide for systematic gathering and sharing of operating experience, have accredited training programs and foster a dramatic change in the attitude toward nuclear safety.

And in forming INPO, the nuclear industry took an unusual step. The industry placed itself in the role of overseeing INPO and its activities, while at the same time endowing our organization with the authority to bring pressure for change on individual members. And it's a fairly unprecedented model, I think it was at the time and still is, of self-regulations with peer review by an industry. Next slide.

Since its inception, INPO's mission has

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remained the same and that's to promote the highest levels of safety and reliability, to promote excellence in the operation of nuclear electric generating plants, and in conducting our activities, we consistently promote strong emphasis on safety culture and conservative decision making in the industry.

It's important to understand that INPO is chartered as a 501(c)(3) non-profit corporation under the Internal Revenue Service Tax Code. That organizational charter specifically prohibits INPO from advocating nuclear power or lobbying to shape policy, so we are not in that domain. Next slide.

This slide shows our current membership and participants and 27 utility members who currently operate the 104 nuclear power plants are members of INPO. In addition to that, we have a subset of co-owners as associate members. Not all co-owners are member of INPO but many are. In addition, we have an international participant program which currently includes 12 countries. I'm not going to name them all but a couple were mentioned that are not full members of INPO or of EPRI, excuse me, specifically, South Korea and Taiwan are affiliated with us at INPO. And

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in addition to that, we have a supplier participant program which currently has 18 members and probably not a surprise, as interest in the country grows for building new plants, so has the interest in the supplier program.

In the last 12 months, we've added four new supplier participants and we expect some more in the near term. All of the US NSSS suppliers and major AE firms are members of INPO.

MEMBER MAYNARD: Why are some of the international or some of the foreign utilities part of INPO? You know, they're part of WANO and they have their own region over there. I'm just curious as to why they --

MR. GODDARD: Well, that is a very good question because all of these nations, their utilities are also members of WANO. They have chose to have this relationship with INPO and I should say they chose to retain it, because INPO's international program preceded the formation of WANO. And they have chose to stay with INPO because it's their belief that they get a greater level of access to industry guidelines and standards that are beyond what they get through WANO.

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MEMBER ARMIJO: Are these utilities still subject to all the rules and authority of INPO? I mean, do they -- are they equivalent to members, US members as far as their responsibilities?

MR. GODDARD: They are not equivalent to members in that they do not have representation on our Board of Directors, nor do we have the same level of authority to impose sanctions that we do with our domestic members.

MEMBER MAYNARD: You do peer reviews of them, but I don't know that you do an assessment.

MR. GODDARD: Well, in fact, we have begun and are now doing assessments for all of the WANO Atlanta center plants for which we do peer reviews.

MR. GAERTNER: But that's a WANO effort, not an INPO.

MR. GODDARD: That is through WANO but it is different because WANO does not do assessments worldwide in conjunction with peer reviews, so that is a very different part of this. I hesitate, too, Mr. Maynard, because some of these international plants do not get peer reviews through the WANO Atlanta Center, so therefore, they don't get an assessment. One example of that would be the utilities in Spain. Next

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slide, please.

This bubble chart, I guess, shows our relationships with a variety of organizations. A number of these have already been discussed so I'm not going to go into detail. We've talked about members and associate members, but a couple things worth noting and reiterating what has already been said. INPO has a very strong relationship with Electric Power Research Institute and the Nuclear Energy Institute and also with the industry's insurance company, Nuclear Electric Insurance, Limited. Those relationships are formalized and very healthy. We also have a relationship with the Department of Energy and obviously, we have a very important relationship with the NRC which we view as an independent relationship, one that is very complimentary.

And the details of our relationship are spelled out in our company's institutional plan and in the Memorandum of Understanding that we have with the agency.

MEMBER SIEBER: Does NEIL still have access to INPO plant evaluations?

MR. GODDARD: Yes, they do.

MEMBER SIEBER: That's the tool.

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MR. GODDARD: That's correct, and they still use those results to help set their premiums.

MEMBER SIEBER: Okay.

MR. GODDARD: Question?

MEMBER MAYNARD: No, no, that helped me in understanding.

MR. GODDARD: Okay.

MEMBER SIEBER: It's an important feature.

