

# NUCLEAR REGULATORY COMMISSION

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of Nuclear Operators

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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COMMISSION MEETING WITH  
WORLD ASSOCIATION OF NUCLEAR OPERATORS

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THURSDAY,

MAY 16, 2002

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ROCKVILLE, MARYLAND

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The Commission met in the Commissioner's Conference Room, One White Flint North, 11555 Rockville Pike, Rockville, Maryland, at 9:30 a.m., Richard A. Meserve, Chairman, presiding.

PRESENT:

RICHARD A. MESERVE, Chairman

GRETA J. DICUS, Commissioner

NILS J. DIAZ, Commissioner

EDWARD McGAFFIGAN, JR., Commissioner

JEFFREY S. MERRIFIELD, Commissioner

ALSO PRESENT:

ZACK T. PATE, Chairman, WANO

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

(9:34 a.m.)

CHAIRMAN MESERVE: The Commission meets this morning to discuss the status in programs and activities of the World Association of Nuclear Operators, WANO.

As most of you are aware, WANO was formally established in 1989 as a nonprofit, non-governmental organization representing the owners and operators of nuclear powerplants worldwide. Created in the wake of the 1986 Chernobyl accident in the former Soviet Union, WANO reflects the will of the international nuclear industry to ensure that such an accident will never happen again, to enhance nuclear safety and the reliability of nuclear powerplants, and to provide a forum for the exchange of information and for fostering communication among the world's nuclear plant operators.

Thirteen years after its founding, WANO today represents approximately 440 nuclear plant operators in 32 countries and has achieved, through the collective efforts of its members, truly impressive gains in nuclear powerplant performance.

Speaking for WANO this morning is its distinguished Chairman, Dr. Zack T. Pate. Dr. Pate is

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1 certainly no stranger to the Commission, to the NRC  
2 staff, or to the U.S. nuclear industry. For many  
3 years associated with the U.S. Institute for Nuclear  
4 Power Operations, Dr. Pate's reputation and career  
5 have been virtually synonymous with the enhancement of  
6 nuclear safety both here in the U.S. and abroad.

7 He has been a tireless and demanding  
8 advocate of excellence in the U.S. nuclear industry,  
9 a strong supporter of industry self-regulation as a  
10 complement to NRC regulatory programs and activities,  
11 and an articulate spokesman for the concept that the  
12 primary responsibility for safety rests on the  
13 industry itself.

14 His influence on the course of the U.S.  
15 nuclear industry can be readily seen in the steadily  
16 improving performance of the industry over the last  
17 two decades in increasing -- that's both within the  
18 industry and in the public -- that nuclear power is a  
19 viable option in the nation's energy future.

20 It is but a short leap in concept from  
21 improving nuclear safety in the U.S. to improving  
22 nuclear safety worldwide, when the world nuclear  
23 industry recognized the need for effective industry  
24 leadership in an organization to reflect its  
25 interests. You had a readily available model in Dr.

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1 Pate and INPO, both of whom played key roles in WANO's  
2 creation.

3 Dr. Pate has been the longest serving  
4 chairman in WANO's history. He has occupied this  
5 position for almost half of the organization's  
6 existence.

7 Dr. Pate, my colleagues on the Commission  
8 and I welcome you once again to the NRC. We are  
9 honored by your presence here today. We look forward  
10 to your presentation this morning with great interest  
11 and with regret that you will be retiring from WANO  
12 later this year.

13 The Commission sincerely appreciates the  
14 time and energy you have invested throughout the years  
15 in nuclear safety, extends to you our best wishes as  
16 you pursue your personal goals, and recognizes that  
17 through your leadership of WANO you have given that  
18 organization the firm foundation necessary to continue  
19 to perform its role into the future.

20 So thank you very much for joining us.

21 Commissioner Merrifield?

22 COMMISSIONER MERRIFIELD: Mr. Chairman, I  
23 don't have any prepared remarks, and I do want to  
24 associate myself with the kind words you've given.  
25 There's a couple of things I'd like to add, as I was

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1 reflecting on what you were saying.

2 The first thing is, obviously, Zack Pate  
3 is the instrumental person in getting INPO to where it  
4 is today here in the United States and the  
5 relationship we have with them. As all of us have  
6 been at the various INPO CEO awards efforts in the  
7 past years, one of the things we are always reminded  
8 of is INPO's commitment to excellence.

9 And given the record that Zack Pate has  
10 shown at INPO and at WANO, I think that word  
11 "excellence" very much demonstrates the attitude that  
12 he has brought and represents in this industry. While  
13 we are regulators, certainly we can be appreciative of  
14 the fact that there is no one within industry itself  
15 that can take a more leading role in the commitment to  
16 that war than Zack Pate.

17 Before I came to the Commission, and as I  
18 was trying to learn more to get ready for the role  
19 that I had, many of the people who I spoke to spoke of  
20 how I need to get to know Zack Pate better, and that  
21 this is a person who really was one that knew what was  
22 going on.

23 I regret that I didn't get to know Zack as  
24 well as potentially I could have, but nonetheless  
25 clearly the relationship between the organization that

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1 he currently represents and the one that he  
2 represented previously are good, strong, and helpful.

3 So as I said, it's a bittersweet issue  
4 today. Reflecting on all the work you've done is very  
5 sweet; reflecting on the fact that you're leaving is  
6 somewhat bitter because of the commitment that you've  
7 made.

8 Looking at the issues of WANO, which will  
9 be my last comment, I think it's very positive that  
10 WANO now incorporates all of the countries out there,  
11 and certainly your successor is going to have a  
12 further commitment to try to work with those who are  
13 not as strong and try to bring them into that level of  
14 excellence that I know has always been your mandate.

15 Thank you, Mr. Chairman.

16 COMMISSIONER DIAZ: I don't know that I  
17 could add much more. Could I have the next 30 minutes  
18 or so?

19 (Laughter.)

20 No. I just want to say that it is our  
21 privilege to have you with us. We know very well what  
22 you have done, and you have been an asset to this  
23 country. And we're very pleased that you have taken  
24 your career for so long, and don't fade away too  
25 quickly.

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1                   COMMISSIONER DICUS: Yes. I just want to  
2 add my congratulations and thanks for the length of  
3 service that you have had, first to our country, and  
4 then to the industry. And I think anyone who could  
5 successfully work with Admiral Rickover is to be  
6 congratulated from things I've heard.

7                   But we're very pleased to have you with us  
8 today, and I think the entire Commission wishes you  
9 the very best in the future. And thank you for  
10 coming.

11                   CHAIRMAN MESERVE: Dr. Pate, you may  
12 proceed.

13                   DR. PATE: Mr. Chairman, Commissioners,  
14 thank you for your very kind and warm welcome and kind  
15 remarks about -- very kind remarks about my career.

16                   It's a pleasure for me to brief this  
17 distinguished Commission. I especially appreciate the  
18 opportunity to give you an update on the World  
19 Association of Nuclear Operators. I'm going to talk  
20 through that using these slides that were furnished in  
21 advance as a basis of my comments, and give you plenty  
22 of time for questions and comments and some dialogue.

23                   The U.S. NRC is held in high regard in  
24 many, many countries, and regulators in these  
25 countries look first to see what the U.S. NRC has done

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1 or wait until the U.S. NRC takes a decision before  
2 setting their own course. And, therefore, as I think  
3 you all know, this Commission has a profound effect on  
4 the state and health of the nuclear enterprise, not  
5 just in the United States but internationally,  
6 worldwide.

