UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

- - -

BRIEFING ON IMPLEMENTATION OF MAINTENANCE RULE, REVISED REGULATORY GUIDE, AND CONSEQUENCES

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PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Monday, March 10, 1997

The Commission met in open session, pursuant to notice, at 2:42 p.m., Shirley A. Jackson, Chairman, presiding.

COMMISSIONERS PRESENT:

SHIRLEY A. JACKSON, Chairman of the Commission
KENNETH C. ROGERS, Commissioner
GRETA J. DICUS, Commissioner
NILS J. DIAZ, Commissioner
EDWARD McGAFFIGAN, JR., Commissioner

STAFF PRESENT AND PRESENTERS SEATED AT THE COMMISSION TABLE:

JOHN C. HOYLE, Secretary of the Commission
KAREN D. CYR, General Counsel
JOE CALLAN, EDO
ASHOK THADANI, Associate Director for Inspection & Technical Assessment, NRR
JEFFREY SHACKELFORD, Senior Reactor Analyst, PRA Branch
SAM COLLINS, Director, NRR
SUZANNE BLACK, Chief, Quality Assurance & Maintenance Branch, NRR
RICHARD CORREIA, Section Chief, NRR

P R O C E E D I N G S

[2:42 p.m.]

CHAIRMAN JACKSON: Good afternoon, ladies and gentlemen. We are pleased to have the NRC Staff here this afternoon to brief the Commission on the maintenance rule implementation.

But before we begin, I'd like to ask for a moment of silence for Nelson Sievering. About two hours ago, this good friend and outstanding public servant, his funeral was held in Chevy Chase a few miles from here.

Now, many of you knew Nelson Sievering who served in many important positions with the United States Government in the nuclear field. Most recently, he was our governor to the IAEA. He served for many years at the IAEA as Deputy Director General for Management.

His career began, like many of you, in the NRC in the nuclear Navy, but he soon used his impressive technical skills to advance vital United States policy objectives in

non-proliferation and the peaceful uses of nuclear energy, first in Brussels and later with the State Department in Washington.

I would like to salute Nelson Sievering for his tremendous contribution to nuclear affairs. He fought a courageous battle against the cancer which eventually took his life this past Thursday morning.

. 4

I had an opportunity in my short tenure at NRC to in fact interface with Nelson on a number of IAEA issues, and we will all miss a true gentleman and nuclear statesman of the highest caliber.

So I would like you, before we begin, to join me in a moment of silence in recognition of Nelson Sievering.

[A moment of silence was observed.]

CHAIRMAN JACKSON: Thank you.

As you know, the maintenance rule was issued because the Commission believed that proper maintenance is essential to plant safety, and that there was a clear link between effective maintenance and safety as it relates to the number of transients and challenges of the safety system. The rule became effective in July of 1996.

During this meeting, the Staff will discuss the status and the results of maintenance rule implementation to date, the changes to regulatory guide 1.160, and any implications that these changes have on future maintenance rule implementation activities.

Copies of the slide presentation are available at the entrances to the meeting and also available are copies of SECY 97-055, Maintenance Rule Status Results, and Lessons Learned, which contains a copy of regulatory guide 1.160, Revision 2.

And so, unless my fellow commissioners have any

. 5

introductory comments, Mr. Callan, please proceed.

MR. CALLAN: Good afternoon. With me today at the table are Sam Collins, the Director of the Office of Nuclear Reactor Regulation, on my right; and on my left is Ashok Thadani, the Associate Director of Technical Assessment in NRR.

To Sam's right, Suzanne Black, the Chief of the Quality Assurance and Maintenance Branch in NRR; to her right, Richard Correia, the Chief of the Reliability and Maintenance Section in Suzie's branch; and then at Ashok's left, Jeff Shackelford, a senior reactor analyst in the Probabilistic Safety Assessment Branch. And just as an aside, Jeff will be heading to Region IV next week. One of my last official acts in Region IV was to recruit him.

CHAIRMAN JACKSON: It was only fair.

MR. CALLAN: It was only fair. Region IV comes out ahead in that trade.

CHAIRMAN JACKSON: By the way, I would like to welcome Mr. Collins in his first appearance before the Commission as Director of NRR.

MR. COLLINS: Thank you.

CHAIRMAN JACKSON: And I didn't get a chance to say that kind of thing to you. You even have a real nameplate. So welcome.