MR. GODDARD: And this I Chart is our INPO Organization and in many ways we are similar to a typical US company. We have a Board of Directors. Our Board is a representative board. It's not all of our members and it is elected by the full membership annually. Our Chairman is Lou Hay, Chairman and Chief Executive Officer of FPL Group, Inc. And the Board elects and manages the President and Chief Executive Officer, who is Jim Ellis and Jim has been in that role since May of 2005.

Because we are kind of an internal Board, we don't have an outside perspective on it, the founding fathers of INPO established an advisory council. It's currently nine to 15 professionals from outside INPO's membership. And they meet periodically to review our activities and provide advice on broad

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organizational topics and methods and they do provide input to our Board of Directors. The Advisory Council is composed of distinguished professionals from areas related to our activities; education, science, engineering, business executives, as well as experts in organizational effectiveness, human relations and utility finance.

I'm not going to go through all of our divisions, but I would just summarize by saying our divisions are grouped into our four key functions; industry evaluations, industry performance improvement, industry training and accreditation and then lastly, our support services organization. I'm going to talk in some detail about our four cornerstone programs a little later. Next slide.

I'm not going to read these but just to mention, a few years ago, we sought to define the essence of what makes INPO unique and in doing so, established these areas as our core values. Next slide.

Okay, these are our four cornerstone programs. They have been such since the company was founded and they're the means by which we promote our mission which is highest levels of safety and

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reliability and excellence. I'm going to give you just a brief overview of each one. Central to everything we do is a strong plant evaluation process.

And plant evaluations today are accepted as part of conducting normal plant operations. I think every single power plant, nuclear utility out there has INPO plant evaluation on their high level calendar of events.

Each plant in the US nuclear industry receives a valuation about every 24 months and they're performance oriented, emphasizing both results that the plant staff achieves and the behaviors and organizational factors that are important to drive the current performance that we see and that may be predictive of either sustaining excellence or in perhaps predicting performance decline in the future.

Each plant evaluation is conducted by a team of qualified experienced evaluators and their teams, in general, I'll say are composed of about one-third full time INPO employees, about one-third of employees who are on loan to INPO from our membership at any one time and about one-third of people who step out of their current job for a utility and join the team as what we call an industry peer to bring

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contemporaneous experience in their areas to the evaluation team.

And in addition to that, the teams also have host utility peer evaluators and every team has an industry executive to serve as an advisor to the team. The scope of every evaluation includes a detailed look at traditional functional categories, including operations and maintenance, engineering and these typically correspond to the nuclear station organization. But in addition and probably more importantly, the teams also evaluate cross-functional areas and these are processes and programs and in some cases, just behaviors that cross organizational boundaries and address -- and these looks address the organizational integration and interfaces including areas such as safety culture, plant operational focus, configuration management, work management, equipment reliability and organizational effectiveness. And that last part is, quite frankly, we evaluate how well the management team is leading the organization.

MEMBER SIEBER: Do you still make a distinction between plant evaluations and corporate evaluations?

MR. GODDARD: Yes, we do. Every plant --

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yes, that's a good question because I don't have that in my remarks but we do, as I said, conduct the plant site evaluation every two years about. In addition to that, we have performed corporate evaluations for most of our history and the frequency with which we do those has cycled a bit and in our early years, we did quite a number and then they tailed off as the industry consolidated and we had fewer members.

In the last few months, in fact, our Board of Directors has empowered us to begin routinely conducting corporate evaluations at every utility and to do them periodically.

MEMBER SIEBER: If you go to a company that operates 10 nuclear plants and you find the same issues in several of the plants, that becomes a corporate issue. As I recall, they used to increase the frequency in which to do evaluations of corporate.

Is that still correct?

MR. GODDARD: That's still true. We always have the ability to do what we call a for cause plant evaluation at any time or a corporate evaluation and the corporate evaluations have grown to have some acceptance, and I think they do add value for the reasons --

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MEMBER SIEBER: I think you could get to the root cause of issues but sometimes these issues originate in the corporate offices. There's nothing the plant can do about it other than say, "Yes, sir".

MEMBER APOSTOLAKIS: One example of an undesirable safety culture was Davis-Besse, and I'm wondering why your evaluations didn't catch anything there. Have you guys done a self-assessment or --

MR. GODDARD: Oh, absolutely, and the question you asked is one that we've asked ourselves much as the NRC asked itself and we did a very detailed review of our activities associated to Davis-Besse. We brought in outsiders to participate on that look and we developed a very detailed action plan to strengthen our cornerstone so that we could minimize the possibility of such an event occurring again undetected. And that included things like being more systematic in how we review or follow up on industry operating experience and a number of other things.