7 If I could have my first slide. This  
8 slide shows WANO's mission. It's straightforward.  
9 It's safety-focused. The words are different, but  
10 it's actually quite similar to INPO's mission. And  
11 WANO, like INPO, focuses strongly on its mission.

12 Next slide. This slide shows four  
13 regional centers in Atlanta, Paris, Moscow, and Tokyo,  
14 and our coordinating center in London. And it is  
15 literally that, a coordinating center. We are  
16 elevating the role of the center in London, and I'll  
17 talk more about that later.

18 The regional centers are the focal points  
19 for WANO's activities and programs, and the regional  
20 concept which was part of WANO's creation or formation  
21 has proven invaluable to WANO in the always difficult  
22 challenge of transcending cultural and language  
23 barriers.

24 Can I have the next slide? This is just  
25 a brief WANO chronology to show you, in part, the

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1 history of the chairmanship. Chernobyl, of course, as  
2 Chairman Meserve mentioned, was a catalyst for WANO  
3 just as Three Mile Island had been the catalyst for  
4 INPO.

5 About a year -- a little bit more than a  
6 year after Chernobyl, in a planning meeting in Paris,  
7 we managed to get 29 countries -- top executives from  
8 29 countries, and virtually all of the executives  
9 committed to the need to form an international nuclear  
10 safety organization. And that was followed by an  
11 inaugural meeting in Moscow. Lord Walter Marshall  
12 became our first Chairman. At the time, he was  
13 Chairman of CEGB, a utility that served virtually all  
14 of the United Kingdom. And he was a distinguished  
15 first leader.

16 Four years later, Remy Carle, who at the  
17 time was the number two executive at EDF, became our  
18 Chairman and provided continuing fine leadership for  
19 the organization.

20 And then, four years later I became the  
21 Chairman at a general meeting in Prague. I was still  
22 CEO of INPO at the time, but I retired from INPO  
23 10 months later to enable me to focus on WANO.

24 Now I'll be succeeded at a Governing Board  
25 meeting in Kiev, Ukraine, in just a couple of months.

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1 I'll be succeeded by a gentleman from Kansai Electric,  
2 a top executive at Kansai Electric, named Hajimu  
3 Maeda. And I think -- I have great confidence that  
4 we've made a really great choice for my successor.

5 To give you a sense of my own interest and  
6 involvement, I have attended 44 of the 45 WANO  
7 Governing Board meetings over the past 12 years,  
8 missing one because of illness.

9 Could I have the next slide? Just to  
10 briefly look at WANO's structure, the General  
11 Assembly, which is a membership, elects the president  
12 of WANO, an honorary position, and we just this past  
13 March elected Pierre Carlier, who recently retired,  
14 again, as the number two man at EDF, as WANO's new  
15 president.

16 The Governing Board includes three members  
17 from each regional center, and the Governing Board, of  
18 course, elects the Chairman. And then each of the  
19 regional centers has its own Governing Board.

20 Next slide, please. WANO programs,  
21 although the names are different, are quite similar to  
22 INPO's, except there is no formal accreditation or  
23 training in WANO. There's, of course, a lot of  
24 interest on -- focus on training, but no formal  
25 accreditation program like the Commission is

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1 accustomed to seeing from INPO.

2 Next slide, please. I thought I'd take a  
3 minute now and go through the membership of each  
4 region. This slide shows the members of the Atlanta  
5 center, and I hasten to add that India and Pakistan  
6 are also members of the Tokyo center. And one might  
7 ask why Romania and Slovenia are in the Atlanta  
8 center.

9 So Romania, as you undoubtedly know, has  
10 built a plant using Canadian technology. And so they  
11 wanted to be close in their alliance to Canada, who is  
12 a member of the Atlanta center. And Slovenia, the  
13 only member of the former Soviet Union that operates  
14 other than a Russian-designed plant, has a turnkey  
15 Westinghouse plant. So they chose to be members of  
16 the Atlanta center.

17 Next slide? The Moscow center is unique  
18 in that all of its members operate Russian-designed  
19 plants. Finland, of course, operates a Russian-  
20 designed plant and a European-designed plant. And on  
21 this slide Poland has no nuclear plant but has  
22 ambitions and is very interested in and contributes  
23 and follows WANO's work.

24 And Iran on this slide is a new member as  
25 of this past March, based on the fact that they are

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1 building the Bushear Nuclear Plant -- another Russian  
2 design.

3 Next slide, please. The Paris center --  
4 China is a member of the Paris center, because of the  
5 French technology at Dai Bai, and, of course, China is  
6 also a member of the Tokyo center. Brazil is a member  
7 of both the Atlanta center and the Paris center, with  
8 a Westinghouse- and a Siemens-designed plant.

9 Next slide? This is the Tokyo center  
10 membership, and it's basically all Asian countries  
11 that operate nuclear powerplants are members of this  
12 center.

13 Next slide, please. This is a peer review  
14 history, just showing the cumulative number of peer  
15 reviews done at WANO member plants. There are 440  
16 units around the world but about 200 stations. And,  
17 of course, the peer reviews are done at a station, not  
18 a unit. So you could say that 187 of the 200 have  
19 been completed, but some of these are repeats. So  
20 that's not quite the full picture.

21 Initially, peer reviews, or evaluations as  
22 we call them at INPO, were not a WANO program. But in  
23 1992 and '93, we did two pilots in each region and  
24 managed to do those to a standard and to a level of  
25 success that the members that had the pilots reported

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1 them very favorably to the membership at our biennial  
2 general meetings. And slowly we've been able to get  
3 WANO members to endorse and support the peer review  
4 program.

5 It is, of course, voluntary. And you can  
6 see from this slide that there is a clear growing  
7 acceptance of the WANO peer review program. The peer  
8 reviews, as Chairman Meserve alluded to a few minutes  
9 ago, is modeled closely after the INPO evaluation  
10 program.

11 The next slide shows some peer review  
12 goals. When we finally got peer reviews established  
13 as a program in about 1995, we set a goal of finishing  
14 half the plants around the world by 2000. We actually  
15 completed 62 percent by 2000.

16 And then we've set a goal to finish all of  
17 the plants around the world by 2005, and we currently  
18 have either completed or have scheduled 93 percent of  
19 the plants around the world, and we have three years  
20 to go. So I'm confident my successors will carry on  
21 and meet this goal.

22 Next slide, please. This slide is just  
23 intended to show the growing participation. This is  
24 primarily training seminars. And, again, these are  
25 often modeled after the very successful seminar

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1 program that INPO has for prospective plant managers,  
2 for engineering managers, maintenance managers,  
3 operations superintendents, radiation protection  
4 managers, and so on.

5 So we've started a similar series of  
6 seminars in WANO, and you can see that there's been a  
7 three-fold increase in participation over the last six  
8 years.

9 And a logical question about these  
10 seminars is: are they being endorsed and supported in  
11 all regions? This next slide shows the regional  
12 participation, and the red block is the 1996 level of  
13 participation in each region, and then the darker  
14 block is the current or last year participation in  
15 each region, and you can, again, see the growth.

16 But important to me and important to my  
17 colleagues on this slide is the regional participation  
18 is more or less proportional to the size of the region  
19 or to the number of nuclear powerplants in the region.  
20 So the slide does show that we have good, broad  
21 participation across all regions.