MR. CALLAN: Sam and I are used to sitting next to

. 6

each other.

We last briefed the Commission on the maintenance rule status almost two years ago on July 26th, 1995. At that time, we had completed our pilot inspection program and

issued the Lessons Learned in new reg 1526.

We were also finalizing a revision to the maintenance rule inspection procedure and were about to begin training inspectors on the rule in preparation for the July 10th, 1996 effective date.

Our presentation this afternoon is on the status of the Staff's activities regarding the maintenance rule and the results and lessons learned from our inspection efforts to date.

And now, I'll turn the presentation over to Mr. Thadani.

MR. THADANI: Thank you. Good afternoon. May I have viewgraph number 2, please?

[Slide.]

MR. THADANI: Our intention is to cover some of the background and rule requirements specifically, results of the activities that we have been involved in since the last Commission brief, and implications of -- at least our understanding of what the implications might be of performance-based rules, how it might impact some other considerations. We will catch up on some of the issues that

develop as a result of our actions.

And then finally, we will summarize our future actions to complete the inspections.

May I have the next viewgraph, please?

[Slide.]

MR. THADANI: I thought I'd make just a few general remarks, and then the presentation by Susan Black and Richard Correia will provide additional information and more details.

The Chairman noted the need for the rule and some of the reasons that led to development of the maintenance rule, so I will not repeat that.

Our thinking over the years has clearly evolved as to what kind of rules one should be writing. Some of the attributes that are very important, will the rule be clear, that it can be and should be consistently implemented, the requirements and meeting those requirements be inspectable, that the rule include consideration of risk information and be performance based.

A lot of attributes one would like to look for. That's quite a challenge, as we're finding out, to insure that these attributes are being satisfied by a given rule.

In fact, the maintenance rule is one of the first risk-informed and performance-based regulations. As you know, most of our recent regulations have been risk-

informed. 50.62 is anticipated transients without scram, is clearly based on a fair amount of risk analysis done by the Staff, and the requirements are deterministic and fairly proscriptive, but those requirements are, in fact, based on considerations of risk.

50.63 is station blackout. Once again, a similar approach was followed. Because there has been considerable interest in the subject matter of the importance of safety, and safety related, I will note that for these regulations, the Staff clearly indicated that non-safety-related components would be acceptable but the focus was on reliability and availability. So these areas were laid out in regulatory guides in terms of what would be acceptable to meet these regulations.

As far as the maintenance rule is concerned, risk

information is used in a number of ways. First, since each plant has done an individual plant examination based on the inspections we have done to date, each licensee has in fact utilized this IPE, although that is not required by the rule. But that is the practice and that was the encouragement provided both in NUMARC's document as well as our regulatory guide.

Areas where they have used the IPE was, first of all, to try to understand what structures, systems, and components have higher safety significance and which ones

. 9

have lower safety significance. And in some cases, if the licensees choose to establish goals for performance of these components, those goals could be numerical and, if numerical, consistent with what was done in the IPE.

The third area that utilizes risk techniques is assessing impact of removing any equipment out of service for preventive maintenance. You recall the issue of on-line maintenance where we were quite concerned about what some of the practices might be, the need to pay close attention to configuration control.

Having IPE provides an opportunity for the licensees to understand impact on risk before taking any components out for preventive maintenance.

In the fourth area, we are --

CHAIRMAN JACKSON: So let me just ask a question. This use of IPE in the context of the maintenance rule implies, then, a high degree of competence on our part in the use of IPE for identifying systems and within the configuration and control methodology for on-line maintenance as opposed to specific numbers?

MR. THADANI: I think in relative terms, that's exactly right, but I might add, it's more than the IPE itself. IPE is one input.

The maintenance rule really -- implementation calls for a panel. First, there's information coming from

. 10

various sources, one of them being the individual plant examination, and this interdisciplinary group takes a look at the information and prioritizes it in terms of what is high safety significance, what is low safety significance, so it's more than just the use of the IPE in the -- as far as the implementation is concerned.

CHAIRMAN JACKSON: Mr. Shackelford looks like he wanted to say something. No?

MR. SHACKELFORD: I can just say that we've seen a variety of approaches to using IPE, in particular in assessing equipment out of service for maintenance, and it's not always quantitative. In the spirit of the risk-based, performance-based approach, we entertained a number of approaches and we evaluate them on a case-by-case basis.

