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Meeting Title: Brief on Imple. Guidance for the Maintenance Rule & Industry Verif & Validation Effort

Meeting Date: 1/29/93 Open X Closed _____

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Title: BRIEFING ON IMPLEMENTING GUIDANCE FOR THE MAINTENANCE RULE AND INDUSTRY VERIFICATION AND VALIDATION EFFORT

Location: ROCKVILLE, MARYLAND

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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BRIEFING ON IMPLEMENTING GUIDANCE FOR THE MAINTENANCE RULE AND INDUSTRY VERIFICATION AND VALIDATION EFFORT

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PUBLIC MEETING

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Nuclear Regulatory Commission

One White Flint North

Rockville, Maryland

Friday

January 29, 1993

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

COMMISSIONERS PRESENT:

IVAN SELIN, Chairman of the Commission

KENNETH C. ROGERS, Member of the Commission

JAMES R. CURTISS, Member of the Commission

FORREST J. REMICK, Member of the Commission

E. GAIL de PLANQUE, Member of the Commission

STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

WILLIAM C. PARLER, General Counsel

JAMES TAYLOR, Executive Director for Operations

JAMES SNIEZEK, Deputy Executive Director for Operations

ROBERT BAER, Chief, Engineering Issues Branch, RES

RICHARD CORREIA, Security Chairman, NRR

WILLIAM RUSSELL, Associate Director, Inspection & Technical Assessment, NRR

OWEN ROTHBERG, Engineering Issues Branch, RES

TOM TIPTON, Vice President, NUMARC

CORBIN McNEILL, President & COO, Philadelphia Electric Company

PROCEEDINGS

(10 0 a.m.)

CHAIRMAN SELIN: Good morning, ladies and gentlemen. We are pleased to welcome the staff and representatives from NUMARC, Nuclear Management Resources Council, to brief the Commission on progress and future plans for implementing the Maintenance Rule, 10 CFR 50.65. The Commission considers this rule and implementation of it to be important to plant safety and, therefore, of course, important to public health and safety.

In July, 1991, the Commission amended its regulations effective July 10, 1996, to add 10 CFR 50.65 monitoring the effectiveness of maintenance in nuclear power plants. This rule requires nuclear power plant licensees to monitor the effectiveness of maintenance activities in order to reduce the likelihood of failures caused by the lack of adequate maintenance.

Since the rule was promulgated, the staff has expended a great deal of effort in order to develop guidance for its implementation. It's been an unusual process. I'd like to say very c' early that the Commission is mindful of the proper relationship between ourselves and between the nuclear power industry, the community that we regulate. However, in promulgating this rule, the Commission recognized the difficulties involved in

developing detailed guidelines, in part because the technical information necessary to develop the guidelines is best available from the nuclear industry.

The rule was written in broad terms, with the thought that the more refined guidance would be developed within two years as the staff gained more experience in the maintenance arena. To this end, the Commission set up an usual process for interaction with NUMARC in order to facilitate the proper transfer of technical information, which was not established as a privileged relationship between the staff and NUMARC. We have tried insofar as possible, and I think quite successfully, to make sure that all this transfer occurs in public fora where all parties are invited and can hear what's going on.

In July of 1992, the Commission approved the staff's proposal to endorse NUMARC's implementation guidelines and the draft regulatory guide monitoring the effectiveness of maintenance in nuclear power plants, issued in November of last year.

The Commission is looking forward to hearing from the staff on progress in developing the guidance and on their plans for resolving the comment and finalizing the regulatory guide. In addition, NUMARC will brief the Commission on lessons learned from its pilot validation and verification program that tested the NUMARC

implementation guidelines in actual plants.

Do any of the Commissioners have opening remarks?

(No response.)

I gather, Mr. McNeill, that you will start with the NUMARC presentation and then we'll go on to the staff presentation?

MR. McNEILL: Yes, sir.

CHAIRMAN SELIN: Good morning.

MR. McNEILL: Good morning, Mr. Chairman and Commissioners. I'm Corbin McNeill. I'm the President and Chief Operating Office of the Philadelphia Electric Company. A major part of my corporate responsibility is the direction and management of the Limerick and Peach Bottom nuclear generating stations.

With me at the table this morning is Tom Tipton, who is the Vice President of NUMARC Operations, Management and Support Services Division responsible for issues such as the Maintenance Rule implementation, this morning's area of discussion.

Also with us in the rear are Warren Hall, Walt Smith, Dan Rains and Jim Eaton, who are the managers and project managers within NUMARC responsible for the development of the industry maintenance guideline and the validation and verification program. Joe Colvin, the

President and Chief Executive Officer of NUMARC, who would normally attend with us today, is on travel and sends his apologies for not being with us today.

As a member of the NUMARC Executive Committee and the Board of Directors, I participate with other industry executives in the formation of policy of generic application to the nuclear industry.

Throughout my naval and civilian career, I have had particularly strong association with the issue of maintenance at nuclear generating plants, and currently I am the Chairman of the NUMARC Maintenance Working Group that consists of senior executives responsible for the generation of electricity through the nuclear power at 43 power plant units in the country. The names and affiliations of the Working Group participants are included as an attachment to my prepared remarks. The working group provides oversight and guidance to the NUMARC process for the development of industry guidance for Maintenance Rule implementation.

Tom Tipton, Joe Colvin, and I also serve as the industry interface with senior NRC management to assure that industry policy matters associated with the implementation of the Maintenance Rule are appropriately addressed.

We appreciate this opportunity this morning to

discuss with you the results of the development of the industry guideline and being able to do so in a reasonable and cost effective manner from the standpoint of the industry. It has been a challenge to develop a process that provides the necessary balance between flexibility and specificity, and that promotes consistency within the industry and while at the same time assures an appropriate degree of regulatory assurance for the NRC and the general public.

The industry has expended significant effort in developing the industry guideline. Four separate Ad Hoc Advisory Committees were formed that involved representatives from 33 utilities responsible for operating nearly 75 percent of the nuclear power plants in this country. The expertise assembled included, for example, individuals knowledgeable in probabilistic risk assessment, reliability centered maintenance, codes and standards, and the nuclear plant reliability data system. Maintenance managers and senior reactor operators were also key participants in these advisory groups.

Additionally, we had very active involvement of representatives from EPRI, INPO, and NUMARC. Countless hours were spent on first understanding the intent of the rule and then developing the necessary guidelines. This was particularly, I think, a demanding challenge since

this was the first of the performance-based rulemaking undertaken by the NRC.

Following the development of the guidelines and the detailed industry review, the guidance was subjected to a very detailed verification and validation process. And without a doubt, we brought our extensive experience and knowledge in maintenance to bear on the issues at all levels within the industry.

A major element of the continuation of that process on your part has yet to be developed, and that's the NRC's inspection module. And at the conclusion of my remarks today, I'll address that in a little more detail in some of our comments in that area, in just a few minutes.

I'd like to address three areas briefly today. They are the process that was established to address the implementation of the maintenance rule, the results to date of the industry verification and validation programs which will be undertaken by Tom Tipton, and where we go from here.

We found that the cooperative but yet independent process established for proceeding with implementation of the final maintenance rule was a unique one that has achieved more than we really had anticipated at the beginning. It can and should serve as a model for

addressing future complex issues and rulemaking implementation. And I commend you individually for providing the methodology, and the staff for its very professional execution.

There are, I believe, five critical factors or elements that helped to make this thing work as well as it did. First was the involvement of the NRC's senior management, including yourselves, the Commissioners, from the very beginning. And this included you and your technical assistants' participation at least viewing of the publicly held meetings that we've had, and we understand the periodic briefings with your staffs that kept you abreast of what was in fact transpiring in those meetings.

Secondly, the participation by your senior staff at the NRC to address the policy issues that were identified during the development of the guidance, followed by the industry and staff each working independently and sharing the results of each other's efforts in a public forum to develop the details and understandings necessary for the policy implementation. We've had several very productive meetings with the NRC Steering Committee chaired by Jim Sniezek, and this process has worked, in our opinion, very well.

The most important but third on my list that I

think was critical to the success of this was the staff development of the draft regulatory guidance rather than that of a contractor. This has been a very refreshing experience for us in that the staff knew the basis for the draft guidance being developed, it was not being interpreted. As a result, the dialogue was clear and meaningful, the confidence level was high in the discussions and, most importantly, the decisionmaking was prompt and decisive. In the popular parlance of management gurus today, the cycle time was very short as we moved through the development. This is a very important aspect of the process that should be introduced in other areas where possible.

I also believe that this element of the process will form a corporate history for the NRC which will provide a clear basis for development of your inspection module and guidelines.

Next, the staff's observation of the industry's execution of the verification and validation process. In the beginning, there seemed to be some skepticism on the part of some of the staff of how serious we were in really testing the draft industry guidelines that had been developed. We believe that having observed the depth and the detail of each utility, that each utility has gone through, that the skepticism has been dispelled

significantly. This builds trust and understanding that is important to the continued existence of our industry, and there is, I believe, a stronger recognition between the industry and the Commission staff that we have strong mutual objectives to provide reasonable assurance of public health and safety.

And the final element was the candor with which the industry and the NRC expressed their views, bringing their own different perspectives up front and on the table, despite the public nature of many of the meetings -- of all the meetings that were held. If concerns are not clearly stated during the process, it can, in fact, adversely affect the outcome and, in some cases, could, in fact, destroy the process. Our respective positions and the concerns that we made clear to everyone -- and I believe, to everyone's credit, that these were, in fact, made clear. For example, we stressed that the implementation of the maintenance rule should not require two maintenance programs -- one to provide the necessary maintenance to safely and reliability to operate the plant in our terms, and another to comply just with the maintenance rule.

Some of this candor made front page news in some of the trade press, and I believe that that's the price of the candor and openness are at risk in this kind of a

process, but I think that the openness and the candor itself do, in fact, provide a message of openness that can, in fact, be well received in the general public.

As I'm sure you would agree, these five elements that resulted from our efforts in developing the industry guidance are not unique to the maintenance rule but can be applied when addressing other issues. I encourage us both to use the lessons learned in the future as we proceed with other initiatives discussed in detail with you last week by Gene McGrath and other members of the NUMARC Executive Committee.

Tom will now brief you on the results of the verification and validation program.

CHAIRMAN SELIN: Before you move on to Mr. Tipton, I'd like to make a couple of general comments in response to these remarks. They are really not specifically oriented towards this process, but the implications that you've drawn for the future.

The Commission, as you well know, is dedicated to the concept of moving to performance-based regulation where possible, and that's very attractive in many ways. It says that we don't prescribe in detail how you do your job, we look at the results and hold the results up against technical standards and see if these results are consistent with what we are looking for.

Furthermore, in a process like this there are two implications. The first implication is that the industry, or in specific cases the licensee, gets the first shot at defining what will be done and how it will be done, rather than the staff prescribing how that's going to happen. And so that requires that there be more interaction, more questions, more cooperation, since going in, a lot of the technical knowledge is in the industry's hand and not in the staff's hand, and it's necessary that the staff get this technical knowledge.

The second implication is that we will be more and more, if we follow this policy, allowing the industry to take the lead and not just defining how the job will be done, but implicitly what has to be done.

Now, this is a positive approach in many senses, but it does mean that we have to be very, very careful to distinguish places where we are learning from the people who we will regulate some of the technical complexities that are involved in their own peculiar processes, rather than trying to impose a standard process. But it's very important that all kinds of careful checks and balances are observed to make sure that we don't go beyond that step and get advice from the regulated industry on how the regulation ought to be carried out and what the objectives are, that the objectives are very clear, they are the

government's responsibility. The technical knowledge necessary to carry out these objectives requires more technology transfer and communication than when one follows a prescriptive set of rules.

That's all positive, but it does mean that on the one hand, we have to be very careful about where we sued the initiative and where we maintain the initiative. And the second is the discussion in the trade press that you alluded to, Mr. McNeill, I thought, very graciously, but effectively in the sense of saying it's a necessary evil. It's not a necessary evil, it's an absolute essential that if we are to have a process where there's much more technical communication, there has to be a countervailing process, be it the press or the intervenors or what have you, to make sure that we have equal conversation to keep us from going beyond the point of exchanging technical information and perhaps putting ourselves in your shoes. Having all this communication carries the risk of an identity of views or just a casual and unconscious acceptance of a point of view, and having the trade press, intervenors, et cetera, also very much involved in this, I think, will serve as a practical reminder to make sure that we pay attention to the fact that all parties have to have an opportunity to discuss and have their views made present.