22 You can see the Moscow center got off to  
23 a slow start on that slide, but it has come up nicely.

24 The next slide shows some additional  
25 examples of participation. Again, as Chairman Meserve

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1 mentioned, 32 countries, they currently are all  
2 members. They've been -- the countries that operate  
3 nuclear powerplants have been members of WANO  
4 throughout. And at a recent biennial general meeting  
5 in Seoul, Korea, just this past March, we had all 32  
6 countries represented by more than 300 delegates.  
7 Actually, closer to 350.

8 We were quite proud of that because, as we  
9 all know, air travel has gotten more difficult since  
10 9/11, and yet members came out to Seoul, Korea, in the  
11 same numbers that had been planned before 9/11 when we  
12 had to postpone that conference.

13 If I could look at the next slide, I'm  
14 going to now quickly show five performance indicators,  
15 and I know the Commission is very accustomed to  
16 looking at these. This first one is a very important  
17 one -- unplanned capability loss factor. But before  
18 I show these, let me report to you that all plants  
19 around the world report data on several performance  
20 indicators into a central database.

21 What I will show is the trends basically  
22 over WANO's lifetime, or the trends over the period  
23 from 1990 when we got data from about 350 units in  
24 1990, and as you'll see on a later slide we had data  
25 from 428 units, essentially all that are operating in

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1 2001. So the trend in unplanned capability loss  
2 factor is quite favorable.

3 The next one -- and I'll go through these  
4 quickly -- collective radiation exposure, a good,  
5 favorable trend. Again, this is worldwide with about  
6 400 units in 2001.

7 The next one, industrial safety, using the  
8 same measure that you are accustomed to seeing in the  
9 U.S.

10 Unit capability factor, the last of the  
11 five.

12 We found in WANO, just as we found years  
13 earlier in the U.S., is that sharing performance  
14 indicator data among the members is just simply highly  
15 motivational. People take a great interest in this  
16 data. They want to know how they're doing compared to  
17 others. They want to know what quartile they're in.  
18 And if they see they're in the lower quartile or even  
19 the lower half in a particular category, they really  
20 work to get to the higher quartiles.

21 And they not only work, but they reach out  
22 to other plants in the database who are doing well in  
23 that area and find best practices on their own. And  
24 WANO doesn't have to do a thing except manage the  
25 database and provide the opportunity for them to share

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1 that and see the need for their own improvement.

2 So this has been a very powerful program  
3 without a huge resource commitment by WANO, but  
4 sometimes I am sure by a huge resource commitment by  
5 the plant. This shows about a nine percent gain in  
6 unit capability factor around the world, which is well  
7 over 40 units, and an additional 41,000 megawatt units  
8 in additional installed generated capacity.

9 This next slide is an index of the  
10 performance indicators. It's a weighted amalgamation,  
11 the same basic approach that INPO uses with some of  
12 the indicators having more weight than others. The  
13 number of units is actually shown on this slide, and  
14 this is typical -- from 373 in 1990 to 428 last year.

15 But the important thing I ask you to  
16 notice on this slide is the improved performance of  
17 the lowest quartile, and that's a worldwide trend, you  
18 know, from 42-1/2 to 78.9 last year. And hopefully in  
19 this current year we'll reach the eighties and achieve  
20 a doubling of the points indicator index for the  
21 lowest quartile in this important measure. And I know  
22 we're all very interested in seeing the plants that  
23 are in the lower quartile move up.

24 The last slide -- like all organizations,  
25 WANO has its challenges. I'll just give you a moment

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1 to read these. My successor and the WANO organization  
2 will do their best to meet these challenges, I am  
3 confident.

4 I said earlier that I would say something  
5 about the role of the coordinating center. The new  
6 Chairman will, of course, operate from Japan, just as  
7 I have operated from the U.S. -- Atlanta.

8 And we realized in WANO that we needed to  
9 strengthen the coordinating center during my  
10 chairmanship, and we've done that by elevating the  
11 position of the director of the coordinating center to  
12 managing director of WANO.

13 And the person who will take that position  
14 this fall is a gentleman named Sigbal Byrd who  
15 recently ran the accreditation program, and before  
16 that the evaluation programs at INPO. And before  
17 that, earlier in his career, he ran the Braidwood  
18 nuclear powerplant -- when it was doing quite well, I  
19 might add -- and I think it's doing quite well today.

20 So I think we have a very capable man who  
21 will support the new Chairman in the London  
22 coordinating center, and he will have a -- you know,  
23 some greater ability to support and challenge the  
24 regions and lead them forward. So that's an  
25 additional challenge that I'll leave to my successors.

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1                   Can I go back to the opening slide now?  
2           That, Mr. Chairman, Commissioners, completes my  
3           remarks, and I more than welcome any questions you  
4           have.

5                   CHAIRMAN MESERVE: Well, thank you very  
6           much, Dr. Pate. We very much welcome, as I indicated,  
7           the chance to interact with you as well as to hear  
8           your presentation.

9                   I just returned from a meeting -- a review  
10          meeting for the Convention on Nuclear Safety, in which  
11          I had the opportunity to respond to questions from  
12          other countries about the U.S. nuclear program. And  
13          I was rather struck, and a little bit surprised, at  
14          the extent of the questioning I received about  
15          performance indicators and U.S. usage of performance  
16          indicators as one of the components of our activities  
17          for oversight of reactors.

18                  The very clear impression I have was some  
19          suspicion by other regulators as to the possible  
20          manipulation of performance indicators. And I know  
21          that you have provided us not only the information  
22          today, but you had earlier sent me some information  
23          about the improvements.

24                  I am curious about whether you have, then,  
25          concerns in that area on -- you've, again, emphasized

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1 this morning the performance indicators, how you  
2 assure the validity of the information that is  
3 reported to you.

4 DR. PATE: We have certainly had  
5 discussions about the worry that performance  
6 indicators could be misinterpreted or could be  
7 misrepresented. And even, you know, totally  
8 unintentionally some of them are complicated. And so  
9 it would be easy to report data that's not precisely  
10 accurate.

11 But by checking plant against plant, and  
12 continuously analyzing the data to see that it makes  
13 sense and that it's consistent, I think we've achieved  
14 a level of confidence that the performance indicators  
15 are pretty darn accurate. And we also have the sense  
16 that the members, you know, have a high sense of  
17 integrity about it, and that is checked during peer  
18 reviews from time to time.

19 And we haven't, frankly, run across any  
20 cases that I know of where there's been -- where we  
21 can see that data has been manipulated or reported  
22 that -- we found errors, but we haven't seen examples  
23 where it appeared to us that the data had been  
24 intentionally misrepresented. So within a small bracket  
25 of error, I think the data that's being reported is

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1 pretty solid.

2 CHAIRMAN MESERVE: We have similar  
3 confidence in the data that's reported to us by our  
4 licensees, as I recounted at that meeting.

5 We have been approached by the executive  
6 branch about resuming our nuclear safety dialogue with  
7 India. And, of course, WANO has had the opportunity  
8 to interact with India and the Indian nuclear program  
9 over a period that we have not been interacting with  
10 that country on nuclear issues.

11 I wonder if you had any suggestions for us  
12 as to areas in which that cooperation might be most  
13 useful.

14 DR. PATE: The Director General of the  
15 Nuclear Power Corporation of India, Limited, Dr.  
16 Chaturvedi, is a member of the WANO Governing Board,  
17 and he currently chairs the WANO Tokyo center board.  
18 He has been a delightful person to have on the WANO  
19 Governing Board, and seems to have to me -- and seems  
20 to represent from NPCIL a sense of openness and a  
21 desire to have a first-class nuclear program in the  
22 high levels of safety in India.