We actually had sixteen action items that I couldn't name off the top of my head now.

MEMBER APOSTOLAKIS: I remember in the early announcements from INPO some senior person said, "The reason why we didn't catch it was because we did

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not connect to dots". What dots were these?

MR. GODDARD: I can't answer the question because I don't know who you're speaking of or --

MEMBER APOSTOLAKIS: Oh, he was a vice president.

MEMBER SIEBER: For those of you who were in the military, you can go to a plant and compare it to a group who are good at soldiering where all the people know what to say and for a moment they can make the plant whatever, look pretty good and the staff and all the other stuff. Some people are better at that than others. Okay, so you could get a pretty decent SALP score back in the days when they did that and INPO score, marching through that process and still have defects in the plant.

You actually have to either find people who know where those defects are and question them or see them yourself in order to be able to determine what the true condition of the plant really is. But most of the time, the condition of the plant reflects itself through the attitude of the workforce.

MEMBER MAYNARD: On the other side of the coin in defense if INPO in other areas, there have been a number of cases where INPO has taken action and

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interacted with the Board of Directors of companies with things that are identified. You don't always hear about those actions and, you know, most of the times, that's something that even the industry doesn't always know what's going on but I think that they learned some things from Davis-Besse but I don't think that's consistent with their performance in other areas.

MR. GODDARD: Well, of course, you can't prove the negative. I mean, we can't prove the things that we've prevented or the interactions we've had that may have turned performance around before things declined. But the point you make is a good one and we do have some interactions with Boards of Directors. Sometimes those are requested where a Board will ask INPO's Chief Executive Officer to come provide a brief on how we view their nuclear operation and in some cases, we force that interaction, as you suggest.

The bottom line on evaluations, whether they are corporate or a plant is that they are very focused on the things not done to excellence and that's really the principal reason why our plant evaluation reports are not available for public release.

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MEMBER APOSTOLAKIS: And what is the standard of excellence?

MR. GODDARD: The standard of excellence is defined by the industry and in some cases, with input from EPRI, from NEI.

MEMBER APOSTOLAKIS: So they are realistic standards then.

MR. GODDARD: Oh, yes, yes. We have a book we call "The Performance Objectives and Criteria". Those are the standards by which we conduct plant evaluations and as our Chief Executive Officer is fond of saying, it's an open book test because everybody knows the criteria that they're going to be graded to but the bottom line is that those standards of excellence are very difficult to achieve and that's by design because we always the industry to be striving to get better.

MEMBER MAYNARD: What's excellent today may not be excellent tomorrow. It's a --

MR. GODDARD: Those standards are not static. They have been revised a number of times throughout our history.

MEMBER APOSTOLAKIS: Other industries, particularly the chemical industry, they like the

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concept of continuous improvement. Do we have anything like that? From our side here, I mean, to meet the regulations, that's good enough but from your side, is there such a thing as a continuous improvement principle?

MR. GODDARD: Absolutely. That's what we're all about is really striving to analyze continuous improvement in the industry through peer review and emulation, through sharing of best practices, and operating experience. And we actually, part of this evaluation, I didn't mention it in the overview I gave but a specific cross-functional area we evaluate at every plant site is performance improvement; how is that plant organization using its corrective action program, its self-assessment activities, its benchmarking activities to improve its own performance?

MEMBER SIEBER: If you would look, George, at the evaluations done in the 1980s, if you did fairly well on one early in the 1980s and didn't change your method of operation to improve, the next evaluation you got was not good. And I also would say that I think for every issue or bad culture that INPO has missed, there have been five to 10 that

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they've caught before it became a problem.

MEMBER MAYNARD: I think that was a good question. I think it's really good that INPO is here because most of our interactions typically with the industry is on regulatory issues and the industry wants bare minimum requirements.

MEMBER APOSTOLAKIS: Yeah.

MEMBER MAYNARD: But that doesn't mean that they want to operate to bare minimum requirements. That's where the INPO, the excellence part and the continuous improvement come in.

MEMBER SIEBER: It actually turns out to be cheaper to run a plant for excellence than it is to run it --

MEMBER APOSTOLAKIS: In the long run, in the long run.

MEMBER SIEBER: Yeah, right. It may take awhile to get there.