MR. THADANI: And the fourth area where risk information is utilized is in trying to understand the unavailability due to maintenance at periodic intervals trying to make sure there's some balance in terms of availability and reliability of structures, systems, and components.

So those are areas where the implementation does rely on risk assessments, at least as one input to those decisions.

From a performance-based perspective, the maintenance rule does give a great deal of flexibility to

. 11

the licensees and, in fact, the definition of what is

required can vary from plant to plant because its flexibility is provided, and I'll give you some examples and then you'll hear some more details.

And this flexibility does make it challenging for inspectors to get some assurance that the maintenance rule is consistently implemented and enforced. This allowed flexibility leads to differences among plants in many areas. Differences can be driven by plant-unique design considerations, different levels in terms of some emergency operating procedures, as well as perhaps even different definitions of system boundaries and so on, which leads to the sense that the scope of the SSCs can be a variable from plant to plant, and in fact is. Performance criteria can vary from plant to plant.

If I may use an example, if one is interested in focusing attention on, say, a pump, an identical pump, high-pressure safety injection pump or some other in these plants, performance criterion could be pressure drop across the pump, could be flow, could be vibration or some other indicator of performance of the pump.

One licensee could choose -- let's use vibration as an example. One licensee could choose performance criterion of 5 mills vibration as a trigger point, saying maybe something's wrong if that vibration level is exceeded

. 12

and taking further actions.

Another licensee may use 7 mills as a trigger point, as a performance criterion. Both of them are perfectly okay depending on the pump performance, and the pump can very likely perform its function even beyond a vibration level of 7 mills, but there are differences.

As a result of these differences, the inspectors need to really understand what is the fundamental reason for looking at that component, and that takes additional effort by and large.

This was recognized up front, and because of that, we have really expended significant resources up front in the development of the guidance documents.

When we have a performance-based regulation, the intent -- at least one element of that certainly is to give licensees flexibility. It is very important to get up front the industry input in terms of guidance, criteria, understanding of criteria and so on. It does become somewhat of an iterative process, and it was, indeed, very important to allow a fairly long time period for these interactions to take place. Naturally, this iterative process also means expenditure of higher resources.

The training of inspectors becomes absolutely essential and we'll come back and touch on what we mean by that.

. 13

In order to make sure there is consistency in the early inspections, we make sure that there is -- all the regions were participating in the inspection.

We have also a panel at NRR. Every time there are issues coming up, the panel evaluates these issues and makes decisions in terms of what enforcement actions, if any, are to be pursued. This is, again, to make sure that issues are being looked at in a consistent manner.

To be able to do these things, it's clear that we have to expend significant resources and we have spent a lot of resources on the maintenance rule.

CHAIRMAN JACKSON: I think Commissioner McGaffigan

has a question.

COMMISSIONER McGAFFIGAN: I just want to break in at some point. At the very outset, you talked about the ideal rule, clear, consistently implemented, inspectable and enforceable, risk-informed, performance-based.

You've talked about the risk-informed aspects of this rule and the performance-based aspects of this rule so far, but the paper also goes in to point out that there is also -- this is less than a pure risk-informed rule, because of the term risk-informed, the PRA implementation plan followed four years later, and so there are elements that aren't risk-informed.

And then on the performance-based, there's a lot

. 14

of deterministic/proscriptive elements to the rule, and there obviously are tradeoffs. If we're headed -- if this is the goal, there are tradeoffs that one faces among these various items. Resources, you've just been mentioning. Performance-based rules, at least this one has been very, very resource intensive.

What advice do you have to the Commission with regard to balancing these various things, and should we recognize that it's a spectrum, that there's no -- we have to tailor it to each circumstance?

MR. THADANI: I think, broadly speaking, this approach is quite reasonable to go forward if we recognize that, until we get a lot of experience, there may be some return down in later years. Having gone through this intensive interaction up front, these intensive -- these inspections are programmatic inspections. These are not performance-based inspections.

So I think we have to wait and see, are there other issues that are going to develop. Once we truly get into inspections for cause, that is, performance criteria are established, and our intention is not to get involved unless the performance criteria are tripped, some trigger initiates NRC involvement, that there may be a problem.