So, this technical cooperation, as I said at the NUMARC meeting, cannot be accompanied by a sense of coziness, but rather a sense of professional respect and open communication, to which you alluded.

I think my own opinion is we've done fine in the maintenance area, but we need to make sure that we don't go beyond the levels that we have in the maintenance area, to allowing the regulated community to draw up the agenda or to make the first recommendation on what the standards are to be met.

So, there are a lot of positive lessons to be learned here, but there are a number of provisos that have to be followed in the future. I'm not at all uncomfortable with what has been done up until now, but I want to make sure that we don't just keep going further and further in that direction without paying attention to the proper roles of all the parties.

MR. McNEILL: Tom Tipton.

MR. TIPTON: Thanks, Corbin. Good morning.

There were nine plants involved in the verification and validation process. I need to emphasize that what we tried to do in setting up this program for the V&V was to select plants that were not involved in the development of the guideline itself because we felt that would be a better test when we went through it with

someone completely unfamiliar with it. So, were successful in selecting seven out of the nine utilities who had not been involved at all in the development.

The plants that participated are included as an attachment to my prepared remarks. All four nuclear steam supply system vendor types were represented in the program. Over the last four months, there has been intense involvement by each of these utilities; the purpose was determine if it is clear how the industry's maintenance guideline works or if additional clarification is needed. This detailed verification and validation process exercised all elements of the industry's guideline. There were seven objectives in developing the verification and validation program, and the objectives and the results to date are as follows.

The first objective was to test the ability of utilities to understand and use the industry guideline to implement the maintenance rule. The participants in the V&V program concluded that the guidance can be implemented as written. However, it was noted that some clarifications of the guidance would be beneficial to the user.

The second objective was to determine the extent to which non-safety related structures, systems and components that are used in the emergency operating procedures should be excluded. The V&V utility

participants generally concluded that most of the non-safety related SSCs in the emergency operating procedures should be included. Exceptions were identified during the process. For example, there are some systems included in the emergency operating procedures to protect key systems such as the turbine that have only economic benefit and do not contribute to accident mitigation.

The third objective was to identify and evaluate the use of PRA and other methodologies for use in identifying risk significant and plant level performance criteria. It was concluded, as a result of the V&V process, that PRAs used in conjunction with expert panels identify the risk significant SSCs effectively. PRA or expert panels used alone have limitations that are overcome by their use in combination.

The fourth criteria was to verify that the use of the guideline will result in similar, but not necessarily identical, results among utilities. The V&V utility participants concluded that many differences in results are attributable to actual configuration differences and not to guidance ambiguities. This is a key element of the V&V findings in that it has to be recognized when an individual utility is inspected, care must be taken in attempting any comparison between similar units because of their different configurations. There

may be differences in the system selected as well as the performance criteria established. However, based on the findings of the V&V, there were good justifications for these differences.

Our fifth objective was to identify lessons learned that facilitate the rule implementation among all utilities. The implementation of the rule will affect utilities differently due to the different approaches that went into developing the individual maintenance programs and the state of implementation for each of the utilities. This includes the utilities' in-house capability, existing software and databases, as well as individual utility objectives and approaches for implementation. Key differences among some V&V participants were due to system/train bounding and the databases that currently focus on component data collection rather than system or train data. Some utility performance monitoring, cause determination and corrective action may need to be expanded.

Our sixth objective was to identify the cost to implement the rule using care not to understate the estimated implementation cost. Our preliminary average non-recurring initial cost in labor hours is approximately 16,000 hours, that's approximately eight person-years per plant. The average annual recurring cost was estimated to

be around 5800 hours per year, or about three person-years per plant. We plan to provide information to the industry on the anticipated resource needs and how to efficiently and effectively focus them.

CHAIRMAN SELIN: Could I stop you for a minute?

MR. TIPTON: Sure.

CHAIRMAN SELIN: My understanding was that this type of maintenance that we're talking about, was maintenance that well run plants would be doing anyway and poorly run plants ought to be doing. So, when you talk about resource implications, are there offsetting resources that go over these net increments to what the average plant is already doing in the way of maintenance?

MR. TIPTON: In looking at the V&V reports, there are not necessarily net increment increases because of the rule. In one report I noticed that they had indicated that they were anticipating an additional person-year to a person-and-a-half-year because of the administration of the program, in tracking the maintenance failures, the repetitive failures, reviewing industry data, et cetera, as required by the maintenance rule. So, I can't say that it is an increment in all cases.

MR. McNEILL: I would add the following. There was a degree of variability between various plants which suggests that some people will have significantly less

implementation manpower devoted to this, and others may have more. I think one of the preliminary conclusions that you might draw from that is, what is the current state of the maintenance programs at those plants. So, we'd have to do a little more testing on that to do it, but there was in excess of 100 percent difference at some facilities in the implementation, and I think that there is some conclusion that you could draw, that that's because they have a different degree of maintenance program.

CHAIRMAN SELIN: The one-time cost I could see because if you go from one system to another system, there's a cost to do that. But I'd be quite interested as time goes on, at the operating cost. Most of the paperwork, as I understand it, is paperwork that people think ought to be done anyway, not additionally to meet our requirements. As Mr. McNeill says, there'd be a big range of resources depending on what today's maintenance is. It would be really good if we could get some sense in the future of whether the improved maintenance has led to lower operating costs or lower operating effects by doing preventive maintenance instead of losing availability of devices. But I guess that's beyond the immediate focus of your program.

MR. TIPTON: We didn't focus on that for the

V&V.

Our last objective was to determine if implementing the rule by use of this guideline results in benefits to the industry, especially in regulatory areas. It is clear as a result of the V&V program that some utilities will benefit from implementing the maintenance rule and updating individual maintenance programs. However, it is also recognized that some utilities will expend resources to implement the rule with no significant benefit to their maintenance activities because of the effectiveness of the programs that they have previously established.

As we have discussed with the staff before, there may be changes to the regulations that should be made as a result of the final maintenance V&V program. For example, during the V&V program the utilities collected and provided us a large amount of data associated with containment leak rate testing, the requirements of Appendix J of 10 CFR 50. It was noted as a result of the review of this test data that a large majority of the penetrations and valves that are required to be tested do not fail. As discussed in our December 21 letter to you, Chairman Selin, the NRC was encouraged to evaluate Appendix J in light of the performance criteria and pursue appropriate regulatory modifications.

Corbin?

MR. McNEILL: Are there any questions that you might have of Mr. Tipton?

CHAIRMAN SELIN: I have a general question, but it's not in response to something you've raised.

MR. McNEILL: Okay. Then I'll finish and then we'll go over it.

COMMISSIONER REMICK: Excuse me, I have one on Appendix J. I'm not sure I understand, Tom, what you just said about Appendix J, what you found and the implications on Appendix J.

MR. TIPTON: Well, when we went through the exercise, we asked each of the utilities to provide us data on what they had seen. And we had utilities give us input from one to six outages. In other words, they went back at least six cycles to see what they had found. And in several cases, for example, in five outages, 200 penetrations had been tested and two had failed out of the 200. What we were finding was the trend based on historical data, in effect, penetrations just are not failing due to the testing.

So, our suggestion would be to look at a performance-based philosophy based on historical record, just like we're doing in maintenance.

COMMISSIONER REMICK: Performance-based Appendix

J, is that --

MR. TIPTON: That's correct.

COMMISSIONER REMICK: Okay. Thank you.

COMMISSIONER de PLANQUE: I'd just like to follow up on your seventh item. You said some utilities will be expending resources without a positive benefit. The implication is they were ahead of the pack in doing the maintenance programs essentially, anyway. Is that the proper inference?

MR. TIPTON: I think it is in that we had one individual utility in the V&V program that had not only finished their IPE, but they had a very detailed reliability centered maintenance program. They had developed all of this technology in-house. And their response to us was they would not really see much in the way of benefit because of their programs, but they would see approximately 1500 person-hours per year additionally because of the administrative burden to do it.

COMMISSIONER de PLANQUE: Just the administrative burden, not a need to change the program per se to comply with --

MR. TIPTON: They didn't see any major change in their programs, no.

COMMISSIONER de PLANQUE: Okay.

MR. McNEILL: The next question that we intend

addressing is where do we go from here? In addition to our efforts to develop and verify the industry guideline in the V&V program, we have responded to the NRC Federal Register notice requesting comments on your draft regulatory guide. In our response we described changes to the industry's guideline that we are considering based on the results of the V&V program as well as other comments from the industry.

The next step, from our point of view, is to review with the staff the comments received on the industry's guideline as well as changes we are considering incorporating by March of this year, and then to finalize that guidance by June of this year.

Following the finalization of the industry guideline, NUMARC plans to hold two three-day workshops in July and August to cover in detail the results of the V&V program, changes made to the regulatory guideline, and to provide a detailed discussion of how to properly implement the guideline and to do so effectively and efficiently.

We anxiously await the development of the NRC's inspection module associated with this regulation. I must stress that a major concern of our industry continues to be how our facilities will be inspected against a performance-based regulation. During the public comment period of the draft regulations, NUMARC has spent many

hours with individual utilities discussing those individual utility concerns regarding the potential that the scope of the rule could be unnecessarily expanded or utility implementation inappropriately evaluated. It is clear, as a result of the V&V program, that the NRC should not compare one plant to another during inspections, but evaluate the individual plant based upon its actual performance, taking into account its individual design characteristics and the effectiveness of its maintenance programs.

We have received assurances since the start of this process that the industry would have meaningful input in a public forum into the review of the inspection module. We are prepared to do so and look forward with keen interest to similar interactions.

In conclusion, I'd like to stress two key points as we go forward in this process. It is imperative that the Commissioners continue to be involved in the process through the final development of the industry guideline, that the NRC's inspection module and the associated training required to fully implement this first of a kind "performance-based" rule. It's very important that we continue interacting during the three years remaining prior to the final implementation, or full implementation, in July of 1996, as issues come to NUMARC's attention, and

to the NRC's attention, that we resolve them in a satisfactory and timely manner. We need to continue to have candid and well thought out discussions during the three-year implementation period. We look forward to continuing our discussions with the staff and with the senior management of the NRC as we go forward.

Thank you very much, and we would be pleased to answer any questions that you might have.

CHAIRMAN SELIN: I'd like to start off with a fairly specific question, and then allow my colleagues to come in. I have some general comments and questions at the end.

I wasn't here during the preparation of this rule, so I missed some of the history and some of the interesting interplay, but reading the rule as it resulted -- I have sort of a general question and then a specific question for you -- and it has to with the 50.65, Parts (a)(1) and (a)(2), the requirements for monitoring the effectiveness of maintenance in nuclear power plants. Let me just tell you both questions.

The general question is, as you read this, how do you see the difference in the implications for what utilities will have to do, depending on whether an SSC is put into paragraph (a)(1) or paragraph (a)(2)? And then, specifically, how would you determine for a given SSC

where you think it ought to be, under which paragraph it ought to be? In other words, the general question is, from your point of view as you read this rule, what do you see the implications for the utility in performing maintenance on SSCs that fall in paragraph (a)(1) versus SSCs falling in paragraph (a)(2), and then, more specifically, how would you see looking at an SSC and trying to determine, from your point of view, where it belongs?

MR. McNEILL: My opinion on that is that the actual maintenance that will be done, if properly -- if the maintenance routines are properly generated, either on an experiential basis or on an engineered basis like in a reliability centered maintenance program, that the true impact of the rule is more in the monitoring and the basis of the monitoring and the basis of the performance, and that management will have a better view of the effectiveness of that maintenance on specific systems, components and structures than they might otherwise have done absent the rule.

Secondarily, there is in the rule a process -- or at least in the implementation of the rule -- a process that should identify repetitive, faulty, improper or lacking maintenance, and would provide a feedback mechanism to correct that. And I personally think that

that's appropriate in some measure to the application of this to the life extension issue, is that there is a feedback mechanism built into this process that requires correction if, in fact, you don't meet certain maintenance standards.

Now, we have struggled -- I think that the biggest struggle that we've had in developing the guidelines and in our discussions with the staff, has been around the (a)(1)/(a)(2) category and defining those. And very candidly, we, I believe, have ended up with a document that complies with the rule, but is somewhat different than envisioned by the drafters of the rule but, in fact, makes more sense when applied in a plant situation.

CHAIRMAN SELIN: But in practice, do you see a big practical impact for an SSC, depending whether it's (a)(1) or (a)(2), or is it just a modest difference?

MR. McNEILL: No, it's a modest difference, because if you don't -- if you are not performing effective maintenance in (a)(2), you are going to end up in (a)(1).