MR. GODDARD: And the last thing I'll say about evaluations unless there are more questions is that we do follow up on these plant evaluations. So there is an accountability to the industry for every organization we evaluate to use that report to improve performance which is also in the continuous

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improvement.

We come back two years later and if we see the same problems, we call that out as a related area for improvement and it has a higher significance when we then, you know, provide an assessment of the plant and then report to the Chief Executive Officer. Every plant evaluation culminates with an oral report to the utility's Chief Executive on the results of the plant evaluation and a numerical assessment.

MEMBER APOSTOLAKIS: But one thing, I think that every major organization has to battle against is routine operations, maybe boredom. You know, we are doing this many, many times. How does one fight that? I mean, it's easy to talk about safety culture and questioning attitude and always being alert, but I don't know that one can do that, including myself, you know, for a very long time. Now, I'm not reviewed by INPO but --

MEMBER CORRADINI: Thank God.

(Laughter)

MEMBER APOSTOLAKIS: I asked for that. So in your experience, I'm just curious, how difficult is it to fight that kind of thing? And the natural tendency of people to say, "Oh, hell, we've been doing

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this for such a long time, I know how to do that in my sleep", and then, of course, something happens.

MR. GODDARD: Yeah, we agree it's very difficult and in fact, we think it's probably one of our greatest challenges when we conduct a plant evaluation is when it's done in a plant that's achieve excellence for a long period of time because sometimes the issues are more subtle and it's more difficult to communicate a need for change to the organization. That's something we struggle with, too, and are always on the lookout for. We've done very detailed analysis of cases where plants have operated well for many years and then declined and a couple of things that that revealed is that, first of all, leadership is central to maintaining and sustaining excellence, and typically either changes in leadership or just a change in focus of leadership is the first thing that will cause a plant to begin to decline. So we're -- we pay a lot of attention to that.

MEMBER APOSTOLAKIS: Now, as you know, as you know, this agency expanded the reactor oversight process to include some aspects, I guess, of safety culture and it's performance based. Now, I'm sure your approach is also performance based but you must

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be going beyond that in the sense that are you interviewing people or doing things? I mean --

MR. GODDARD: We go beyond performance base. We really look hard at behaviors and the attitudes of the people. We do conduct interviews. We conduct a survey, a written survey, so we get a lot of input. I'm not going to tell you that we have that area fully understood. I mean, we continue to work on it.

MEMBER APOSTOLAKIS: No, I understand, yeah.

MR. GODDARD: But yes, we go beyond the performance base.

MEMBER APOSTOLAKIS: Because one thing that's always intriguing me is this questioning attitude that the IAEA has made a central part of safety culture and I'm really wondering how one can convince oneself that there is a questioning attitude. I don't know that.

MEMBER SIEBER: The Navy once did a study that showed that the significant factor in performance of ships was who the captain was and the crew could be any old crew, the ship could be any old ship but a good ship had a great captain.

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MR. GODDARD: I think that's consistent with what our study showed. Okay, if I could, yeah, move on to training and accreditation. Our training and accreditation cornerstone involves technical and operational education of the nuclear working force. Accreditation of utility training programs is an important part of the program and it's designed to identify strengths and weaknesses in training programs and help in making needed improvements. The process includes a self-evaluation by our members with assistance provided by the INPO staff, an onsite evaluation by teams of INPO and industry personnel and then lastly, a review of the accreditation team visit results by an independent national nuclear accrediting board composed of eminent scholars and executives.

I emphasize independent because while the plant evaluation results are decided by INPO's executive team at an assessment grade determined by our Chief Executive Officer, accreditation is -- the accrediting board does not have an INPO staff member sitting on the board. So it is completely independent for us and for the industry. If training programs meet the Board's standards, then the Board will award accreditation or renew accreditation. When I say

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establish it or award it, because we're coming up with new plants where we're going to be looking at accrediting some new training programs for the first time in many years.

And if there are problems identified, the Board can place training programs on probation or in an extreme case, withdraw accreditation. And accreditation is maintained on an ongoing basis and it's formally reviewed primarily in two areas, for operator training and then technical training programs on four-year cycles. And those cycles are typically offset by two years. So we're looking at half the training programs at every plant site every two years with the thought being that if problems are evident in one area, they're probably evident in the other one, too.