COMMISSIONER McGAFFIGAN: But you have to get somewhat proscriptive. You're going through this level of

. 15

inspections now, and I don't want to preempt the whole briefing, but you're going through this level of inspection now, which is somewhat prescriptive or programmatic, in order to establish a baseline from which you can then judge later and hopefully get some resource benefits, both to the Commission and to the licensee, but we're not there and we won't be there for some time.

MR. THADANI: I think it will be difficult to predict. We need some experience to see how it comes out, what kinds of problems we run into at a future date.

But you are quite right. Some elements ultimately will end up being proscriptive. And again, let me use an again.

I indicated that the performance criteria could be probabilistic, numerical, or deterministic, like I used the flows, vibration level.

Now, it's very difficult if one is looking for an unreliability of, let's say, failure of 1 in 1,000 demands. One needs a fair amount of data, and data in terms of challenges, successes to be able to make some estimates of what the underlying reliability might be.

And in fact, there may be yet another concern. Can we wait until that component fails before we take action?

One of the attributes we were looking for was
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16
early indication of failure so that one does not take action after a failure has taken place, but rather, degradation is taking place, to be able to identify some trigger points in terms of degradation. That necessarily, I think, has to be deterministic.

So it seems to me that the approach that is being utilized is a mixed approach, probabilistic in terms of, as I said, looking to see where one ought to be doing more and where one ought to be doing less.

In terms of components, structures, and systems that come up in the most safety significance category, one could perhaps tolerate failures, but I think in the high safety significance category, very likely you would have to have a mixture of the two.

We'll wait and see once we get more experience in terms of our reaction, industry actions, can they maintain the performance criteria, how often do they get tripped, what our involvement will be. I think time will tell how that plays out.

COMMISSIONER McGAFFIGAN: My only comment is, this paper, the SECY 97-055 that they're basically briefing on today, it's very informative for somebody coming to the Commission as I did six months ago in terms of laying out the nuances here.

We tend to use risk-informed and performance-
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17
based all the time, and when you get into the nuances of actually looking at probably the most risk-informed, performance-based rule we have, it's -- we're well into gray areas. We're well into the continuum.

And several pages go through the examples of where we're being less than pure if we're headed towards a pure model, which we probably won't because life is not -- doesn't allow us to work --

CHAIRMAN JACKSON: Purity is an ideal.

MR. THADANI: Yeah, it's an ideal.

CHAIRMAN JACKSON: Why don't you go on.

MR. THADANI: But in any case, the 20 inspections that we have conducted so far, and I want to make sure I don't overstate this, they indicate that, generally, the programs that the utilities have in place are adequate. That's not to say that we haven't found problems.

We've found problems, a range of issues, and we would come back to one issue that relates to the language in the rule itself in the -- what we have found in terms of the industry actions in that area, and we'll talk about, is there need to revise the regulation proposal, at least for the Commission to revise the regulation or not, but we'll come back and indicate to you our thinking at this point.

By and large, I think the language in the rule has had some impact in terms of licensees having taken that part
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18
of the rule less seriously than the other parts.

COMMISSIONER McGAFFIGAN: That's the configuration control part?

MR. THADANI: That's basically the configuration control on-line maintenance issue where the rule does not say that the licensee shall have those programs. It says they should, and so OGC will say it's very difficult to enforce that part of the rule.

And I might as well note that we did identify --

in fact, Jeff was actively involved -- did identify a number of concerns, and these concerns have been relayed to the licensees. They appear to be receptive to those comments.

We intend to go back, take a look to see what's actually being done and come back to the Commission with a recommendation subsequent to that once we get all that information together. We're not prepared at this time to say we propose changing the regulation, at least at this time.

Since the last briefing, we have trained, as I said, a number of other inspectors and other Staff. Total number of people -- we have three levels of training and we'll go into that. The number of people we have at least trained or given them some sense of what the maintenance rule calls for is 900, and a fairly large number of people have had fairly thorough training in the maintenance rule

itself.

We have developed enforcement guidance and established an enforcement panel. We work with the industry to revise guidance documents, and, as I said, we have completed 20 inspections so far.

Suzie Black will cover the rule background and then Rich Correia has been on every inspection --

MR. CORREIA: Half.

MR. THADANI: Half of them, okay -- most of the inspections, is going to go through the status and some of the details.

MS. BLACK: Thank you. As a way of background, the rule was issued on July 10th, 1991 and it was to take effect on July 10th, 1996. This was giving two years for the guidance documents to be issued, as well as three years for licensees to establish their programs and have them in place by the effective date of the rule. They were to gather two cycles of data.