23 So I think, Mr. Chairman, the only comment  
24 I could make is to say that I sense in India, through  
25 its Chairman and through other people that we've

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1 interacted with in peer reviews, a real desire for  
2 openness and a real desire for improvement. So it  
3 occurs to me that it's just simply encouraging that  
4 you would reach out to India.

5 CHAIRMAN MESERVE: Again, I'm going to put  
6 you on the spot on another country. We have reports  
7 from time to time about the prospects for extension of  
8 the lives of the first generation reactors in Russia.  
9 And this has been an area of great interest throughout  
10 the Western world, of course, in dealing with the  
11 concerns about that -- those reactors.

12 Do you have any perspectives on those --  
13 the situation as a result of your WANO activities that  
14 you could share with us?

15 DR. PATE: You're asking some good, tough  
16 questions.

17 (Laughter.)

18 That's fair.

19 CHAIRMAN MESERVE: We realize this may be  
20 our last chance in this role to be able to drag  
21 information -- I mean, I don't mean to put you in an  
22 awkward position. I realize that your interactions  
23 with these countries are confidential, and I --

24 DR. PATE: I think I --

25 CHAIRMAN MESERVE: -- whatever insights

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1 you can provide us would be useful.

2 DR. PATE: I think, first of all, I would  
3 say that our Russian colleagues have worked very hard  
4 since the Chernobyl accident to improve the safety of  
5 their nuclear power program and the safety of their  
6 plants. Working with them has been an absolute  
7 delight to me. I have a number of friends in Moscow  
8 throughout the nuclear program in Russia, and I have  
9 just the highest regard for them.

10 I might add to that that my sense from  
11 many plant visits and reviewing many peer reviews --  
12 peer review reports is that their pressurized water  
13 reactors are pretty rugged plants with a lot of  
14 margin, a lot of thermal margin. And so I think  
15 that's probably the limit of my real knowledge.

16 You know, we see real improvement in  
17 Russia in their safety and in their culture. We see  
18 a real dedication to improvement, and the pressurized  
19 water plants appear to me to be a rugged plant with a  
20 lot of margin.

21 CHAIRMAN MESERVE: I won't ask you about  
22 the RBM case. Let me -- this is -- you obviously know  
23 the U.S. program very well and have a perspective as  
24 a result of your WANO experiences to have some insight  
25 on our own program.

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1           And I didn't want to have this opportunity  
2           to interact with you go past without asking you  
3           whether you have any suggestions for the NRC as a  
4           result of your experiences with WANO.

5           DR. PATE:    The really honest answer to  
6           that question is, once I retired from INPO, I focused  
7           on other countries.  And I haven't, frankly, followed  
8           the U.S. NRC's work nearly as closely as I did when I  
9           was at INPO.  Of course, I read continuously, and I  
10          think I have a generally good sense of what the U.S.  
11          NRC is doing.

12          My sense is that their new regime that's  
13          been put in place in recent years is a huge  
14          improvement over the previous approaches.  But I  
15          simply don't have enough insight to give you a  
16          suggestion for improvement, and I think if I did it  
17          would likely be off -- probably off base, off target.  
18          So I pass on that.

19          CHAIRMAN MESERVE:  Okay.

20          DR. PATE:  And that's just a genuine, you  
21          know, reality.  It's not dodging the issue.  I just  
22          don't know enough or have enough insight, especially  
23          compared to the people around this table, to think  
24          that I could give you a meaningful suggestion.  I  
25          simply say that it appears to me to be a huge

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1 improvement over what I saw a decade ago.

2 CHAIRMAN MESERVE: Thank you very much.

3 Commissioner Dicus?

4 COMMISSIONER DICUS: Thank you.

5 On slide 17, where you have the collective  
6 radiation exposure and the impressive numbers going  
7 down over a decade, and as you and I both know it's a  
8 product of two things -- improvement in exposure  
9 control plus the number of people who are monitored.

10 I kind of want to hear from you that this  
11 decline in collective radiation exposure is not so  
12 much because their fear of people being monitored, but  
13 because it does represent, in your view, a true  
14 improvement in radiation safety.

15 DR. PATE: You know, frankly, I hadn't  
16 really seriously thought about that. But my immediate  
17 reaction is that in most countries the number of  
18 people hasn't changed much. You know, whereas in the  
19 U.S., I think there's been a concerted effort to  
20 reduce staff, I don't see much change in most member  
21 countries. So, you know, my sense is it's a pretty  
22 direct measure of reduced exposure.

23 COMMISSIONER DICUS: Are our U.S.  
24 utilities very active in WANO?

25 DR. PATE: You know, when WANO was set up,

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1 we basically married WANO and INPO and put them in the  
2 same building with a lot of common services, with a  
3 full recognition that INPO was in place, and U.S.  
4 utilities were used to INPO evaluations and had fully  
5 endorsed and supported accreditation, and so on.

6 And so we didn't seek to change that, but  
7 what we did seek to do is give the U.S. credit in WANO  
8 for participation in INPO programs. So the U.S. is a  
9 bit of an anomaly in the sense that its participation  
10 in WANO is through INPO. The Atlanta center, of  
11 course, is in the same building.

12 Now, having said that, about one out of  
13 four U.S. evaluations are now WANO peer reviews. And  
14 that means a little bit different approach, not much,  
15 and it means that several people from the  
16 international community are on the team to gain the  
17 benefit of seeing what's happening in U.S. plants and  
18 to gain experience that can be applied back in their  
19 center.

20 So the U.S. utilities see WANO peer  
21 reviews from time to time, about every third or fourth  
22 evaluation. I think it's now settling down to be  
23 every third, because that meets WANO's goal -- one of  
24 WANO's goals. And the U.S. utilities often get  
25 documents now that are WANO documents in lieu of an

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1 INPO document. But INPO also monitors that document,  
2 and, if it wants to add something to it, it does that.

3 The U.S. is not entirely unique in this  
4 regard because EDF has its own internal peer review  
5 system that's managed from headquarters, and within  
6 the WANO community they take credit for the peer  
7 reviews done internally by EDF. The German utilities  
8 do quite a similar thing. So the U.S. is not the only  
9 country that in a way has its own peer review program.

10 And to address that, when WANO set its  
11 long-term peer review goal, it set the goal of -- that  
12 every WANO member should have a peer review with  
13 external direction at least every three years, and a  
14 WANO peer review at least every six.

15 Now, many WANO members opt to have the  
16 WANO peer review every three years -- for example,  
17 British Energy -- but the U.S. has a WANO peer review  
18 every six years and an INPO evaluation every two. So  
19 that goal accommodated the INPO programs, and it  
20 accommodates programs like EDF has. But it still gets  
21 the WANO peer review done periodically in each member  
22 country.

23 COMMISSIONER DICUS: Okay. Thank you.  
24 And, again, recognizing the confidentiality that you  
25 have, but are there any key points or issues that you

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1 have noticed across the countries that exist between  
2 the regulator and the industry that would be of  
3 particular use to us?

4 DR. PATE: Explain that a little bit more.

5 COMMISSIONER DICUS: Well, for example,  
6 obviously, in the countries there are different levels  
7 of regulation, there are different regulators that  
8 have more or less resources. But clearly, in the  
9 countries, there's a regulator -- I am assuming, in  
10 most of them -- and the industry. Are there key  
11 points that you have noticed that seem to be common  
12 denominators in the countries? And I know I'm  
13 catching cold on another --

14 DR. PATE: That's okay. Well --

15 COMMISSIONER DICUS: And there may not be.  
16 I'm --

17 DR. PATE: I think, as you already know,  
18 there are regulators in some countries that don't have  
19 enough independence or authority, and see that from  
20 time to time. So that's the -- you know, that's the  
21 challenge, if you will, that is evident from time to  
22 time, without, of course, naming those countries.