In addition, we conduct a variety of courses and seminars to help personnel better manage nuclear technology, more effectively address leadership challenges and improve personnel performance. We don't provide technical training at INPO. The courses we provide are really focused more on the leadership and sharing of best practices. Our courses are aimed at every level from Chief Executive

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Officer down to site level executives, to plant managers and down to front line supervisors. And we run many seminars annually.

MEMBER ABDEL-KHALIK: Who defines that standards for accreditation?

MR. GODDARD: They are also established through the industry and documented in a standards for accreditation of nuclear power plant training programs.

MEMBER ABDEL-KHALIK: So it's not the Board.

MR. GODDARD: No.

MEMBER MAYNARD: But the accreditation in the beginning, I believe there's some people from academia that are part of the advisory committee and accreditation is more than just the industry deciding what it wants to do.

MR. GODDARD: Right.

MEMBER MAYNARD: It fits in with the process similar to a university program being accredited but it is geared primarily towards what's needed for the nuclear power plant.

MR. GODDARD: That's true.

MEMBER MAYNARD: Many of the same

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attributes are looked at in either case.

MEMBER SIEBER: It seems to me every accrediting board have outside people.

MR. GODDARD: Oh, every -- and since there's interest, I'll just tell you, and Dr. Corradini is on our accrediting Board, so he probably has a better view of this than I do. I'm not --

MEMBER CORRADINI: I was hoping you wouldn't say that because I'd get it from him because I'm sure he's participated in more of them than I have which is my experience when I was in the utility industry was a little different, much less fun.

MR. GODDARD: An accrediting Board is composed of five individuals. There is a Chairman, who is typically an industry senior executive. There is another industry senior executive. Now the rule is that those two people cannot be from the utility whose plant -- whose programs are up for review. Okay, then there is a member of the Board who is nominated by the Nuclear Regulatory Commission and the rule there is that they cannot be a current NRC employee. So typically, we have people who are nominated by the NRC after they retire.

In fact, Ellis Merschoff was just

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nominated and will join the Board at the next turnover.

MEMBER CORRADINI: You have the last three EDOS.

MR. GODDARD: Yes, yeah, Joe Callen is a member of the Board.

MEMBER SIEBER: That was not always the case.

MR. GODDARD: Yeah, it is now. I can't speak to the distant --

MEMBER SIEBER: Years ago it could be --

MR. GODDARD: We also have a member from academia and a member from industries outside of nuclear power and in the past we've had companies like Airbus, Motorola, Texas Instruments represented. And the Board makes its decision by majority vote. So a three to two vote will -- could renew an accreditation or put it on probation. So the key thing to take out of this is, even though the industry has two representatives, it -- the industry does not have a majority. Any questions? Okay. Any other questions on training or accreditation?

Okay, moving to analysis, this is where INPO reviews and analyzes operating experience from

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domestic and non-US nuclear plants and this program is one where we are receiving constantly voluntary reports made by our members on events that occur at the plant site. In a typical year we'll get anywhere from 2500 to 3,000 separate OE entries. That's what we call them, and we analyze them to identify and communicate trends, themes, lessons learned of importance to the industry with the goal of preventing similar events from reoccurring at other plants.

We share this information primarily through our website and through a nuclear network which is a worldwide internet based communications system, so it's used by our members and all of our participants, including the international participants. Information most significant to safety is typically published in what we call significant operating experience reports or SOERs. And our members are expected to, on receipt of those documents, review the recommendations and implement actions in the recommendations to prevent those significant events from reoccurring. And we follow up on those specifically through the plant evaluations.

And if we find recommendations that are not being implemented properly, we will call that out

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as an area of improvement. We also provide what we call just in time operating experience in a format that's designed to be accessible to plant personnel, working level people and used in real time to help them prepare for and perform specific tasks. And that's most often used in pre-job briefings.

Our fourth and final cornerstone is the assistance area. And between evaluations, we monitor performance of our member stations to identify areas where assistance can be used to improve performance or respond to indications that there may be a decline taking place. And we also will provide at the request of our members, visits to plant sites by INPO and industry personnel from -- to look at specific requests.

MEMBER SIEBER: Before you turn from that slide, those four areas are in turn evaluated by the evaluation group that are typically composed of industry representatives, Bob Seal (phonetic) who many of you remember was on the one that I was team leader for, Gary Yates, (phonetic) and so INFO subjects itself to an evaluation process so that these programs work. I guess the other person on my team was a Navy guy and so they go after the leadership experience to

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look at the overall programs to make sure the elements are there and the people are following them. I think that's a tribute to the process because they subject themselves to the process that everyone else is subjected to.