The industry guidance document is NUMARC 93-01. It was -- it provides one acceptable method of implementing the rule. Currently, to date, all licensees are using that method.

Revision 2 was issued in April 1996, and that was after our pilot program. It included the lessons learned from our pilot program.

Regulatory Guide 1.160 endorses 93-01. Revision 2 was just completed a couple weeks ago and is attached to your Commission paper.

Our Inspection Procedure 62706 provides guidance for our inspectors for the baseline inspections.

We also have an Inspection Procedure 62707 which is used by our residents as part of the core program.

This is more what you would call performance-based inspection procedure. It's used to observe maintenance activities as well as follow up on events.

Now, the maintenance rule itself, if you use the guidance in 93-01 to implement it, first what you do is determine which structure, systems, and components are within the scope of the rule. I hope you won't mind if I start saying SSCs because it gets to be quite a tongue twister after the 15th time.

But anyway, the scope of the maintenance rule is safety-related structures, systems, and components, as well as some non-safety-related.

The first category is those that are relied on to mitigate accidents or transients or used in the emergency

operating procedures. An example of that would be a startup feedwater pump or perhaps gas turbines.

The second category is those whose failure could prevent safety-related SSCs from fulfilling their safety

21

function. An example would be perhaps instrument error or heating, ventilating, or air-conditioning systems.

The third category would be those whose failures could cause a reactor scram or actuation of a safety-related system, for example, feedwater or circulating water.

CHAIRMAN JACKSON: And that would be an example of perhaps what would not be in what we call safety related?

MS. BLACK: Right.

CHAIRMAN JACKSON: But it has safety significance within the scope of this rule?

MS. BLACK: True, because they initiate transients, and that was one of the purposes of the rule.

CHAIRMAN JACKSON: Right.

Commissioner Diaz.

COMMISSIONER DIAZ: I'm glad to see that the EDO came with reinforcements this afternoon. I'll go back to my original point this morning and I'm sure you're ready for it now.

Let's look at the definition of safety-related system or components, and I -- you know, I am puzzled. It is not a complete definition. It essentially excludes all those SSCs that have no relationship to a design-basis event.

You can say, which ones are those? Well, we used to really be very specific in detailing any SSC that was

22

part of the fuel, the primary coolant, you know, pressure boundary, every one of those things that we relied upon to prevent the consequences of an accident that are outside of the design basis.

Well, the rule, of course, specifically, I'm talking about the SSCs that are inside of an envelope of a design basis and excludes the systems that are used or put to use or normally used for normal and anticipated transients, and I'm sorry, but I don't understand it.

There is something in here that is implied in the word, and I'm sure it was meant to be included, but I don't see it. And it's not there anymore.

And, you know, you look back at Appendix B, you look back at whatever you want to, you see, you know, structure -- SSCs, not repeated, that prevent or mitigate, and that includes all of the systems. But in this definition, they're excluded.

We only are dealing with -- the scope of the rule is dealing exclusively with systems that are inside of the design basis accident envelope and no other system structures, and we deal with those that are safety related and those that are not safety related.

Those that are non-safety related but are required to function for the function of the safety related are of course what we used to call safety significant. It's just

23

one level below safety related, safety related being one level below important to safety, and -- but it's out of there. Where are they? I don't see where these systems are. I'm sorry.

CHAIRMAN JACKSON: Let me ask a question in this the generic way. Where is "safety significant" defined for

the purposes of this rule?

MS. BLACK: Well, that goes beyond the scope issue. Safety significance goes into how you monitor, and so safety -- once you get the scope of what's under the rule, then you determine what's safety significant and what isn't, and that's done by the expert panel that Ashok was mentioning before.

They do use PRA insights and performance -- or importance measures that are defined in 93-01, but that -- it doesn't relate back to what's in our "outside of scopes."

COMMISSIONER DIAZ: You know, it's easy to fix. Now, it might take two years, but all you have got to do is, when you get into the definition, are relied on to remain functional during normal operations, anticipated transients, and following design postulated events to insure the integrity of the reactor cooler. And those are the kinds of things we always said, but it doesn't say it.

MR. THADANI: By and large -- I may be getting into this and regret it later on, but by and large --

. 24

COMMISSIONER DIAZ: I assure you, you will.