23 (Laughter.)

24 COMMISSIONER DICUS: Okay. Thank you.

25 CHAIRMAN MESERVE: Commissioner Diaz?

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1                   COMMISSIONER DIAZ:       Thank you, Mr.  
2                   Chairman.

3                   Dr. Pate, I notice in your mission  
4                   statement that it's WANO's mission to maximize the  
5                   safety and reliability of the operation of nuclear  
6                   powerplants. Of course, we at the NRC are always  
7                   trying to maintain or, I will say, maximize the safety  
8                   always.

9                   Of course, I have for years said that  
10                  there has to be -- and there surely is -- a strong  
11                  correlation between safety and reliability, that those  
12                  plants that are most reliable probably have a very  
13                  good safety record, and vice versa.

14                  So I think that putting this together is  
15                  a very good thing. With this tremendous amount of  
16                  experience that I hope we're not going to lose, that  
17                  you're going to still be on the sidelines, on the  
18                  issue of safety and reliability, is there any one  
19                  particular issue that presently exists that has a  
20                  relationship between these two components that you  
21                  believe could be, you know, improved? And let me tell  
22                  you why.

23                  If you look at these figures -- and I made  
24                  the comment in a briefing not very long ago that there  
25                  is no doubt a significant improvement in all of them,

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1 but their approach in -- in asymptotic behavior --

2 DR. PATE: Yes.

3 COMMISSIONER DIAZ: -- and that's because  
4 of the -- you know, the systems learn, the error, you  
5 know, gets better, expertise gets more into play,  
6 people are more concerned of -- there's all of these  
7 factors, both in equipment and things that are -- have  
8 created this very good resource that, you know,  
9 reflect very clearly in safety.

10 And, of course, it's very difficult to get  
11 out of asymptotic behavior. You have to have a  
12 significant change. You can go back if you're not  
13 careful, but to bring it down -- but I wonder, when  
14 you look at all of these factors, is there anything  
15 out there that comes out in your attention that could  
16 significantly be considered as an area that further  
17 improvement could be made?

18 DR. PATE: Is there any one particular  
19 area that could lead to further improvement in safety  
20 and reliability?

21 COMMISSIONER DIAZ: Right. That's not a  
22 tough question, is it?

23 (Laughter.)

24 DR. PATE: No, but it bears some thought.

25 (Laughter.)

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1           It's difficult to point to any one  
2 particular area that would lead to a small step along  
3 this asymptote. I gave a speech at our tenth  
4 anniversary biennial general meeting in Victoria,  
5 British Columbia, called Message from the Top, and  
6 focused on the vital importance of the right message  
7 about safety from the top of the organization. And  
8 somewhere in the speech I added, including from the  
9 regulator.

10           So perhaps our most important challenge  
11 collectively in this area where we, you know, are in  
12 an asymptotic behavior -- for example, for unit  
13 capability factor or capacity factor -- and we  
14 probably are approaching an asymptotic behavior for  
15 unplanned plant closures, is to keep that strong focus  
16 on safety at all levels, so the pressures of staying  
17 on that asymptote and not having that drop down that  
18 you mentioned or that wrinkle or having that, you  
19 know, economic loss don't pull away the paramount  
20 importance of safety in the minds of operators,  
21 engineers, managers, at all levels, and so on.

22           So, to me, one of the most important  
23 factors to stay on this asymptote rather than to --  
24 and continue the improvement rather than to backslide  
25 is to get that message from the top, and by that I

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1 mean the CEO and the chief nuclear officer and the  
2 regulator and the -- everyone who has a hand in this  
3 equation, including WANO. So the people who run these  
4 plants understand day in and day out that their  
5 paramount mission is safe operation of that plant.

6 I perceive that as one of our greatest  
7 challenges going forward. I think we are handling it  
8 well, but we must continue to handle that well.

9 COMMISSIONER DIAZ: Because I think that  
10 I -- I believe that what -- you know, which is -- of  
11 course, I personally like to have this asymptotic  
12 behavior. But what it's going to do is -- and maybe,  
13 you know, this is a good question.

14 By being in this asymptotic behavior in  
15 practically every single one of these -- in all  
16 regions, there's really now the need or the pressure  
17 to perform at those levels, and to avoid, you know,  
18 getting the event that will get you out and create,  
19 you know, the capability loss or the increased, you  
20 know, radiation exposure, or, you know, any of the  
21 multiple performance indicators.

22 I believe that what could happen is that  
23 we're going to have to drive the understanding of what  
24 it means to be working at those levels, and at the  
25 same time there's going to be a pressure to go to a

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1 higher level of performance, which is the only way  
2 that, of course, you're going to change the curve in  
3 itself.

4 And that higher level of performance, of  
5 course, is probably possible now by all of the  
6 learning that has taken place. In other words, it is  
7 probable that only a deep knowledge of the system's  
8 behaviors and some of the human factors that are  
9 involved can maintain that curve going the way it is,  
10 or even if it's going to be improved. And that  
11 requires another level of excellence, using some of  
12 your most favorite words. Does that make sense to  
13 you?

14 DR. PATE: Yes, I think I understand fully  
15 what you are driving to. That the human factors side  
16 of that equation is always a great challenge. As you  
17 talked and as I thought about this question, I thought  
18 about an experience of just a few years back that our  
19 Chair with the Commission visited the nuclear  
20 powerplant in Armenia. In fact, the Moscow center had  
21 a Governing Board meeting in Armenia. They move the  
22 Governing Board meetings around the membership.

23 And I went out and attended the Governing  
24 Board meeting, and then visited the plant and spent  
25 actually quite a bit of time with the plant manager,

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1 station manager, a man named Asashan. And it happened  
2 to be his birthday while we were there.

3 We all know that plant started up after  
4 having been closed from an earthquake for many years  
5 and one of two units restarted. And we learned  
6 quickly in Armenia that this small country is highly  
7 dependent on that plant, and any time that one unit is  
8 closed they're in brownouts.

9 So I went there with an inherent worry  
10 that the operators and management would be under  
11 tremendous pressure, and they would have a mentality  
12 to operate the plant at all cost. You know, it would  
13 be under just enormous pressure to keep it running.

14 Well, they are, and they were. But the  
15 people in the plant, it seemed to me, realized that  
16 the success of that plant was so important to this  
17 small country, and in a country so, you know, proud  
18 and so proud of its independence.

19 And they were such heroes in the community  
20 for running that plant and getting it restarted and  
21 having electricity that it struck me and my colleagues  
22 that they had reached a higher level. I mean, they  
23 were determined to understand every system. They were  
24 determined to meet the human performance challenge and  
25 to communicate and to wait and see and to stop and

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1 think before they acted.

2 In fact, they had this STAR program as  
3 part of their culture, the stop, think, and act, and  
4 then review what you've done, which has been around  
5 for many years and I've seen in many countries around  
6 the world.

7 So we came away with a sense that although  
8 there could have been, you know, a small degraded  
9 margin of safety because of the pressure, we came away  
10 with a sense that there was an enhancement of the  
11 margin of safety because of the commitment and because  
12 of the sense of purpose that these operators in  
13 Armenia had.