MEMBER MAYNARD: We have a little over 10 minutes.

MR. GODDARD: Yeah, I'll come to a close here. Assistance also has the lead at INPO for conducting workshops, seminars and working meetings similar to what NEI and EPRI already described so I won't go into detail. Next slide, please.

I mentioned WANO and that INPO serves as the home for the Atlanta Center of WANO and we think this is one of our key relationships and I wanted to just give you a little more detail. WANO was formed by the International Nuclear Committee or Community as a result of the Chernobyl accident and WANO's mission is very similar to INPO's and it's to maximize the safety and reliability of the operation of nuclear power plants through the exchange of information and encouraging communication, comparison and emulation among its members.

It operates through four regional centers.

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They're in Atlanta, Paris, Moscow and Tokyo and a coordinating center which is in London. And all operating nuclear power plants worldwide are members of WANO. INPO represents the US nuclear industry as WANO's -- in WANO activities and as a member of WANO.

Other WANO Atlanta Center members are located in Brazil, Canada, India, Mexico, Pakistan, Romania and South Africa. So you can see it's a pretty diverse membership. And those countries choose to belong to us primarily because of the similarities in technology.

I mean, Pakistan has a CANDU Reactor which is a wider part of our center. We also INPO provides WANO AC resources to support it's day-to-day activities and we provide access to our computer servers for WANO, so among other things.

But INPO through WANO and through our international relationships through the international program I mentioned, and through some more detailed activities with organizations such as the Japanese Nuclear Technology Institute actually directly interacts with about three-quarters of the world's 440 plus nuclear plants. So we have quite a reach for an organization of about 350 people.

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MEMBER ABDEL-KHALIK: Are there any export controls constraints imposed on you through participation of countries that are not -- who are not signatories of the NPT?

MR. GODDARD: I don't know that I can answer that question completely. You know, we -- because of the nature of what we do which is focused on safety and reliability of nuclear power plant operations, we really don't have access to technology which could be used to proliferate nuclear weapons. We do, you know, sometimes deal with some difficulties gaining access for people into the US for some of our -- some of our seminars, but that has not been something we haven't been able to work through the State Department to resolve.

MEMBER MAYNARD: I don't know the details.

At the beginning of WANO there was -- it took a lot of interaction and a lot of work with the State Department and the Justice Department and everybody else to find a mechanism to be able to do as much as they can. That was a difficult part to get over, but I don't know the details of what can or can't be done right now.

MR. GODDARD: I could look into that and

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get back to the committee if that would be a desire. I can't go much farther in that question.

MEMBER ABDEL-KHALIK: But I know that universities are now struggling with that issue.

MR. GODDARD: If I could, I'll move onto the next slide which is four INPO focus areas. I think you've heard about every one of them some in the other presentations today. The first is fuel. That was a question early on and I don't want to repeat what's already been said, but we do collect a lot of industry performance data and fuel or -- and performance indicator data and fuel is an area that we have grown more interested in because many plants are operating with albeit minor, they are fuel cladding failures.

And roughly a quarter of the plants today are operating with some fuel defects. So it's -- you know, because of its importance in one of the three barriers to release fission products to the environs, and the fact that it's the only area of significance where the industry has a negative performance trend over the last 10 years, we have really raised the importance of this issue in the industry.

We changed our goal for fuel performance.

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It has historically been to strive for zero fuel defects. A subtle but important change in the 2010 goal is that we will achieve zero fuel failures. And INPO has taken a leadership role here with great support from the Electric Power Research Institute, NEI, and probably more importantly with all of the fuel vendors to address this issue. So we have put together some pretty detailed guidelines and through our evaluation process, we've begun to review systematically how plants are implementing those guidelines to achieve zero fuel failures at their plants, or if they already are achieving that, to insure that they will sustain that level of performance.

Next in the switch yard, grid and transformer area, the blackout of 2003, obviously, raised a lot of attention in this area but actually since 2000, the industry has experienced an increasing trend in a number of events related to these systems and components and several, as you know, have been consequential. So INPO, working with the industry, with NEI and EPRI, became more aggressive in our efforts to insure reliability of offsite power and to minimize the operational risk. And we've seen a

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number of contributors to the problems, including aging, power uprates, equipment maintenance shortfalls, and quite frankly, the ineffectiveness of communications between the nuclear plant operator and the grid operator, which has kind of grown more significant with the change in the industry where in many cases the plant no longer owns its switch yard but has to interface with a different owner.