CHAIRMAN SELIN: So, you would see a process by which SSCs would go back and forth, depending --

MR. McNEILL: Some would, some of them will stay in (a)(1) because of their safety --

MR. TIPTON: In (a)(2).

MR. McNEILL: -- in (a)(2) -- well --

MR. TIPTON: Maybe we should quickly go through the process as set up in the guideline. Basically, the way the process works is you identify those systems, structures, and components that are in the maintenance rule, and then through a PRA or a critical system analysis, et cetera, you determine those systems, structures, and components that are risk significant, and those that are risk significant and those that are standby, you would have to identify performance criteria to evaluate them against.

Now, if they meet the performance criteria based on historical record -- and our historical record is two refueling outages before 1996 -- they would stay in (a)(2). The third group would be those non-safety related systems that are operating, such as feedwater system, that would have their performance criteria at the plant level -- scrams per thousand operative hours, et cetera.

So, the performance criteria would be set up. You evaluate your systems, structures, and components against that criteria. If they don't meet it, you go to (a)(1) and establish goals for two reasons. The first reason was our first goal was to make sure we had one maintenance system, not two; the second was if you have a

goal on a system, it would be clear to the management that it's not meeting its performance criteria. In other words, there is a significance to the word "goal". And so in establishing the guideline, when the V&V program went through that, they established, for instance, the availability as a performance criteria, then they went back and looked at the last two cycles. If they had the acceptable availability, let's say, that was used in their IPE, then they would stay in (a)(2) under the preventive maintenance program but, if they didn't, they could move into (a)(1).

CHAIRMAN SELIN: So, on day one there could be quite a bit of difference from one plant to another about what systems are (a)(1) or (a)(2).

MR. McNEILL: That is correct.

MR. TIPTON: Absolutely, based on historical record.

CHAIRMAN SELIN: I see.

MR. McNEILL: And that is one of the realizations that we came to, that we had to -- even though the rule does not become effective until 1996, you have to really be implementing it prior to that in the plant so that you hit 1996 with the required data and performance criteria already well in hand.

CHAIRMAN SELIN: Well, let me just go on to

this, and then I'll turn it over to the rest of the Commission. Would you see any systems being so important to safety that they would be in any one initially, regardless of the plant performance -- in other words, just across-the-board?

MR. TIPTON: Not the way we've set this up, no -- the reason being we tied to the performance of that system, okay?

CHAIRMAN SELIN: In that plant.

MR. TIPTON: In that plant.

CHAIRMAN SELIN: As opposed to industry-wide performance.

MR. TIPTON: That's right.

CHAIRMAN SELIN: I mean, if diesels were running at 92 percent reliability instead of 98 percent reliability, you still wouldn't be --

MR. TIPTON: They would be (a)(1).

MR. McNEILL: They would be back --

CHAIRMAN SELIN: Across-the-board.

MR. TIPTON: Well, no. If a diesel at that utility was not meeting its reliability --

CHAIRMAN SELIN: That's not the question I'm asking. The question I'm asking is, are there systems that are so important to safety and where the industry-wide performance is not so exceptionally good that you

would start off and say they are all in (a)(1) in every plant until a given utility can show it's much better than the overall standard?

MR. TIPTON: Not the way we set this procedure up, no.

MR. McNEILL: But the end result is that you will get what you're looking for.

MR. TIPTON: If it's not performing.

MR. McNEILL: Well, you're going to get it monitored even beyond --

CHAIRMAN SELIN: Let me just tell you why I'm asking this question, is that when we talk about performance monitoring, we usually are talking about the performance of one plant compared to the industry average but, in fact, a lot of the performance monitoring is industry-wide. You know, if you have small samples, you may not have good data on one plant to another about variations, and the question is, across all 107-108 plants, what is the performance of this system, and your answer leads me to believe that you believe for the major the major systems you can determine characteristics on a plant-by-plant basis, even though some of these samples are pretty small.

MR. TIPTON: Well, it's also required in the maintenance rule that you evaluate against industry data

where applicable. And in the diesel situation, there's industry data that you're required to review against.

CHAIRMAN SELIN: Okay. Commissioner Rogers?

COMMISSIONER ROGERS: I wonder if you would comment a little bit on how many significant plant systems aren't entered into the NPRDS database that really are needed to be able to make this judgment of dispositioning of SSCs into Category I or Category II.

MR. TIPTON: In the industry?

COMMISSIONER ROGERS: Yes, the data isn't entered into the NPRDS system really, on some systems. I think the Instrument Air system is one that was mentioned here. How many important systems do you feel there is an inadequate database in NPRDS?

MR. TIPTON: The only one that I can remember going through the reports was the Instrument Air, but you have to understand that they don't rely just on NPRDS, CFAR, et cetera. They basically look first at their plant history on those systems and at a system/train level. Now, there will be situations where you'll want to go to the component level because it's an isolation valve between systems. But generally speaking, I think one or two of the V&V programs did go back and go through their NPRDS database systems compared to the industry, to do a check on where they are relative to the industry, but it's

more based on their plant's history at that plant.

The other thing that complicates it a little bit, you have to understand we're looking for maintenance preventable failures alone in terms of making the decision. So, that wrinkle's in there.

COMMISSIONER ROGERS: On these workshops that you plan to hold in July and August, who's going to participate in those?

MR. McNEILL: I don't think we've come to that conclusion, but I would see these in a manner similar to a number of workshops that we've had, that we will probably have both NRC and NUMARC presenters at the workshops.

MR. TIPTON: We will definitely -- I'm sorry.

MR. McNEILL: I would think we will invite the NRC to participate.

MR. TIPTON: Yes.

COMMISSIONER ROGERS: Well, you know, just along the lines that the Chairman referred to very early, on the importance of openness in this process, do you expect that any other organizations might be able to participate if they wish to?

MR. TIPTON: In the past, what we have done is we have the utilities, INPO, EPRI, et cetera, involved in our program. Basically, what we do in our workshops is go

through -- for instance, in this case, we would go through what the V&V plants went through, and be in a position to answer questions from their point of view. So, since the workshops will be focusing on the guidelines, that's how we'd handle it.

MR. McNEILL: I think another -- we will get back to you and give you our opinion on whether --

COMMISSIONER ROGERS: Yeah, I think that's worth taking a look at just to see --

MR. McNEILL: It's not clear what their role would be, whether they would be a presenter -- I'm not so sure they have the expertise to make the presentations for the nature of the -- but to be someone in the audience. We may be able to arrange that, but we'll get back to you through the NUMARC staff.

COMMISSIONER ROGERS: All right. It would be interesting to hear what your thoughts are on that.

CHAIRMAN SELIN: May I just follow up?

COMMISSIONER ROGERS: Sure.

CHAIRMAN SELIN: If this were a mature process, and really it is just a communication about how the rule applies to main feedwater pumps, that would be fine, but this is an evolving process with implications, as you drew, Mr. McNeill, that goes far beyond a speech and, therefore, the importance of not only accepting but going

out of the way to getting a range of opinions of what you might think of as a technical workshop is essential because it won't be just the presentation of here's how it works, it'll be almost certainly further evolution in what the policy and the process is, and it's essential that such meetings be not only open, but anybody who has a say be invited to do that say at that session.

I'm sorry.

COMMISSIONER ROGERS: No, that's fine. Really, that's all I wanted to say.

CHAIRMAN SELIN: Commissioner Curtiss?

COMMISSIONER CURTISS: I just have a couple of comments and a couple of questions here. I thought the presentation was generally pretty thorough at summarizing what obviously reflects a good deal of work that's gone in since July of 1991.

Let me say a word or two about the process because I, in many respects, share the observations that the Chairman made, and would like to pick up on your comments, Mr. McNeill, about where we go from here. I have several comments I'd like to make.

First, I think, from my perspective, that this process that we've employed which, in many respects, was necessitated and appropriate because of the fundamentally different kind of regulatory approach that's been taken in

this rule and, hence, needed and, I think, benefitted from senior attention both within the agency and within the industry.

The process, in my view, as it's been undertaken so far, has been a model of the way we in carrying out our independent responsibilities, and you in ensuring that you have sufficient flexibility to adopt approaches that may differ from plant-to-plant but nevertheless will achieve the objective or goal that we've established in this rule. This process, I think, comes pretty close to the mark in terms of being about an ideal process.

It is not without its vulnerabilities, the Chairman has summarized those, and I think there are vulnerabilities in terms of the impression that we're in cahoots in developing this approach, or somehow it's not being done in a fully open process, that we need to be sensitive to, and I'd like to say a word or two about that because I think there are things that we have done and can think about doing in the future to make sure that there is as inclusive a process that will benefit from a wide range of views, not just those represented here in the agency or within the regulated community, that will serve to improve the regulatory product from the standpoint of our job, which is to ensure that the public health and safety is protected.

It ought not to be lost upon anybody that this process has been in some respects a confrontational one. Beginning from the very outset -- confrontational, I think, productively so -- beginning from the outset, I will note when the industry as a whole opposed adoption of a maintenance rule that the Commission, nevertheless, for reasons that I think have been borne out in the subsequent developments, believed were appropriate and necessary.

Secondly, my sense, having watched this process rather closely and having attended some of the meetings and read all the minutes and been briefed on a continuing basis, is that we set out in the clearest and most unequivocal terms what our objectives were as an agency in terms of implementing this rule, and I think there came pretty close to the mark at the outset as well. There was a lot of productive discussion on how we achieve those objectives, but very little give on what the objectives were in terms of the performance of SSCs within a plant. And if there has been any accommodation here in that regard, I'd commend you for the significant movement that you've taken in the direction of what the staff insisted upon from the very outset in terms of how this rule had to be implemented. And I think that's been productive, been a lot of give-and-take on the prescriptive details. We've certainly benefitted from the V&V program, which I think -

- and I'll get back to in a minute -- gave us a technical perspective, as the Chairman emphasized, that we wouldn't otherwise have if we didn't have the benefit of a program like that.

I think the process has been a useful one. I think, as I say, and I've suggested in other contexts with all the caveats, about the need for openness. These meetings have all been conducted in a public fashion, and the opportunity for people to comment and to address -- raise and address issues, that this process can and perhaps should be used in other contexts, not just limited to performance-based regulatory initiatives where there was a unique justification for it here.

I read with great care your comments on the development of the inspection guidance, and I have, in fact, come to recognize that the inspection guidance for this rule is a matter of great sensitivity because that's where the "rubber hits the road" when we go out and inspect against what this rule in this guidance now will hopefully accomplish.

And I haven't given a good deal of thought to where I come out personally on the question of how to achieve the same kind of interaction effectively, in an open way, on the inspection guidance as we've achieved on the development of the guidance for the rule itself, but

I do think because we are talking about inspection guidance, there are some considerations that warrant taking a careful look at how we approach our respective responsibilities in the development of that guidance, and I'd like you to think about that. Our people, I know, have thought about it because I've talked to them about it.

One thought that I would toss out for your consideration -- and I don't need your reaction at this point unless you'd like to -- we have, for the development of the interim inspection guidance, which is the guidance that now governs inspection of maintenance programs between 1991 and 1996, employed a process that it seems to me might appropriately balance all the competing considerations, and I would commend it to you for your consideration here. Our people are hard at work on the development of the inspection guidance, and I think we'll hear more about that when they make their presentation.

I would offer the thought that perhaps what we ought to do is take the inspection guidance when our people complete its development and give it their best effort -- we'll find out when that is here shortly -- publish it for public comment so that it will get the widest possible public opportunity for vetting, if you will, and maybe in conjunction with that and similar to

what we did on the interim inspection guidance, conduct a workshop, we would conduct a workshop -- and I haven't raised this with the others, but it's an approach that the Chairman has suggested in the context of Part 52 and I think worked remarkably well there. We have used it for the interim inspection guidance and it worked there as well, and it might provide an opportunity for you to take a look at what our staff believes would be a first good cut at the inspection guidance to have an interaction like we've had in this context, but it's to ensure that there's an open forum where anybody else who wishes to interact, after being published in the Federal Register, would have that opportunity. And I toss that out for your reflection as we move to the next step.

I do have a handful of specific questions that I would like to ask you. Picking up on Commissioner Rogers' question about NPRDS, I, too, had the same question, but from a slightly different perspective. Instrument Air is the one system that you have determined is risk significant, that is not reported in the NPRDS context. And while I think you've described appropriately and accurately how an individual licensee will set the goals and performance criteria under this rule, the question, I guess, that recurs in my mind is, in the experience with the V&V program, did we learn anything

about the comprehensiveness of the NPRDS system that might suggest that as an industry-wide effort, NPRDS in certain respects perhaps could be more useful for the purposes that Commissioner Rogers laid out, to gain industry-wide experience and to fill the gaps that might exist today in the NPRDS reporting system, so that can complement in a more effectively way what we are doing in the maintenance context.