14 So I think that's an example of what you  
15 are talking through that -- to get the operators and  
16 managers of the plants to the next level where they --  
17 rather than feel the enormous pressures that are on  
18 them today to operate these plants to stay on that  
19 asymptote, they achieve a higher sense of purpose in  
20 that level of knowledge, in that state of human  
21 performance, that takes them to the next level.

22 So I think that's, you know, a fascinating  
23 and important challenge for all players in this  
24 business.

25 COMMISSIONER DIAZ: Thank you very much.

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1 That Armenian powerplant was BBVR 230. It had a  
2 serious earthquake when it was operating, and had --  
3 it didn't have a LOCA, that's correct? Thank you,  
4 sir.

5 CHAIRMAN MESERVE: Commissioner  
6 McGaffigan?

7 COMMISSIONER MCGAFFIGAN: Thank you, Mr.  
8 Chairman. I want to apologize for being late. I  
9 ended up having to drive more than 50 miles to get  
10 here this morning, and it took me more than an hour  
11 and a half to do it. So that's -- it's only 17 miles  
12 from here, but I had to backtrack for a while to do  
13 some soccer business, unfortunately.

14 When you all do a WANO evaluation, do you  
15 use the INPO system? Do plants get rated WANO 1, 2,  
16 3, 4, 5, a la INPO when you do a WANO inspection?

17 DR. PATE: Yes. That's -- first of all,  
18 the peer reviews are voluntary in WANO.

19 COMMISSIONER MCGAFFIGAN: Right. I  
20 understand they're voluntary. But do you still give  
21 them a score?

22 DR. PATE: And then the performance  
23 assessment is voluntary. So several members now ask  
24 for assessments, and it's a growing activity. And, of  
25 course, I would encourage it, and I think it will

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1 continue to grow. But only a relatively small  
2 fraction of the countries, probably about one-fourth  
3 now, ask for an assessment.

4 COMMISSIONER McGAFFIGAN: Okay. That  
5 answered several of my questions, because I want to --  
6 let me just -- one of the most powerful tools I ever  
7 saw INPO use, and I think it was while you were still  
8 there, was despite all of your rules about  
9 confidentiality, Com Ed had gotten to the point where  
10 they weren't listening, and you published a letter to  
11 the Com Ed board that had a profound effect on Com Ed,  
12 a profound effect for the positive. All of the watch  
13 lists that we had had hadn't really gotten their  
14 attention, but you got their attention in a unique  
15 way. I think it was around '98.

16 Is that a tool that WANO will ever get to,  
17 where you would -- you know, you would get so  
18 frustrated with the performance of a member utility  
19 that you would do what you did with Com Ed in '98? Is  
20 that conceivably -- that's probably not allowed  
21 currently by your rules, but it would be allowed some  
22 day perhaps.

23 DR. PATE: WANO's confidentiality policy  
24 retains the results of peer reviews within the WANO  
25 community. But the WANO Governing Board has to

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1 represent WANO and its members' overall best interests  
2 just as I think the INPO Governing Board or the INPO  
3 Board of Directors has done in the U.S. over the  
4 years.

5 I think it would be, you know, a rare  
6 occasion, an unusual situation, for WANO to go beyond  
7 this confidentiality policy. But we did that on one  
8 occasion early in my chairmanship when the peer review  
9 team found some really troublesome situations at  
10 Chernobyl Unit 3.

11 And the WANO Governing Board made the  
12 decision to ask the member to provide a copy of a  
13 summary of the report to IAEA, and the WANO Governing  
14 Board also decided to inform the G-7 safety  
15 representatives in the G-7 countries.

16 COMMISSIONER McGAFFIGAN: That's analogous  
17 to what -- the comment in the 1998 letter that INPO  
18 sent to Com Ed in some sense.

19 DR. PATE: At least somewhat.

20 COMMISSIONER McGAFFIGAN: Right.

21 DR. PATE: Yes.

22 COMMISSIONER McGAFFIGAN: Okay.

23 DR. PATE: And, you know, one of the  
24 consequences of that was Vice President Gore wrote a  
25 letter to President Kuchma to encourage improvements

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1 at Chernobyl Unit 3. So that was a difficult decision  
2 for WANO, but it shows that the WANO Governing Board  
3 is willing to, you know, step out when necessary.

4 COMMISSIONER McGAFFIGAN: This is, again,  
5 probably a question that goes to our practice, and I'm  
6 trying to see how widespread it is. It probably isn't  
7 based on the first question, but one of the things  
8 I've done since I've come here is to pay attention to  
9 INPO and INPO ratings of the U.S. plants.

10 And a wise person from INPO told me early  
11 on that what you all told people when you were at INPO  
12 is to believe the worst. If you're in our good graces  
13 and NRC has you in the gun sights, believe NRC. If  
14 you're in -- if NRC doesn't have you in the gun  
15 sights, and we have you at INPO 4, believe us. So  
16 believe the worst of the two ratings.

17 DR. PATE: I'm very familiar with that.

18 COMMISSIONER McGAFFIGAN: Do regulators in  
19 other countries get access -- you know, we get access  
20 to INPO reports through our resident inspectors, and  
21 our program managers can see them when they visit a  
22 plant. Do regulators in other countries get access to  
23 WANO reports as a routine matter, or is it country-  
24 specific?

25 DR. PATE: There's not a WANO policy on

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1 that. The WANO policy permits the member to share the  
2 results with the regulator, because a policy otherwise  
3 would not be wise. And I think many, perhaps most, do  
4 share the results with their regulator. I think, in  
5 general, as you would expect, when the regulator asks  
6 they are able to see the reports.

7 And as is the case in this country, the  
8 regulators have respected the confidentiality of the  
9 reports, when they have asked to see them.

10 COMMISSIONER McGAFFIGAN: One of the  
11 issues in the '90s, and it still comes up in this  
12 country, you have these design basis issues that were  
13 the heart of some of Millstone's problems and other  
14 plant's problems. And I know INPO, as a result of  
15 that, tried to put somewhat greater emphasis in their  
16 program, at least thinking about design basis issues.

17 We're still -- at Point Beach we've got a  
18 design issue there that --

19 DR. PATE: I didn't understand the first  
20 part. I'm sorry.

21 COMMISSIONER McGAFFIGAN: During the '90s,  
22 we had some real problems in this country with design  
23 basis issues and with --

24 DR. PATE: With design basis, okay.

25 COMMISSIONER McGAFFIGAN: -- with design

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1 basis issues. And we basically -- you know, many  
2 plants were shut down for significant periods of time.  
3 The classic was Millstone.

4 After that, as I understand it, INPO put  
5 some -- founds ways to build design basis issues into  
6 their program. You know, as a passing thought, I'll  
7 tell you we're still finding significant design basis  
8 issues. Point Beach is about to -- has gotten a  
9 preliminary red finding and is not really disputing  
10 the red finding for an old design issue.

11 Have you all in WANO thought about design  
12 basis issues and making them part of your evaluations  
13 in some way? It's not your primary focus. Your focus  
14 is operations. But some of these things that we found  
15 occasionally were quite significant. D.C. Cook was  
16 another example.

17 DR. PATE: The performance objectives and  
18 criteria that are used as a basis for peer reviews --  
19 it's a document that gives guidance in each particular  
20 functional area and on a range of other broad areas.  
21 The ones used by INPO and WANO are closely matched and  
22 constantly compared.