So we started conducting review visits in this area in 2004 and it remains an ongoing initiative and we expect to complete a visit to every plant site by the end of 2008.

MEMBER BLEY: I'm just a little curious. If part of the problem is that the switch equipment is now owned and operated by other organizations, they're not part of INPO, so you don't have the same leverage we would assume; is that true?

MR. GODDARD: That's accurate and I guess it's very similar to the NRC. I mean, we work through our member to drive excellence in this area. What we expect of our members is that they will establish detailed coordination plans with their grid and switch yard operator to make sure that they're meeting established guidelines and standards for performance

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in these areas.

MEMBER CORRADINI: So can I ask a question here? It would seem to me that a task force would be or has been formed that would feed back to EPRI which is the -- I would assume in some sense looking over research and higher reliability for the grid, where is the feedback into work in terms of improved reliability of the grid or do you have to go through essentially the transmission companies which I assume are EPRI members? Or is there a different approach to that?

MR. MARION: This is Alex Marion again. Immediately after the 2003 blackout, we put a team together that involved INPO, NEI, of course, the utilities, but more importantly we included North American Electric Reliability Council. And NERC has had extensive interactions with INPO in trying to model some of the INPO programs so that they can deal with the transmission organizations and other stakeholders who were responsible for reliable operation of power transmission system.

MEMBER CORRADINI: Just for the sake of my understanding, is NERC the equivalent of INPO relative to the transmission grid or is it more of -- it's not

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regulatory.

MR. MARION: Well, it is now.

MEMBER CORRADINI: It is now?

MR. MARION: Yeah, with the Energy Policy Act of 2005, a --

MEMBER CORRADINI: Excuse me.

MR. MARION: -- task was given to NERC to develop standards and implement the standards and enforce them. We have responsibilities with NERC and we're closely coordinated with them.

MEMBER CORRADINI: I see, all right, thank you.

MEMBER SIEBER: That varies across the country. You know, you have five or six reliability groups. One of the best ones is right around here.

MEMBER CORRADINI: We are kind of running close on time. We need to --

MEMBER SIEBER: There's communications, analytical tools and so forth.

MEMBER CORRADINI: It's my job to crack the whip here.

MR. GODDARD: This is my last slide. I'm not going to talk about emergency preparedness and knowledge retention and detail. I'll just say that

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when INPO was founded, emergency preparedness was a very important element of our organizational structure and that over time, as the industry improved in that area, we got out of that business. Primarily through working with NEI and input from NEI, we in 2004 re-established this as an organizational element for us and we're now looking at every plant again in that area.

And knowledge retention, you know, we, again, are coordinating with NEI, EPRI, to begin to deal with the large loss of personnel, this industry has begun to see and will see over the next five to 10 years. I think that's my last slide, so unless there are questions --

MEMBER MAYNARD: One thing that I think was mentioned in couple of presentations but I think it's important to talk just a bit more about, and that's the loaned employees because INPO has a number of loaned employees. Also INPO has reversed on these where INPO employees will go work at a utility for awhile to stay current which I think is important to the overall process. And many of the INPO individuals, full time employees, came out of the industry anyway. Yourself was at Pilgrim there for a

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number of years.

To a lesser degree but to the same extent, NEI also has some loaned employees and provides some mix there. The other thing I want to just point out, the peers for the evaluations, there's a couple of benefits to that. First of all, you do get some additional looks by real time people responsible for that on the team looking at it, but a side benefit that everybody has really recognized is that those people take back a lot of things to their utility that helps themselves a lot more too, so it's a real good process.

The last thing is evaluations. A retiring chief nuclear officer doesn't count days, he normally counts the number of E&A visits he has left.

(Laughter)

MEMBER MAYNARD: Any other questions here before we wrap it up? Well, I'd like to -- I really appreciate you coming and spending the time and being able to do it in an environment where we're not talking about a given specific issue that we may be at loggerheads on or whatever. So I really appreciate you time in coming. With that, I'll turn it back over to you, Mr. Chairman.

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CHAIRMAN SHACK: Well, thank you again, very much. I'd like to just keep going with P&P if we can. That will give us incentive to get through it quickly because everybody will want lunch and a break.

(Whereupon, at 11:21 a.m. the above-entitled matter concluded.)

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