MR. TIPTON: Commissioner Curtiss, based on the experience of the nine V&V plants, their conclusion was overall at this time that there didn't need to be a change in the NPRDS database, okay -- but that's a sample of the industry.

As we go forward in full implementation for the industry, we may see a benefit, a need, et cetera. So, I can't close out changes, but just based on what we have gleaned from the reports and the feedback from the nine plants, they didn't see changes in the NPRDS at this time.

COMMISSIONER CURTISS: Okay. Well, I'd encourage you to take a look at that. I know our folks in AEOD over the years have focused on the question of how durable and comprehensive the NPRDS database is. It would be extremely valuable here in taking into account the industry-wide experience in setting goals and performance criteria not required, but -- NPRDS is not a system that's

required to do that, but it seems to me it could be extremely beneficial if any shortcomings that have been identified can be addressed here.

Second, the one major change that you have proposed, or major expansion, if you will, in the guidance, is in the area of the use of PRAs. Could you say a word or two more on how, based upon your comments, you'd propose applying PRAs in the risk significance context?

MR. TIPTON: I will get out of my area very quickly if I go too far on this, that's why I have the experts behind me, but what happened was, when we originally developed the concept of risk significant systems, we were looking at it in terms of contribution to core melt frequency, but other schemes came up during the V&V process that were equally applicable to make that decision on which systems were risk significant.

And, so, what we developed -- there were major changes to the guidelines after the V&V, as a result of that, to make that determination of which systems had the major contribution to reducing risk and identifying those systems through the PRA, and then based on that providing that to the expert panel for those areas where there's uncertainty or the model didn't cover the modes, all modes of the plant operation -- for instance, refueling outage

where you have RHR as an active system instead of a standby system.

And, so, with that combination of the two, and the fact that through the V&V they came up with the "risk/worth" criteria, that's why we had the major changes. But I want to emphasize that PRA is not the only way, as in the guidance, that you can get a handle on the risk significant systems.

COMMISSIONER CURTISS: I was impressed with -- I read the section here that you propose to expand upon, the risk achievement worth section in 9313, and I must say I was impressed with the work that's been done, and it's really come as a result of the V&V program where it's gotten greater focus, to define in more detail how PRAs might be used in this context, and give some practical meaning to the IPEs that will be coming in here and can be used, I think, very effectively in this context.

MR. TIPTON: Yes.

MR. McNEILL: I think that we recognize not only that, but we recognize that IPEs have not yet broadened beyond a certain set of operating conditions for the plant -- generally, the operating plant as opposed to the shut-down plant.

And, secondarily, we acknowledge that there is uncertainty associated with PRA calculations, and that you

can, in fact, use human minds to interface with that and interpret those results more than you necessarily can with statistics.

COMMISSIONER CURTISS: Okay. Just two other quick questions and then I'll be done here. On the (a)(1)/(a)(2) question, Corbin, you had an interesting comment that you didn't think it was quite in accord with the drafters of the rule and what they were thinking at the time. And as one who was around at the time and involved in the drafting of the rule, I guess my view is that we've seen some evolution in whether a system, structure, or component will start out under (a)(1) or (a)(2), but two comments that I guess I'd make.

First, it ought not to be lost sight of that whether you're under (a)(1) or (a)(2), that distinction has been the focus of a lot of discussion because there are two separate sections there that have different requirements associated with them, but it ought to be emphasized that there's a good deal of monitoring, as that term is understood in the (a)(1) context, that will go on in the (a)(2) context of licensees' PM programs, and because of the discussion of the difference between the two, I think we've seen the distinctions between the two breakdown a little bit. There's been this, I know, obsession with having systems all start out under (a)(2)

and stay there because of a fear of what (a)(1) might cause a licensee to have to do, but from my own personal perspective I think that the rule itself is sufficiently flexible to accommodate this outcome. In fact, I think it's a reasonable outcome and, from my perspective, this approach is fully in accordance with the rule itself, if there was any question --

MR. McNEILL: I have no question about that, but it has, in fact, gone through a lot of interpretation, public interpretation. I think we're fully in compliance with the rule. Part of the problem came from the definitions of terms in the beginning, which were not all fully defined -- what is monitoring as opposed to what is data taking, and things of that nature.

COMMISSIONER CURTISS: In that regard, let me ask you, based upon the effort that you've undertaken to date, are there any modifications or changes to the rule itself that you believe we need to consider?

MR. McNEILL: I don't think we are prepared to answer that question right now. We do know, or let's say we're cognizant of the fact that there has been some discussions about a minor modification of the rule at sometime before it's full implementation date, and I think that as time goes on and we work our way through this, that we may have some suggestions there, but --

COMMISSIONER CURTISS: Okay.

MR. McNEILL: Go ahead.

MR. TIPTON: There's one that's had a lot of discussion, and that is instead of annual review, go in a fuel cycle because you get data during a refueling cycle.

COMMISSIONER CURTISS: Right. That's the one that I'm aware of.

MR. McNEILL: That's the only very physical one that I know of.

COMMISSIONER CURTISS: Okay. You don't know of any other -- there are no others that you believe need to be made?

MR. McNEILL: No. I think we have been able to construct implementation guidelines that implement the rule satisfactorily, and do so in an effective manner from the industry's viewpoint, and not require a rule change other than that one specific one.

COMMISSIONER CURTISS: Okay. Finally, on the question of how this approach might fit into or be integrated with the license renewal rule, do you have a sense based upon your experience -- obviously, to the extent that one might look to this rule as providing a database related to performance of SSCs that are covered under both rules, the question that arises, how long do you need to develop that database?

Mr. McNeill, I think you touched on the question of utilities needing to get going on the implementation rule prior to 1996. Do you have a sense, based upon your V&V program, as to what period of time in implementation of the rule, one would need in order for the performance of SSCs to settle out in terms of whether they are under (a)(2) and addressed appropriately, under (a)(1) and the subject of goals, to give you a good database under your belt?

MR. McNEILL: I'm going to ask Mr. Tipton to address that, and I'm going to provide one further comment on the issue.

COMMISSIONER CURTISS: Okay.

MR. TIPTON: The way we set up the guidelines and the fact that we hopefully will finalize them in June of this year, we think the three-year time frame between now and full implementation we'll have sufficient time with the data we've already collected, to collect the necessary data to make that determination in terms of their performance.

COMMISSIONER CURTISS: Okay. I don't want to put words in your mouth, but if the licensee implemented this rule during that three-year period come July 1st of 1996, the potential that you see for application of this rule in the license renewal context would lead you to say

that we ought to have sufficient information upon the performance of SSCs to say that the maintenance program either is or isn't working effectively for that particular SSC?

MR. McNEILL: I believe that's the case, and certainly no more than one year beyond that particular case.

Now, I'd like to -- I know there's been a great deal of discussion about maintenance rule applicability to the life extension rule, and I'd like to give you one example that we've in fact had at our Peach Bottom station, and it's not a life extension issue, but it's very, I think, relevant in this case.

Back in the 1960s, the popular power cable at that time was made with a dielectric material -- and I do not know the specific name of it -- which in a moisture environment has broken down under a process that's referred to as "treeing", and it applies not only to power plant, but in fact we see it on our transmission and distribution systems. And we have had a failure at Peach Bottom from that. We did the appropriate diagnosis, and we have in fact gone in and sampled other cables by pulling them out and examining them. And I would say that that's the kind of outcome that should occur in the maintenance program that in fact provides relevance to a

broad area of the aging issue for it.

So, I am personally -- and I'm not speaking for the industry here -- I do think that there is a great deal of relevance of the implementation of the maintenance rule to plant life extension and building the requisite data necessary to support life extension.

COMMISSIONER CURTISS: Okay. That's all I have.

CHAIRMAN SELIN: If you'd just forgive me for one minute, I'd like to follow up on this question of rule changes that of all the areas where we must be absolutely certain that everybody has an opportunity to comment on that, not just the licensees, that is the critical area. Obviously, any recommendations for rule changes that come from the regulated community will be vetted for interest. Do you have any other suggestions as to how that area can be kept wide open?

MR. McNEILL: We had no anticipation that the rule change that we might suggest would be handled in anything other than the Commission's routine process for modifying its existing rules, which would include open public comment, and public notice, and whatever.

CHAIRMAN SELIN: Yeah, but there's another hat, which is the experience that has been gained through these joint working areas might suggest to other people rules changes. We need to figure out a way to make that

experience publicly available so that -- your conclusion is only one change is necessary. Somebody else might conclude something different.

MR. McNEILL: I believe they have a process to submit recommended rule changes to the Commission, I believe.

CHAIRMAN SELIN: Commissioner Remick?

COMMISSIONER REMICK: What impact, if any, do you foresee on the implementation of the maintenance guidance document, depending on whether the inspection guidance comes out sometime reasonably soon versus being delayed for several years? Do you see any impact on the implementation by utilities?

MR. McNEILL: Well, I see -- there will be a risk, let's say, at least a perceived risk in doing that. We are in the first of a performance -- you know, the first example of a performance-based rule. There is -- there was industry concern on how we were going to implement that rule. There has been industry concern about how it will, in fact, be enforced. And I think, though, if we wait too long, there will be an uneasiness out there as to whether I'm doing it right or not. And, you know, we would suggest that there be development of a module, that that module be piloted a number of times early in the process, before the rule is fully effective,

and that the lessons learned from that be brought back into the industry, and there may be some lessons for the staff to understand also.

I think we have the basis of a good -- the other reason for not waiting too long is that the individuals and the NRC's corporate history that's been involved in the verification and validation and in the dialogue that's gone on in the development of the guidance will evaporate with time, and if you don't codify those thoughts and understandings fairly early in the process, you may end up with an enforcement document that is quite different than the basis under which the guidelines were developed.

So, I would suggest that the sooner we move ahead with a draft document, the better off we would be.

COMMISSIONER REMICK: I certainly share those views because I think more than one occasion, the implementation of a rule through the inspection process was different than my interpretation of what the rule was, so I agree with that.

I'm very pleased with the outcome of this interaction on developing regulatory guidance. I'm personally not aware of any law of nature that says that knowledge, wisdom, experience, or insight increases as one gets closer to the Potomac, and I strongly favor the process carried out by a number of other regulatory bodies

in other areas of the world, in which those who have the expertise to contribute to complex issues like the development of this guidance, sit down around the table and work it out in an open forum, and I think that should be done and not worry about what the trade press, how they might report it.

I personally know of no other agency in this town that's more open than this agency, and I applaud that openness and certainly want it to continue. In fact, I'm so much in favor of openness that I favor that this maintenance rule in its present forum should have gone out for public comment, which it did not. I think through that we might have improved upon paragraphs (a)(1) and (a)(2) so that they are more consistent with the way that they are being implemented. But I'm very pleased with the process that we went through. I think we should not put it to rest. I think there are other areas where it can work, and so I am, as I say, very pleased with the interaction between the staff and those who participated in the development, and I hope that our staff -- and I realize they have resource limitations and other priorities -- but as soon as we possibly can work on the inspection guidance, I hope that we can.

CHAIRMAN SELIN: Thank you very much, Commissioner Remick. Commissioner de Planque?

COMMISSIONER de PLANQUE: I have no further questions.

CHAIRMAN SELIN: Okay. I have a couple of comments to make. First of all, obviously, I feel the same way that Commissioner Remick does about the openness, but what we are essentially inviting people to do is to comment on this rule as we see -- not to spend so much time looking at the rule before we see the regulatory guidance, but having the guidance in hand, we're inviting the world to go back and take a look at the rule and saying, having the guidance worked out, are there changes that ought to be made in the rule.

The second is that I would like to point out that we did issue the interim guidance for comment, which is quite unusual in our case. We felt obliged that since the industry was putting so much of a cooperative effort into working on the regulatory guidance, that the interim guidance -- you ought to have a chance and the world ought to have a chance to take a look at the interim guidance to see if it was a step in the right direction or the wrong direction. So, this process has led to a lot of communication at a lot of different levels in what I think is an appropriate fashion.

Third is I'd like to make just a short comment about the NPRDS in a generic sense. I said before,

remember, performance is both industry performance and power plant performance, individual plant performance. To the degree that there are industry statistics, these are the a priori probabilities that go into the testing or the evaluation of the individual plant. There's a big difference between having some plant statistics but no industry statistics, in which case that's your only basis, and having industry statistics and say going in the reliability is such-and-such, let's see what additional information comes up. So, whether it's through the NPRDS, which a lot of us are comfortable with, or some other device, effort has to go into getting industry-wide statistics, not just rely on the plant statistics to determine the best estimates of probabilities. For a small sample or unusual features, you'd be very hard put to look at, I don't know, a containment failure, or something like this, on a plant -- structural problems on a plant basis, when these are very usual events.