23 So if performance objectives and criteria  
24 have guidelines that lead you into design basis issues  
25 at INPO, then I think most of that would be

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1 transferred to the PO&C -- performance objectives and  
2 criterias -- for WANO. Having said that, WANO is at  
3 a stage of relative infancy in its peer reviews, and  
4 I would say that there's only a minimal look at design  
5 basis, and that there should be more in the future.

6 COMMISSIONER McGAFFIGAN: Final question  
7 I'm going to have -- one of the things I'm proud of we  
8 did as a Commission during the last few years that I  
9 think improved safety is that we passed a rule --  
10 5065(a)(4) -- which basically asked licensees to keep  
11 a track of their misconfiguration when they're doing  
12 online maintenance.

13 The concern was that with more and more  
14 online maintenance happening so that outages could be  
15 shorter, that some licensees weren't necessarily using  
16 the best tools available to keep track of their risk  
17 configuration.

18 And the licensees who had the tools were  
19 -- I visited Point Beach at one point, and they had a  
20 nice risk monitor, and they told me that at times when  
21 they were planning some maintenance they would find  
22 these resonances where they'd say they were doing X,  
23 and they'd be doing Y, and if they did them at the  
24 same time it was a problem. And it wasn't intuitively  
25 obvious, but once they understood why the risk monitor

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1 was -- was shouting at them, they understood it, and  
2 then they obviously amended their maintenance program.

3 That practice is now obviously the  
4 baseline in America. Have other countries similarly  
5 thought more about whether by a regulation or just by  
6 a peer evaluation, thought more about how to -- how to  
7 keep their risk configurations under control when --  
8 as they do more and more online maintenance and try to  
9 make outages shorter and shorter?

10 DR. PATE: At least in part by using kind  
11 of a real-time --

12 COMMISSIONER MCGAFFIGAN: Risk tools.

13 DR. PATE: GSA.

14 COMMISSIONER MCGAFFIGAN: Right.

15 DR. PATE: That technology is spreading,  
16 and it's I think, you know, in wider use around the  
17 world. But I think that the U.S. is ahead of most  
18 countries on that. You know, there may be some that  
19 are right up there in Western Europe, but it's a good  
20 technology that we should continue to encourage.

21 COMMISSIONER MCGAFFIGAN: Part of my  
22 reason for asking the question is to have this  
23 dialogue on the record. Thank you, sir.

24 CHAIRMAN MESERVE: Commissioner  
25 Merrifield?

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1                   COMMISSIONER MERRIFIELD: Thank you, Mr.  
2 Chairman.

3                   I'll start, first, with a clarification.  
4 Commissioner McGaffigan asked a question about the  
5 activities you had at INPO relative to Com Ed in terms  
6 of sending a letter. And you mentioned to him the  
7 issues that you had relative to Chernobyl and the  
8 Ukraine, and how you were dealing with that at WANO.

9                   Just for clarification of the record,  
10 there wasn't -- are we usually that as an example?  
11 Was it or was it not your intention to put those on  
12 the same significance level?

13                  DR. PATE: No. There was no intent to in  
14 any way correlate significance.

15                  COMMISSIONER MERRIFIELD: Okay.

16                  DR. PATE: I think as you -- you know,  
17 maybe to further clarify that, rather than just leave  
18 it as a stark answer, I think as all the Commissioners  
19 would remember, that we wrestled with Com Ed for a  
20 long time trying to get the program to go this way.

21                  And it seemed to at least many of us that  
22 it kind of went -- I know your predecessor chairman  
23 said at one time they -- I forget -- "the blanket  
24 won't cover the whole bed" as a characterization back  
25 several years ago.

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1                   So there wasn't any abrupt change. We  
2 just pushed harder to try and resolve a long-term kind  
3 of troublesome situation that had worried a number of  
4 us for some time.

5                   COMMISSIONER MERRIFIELD: Issues of the  
6 Ukraine were -- given the activities of --

7                   DR. PATE: Totally different situation.

8                   COMMISSIONER MERRIFIELD: -- technologies  
9 it was more significant in that respect.

10                  DR. PATE: Well, yes, totally different  
11 situation.

12                  COMMISSIONER MERRIFIELD: Okay. I just  
13 wanted to clarify that.

14                  One of the things that I have observed  
15 lately -- and it's hard to see where it's going to go;  
16 you can't always project into the future. But many  
17 countries out there right now are talking about  
18 creation of smaller or modular reactor projects that  
19 would fulfill a variety of purposes -- providing power  
20 for remote areas or providing power for desalinization  
21 for several countries that are in great need for that.

22                  So that would include not just the Pebble  
23 Bed project down in South Africa, but the discussions  
24 the Russians have had about floating reactors, efforts  
25 that China, Korea, Japan, and others have had with

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1 smaller -- thinking about smaller reactors that they  
2 might be able to sell to some countries.

3 In parallel with that, there are countries  
4 out there right now which currently do not have  
5 nuclear programs, but that are considering them,  
6 Vietnam being I think an example of that.

7 DR. PATE: That are considering what?

8 COMMISSIONER MERRIFIELD: Considering  
9 entering into a nuclear program, but that currently do  
10 not have them. Vietnam is one example of that.

11 My question of this: to what degree is  
12 WANO looking proactively down the road to reach out to  
13 countries that might have an interest in having a  
14 nuclear power option in their country which -- that  
15 don't have it now, to ensure that if they choose that  
16 as a national priority that they are prepared for what  
17 comes with it, from a safety impact and other things  
18 that we collectively are concerned about.

19 DR. PATE: Well, yes, the answer to that  
20 is quite straightforward in the sense that WANO  
21 traditionally waits until a potential member has a  
22 project underway, and that member applies for  
23 membership hopefully well in advance of completion of  
24 the project.

25 So WANO has not in any way tried to

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1 influence the question of whether a country built a  
2 plan or what choice they made. Iran became a member  
3 in March. Iran is building Bushear. WANO had no  
4 influence whatsoever on whether Iran built that plant  
5 or what technology they chose, but simply took the  
6 position, the posture, the policy, that if a country  
7 built a nuclear powerplant and plans to operate it for  
8 commercial or for, you know, public use, meaning not  
9 a weapons plant, then WANO wants to help them operate  
10 that plant safely, so we encourage them to become a  
11 member.

12 But that, so far, has been a limit of  
13 WANO's involvement with potential -- with countries  
14 that potentially want to add a nuclear program.

15 COMMISSIONER MERRIFIELD: One of the  
16 reasons I raise that is given the nature of the drop-  
17 in modular projects, and being -- having smaller  
18 reactors, that could certainly increase or make wider  
19 availability to countries that may not have the  
20 capabilities, where we would traditionally think of  
21 operating these.

22 One of the things that INPO and its  
23 members do that I think is very meritorious is that  
24 when there is a member who is in difficulty, the INPO  
25 members and INPO staff try to provide assets,

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1 including sending people from INPO to a site to help  
2 in recovery efforts -- currently right now, for  
3 example, in Cooper, there are some INPO folks there.  
4 Other members of INPO have sent folks to Cooper to try  
5 to help them with some of their difficulties.

6 Is there -- has there been any thought of  
7 a WANO corollary to this?

8 DR. PATE: I think that I could give you  
9 examples of a similar thing being done in Canada, you  
10 know, to help that member. So it -- certainly, WANO  
11 recognizes the benefit and the merits of trying to  
12 help a member who is experiencing difficulty. But  
13 that, in WANO's realm, would be a regional matter.  
14 And the region would have to find someone of the same  
15 language and culture who could really help.