MR. THADANI: Safety-related structures, systems, and components are clearly a subset of what is important to safety. Those languages appear in different regulations, as you well know. Appendix B applies to safety-related structures, systems, and components.

COMMISSIONER DIAZ: I'm sorry. I need to interrupt you. Appendix B specifically goes and says those systems to prevent or mitigate, and then it goes and says, those systems are needed during normal operations, maintenance.

And this doesn't say that. This specifically says that those systems are only -- they are in the envelope of the design basis, and we have left all the other systems out.

MR. THADANI: When you say "this," you mean the maintenance rule?

COMMISSIONER DIAZ: Absolutely.

MR. THADANI: No. I think the maintenance rule's scope is much broader than that and it's broken down in parts. One part says all safety-related structures, systems, and components. That's one part.

Another part is --

COMMISSIONER DIAZ: No, sir. Read the defining paragraph above it. It doesn't say that. It says, means

. 25

those safety -- those SSCs that are relied on to remain functional during our --

CHAIRMAN JACKSON: I think that we're not going to resolve this issue in this meeting. I think it is more important for us to try to understand where the Staff is at this stage of the game and then we can come back and consider, you know, how that is affected by lack of clarity with respect to the definitions.

Perhaps once they've gone through it, we can have a clearer understanding, so why don't you go ahead.

MS. BLACK: As I was saying, the scope of the maintenance rule usually is about 60 percent of plant structures, systems, and components, although that can vary a lot depending on how licensees do their scoping. It can be as low as 50 percent and I've seen it almost 80 percent at some plants.

Then the expert panel determines the safety significance or makes that cut between high safety

significant and low safety significant, and that is usually about 30 percent of the in-scope systems end up being high safety significant.

The monitoring then varies depending on the safety significance of the structure, system, or component. High safety significant SSCs are monitored at the system or train level and reliability and availability are both monitored.

. 26

For low safety significant, normally operating system, they are monitored at the plant level, monitoring scram safety system actuations or unplanned capability loss.

Standby systems are monitored like they were high safety significant. They're monitored at the train level and at least reliability is monitored.

COMMISSIONER ROGERS: Excuse me. Could you just explain what you mean by monitored at the plant level?

MS. BLACK: Monitored at the plant level would be, you would set performance criteria of no more than two scrams per cycle or no more than X number of safety system actuations, and then when you reach that trigger, you would go and look at what components were causing that and monitor it more closely under (a)(1).

But if you monitored all the systems under the maintenance rule like you do the high safety significant, the monitoring requirements would be pretty extensive.

And also, monitoring varies with performance. Most -- using 93-01, licensees before the date of the rule are supposed to go back and look at their data to see if they meet the performance criteria.

You can monitor your SSCs under paragraph (a)(2) but you have to demonstrate effective preventive maintenance, and this you do by meeting your performance criteria that the licensees set for themselves. And if

. 27

these standards aren't met, then the SSCs must be monitored under (a)(1) or licensees must take corrective actions and set goals and monitor against those goals.

And the final part of the rule is the periodic assessment in which the program must be assessed every refueling cycle to evaluate the overall effectiveness of maintenance at the plant. And also, they must balance at that point reliability and availability to determine if they're not doing too much preventive maintenance and causing too much unavailability of the system.

COMMISSIONER McGAFFIGAN: Could I clarify if this is the right time? The Staff has clarified to the industry that it is not a problem to be under (a)(1).

MS. BLACK: Right.

COMMISSIONER McGAFFIGAN: There is nothing you're going to hold against them if they're in paragraph (a)(1) as opposed to paragraph (a)(2)? There was apparently at the outset some misgiving with regard to the staff's intentions on that, but you have clarified that?

MS. BLACK: We hope so, and I'll do it again right now. Having systems in (a)(1) is not looked upon as a problem by the NRC and won't be considered in the self-grades and that type of thing.

And the other part of (a)(3), which Ashok talked about, was the part that encourages licensees, when

. 28

performing preventive maintenance, to assess the total plant equipment that's out of service to determine the effect on safety functions.

COMMISSIONER DIAZ: Excuse me. Is there a difference between performance goals in (a)(1) and performance criteria in (a)(2)?

MS. BLACK: Yes.