So, once you consistently try to use industry-wide statistics in a statistically valid way to arrive at the plant estimates.

Finally, I'd just like to say this has been, by all accounts, a very successful process, and it was not ordained, from what my colleagues tell me at the beginning, that it wouldn't work out so well. I think

that because the process has been so successful, it has been essential that we make these admonitions to you about not just casually extending the process to other areas where the prerequisites of transfer of technical information and the ability to lay it all out on the table may not follow. It's really a compliment to what you've done rather than a complaint about what you've done that's led to these general comments. And in particular, from my own experience with this process, I have to say that Mr. McNeill's leadership has been invaluable, and we hope that it's volunteered for many future projects in an equal fashion. So, thank you.

MR. McNEILL: If I might conclude with just a personal observation, and maybe a suggestion, and I'm speaking now for myself and my company possibly, but not NUMARC or the industry. I have been a strong believer in what I would call a revolution in the regulatory process in this business, recognizing that that takes time and takes testing and takes what I refer to as "baby steps" at times, but I think I agree that some of the observations, this has been, from my viewpoint, a very successful process. It's been a successful test of a methodology that might be utilized as we move forward in the appropriate areas.

I think we ought to be proud and confident of

what we've done rather than too excusatory, if you want to call it, of some of the dangers that are found here. But I would suggest possibly in order to solidify the public confidence in this process, that you undertake, or have the staff undertake, a modest independent review of the process that went through here, and have them start back with the day that the industry was offered the input in this forum, and test it to see if there's a factual basis that says that the public interest was protected, openness and candor were part of the process, and build a history of that based upon a separate review, that says -- that documents the fact that this appear to have worked, and you can provide input from the public on that particular process also as a basis for doing that.

CHAIRMAN SELIN: Thank you very much, Mr. McNeill.

Mr. Taylor?

(Whereupon, the first panel stepped back from the table and the second panel came forward.)

CHAIRMAN SELIN: Good morning, Mr Taylor. We welcome the views of the staff on this issue, both historical and perspective, and turn the floor over to you.

MR. TAYLOR: Good morning. With me at the table are members of the NRC Steering Committee which I

appointed, and the Working Group which we established for implementing the maintenance rule.

On my right, Owen Rothberg and Bob Baer, from the Office of Research; Jim Sniezek, my Deputy; to my left, Bill Russell and Rich Correia, from the Office of Nuclear Reactor Regulation.

The regulatory guidance for the maintenance rule is scheduled to be issued about June 30th of this year, and the purpose of this meeting is to describe NRC staff's efforts to develop that guidance as well as the related inspection procedures and other related activities.

Mr. Sniezek has headed the Steering Committee, and he has been working with the staff on the development of this guidance, and will brief you on exactly where we stand and what we've planned ahead. Jim Sniezek.

MR. SNIEZEK: Thank you, Jim. Can I have slide 2, please. (Slide)

This slide just highlights the topics we'll be covering during the presentation today. I think it's self-explanatory.

Slide 3. (Slide)

The maintenance was published as a final rule in July, 1991, to be effective in July of 1996. The Commission directed the staff to have implementing guidance in place within two years of rule publication, so

that the industry would have sufficient time to make any necessary changes in maintenance processes and practices prior to the effective date of the rule.

Shortly thereafter, in August, 1991, NUMARC proposed that the industry develop the guidance necessary for consistent implementation of the rule. The NRC staff supported the industry initiative, but concurrently initiated the development of a detailed regulatory guide so that the staff could have a guidance in place to endorse in the event that industry did not come through on its effort.

Slide 4, please. (Slide)

Therefore, in August, 1991, a Steering Committee composed of managers from Research, NRR, and the Office of the EDO was formed to interface with the senior managers of NUMARC and industry regarding the key elements of guidance which the staff deemed necessary for effective implementation of the maintenance rule. The Steering Committee also provided appropriate guidance to the NRC staff who had the task of developing a regulatory guidance for rule implementation. A working group comprised of appropriate staff from Research, NRR and the Regions, was tasked with developing the regulatory guidance in the form of a detailed regulatory guide.

In June of 1992, the staff effort on development

of a detailed regulatory guide was terminated since it was determined by the working group and the Steering Committee that the progress of the industry developed guidance was such that with a few changes it could be endorsed by the NRC as an effective way of implementing the maintenance rule.

You will note from the composition of the working group, we even envisioned at that stage that the implementation by the NRC would require regional input, so we had regional people on the working group as well as Research and the Office of Nuclear Reactor Regulation.

It's important to note that in carrying out its functions, the working group received support from various offices in the PRA, Trends and Patterns, and legal arenas. The key support personnel are identified on the slide.

Slide 5, please. (Slide)

The NRC Steering Committee had eight public meetings with the industry steering committee between August, '91, and June, 1992, and the working group had nine public meetings with the NUMARC working group to resolve a number of issues regarding the industry guidance documents, once it was decided that the industry developed guidance document was consistent with the maintenance rule.

NUMARC, in July of 1992, released its draft

guidance so that we could use it as an endorsement point in our draft regulatory guide which went out for public comment. We went out for public comment in November of 1992, and the comment period closed on January 15th of this year.

Slide 6, please. (Slide)

As of January 27th, we received comments from nine organizations plus the Division of Engineering and Research of the NRC. A quick review of the comments indicates there are no issues not previously considered by the staff during the guidance development process. We still have to do, obviously, a more thorough review of the comments that we have received. In the event the staff deems any changes to NUMARC guidance are necessary, we will so inform NUMARC.

Slide 7. (Slide)

In addition to the Steering Committee meetings and the working group meetings, the NRC staff working group attended as observers four NUMARC verification and validation meetings between August and November, 1992. We did that to learn first-hand the views of the industry regarding the usefulness of the NUMARC guidance document and to confirm the staff decision to endorse the industry guidance document. Until we completed that stage, we weren't positive that we would go through with the

endorsement. I believe that NUMARC described the insights that came out of the V&V effort, and we won't dwell on them at this time.

We expect NUMARC to provide revised guidance in the March time frame that we can use in going through NRC's internal process of the CRGR and ACRS to enable us to promulgate the final regulatory guide.

Slide 8, please. (Slide)

Regarding proposed changes to the maintenance rule --

CHAIRMAN SELIN: Before you go on, Mr. Sniezek. My memory of this process was not as smooth as that which is depicted at this point. It seems to me that there were a couple of points where the NUMARC approach and the staff approach were quite divergent, and it took some hard work to get them back.

MR. SNIEZEK: Early on in the process we had some very hard meetings, I will call that. In fact, we were a little chagrined to see the manner in which they were portrayed in the press, but it was very essential --

CHAIRMAN SELIN: Because they were so inaccurate, or because they were so accurate?

MR. SNIEZEK: Well, they were accurate --

(Laughter.)

CHAIRMAN SELIN: You have to get used to the new

world --

MR. SNIEZEK: I guess what -- there's no problem. We were quite blunt with each other, and I'm a believer in being blunt whether you're in a public meeting or you're having an internal staff discussion or what have you because, if you're not blunt, you don't get the issues on the table.

One of the issues that was discussed by the Commission with NUMARC was this (a)(1)/(a)(2) concept. We had a major problem understanding what the industry wanted to do, at first. And it boiled down very simply. In our mind, there is very little difference between (a)(1) and (a)(2). We finally recognized the fundamental difference is not in what we're going to do in the maintenance area, but it's the management attention that gets paid to the issue.

In the (a)(2) process, there are performance criteria which the components and systems and trains will have to meet. If they don't meet them, then it gets kicked up to the (a)(1) process and senior management starts focusing on it and it starts getting trended. But the fundamental types of maintenance remains constant whether you're in the (a)(1) or (a)(2) process. We had quite a few meetings on that issue.

Bill -- there are a couple other topics, but

that --

MR. RUSSELL: There were other issues, whether you needed to monitor for performance at the train level rather than just the system level, what constituted a system failure. So, there were a number of disputes that were quite candid and, basically, we got down to describing the rationale for the positions that were taking on each side, and what we would deem to be acceptable and what we were concerned about was somehow or other coming up with some words that would take the substance out of what we were trying to achieve with the maintenance rule.

MR. SNIEZEK: What really worked well is, we had developed our regulatory guide how we read it, and we were doing it how we would have done it. In the meantime, the industry developed the way they wanted to do it and, obviously, they weren't in locked step, and we had to come to an understanding of why the differences exist.

COMMISSIONER CURTISS: Let me emphasize that point because that was a key -- I don't know if it was a tactical decision or what have you, but the decision, perhaps driven by the schedule, to develop what the staff believed to be an appropriate guidance document for the implementation of this rule. I know a lot of work went into that by Owen and Bob and some other people, and

considerable effort to think through in careful detail what the staff expected.

Having that out on the table and laying out the expectations that you had in terms of the objectives in the clear and unequivocal fashion that you did, in my view, gives this process an important perspective. That is to say, it was clear and up front and open right at the outset, with the details, the prescriptive implementing details subject to the back-and-forth, what it is that we expected out of this process. And the observation that I made when the industry representatives were here, that there was a lot of give-and-take, but with respect to the objectives, those were laid out in clear and equivocal terms. And that decision to put that guidance document out, I thought, helped catalyze the process and focus the thinking and was a useful step.

MR. SNIEZEK: If I could digress just a moment at this time, I had mentioned that it made the process even more difficult to reach resolution because we had sort of solidified our thoughts and, you know, once a regulator solidifies their thoughts, it's very difficult to get them to change. But that did preserve their original objectives, so there was no question that the original objectives would be met. And that may be a thing we want to consider in the future. It's different than

from starting from scratch and sitting around a table and just thinking about it from two different sides. When you both have your positions put down and then start knocking heads, I think you get a better product overall.

Going on, changes to the maintenance rule. Early in the guidance development effort, it became clear that the evaluation period should be changed to every refueling outage since the normal full maintenance cycle is based refueling cycles. A proposed rule change is being developed by the staff and should be ready to go out for public comment by the time the maintenance guidance is finalized in June of '93.

MR. TAYLOR: This will go through our standard process.

MR. SNIEZEK: Standard process.

Slide 9, please. (Slide)

Related NRC activities. There are several related NRC activities. One is license renewal. The staff is of the belief that the licensee's implementation of the maintenance rule can fulfill many of the requirements for an effective program to address age-related degradation under the license renewal rule. This will be suggested in the discussion section of the regulatory guide for the maintenance rule, and can be detailed in the regulatory guidance for the license

renewal rule.

The staff's exact proposal remains to be fully developed, and will be presented to the Commission in March of this year when we discuss the license renewal rule.

Diesel generator reliability. In June of '91, the Commission gave staff direction to develop a rule pertaining to diesel generator reliability. A proposed rule and reg guide was issued for public comment last year. Based on the comments and further staff review, we believe that the industry guidance document for the maintenance rule can be modified to use the diesel as a specific example for treatment under the maintenance rule, and this would eliminate the need for a separate rule and reg guide on diesel generator reliability. The example would include both the reliability and availability aspects of the diesel generator. NUMARC is developing guidance to put into their guidance document to use this as an example, and we will be coming shortly to the Commission with a paper and follow up with a direction to issue a rule on the diesel generators, and provide some options to the Commission of which one of the options will be to use the maintenance rule and the example of the diesel in the regulatory guidance as fulfillment of what we need to have for the diesel generator. That will be up

in, what, the March time frame, I believe, it will be before the Commission.

Could I have slide 10, please. (Slide)

CHAIRMAN SELIN: Let me just say, that sounds sort of cute to me, I have to tell you that. Please make sure that when you look at this proposal, you take a look at the implications and precedents for dealing with what amounts to the rule change in the guidance document. It's not that we need a lot more rules, but somehow that has a feeling of being a little bit too cute.

MR. PARLER: We don't have any precedents that say you can change a rule in a guidance document, that I'm aware of. If we do have them, I wouldn't follow them.

CHAIRMAN SELIN: I'm sorry, it's not change a rule, we don't have rules today, but it's a --

MR. SNIEZEK: This would obviate the need for a new rule.

MR. TAYLOR: Could.

MR. SNIEZEK: Could.

CHAIRMAN SELIN: I did say it, I didn't say it properly, but it's an area in which we've at least considered that a rule was the appropriate vehicle, and if we don't do it by rule but by guidance, let's make sure we carefully think out what are the implications.