16 So I think the reality is WANO does little  
17 of that, but WANO certainly discusses and will do that  
18 when it can. And I think that's a good, important  
19 challenge for the future. It's a good point.

20 COMMISSIONER MERRIFIELD: On a related  
21 topic, and you mentioned it in your answer, WANO has  
22 divided itself, to a certain extent, technologically  
23 by design, by the reactor style in part.

24 I think one of the benefits of effective  
25 peer review programs is to get a good cross-

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1 fertilization, not simply within an owners group, for  
2 example, but among different styles of reactors,  
3 because not only is it an issue of the technology that  
4 you're working on, but an issue of management --  
5 things that we don't get into at the NRC, of  
6 management styles, ways in which you manage your  
7 workers, work programs, and corrective action  
8 programs, and things of that nature.

9 Is there some thought of enhancing that  
10 cross-fertilization? And is that part of the vision  
11 of the London center, to try to coordinate a greater  
12 amount of that going down the road to avoid too much  
13 regionalization?

14 DR. PATE: Yes. That's a good question  
15 and a good point. And a very important part of the  
16 answer is that the WANO teams almost always draw on  
17 people from all regions. A good example is I was at  
18 the exit meeting for a WANO peer review at Louisa  
19 plant in Finland. It's a Russian-designed plant.

20 I would say there were nine people on the  
21 team from the Moscow center, mostly Russia, Potts, the  
22 Potts plant in Hungary, the Yukivani plant in the  
23 Czech Republic, Ukraine, but others. And then there  
24 were four or five from Central Europe, from EDF, I  
25 think one from Spain, and so on. There were two from

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1 the Atlanta center and one from the Tokyo center.

2 So that's kind of a typical model of how  
3 WANO does a peer review, where the bulk of that team  
4 -- the nine or 10 -- are from that region culturally,  
5 and that peer review was done in Russian, but  
6 everything is translated to English, and the final  
7 report is in English.

8 But the people -- the nine people on the  
9 team, and probably about 12 of the 16 or so team  
10 members, could speak Russian. And, of course, you  
11 have interpreters for those who don't. But it can be  
12 done in the language that the operators speak, which  
13 is, of course, enormously helpful in the day-to-day  
14 dialogue by the team.

15 But the makeup of the team is truly  
16 worldwide and has people who know how EDF runs plants,  
17 and, you know, how plants are run in Spain, Hungary,  
18 Czech Republic, and the U.S.

19 So we try and do that, and you're exactly  
20 right. The coordinating center in London needs to  
21 encourage that, because sometimes the regions will  
22 tend to put people from only their region on the team  
23 and not have enough representation from other parts of  
24 the world who may have a little different slant on  
25 management or approaches. It could be valuable, so --

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1                   COMMISSIONER MERRIFIELD:    But also, it  
2 strikes me it goes both ways as well, not simply a  
3 function of having one of the members come to a site  
4 and provide that peer review there, but also an effort  
5 to get people from those sites out --

6                   DR. PATE:    Exactly.

7                   COMMISSIONER MERRIFIELD:  -- and see how  
8 other people --

9                   DR. PATE:    Exactly.   And, in fact, that  
10 proves to be one of the greatest benefits of a peer  
11 review is to see something different and something new  
12 and often times something better and takes it home.

13                   As I'm sure has been discussed by this  
14 group before, there are three major benefits of peer  
15 reviews and evaluations.    And the first is the  
16 preparation the plant undertakes to get ready, and  
17 sometimes we think that's about half the benefit.   And  
18 then it's the peer review itself that points out  
19 things that can be improved.   And then the third is  
20 the people on the team take home fresh ideas.

21                   So those three things in combination, in  
22 my view, make peer reviews a very powerful tool to  
23 stimulate improvement around the world.

24                   COMMISSIONER MERRIFIELD:  Okay.   And on  
25 that score, I'll tell you about a peer review of my

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1 own. I had not been a Commissioner very long here,  
2 and when -- on my first foreign trip I managed to go  
3 to Slovenia and visited the Kirshko unit that you  
4 mentioned early on.

5 While I was there, I had an opportunity to  
6 have a long discussion with Miraslav Duporach, and  
7 during that he quoted to me -- and I've mentioned this  
8 before in public -- quoted to me verbatim parts of  
9 Reg. Guide 1.174, and much better than I knew it at  
10 the time, frankly.

11 And it struck me the degree to which the  
12 NRC has had an impact on our foreign counterparts in  
13 terms of helping them with their programs, and we --  
14 and it goes both ways now, which is a healthy thing.

15 Some years ago, there were a lot of  
16 concerns among licensees about the subsidy that they  
17 had to give for us to be involved in those  
18 international programs. Now that Congress has given  
19 us money out of the general revenues to help pay for  
20 things of that nature -- and those are no longer  
21 imposed on our licensees -- I think some of that  
22 discussion about our international programs is ebbing.

23 But the question that I'm coming at from  
24 here is to try to see if you have some reflection on  
25 the involvement of the NRC in the international arena

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1 with our co-regulators. And are there areas, given  
2 your wide involvement internationally, where you think  
3 it would be helpful for us to become more involved?

4 DR. PATE: It's difficult for me to, you  
5 know, draw on insights from WANO that would be helpful  
6 in answering that. But I go back to my opening  
7 remarks about, you know, the profound effect of this  
8 Commission on the success of the nuclear enterprise,  
9 not just in the U.S. but worldwide.

10 And in response to your question, I think  
11 the best suggestion that I could give, which I am  
12 confident you do anyway, is to -- as you go through  
13 your routine decisionmaking process, take full  
14 cognizance that it has enormous effect overseas. And  
15 I think the regulators overseas follow closely what  
16 happens in this regulatory agency and this Commission.  
17 And it doesn't need a lot of stimulation. It takes  
18 place anyway.

19 COMMISSIONER MERRIFIELD: Well, following  
20 along on the -- on a question that the Chairman asked  
21 -- and I don't want -- my intention is not to have you  
22 answer this now, but to perhaps reflect -- sort of a  
23 takeaway to reflect on it, and if you had an  
24 opportunity to engage with us in a more individual  
25 manner later on.

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1           But it would be helpful to get your  
2 reflections on countries that it might be useful for  
3 us to become more involved with, or areas  
4 internationally where we may enhance our impact on  
5 improving safety, and how we may engage and what  
6 regulators we might need to engage with to help bring  
7 them up, because as you and your leadership at INPO and  
8 WANO have tried to lift the boat among the regulated  
9 industry, I think there's a commitment -- I mean, I  
10 sense that on -- certainly on my part, and the others  
11 here, of trying to lift the boat of our regulatory  
12 community so that we're doing the right thing as well.

13           So I don't expect you to answer that  
14 directly, but if you had some reflections that you  
15 could provide later on, that might be helpful.

16           Thank you, Mr. Chairman.

17           CHAIRMAN MESERVE: Good. Thank you, Dr.  
18 Pate, for your presentation. I think it is clear from  
19 your comments that WANO was a great success, and that  
20 the organization has established a solid foundation  
21 and the necessary credibility to sustain itself and  
22 its programs in the future. Much of that considerable  
23 accomplishment has to do with your leadership.

24           We thank you, Dr. Pate, for a job and a  
25 career well done.

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With that, we're adjourned.

(Whereupon, at 10:49 a.m., the  
proceedings in the foregoing matter were  
adjourned.)

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