COMMISSIONER DIAZ: Could you --

MS. BLACK: A lot of times the goals that are set when somebody goes into (a)(1) can have the performance criteria from (a)(2) as the goals, but we like to see a goal that is specific to the problem.

For instance, if there was a -- one of the plants we went to had a reactor coolant pump shaft problem and one shaft had actually broken and they were concerned that the other shafts which had the same material were going to perhaps fail, and so they set a goal of a certain level of vibration. If they hit that level of vibration, they thought there was a greater chance of that shaft breaking too and so they were going to shut down and replace it.

So we like to see the goal specific to the corrective action or the problem and have them monitor it more specifically under (a)(1) than it is under (a)(2).

COMMISSIONER DIAZ: So there is a difference in actually the level of specificity or the --

MS. BLACK: Usually.

COMMISSIONER DIAZ: -- level of demanded safety usually between --

MS. BLACK: We like to say usually because of the flexibility in the rule, but, yes. If there hasn't been a problem identified, specific corrective actions that have been taken for that problem should be monitored to make sure that the problem has been corrected before you go back into (a)(2).

COMMISSIONER DIAZ: Have there been problems between performance goals and performance criteria, or that is very well understood by everybody?

MS. BLACK: Has there been a problem? I think that during the pilots there was a problem because we had to put out more clarification on that specific issue that we expected the goals to be more specific to the problem than the performance criteria, yes.

And now Rich will discuss the results of the baseline inspections and the clarifications in the regulatory guide.

MR. CORREIA: Thank you, Suzie.

Could you go to slide 6, please?

[Slide.]

MR. CORREIA: As Ashok said earlier, we have just completed the 20th baseline inspection last week. Each

inspection, we're finding, is unique because of this flexibility licensees are given to develop and implement their program.

Each time the inspectors prepare, they have to start fresh with a new program, the different ideas, and evaluate those as to whether or not they meet the regulation.

For example, one of the differences we have seen is how licensees scope SSCs into the rule. Some have done it by systems, some have done it by function, which tends to increase the overall number. We have determined that both are perfectly acceptable but, again, it causes you to step back and evaluate these programs in more detail.

You can't necessarily take what you learn from a previous inspection on to the next because it may be quite

different.

Overall, I believe licensees are doing an adequate job implementing the rule. As Ashok said, we have seen problems; we have issued many violations, but the violations tend to be specific to a particular part of the requirement, not that they did not meet a requirement.

For example, high safety significant SSCs should be monitored against both availability and reliability. In some cases, we found that one of the two was not being monitored, so they established the (a)(2) programs, but how

they were monitoring a particular system or group of systems varied and that was one example.

Two of the sites have had no violations. One site had a Level 3 violation with no civil penalty, and the rest, a combination of some varied Level 4 violations.

COMMISSIONER DIAZ: Any program that was not acceptable, not adequate of the 20 that you could say --

MR. CORREIA: No. They've all implemented programs, developed programs. The problems we've seen are specific to a certain part of the rule.

One of the problems that seems to be related to some of these violations are that some licensees did take full advantage of the three years that the Commission gave them to implement the rule. They got late starts -- they all developed the programs but took longer times to actually implement them and resulted in some of the problems we've seen.

Next slide, slide 7, please.

[Slide.]

MR. CORREIA: Two of the common findings we have seen on these baseline inspections, one is inadequate reliability performance criteria/goals. Some licensees were monitoring reliability by counting the number of MPFFs, which is a maintenance preventable functional failure, failure of the function that placed the SSC in the scope of

the rule.

Without an adequate technical basis -- for example, if they chose to monitor unavailability for the high-risk system, high-safety system, there may not have been a link back to the PSA assumption, for example.

COMMISSIONER DIAZ: So this implies that everybody monitored availability in an adequate fashion, because the only inadequate was reliability?

MR. CORREIA: In this particular case I was citing here, it related to reliability, using a number of failures over a period of time without considering demands or a link back to the PSA assumption.

CHAIRMAN JACKSON: How do the inspectors judge the adequacy of reliability, performance criteria or goals, and what role does the licensee's PRA play in setting the goals?

MR. CORREIA: Typically the inspector would ask, what is the basis for this particular value you've chosen? In most cases for high safety significant SSCs, there is a link back to the assumption in the PSA, and based on that assumption or some sensitivity analysis that they've chosen to do, the inspectors determine whether or not this performance criteria is acceptable.