MR. SNIEZEK: And it has to be based on the

public comment that we have received so far on this.

CHAIRMAN SELIN: Okay.

MR. TAYLOR: We'll bring that to the Commission, obviously. I'm sure if we do that, we have an agreement.

MR. SNIEZEK: The NRC inspection procedures. The NRC inspection procedures are to be developed by the staff immediately after the regulatory guide issuance. Since the regulatory guide is to be the basis for inspection procedure acceptance -- this is very important -- we expect the procedures to be drafted by mid '94, and to hold public workshops and conduct staff training in that time frame.

It is important to note at the public workshops we will specifically invite not only industry, but various public interest groups to participate in that workshop. Shortly after we have the workshops and refine our inspection procedures and conduct staff training, we will be conducting pilot inspections. We're shooting for the late '94 time frame to conduct our pilot inspections.

In our mind, it is very important that a consistent performance-based regulatory philosophy, as espoused in the rule, be portrayed in the guidance document, in the NRC inspection procedures, and regulatory interpretations made by our field inspectors. We believe that the above process will help ensure the consistency as

well as a common understanding by the licensee and the NRC staff regarding expectations.

Slide 11, please. (Slide)

Schedule for completion of the regulatory gu . As I mentioned, public comment period has closed. Public comments will be resolved by the end of March, '93. We will be going through the ACRS and CRGR processes in April and May, and we expect to issue the regulatory guide in final form by the end of June, '93.

CHAIRMAN SELIN: How does the diesel issue fit into this schedule?

MR. SNIEZEK: It will be before the Commission before then, so that it -- in the March time frame the Commission will get the diesel issue to make a decision on.

CHAIRMAN SELIN: And there will have already been sufficient public comment that the Commission can act on that then?

MR. SNIEZEK: We have already received public comments. They've been examined, and they're forming part of the basis of our recommendation to the Commission.

This concludes the staff's presentation.

CHAIRMAN SELIN: Commissioner Rogers?

COMMISSIONER ROGERS: Yeah. Just on some of the comments that you received, could you indicate what the

nature of the Division of Engineering Research comment was?

MR. SNIEZEK: The Division of Engineering -- and I'll paraphrase it; I just spent ten minutes looking at it, so I haven't done a thorough analysis, and I'd ask other people to chime in if they so desire -- is that, in my mind, it was trying to change the maintenance guidance document into an aging guidance document, change it more into a license renewal guidance document, which also means that we have a lot of work to do with our staff yet, to make sure they understand how this all ties together. That was it, in my mind, in a nutshell, Commissioner. Do you have anything you want to add to that, Bill?

MR. RUSSELL: I would just add that the major emphasis appeared to be on the Class I structures and some of the components which we have not yet captured with rule change, that we're looking at, related to tanks and other components. We're working on endorsing later versions of the ASME code which would capture some, and there is some experience with Class I structures. But we have not, at this point in time, concluded that they should be given treatment within the scope of the maintenance rule.

COMMISSIONER ROGERS: Uh-huh. Okay. Of the comments from the outside, there really seemed, at least in the materials that we received, only two that were --

seemed to be negative and how would you regard those two -- - the substance of those two negative approaches? One was the Illinois Department of Safety and the other was from Centerior Energy. It seemed to me the Illinois Department of Safety comments really related, really, almost philosophical, and they related to a totally different view of what regulation ought to be in this area, quite contrary to the one that the Commission adopted, in which we specifically took the position that a performance-based rule was what we were looking for, and we really wanted to emphasize the responsibility of the licensee to define -- look very carefully and define those systems which really needed maintenance activities, and to justify that definition. Whereas the Illinois Department of Safety seemed to feel that unless the regulator made that definition, that it wasn't going to result in an effective maintenance program. I wonder if you might comment from your point of view on that.

MR. SNIEZEK: Commissioner, I think you read it just the same way I read it but, again, it was a very quick look at it and we haven't really focused that hard yet.

Bill, or anybody else -- Owen, I think you probably looked harder than anybody els so far.

MR. ROTHBERG: What they were outlining was a

prescriptive rule that was, well, rejected by the Commission in '91. A lot of those points, those specific points that the Department of Illinois came up with, were right out of some of the background material for that prescriptive rule.

COMMISSIONER ROGERS: The comments that you made a little bit earlier about the importance of the staff attempting to make its own guidance before you had to comment on the industry view of this, to me, that's a very important process. I agree with you totally that it gives for a much better result. I'm not sure that it has to be contentious, necessarily, although I suppose there will be some of that inevitable -- inevitably will creep in -- but the staff sitting down and really trying to do the job itself before commenting on somebody else's efforts, I think, is very salutary. You have a much better feeling about what you think the issues are, and I think that is terribly important.

How would you characterize the important differences, though, between the staff's approach and the industry's approach here in developing the guidance?

MR. SNIEZEK: I think the important difference was they took it from an implementation standpoint and what it meant to the plant staff and the management of the plant and the time expenditure of the various people in

the plant staff, where we took it more head-on with these are the right things to do, you should have goals, you should have training, et cetera. They ended up doing the same thing, but it really broke down to what level of management do they really want to focus in the plant, on the issues whereas under (a)(2), whether you're meeting your performance criteria in your maintenance program, may be judged by the plant manager and the maintenance manager and the operations manager under (a)(1), if you find you weren't meeting that and it gets kicked up to (a)(1), the trending and the goal-setting to get back so you are meeting your performance criteria, would be looked at by the vice president -- VP, Nuclear -- at that level. So, it's more -- we saw it as a delineation of who is really doing the job in the utility. And that was hard for us to get into at first, and we had a lot of discussion on that.

COMMISSIONER ROGERS: Yes. Uh-huh. I see. Well, I think that's helpful to see that. Someplace there was a reference to the concept of the appointment of an expert panel to bring together PRA and the IPE results, and I wondered if you had any thought of how such expert panels might be set up, or whether there's been any experience in trying to do that, particularly in this area of prioritizing SSTCs -- and I notice we now have a "T" in that collection that didn't used to be there.

MR. SNIEZEK: I'd ask Bill Russell if he would address that, please.

MR. RUSSELL: Well, the process -- in fact, my looking at the proposed changes to how they define "risk significance", I think what came out of V&V is, in fact, a step in the right direction. It has both deterministic processes that are followed from the standpoint of identifying importance of maintenance and maintenance work, summing those up and then making judgments about how much improvement you can get with maintenance as it relates to reliability and availability, and then subjecting that to the individuals and the plant staff both that would have risk experience, maintenance experience, and operations experience, to test that because there are a lot of uncertainties in the process.

And, so, I would characterize it more combining those two features rather than using one or the other. And, in fact, the methods that they've defined in their comments appear to me to be a step in the right direction. It's using importance measures, whether you're using importance measures for change in core damage or potential improvement in risk as a result of maintenance assuming maintenance was perfect, and how much improvement can you achieve. So, the techniques seem to be reasonably well thought out, and the process is one of then applying that

to judgment and testing what comes out numerically to see if it makes sense.

COMMISSIONER ROGERS: But this panel you would see as being composed entirely of people from the plant itself --

MR. RUSSELL: Yes.

COMMISSIONER ROGERS: -- or the licensees --

MR. RUSSELL: The way it's envisioned now is that this would be done with licensee resources. Whether they brought consultants in or others to assist them with the process would be up to them, but it would be a process that would be executed by the licensee.

COMMISSIONER ROGERS: Did you have any comments on the NUMARC definition of "criteria" for the risk reduction worth listed in 9.31.1?

MR. RUSSELL: As it relates to the comments we received, we're still reviewing those in detail. What I've given you is what I'd characterize as kind of a top level review. We still need to go through those in some detail. We have received comments from the staff, and we have not yet reviewed those internally with the steering group. Once we do that, we plan on having a public meeting with NUMARC to review their comments as well as other comments we've received. There are some areas that we feel we may want to make some changes to the NUMARC

guidance, for staff reasons, and that process is ongoing.

COMMISSIONER ROGERS: I see. All right.

MR. RUSSELL: So, rather than giving an answer now, I'll give you the general feel, and that is we think it's going in the right direction, and that it is an improvement, but we don't have detailed comments on it at this point.

COMMISSIONER ROGERS: Well those are the only detailed questions or comments I have, except that I think that this -- I really want to echo some of the remarks that Commissioner Curtiss made earlier, that this started out a little bit rocky road, but it has, I think, proven to be a very successful approach to dealing with issues where the responsibility clearly -- and leadership -- clearly has to be with the licensee. We don't do maintenance, they do maintenance. And I think that while it is a possibly delicate matter of to what extent we are working hand-in-glove with the licensee in developing these things, I think that the issue that must be kept very much in mind is that the more the licensee takes the initiative, the more they are acknowledging their responsibility and the less that accusation can be made that they are only following what we told them to do, when it's really their responsibility to carry out effective maintenance.

So, I think that to me the process has been a very salutary one, and one which, in fact, reinforces the sense of ownership of the plant by the licensee, which is absolutely fundamental to long-term safe operation. So, I think that's something to be kept in mind when one expresses some concern about how closely we're working with the industry here. We're forcing them to come forward with a definition of what they really want to do and how they want to do it, and that, it seems to me, is absolutely fundamental to long-term safety.

MR. SNIEZEK: Commissioner, I think that's exactly right, and I'd like to draw something as a corollary to NRC. The inspection procedures are our responsibility to go through. And I think it's very that NRC staff defines what we're going to inspect. Now, whether or not our acceptance criteria appears to be acceptance with the guidance documents, I think that's where we need the feedback from the public and the industry, but what we inspect is a regulatory responsibility. I think when we develop our inspection procedures, we have to keep that in mind on that side of the coin as well.

COMMISSIONER ROGERS: I think that's a very good point, to draw that distinction, yes. Yes. Well, I'd like very much to commend the staff for bringing this to

this, I think, very positive point in the development of the maintenance rule.

CHAIRMAN SELIN: Any other comments? Commissioner Curtiss?

COMMISSIONER CURTISS: Let me just summarize. I don't have any questions except for a couple on the schedule. The one thing I do want to do is commend everybody here at the table, as well as a couple of people who are not here at the table, who have worked so long and hard on this product from July of 1991. I know from watching it closely and talking to you and meeting with you about every other month in that period of time, that your effort to bring this to the conclusion that it's at now and, over the course of the next four or five months, to move forward with the final reg guide and the development of the response to the comments, has been truly, I think, commendable and significant. A lot of long hours went in on this -- Tom Foley and Gary Mazuno, who are not here at the table but in the room, senior management within the agency, Tom Murley and Eric Bechjord who made this process work because it involved the devotion of people from both NRR and Research -- there are a lot of people to be commended here, and I've probably missed some by picking the people that I've selected, but Rich Correia, Bob Baer, and Owen Rothberg, I must say, and

I'll say so in this public fashion, have done a truly creditable job here.

Just a couple of quick comments and questions. I'm pleased to see that you're on schedule to have the reg guide finalized by June 30th of this year. That's been a point of particular interest to me, and I have watched with great interest as that schedule, which I keep in my file on my desk, has continued towards that conclusion for the reg guide. And I look forward with great interest to the staff's recommendations on the diesel generator rule, B-56, which will come up, I guess, in March of this year, together with your recommendations based upon what we've done in this context on the license renewal initiative, that I know NRR and others are working on carefully right now.

Two questions that I guess I'd like to ask. Where do we stand on the OMB paperwork clearance package? Has that gone to OMB?

MR. ROTHBERG: It went over to OMB on the 21st of January.

COMMISSIONER CURTISS: Do you anticipate, or have you heard --

MR. ROTHBERG: Sixty days.

COMMISSIONER CURTISS: They have 60 days to review that?

MR. ROTHBERG: They have 60 days.

COMMISSIONER CURTISS: Okay. All right. I assume that process will go forward smoothly, but given our experience with some of the other rulemaking packages, if there are any difficulties that arise in that context, I think it would be appropriate to raise those up to the appropriate level to ensure that they get resolved and that doesn't become a critical path item.

The one-year rule change, I take it there are no other changes in the rule that the staff will be recommending, save for the change from the annual evaluation to an evaluation period that would comport with the fuel cycle?

MR. SNIEZEK: At this time, that's correct.

COMMISSIONER CURTISS: Okay. My own view on that, if that's the case, is that based upon the relatively focused nature of that issue -- in fact, it's almost administrative in nature -- in the interest of making sure that the guidance and the rule change, that particular one, the OMB clearance package and the inspection guidance, which I'll turn to in a minute, are in place as early as possible so that the licensees that may wish to implement this rule before 1996 can do so, I would encourage you to move forward as swiftly as possible with the rule change to modify the one-year provision and,

if that can be done earlier than after the conclusion of the reg guide and, in fact, if it can be done consistent with the EDO delegations, I think we ought to move forward as expeditiously as we can.

The inspection procedures, I noted that you've targeted mid 1994 for the development of those inspection procedures, and I know because this is the first performance-based rule, and because of the significant interest in those inspection procedures as well as the work that the staff has ongoing in other contexts, that it's important to take the time necessary to do that right. And I share Commissioner Rogers's comment, and I think the comment, Mr. Sniezek, that you made, that that's an instance where it would be useful for the staff to put down first in its own document what it believes ought to be the basis for inspection, and because of some aspects that are unique to the inspection arena, I would encourage you in that context, as I have already for the industry participants, to come up with an approach that would secure the lightest possible public participation, perhaps even to the point of publishing the inspection guidance in draft form prior to the workshop so that people can chew over that and have a good sense of what their concerns are when they come to the workshop.

At the same time, it seems to me that because of

the great interest in this aspect of the program and since this will be a central component, I think, of the willingness of licensees to proceed with implementation prior to 1996, it would behoove us to try to get the inspection guidance out as promptly as possible so that they can "see the whites of our eyes", if you will, and get a sense of what the inspection guidance might look like.

I know a yeoman effort has been devoted to this task and has gotten us to this, what I think is, a very successful point, and I trust that same kind of effort will go into the inspection guidance. And I'll commend you in advance for the development of that. Thank you.

MR. SNIEZEK: Commissioner, one point that NUMARC raised, and that was the loss of continuity, and I think, again, in the selection of the working group, we picked people who are involved, like Rich Correia is a section chief in NRR, who is responsible from a maintenance inspection procedure development. So, the thought process and things of that nature, we're going to strive -- we will have the continuity -- we won't strive to, we will have the continuity in that.

COMMISSIONER CURTISS: Good.

MR. RUSSELL: We've also committed in a Commission paper that forwarded up the interim guidance,

that we would have public workshops. In the last public workshop we had, I committed to following a similar process -- that is, we would notice the availability in the Federal Register, we would make the documents publicly available sufficiently in advance, and we specifically made efforts to invite others who may have views different from the industry. We then took the comments in that workshop and then we made changes as we saw they were appropriate, to the guidance, and then we informed the Commission what changes we made and why, and forwarded it up. And I think that that process worked well, and it is a very important issue from the standpoint of performance-based inspection.

We have changed significantly. At that time, I thought that we would be focusing on a late 1995 completion. I moved that up by about 18 months, to try and get it in the middle of '94, such that the guidance is available and we can have the workshop. The one area that we need to think out, and that is how soon we can get into pilot inspections and inspecting against a rule that's not yet in effect and how we treat that. We do believe we need some experience with the guide, and we need to work on that activity, but our intent now is to both move up completion of the guidance and the pilot inspections such that they would both occur hopefully in '94 or in early

'95.

COMMISSIONER CURTISS: Okay. Very good.

CHAIRMAN SELIN: Commissioner Remick?

COMMISSIONER REMICK: First, a question on clarification. Jim, on slide 7, you need not refer to it, but you indicate that NUMARC is providing divine guidance based on [illegible] effort by early March, 1993. Is that in addition to [illegible] comments provided --

MR. SNIEZEK: It's my understanding that would be refinement to their comments. They are still working it, and we need something to go with the best we have, to take to ACRS and CRGR. So, that's why we need a March document; otherwise, we could wait until June.

COMMISSIONER REMICK: I see. Okay. I want to second the comments that Commissioner Curtiss made on the inspection guidance. Might I assume that your pilot inspections that will be under your process of managing team inspections, managing, coordinating and so forth, consistent with that guidance you provided us in the past.

MR. RUSSELL: Yes. That is the intent. We also recognize that this would come to the Commission probably in draft form, so that you are aware of what we're going out to meet on, and then we would conduct the meetings and advise you as to how we propose to change the guidance --

MR. SNIEZEK: Commissioner, as another point, I

would even envision that stage, since the industry will know who they believe is the furthest along in implementing the industry guidance on maintenance, that I will even ask for volunteers for the pilot inspection to go out.

COMMISSIONER REMICK: Good. Okay. In the interest of coherence and consistency of regulatory activities, I personally like what you're thinking about in the diesel generator area, and certainly encourage you to consider along those lines. That makes a lot of sense to me. I must admit diesel generators are a very important system or components, and it's hard to imagine why they should be handled separately, so I'm encouraged by your current thinking on that.

And I would just briefly like to join in echoing my commendation to the staff, too, for your effort in this area. It's highly commendable.

CHAIRMAN SELIN: Thank you. Commissioner de Planque?

COMMISSIONER de PLANQUE: I don't think I need to add to those commendations, so let me just ask a question for my education, since I wasn't here in the beginning of the process.

It's my understanding that in the beginning there was some difficulty and a wide range of opinions as

to what should come under the scope, not just (a)(1) and (a)(2), but what should come under the scope in general.

Has this problem gone away? And, if so, can you tell me how that's been resolved?

MR. SNIEZEK: Let me say, it's gone away. It's been resolved. I don't know if I can tell you how it's been resolved, but it's been resolved. Bill?

(Laughter.)

MR. TAYLOR: Bill, why don't you --

MR. RUSSELL: Essentially, the way it was resolved was that in the guidance they adopted language which was identical to the rule as it relates to scope, and the one area that there was some negotiation on was the area of "could cause a reactor trip", which could be a subjective all the way back to the mine mouth where you mine the ore, you know. So, clearly, there needed to be rule of reason. And what we agreed upon was essentially "has caused a trip", either based upon industry experience or based upon plant-specific experience. So, that was the one area where there was some fuzziness, and we reached agreement on that fairly early on. And with that exception, I think that the scope is as defined in the rule and as the background and the statement of considerations described it.

MR. SNIEZEK: Well, there was one other, and

that was emergency operating procedures, also.

MR. RUSSELL: Oh, yes, the --

MR. SNIEZEK: We had a lot of discussion on that one. And the NUMARC guidance document, the latest version, has gone, as I understand it, even further than where the staff was pushing as a rule of reason.

MR. RUSSELL: In fact, as Tom Tipton indicated in his remarks, where things are included in emergency procedures which are for equipment protection, that would be excluded. So, for example, if you had the lube and lift pumps for the main turbine included because you wanted to keep from destroying your main turbine, that really is there for economic protection and not needed for safety considerations.

COMMISSIONER de PLANQUE: Okay. So, you're not expecting any problems in this area with implementation?

MR. RUSSELL: No.

COMMISSIONER de PLANQUE: Thank you.

CHAIRMAN SELIN: Thank you. Well, thank you very much. I think it's very important to come back and concentrate on this one point that -- with all respect, you didn't say it right at the beginning, but you did later on -- the reason for the staff to start off is not just a backup in case the NUMARC regulatory guidance was uneven, it was to make sure we brought something to the

table and that we had something we could continue. It's what you might call a Hegelian regulation. You have thesis, and then you have conflict or antithesis, and then you get some synthesis at the end of that, and that's a very important lesson. We can't just get lazy and turn it over to somebody and see if they turn out something. We need to know what we think as well, in advance.

So, thank you very much, folks.

(Whereupon, at 11:54 a.m., the meeting was adjourned.)

CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events of a meeting of the United States Nuclear Regulatory Commission entitled:

TITLE OF MEETING: BRIEFING ON IMPLEMENTING GUIDANCE FOR THE MAINTENANCE RULE AND INDUSTRY VERIFICATION AND VALIDATION EFFORT

PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: JANUARY 29, 1993

were transcribed by me. I further certify that said transcription is accurate and complete, to the best of my ability, and that the transcript is a true and accurate record of the foregoing events.

Phyllis Young

Reporter's name: PHYLLIS YOUNG

IMPLEMENTING GUIDANCE FOR THE MAINTENANCE RULE, 10 CFR 50.65, "MONITORING THE EFFECTIVENESS OF MAINTENANCE AT NUCLEAR POWER PLANTS"

PRESENTATION TO THE
NUCLEAR REGULATORY COMMISSION

JANUARY 29, 1993

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BACKGROUND

* RULE PUBLISHED 7/10/91. (EFFECTIVE 7/10/96)
* INDUSTRY/NUMARC PROPOSED TO PROVIDE IMPLEMENTATION GUIDANCE FOR THE RULE 8/91.
* NRC STAFF FORMED STEERING GROUP AND WORKING GROUP 8/91.
* REGULATORY GUIDANCE TARGET ISSUE DATE IS 6/30/93.

NRC STAFF STEERING COMMITTEE

JAMES H. SNIEZEK, DEDR
WILLIAM T. RUSSELL, NRR
CLEMENS J. HELTEMES, JR., RES
ROBERT L. BAER, RES

NRC STAFF WORKING GROUP

RICHARD P. CORREIA, NRR
MARK RING, REGION III
OWEN O. ROTHBERG, RES
THOMAS F. STETKA, REGION IV

STAFF SUPPORT TO THE WORKING GROUP

CARL E. JOHNSON, JR., RES
PATRICK D. O'REILLY, AEOD
THOMAS FOLEY, NRR
CHARLES D. PETRONE, NRR
GEARY S. MIZUNO, OGC

* EIGHT PUBLIC MEETINGS BETWEEN NRC AND INDUSTRY, 8/91 TO 6/92.

* NINE PUBLIC MEETINGS BETWEEN NRC AND NUMARC, 6/92 & 7/92.

* SECY-92-229 OF JUNE 25, 1992 INFORMED COMMISSION OF PROGRESS AND STAFF'S INTENT TO ENDORSE THE INDUSTRY GUIDANCE. SRM OF 7/17/92 AFFIRMED STAFF'S INTENT.

* NUMARC 93-01, REV. 2A, RELEASED BY NUMARC ON JULY 10, 1992.

* DRAFT REGULATORY GUIDE OFFERED FOR PUBLIC COMMENT (FRN 11/24/92). COMMENT PERIOD CLOSED 1/15/93.

SUMMARY OF PUBLIC COMMENTS

* TEN SETS OF COMMENTS AS OF 1/27/93:
  - STATE OF ILLINOIS
  - YANKEE ATOMIC
  - WESTINGHOUSE
  - ENTERGY
  - NUMARC
  - NORTHEAST UTILITIES
  - TVA
  - CENTERIOR ENERGY (TOLEDO EDISON)
  - ARIZONA PUBLIC POWER
  - RES/DE

* INITIAL REVIEW STARTED.

NRC STAFF OBSERVATIONS OF THE INDUSTRY VERIFICATION AND VALIDATION (V&V) EFFORT

* NRC STAFF WORKING GROUP ATTENDED FOUR NUMARC V&V MEETINGS 8/92-11/92.

* INDUSTRY APPLIED NUMARC GUIDANCE TO ACTUAL PLANTS.

* INSIGHTS GAINED ON A NUMBER OF TOPICS SUCH AS SCOPE, PLANT DATA BASES FOR SYSTEMS/TRAINS, USE OF PROBABILISTIC RISK ASSESSMENT, AND CONSIDERATION OF EQUIPMENT TAKEN OUT OF SERVICE.

* NUMARC PROVIDING REVISED GUIDANCE BASED ON V&V EFFORT BY EARLY MARCH 1993.

PROPOSED CHANGE TO MAINTENANCE RULE

* §50.65(a)(3), "PERFORMANCE AND CONDITION MONITORING ACTIVITIES AND ASSOCIATED GOALS AND PREVENTIVE MAINTENANCE ACTIVITIES SHOULD BE EVALUATED AT LEAST ANNUALLY..."

* INTERVAL SHOULD BE CHANGED TO EVERY REFUELING OUTAGE BUT NOT TO EXCEED TWO YEARS.

* A PROPOSED RULE CHANGE IS BEING INITIATED.

* PROPOSED RULE CHANGE TO BE ISSUED BY 6/30/93.

RELATED NRC ACTIVITIES

* LICENSE RENEWAL (§54):

  TO BE COVERED BY SEPARATE BRIEFING, 3/93.

* DIESEL GENERATOR RELIABILITY (§50.63), RESOLUTION OF GENERIC ISSUE B-56:

  COMMISSION PAPER IN PREPARATION TO OUTLINE AND RECOMMEND OPTIONS.

  INDUSTRY GUIDANCE DOCUMENT OR REGULATORY GUIDE FOR THE MAINTENANCE RULE COULD BE MODIFIED TO PROVIDE GUIDANCE TO LICENSEES FOR SURVEILLANCE OF DIESEL GENERATORS, AS AN ALTERNATIVE TO RULEMAKING.

NRC INSPECTION PROCEDURES

* TO BE DEVELOPED AFTER REGULATORY GUIDE ISSUED.
* REGULATORY GUIDE TO BE BASIS FOR INSPECTION PROCEDURE ACCEPTANCE.
* PUBLIC WORKSHOPS.
* PILOT INSPECTIONS.

SCHEDULE FOR COMPLETION OF REGULATORY GUIDE

* PUBLIC COMMENT PERIOD CLOSED 1/15/93.
* PUBLIC COMMENTS RESOLVED 3/93.
* ACRS AND CRGR PRESENTATIONS 4/93-5/93.
* REGULATORY GUIDE TO BE ISSUED 6/30/93.

January 29, 1993

INTRODUCTION

Good morning, Chairman Selin and Commissioners.

I'm Corbin McNeill. I am President and Chief Operating Officer of Philadelphia Electric Company and am responsible for the direction and management of the Limerick and Peach Bottom nuclear generating stations.

With me at the table this morning is Tom Tipton, Vice President of NUMARC's Operations, Management and Support Services Division responsible for issues such as Maintenance Rule implementation, the area of this morning's discussions. Also with us are Warren Hall, Manager, Walt Smith, Dan Rains and Jim Eaton, Senior Project Managers within NUMARC responsible for the development of the industry's maintenance guideline and the verification and validation program. Joe Colvin, the President and Chief Executive Officer of NUMARC, who would normally attend with us, is on travel and sends his apologies for not being able to be here today.

As a member of the NUMARC Executive Committee and Board of Directors, I participate with other industry executives in the formulation of industry policy of generic application to the nuclear industry.

Throughout my naval and civilian career, I have had a particularly strong association with the issue of maintenance at nuclear generating plants. Currently, I am the Chairman of the NUMARC Maintenance Working Group that consists of senior executives responsible for generation of electricity through nuclear power at 43 power plant units. The names and affiliation of the Working Group participants are included as an attachment to my prepared remarks. The working group provides oversight and guidance to the NUMARC process for the development of industry guidance for Maintenance Rule implementation at a senior management level. Additionally, Tom Tipton, Joe Colvin, and I serve as the industry interface with senior NRC management to assure industry policy matters associated with the development of industry guidance to implement the Maintenance Rule are appropriately addressed.

We appreciate this opportunity to discuss with you the results of development of industry guidance to implement the maintenance rule in a reasonable and cost effective manner. It is a challenge to develop a process that provides the necessary balance between flexibility and specificity, and that promotes consistency for both the industry and the NRC.

In addition, the industry expended significant effort in developing the industry guideline. Four separate Ad Hoc Advisory Committees were formed that involved

representatives from thirty-three utilities responsible for operating seventy-five percent of our plants. The expertise assembled included, for example, individuals knowledgeable in probabilistic risk assessment, reliability centered maintenance, codes and standards, and the nuclear plant reliability data system. Maintenance managers and senior reactor operators were also key participants. Additionally, we had very active involvement of representatives from EPRI, INPO, and NUMARC. Countless hours were spent on first understanding the intent of the rule and then developing the necessary guidance. Following its development and detailed industry review, the guidance was subjected to a very detailed verification and validation process. Without a doubt, we brought our extensive experience and knowledge in maintenance to bear on the issue at all levels within our industry.

A major element of that process has yet to be developed -- the NRC's inspection module. I will speak to the importance of this key element in just a few minutes.

We plan to address briefly three areas. They are:

- The process established to address the implementation of the maintenance rule;
- Results to date of the industry verification and validation program; and
- Where we go from here.

Tom Tipton will discuss the results to date of the industry verification and validation program.

THE PROCESS

We have found the cooperative process established for proceeding with implementation of the final maintenance rule a unique one that has achieved more than we anticipated. It can and should serve as a model for addressing future complex issues. I commend you for promoting this methodology and your staff for professional execution. There are, I believe, five critical factors that helped make it work. They are:

- Involvement of the NRC's upper management, including the Commissioners, from the beginning. This included you or your technical assistants' participation in publicly held meetings and, we understand, periodic briefings with your staff to stay abreast of the progress being made.
- Participation by your senior staff to address the policy issues that were identified during the development of the guidance followed by the industry

and the staff each working independently and sharing the results of each other's efforts in a public setting to develop the details necessary for policy implementation. We have had several very productive meetings with the NRC Steering Committee chaired by Jim Sniezek. The process worked well.

- Staff development of the NRC's draft regulatory guidance rather than by a contractor. This was a very refreshing experience for us in that the staff knew the basis for the draft guidance being developed. As a result, dialogue was clear and meaningful and the confidence level was high and, most important, decision-making was prompt and decisive. In the popular parlance of management gurus today, cycle time was short. This is a very important aspect of the process that should be introduced in other areas where possible.

- Staff observation of the industry's execution of the verification and validation process. In the beginning, there seemed to be skepticism on the part of some of the staff of how serious we were in really testing the draft industry guidance that had been developed. Having observed the depth and detail each utility had gone through, that skepticism has been dispelled. This builds trust and understanding that is important to the continued existence of our industry. There is the recognition that we have mutual objectives to provide reasonable assurance of public health and safety.

- The candor with which the industry and the NRC expressed their views, bringing their own different perspectives up front and on the table. If concerns are not clearly stated during the process, it can adversely affect, and in some cases, destroy the process. Our respective positions and concerns must be made clear to everyone. For example, we stressed that the implementation of the maintenance rule should not require two maintenance programs - one to provide the necessary maintenance to safely and reliably operate the plant and another to comply with the maintenance rule. Some of this candor made front page news in some of the trade press coverage. That is the price of candor and openness that, if kept in the proper perspective and not allowed to drive the process, is an appropriate price to pay.

As I am sure you would agree, these five key elements that resulted from our efforts in developing the industry guidance are not unique to the maintenance rule but can be applied when addressing other issues. I encourage us both to use these lessons learned in the future as we proceed with the initiatives discussed in detail with you last week by Gene McGrath and other members of the NUMARC Executive Committee.

Tom will now brief you on the results of the verification and validation program.

RESULTS OF THE VERIFICATION AND VALIDATION PROGRAM

Thanks, Corbin. There were nine plants involved in the verification and validation program. The plants that participated are included as an attachment to my prepared remarks. All four nuclear steam supply system vendor types were represented in the program. Over the last four months there has been intense involvement by each of these utilities; the purpose was to determine if it is clear how the industry's maintenance guideline works or if additional clarification is needed. This detailed verification and validation process exercised all elements of the industry's guideline. There were seven objectives in developing the verification and validation (V&V) program. The objectives and the results to date are as follows:

1. Test the ability of utilities to understand and use the industry guideline to implement the maintenance rule.

   The participants in the V&V program concluded that the guidance can be implemented as written. However, it was noted that some clarifications of the guidance would be beneficial to the user.

2. Determine the extent to which non-safety related structures, systems and components (SSCs) that are used in the emergency operating procedures should be excluded.

   The V&V utility participants generally concluded that most of the non-safety related SSCs in the emergency operating procedures should be included. Exceptions were identified during the process. For example, there are some systems included in the emergency operating procedures to protect key systems such as the turbine that have only economic benefit and do not contribute to accident mitigation.

3. Identify and evaluate the use of PRA and other methodologies for use in identifying risk significant and plant level performance criteria.

   It was concluded, as a result of the V&V process, that PRAs used in conjunction with expert panels identify the risk significant SSCs effectively. PRA or expert panels used alone have limitations that are overcome by their use in combination.

4. Verify that the use of the guideline will result in similar, but not necessarily identical, results among utilities.

The V&V utility participants concluded that many differences in results are attributable to actual configuration differences and not to guidance ambiguities. This is a key element of the V&V findings in that it has to be recognized when an individual utility is inspected, care must be taken in attempting any comparison between ostensibly similar units because of their different configurations. There may be differences in the system(s) selected as well as the performance criteria established. However, based on the findings of the V&V, there were good justifications for these differences.

5. Identify lessons learned that facilitate the rule implementation among all utilities.

The implementation of the rule will affect utilities differently due to the different approaches that went into developing the individual maintenance programs and the state of implementation. This includes the utilities' in-house capability, existing software and data bases, as well as individual utility objectives and approaches for implementation. Key differences among some V&V participants were due to system/train bounding and the data bases that currently focus on component data collection rather than system or train data. Some utility performance monitoring, cause determination and corrective action may need to be expanded.

6. Identify the cost to implement the rule using care not to understate estimated implementation cost.

The preliminary average non-recurring initial cost in labor hours was approximately 16,000 hours -- that's about 8 person-years per plant. The average annual recurring cost was estimated to be approximately 5,800 hours per year -- about 3 person-years per plant. We plan to provide information to the industry on the anticipated resource needs and how to efficiently and effectively focus them.

7. Determine if implementing the rule by use of this guideline results in benefits to the industry, especially in regulatory areas.

It is clear as a result of the V&V program that some utilities will benefit from implementing the maintenance rule and updating

individual maintenance programs. However, it is also recognized that some utilities will expend resources to implement the rule with no significant benefit to their maintenance activities because of the effectiveness of the programs that they have previously established.

As we have discussed with the staff before, there may be changes to the regulations that should be made as a result of the final maintenance V&V program. For example, during the V&V program the utilities collected and provided us with a large amount of data associated with containment leak rate testing (the requirements of Appendix J to 10 CFR 50). It was noted as a result of the review of this test data that a large majority of the penetrations and valves that are required to be tested do not fail. As discussed in our December 21 letter to Chairman Selin, the NRC was encouraged to evaluate Appendix J in light of the performance criteria and pursue appropriate regulatory modifications.

THE FUTURE

The next question that we must address is where do we go from here? In addition to our efforts to develop and verify the industry guideline, we responded to the NRC's Federal Register notice requesting comments on your draft regulatory guide. In our response we described changes to the industry's guideline that we are considering based on the results of the V&V program as well as comments from the industry. The next step, from our point of view, is to review with the staff the comments received on the industry's guidelines as well as changes we are considering incorporating by March and finalize it by June of this year.

Following finalization of the industry guideline, NUMARC plans to hold two 3-day workshops in July and August to cover in detail the results of the V&V program, changes made to the industry guideline, and provide a detailed discussion of how to implement the guideline effectively and efficiently.

We anxiously await the development of the NRC's inspection module associated with this regulation. I must stress that a major concern of our industry continues to be how our facilities will be inspected against a performance-based regulation. During the public comment period of the draft regulations, NUMARC spent many hours with individual utilities discussing individual utility concerns regarding the potential that the scope of the rule could be unnecessarily expanded or utility implementation inappropriately compared. It is clear as a result of the V&V program that the NRC should not compare one plant to another during inspections but evaluate the plant based on its actual performance taking into account its individual design characteristics and the effectiveness of its maintenance programs. We have received assurances since the start of this cooperative process that the industry would have meaningful input in a public

forum into the review of the Inspection Module. We are prepared to do so and look forward with keen interest to similar interactions.

CONCLUSION

In conclusion, I would like to stress two key points as we go forward in this process. It is imperative that the Commissioners continue to be involved in the process through the final development of the industry guideline, the NRC's inspection module and the associated training required to fully implement this first "performance-based" rule. It is also very important that we continue interacting during the three years remaining prior to full implementation in July 1996, as issues come to NUMARC's attention, to resolve them in a satisfactory and timely manner. We need to continue to have candid and well-thought out discussions during the three-year implementation period. We look forward to continuing our discussions with the staff and the upper management of the NRC as we go forward. Thank you very much, and we would be pleased to answer any questions you might have.

VERIFICATION AND VALIDATION PROGRAM

Callaway	W; 1125 MW; C.O. 4/85
Connecticut Yankee	W; 565 MW; C.O. 1/68
Comanche Peak	W; 1150 MW; C.O. 8/90
Calvert Cliffs	CE; 825 MW; C.O. 5/75
Arkansas 2	CE; 858 MW; C.O. 3/80
Crystal River	B&W; 821 MW; C.O. 3/77
Arkansas 1	B&W; 836 MW; C.O. 12/74
Grand Gulf	GE; 1142 MW; C.O. 7/85
Fermi	GE; 1075 MW; C.O. 1/85

C.O. = Commercial Operation

NUMARC MAINTENANCE WORKING GROUP

CHAIRMAN:

Corbin J. McNeill, Jr.	-	President & COO Philadelphia Electric Co.
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