For example, if they chose 95 percent reliability for their emergency use generators, you would expect to see a reliability criteria that was equal to that, or if it was

different, some basis for why that difference was acceptable. And it may be some type of sensitivity analysis to show that perhaps 90 percent is acceptable and -- for particular reasons.

MR. THADANI: If I may, assessing underlying reliability for any given component requires a fair amount of data, demand information, and one can use estimators rather than regular statistical assessments because then the need for data goes up quite significantly.

So like diesel generators, there may be enough information on -- that includes testing and actual demands. It would be difficult if the expected reliability is much better than what we demand for emergency diesel generators.

For example, if it's a passive structure, one would demand fairly high reliability. It wouldn't be very -- one can establish numerical criterion, but it doesn't really mean very much. So one has to then go back to something else to assess.

For example, structure may depend on, is it anchored properly, are the bolts in place, are some of them loose, et cetera, is there a lock-down necessary?

So I think all these facets sort of have to be considered as one goes forward in these inspections, particularly when one looks at reliability performance against what was assumed in the probabilistic safety

assessment.

I think it's going to continually be an issue we have to watch, see how well it works.

MR. CORREIA: Another area that the inspections have focused on is scoping. Certain SSCs were not included in the scope of the rule, and one example we found fairly commonly are non-safety-related SSCs that are relied upon to mitigate accidents or transients or use the EOPs, such as emergency lighting and communication systems.

And one could say, well, they do not perform a mitigating function, but I think history tells us that these systems are very important to the -- to assure that the mitigation functions are achieved for use in EOPs.

CHAIRMAN JACKSON: Was that an issue where the guidance was not clear enough?

MR. CORREIA: I believe it was discussed during the pilot programs. I think we probably didn't make it a big issue at that time. It certainly was covered during all the pilots, but it is important and it is in our regulatory guide now.

A similar issue we've seen recently in the baselines is a reluctance to identify maintenance preventable functional failures. I'm not quite sure why. It may be something similar to why there was reluctance to put things in (a)(1) during the pilot programs. It may be

seen as an indication of poor maintenance programs. We don't view it as that. It's an indication that there's a problem that needs attention and corrective actions, and there's certainly no penalty on our part.

Structural monitoring. As we recognized during the pilot program, structures cannot be monitored using performance criteria as active systems. They need more of a condition monitoring approach.

We all agreed, though, with industry that more guidance was necessary. NUMARC NEI did add guidance to 93-01, and we have added additional guidance in our reg guide also to address this issue.

And the main problem we've seen during the baselines is that licensees have established criteria that would move something from the (a)(2) category to the (a)(1) category after a failure. I think for a structure, that's unacceptable, something -- the problem needs to be identified as a -- if left alone, would result in a failure; at that time moved to the (a)(1) category for corrective action.

The (a)(3) safety assessments we have discussed somewhat already. All licensees are doing something. They vary from using a fixed deterministic blend with PRA matrix of combinations of systems that cannot be taken out of service simultaneously.

. 36

Some licensees have an on-line safety monitor or risk monitor that they use to determine what configurations are acceptable or not. As Ashok said, they are all treating the "should" in the regulation like a "shall." They are all doing something. The question comes up is, are these weaknesses we are seeing in their methods such that we need to change the rule? We don't believe we do at this time.

COMMISSIONER McGAFFIGAN: Could I follow up on that? You don't believe you need to at this time, but on page 17, I think, of the paper, you say you're going to continue to assess that. And what you just said, they're treating the "should" as a "shall" is -- at a briefing last week -- you were present -- I didn't hear that then. They are doing something. They aren't doing as much, was my impression, as if the word "shall" was there rather than "should."

And it strikes me, in the PRA implementation plan, we're talking about in-service inspection and in-service testing, at some point being able to do this configuration control is going to be important and have consequences in other areas. Isn't that the case?

When will we or when should we get you guys to come back to us and tell us whether we need to change "should" to "shall"? What's the proper time period in which to get that assessment out of you?

. 37

MR. THADANI: Let me comment on that. I think the concern is real. The issue of configuration control, on-line maintenance, I think is a safety significant matter. We have to deal with it very carefully.

As Rich mentioned, we have identified problems, weaknesses is what we call them, and what we're finding is that the licensees are listening to our concerns and would like to take a crack and see as feedback, are they actually taking advice and comment they're getting and implementing changes. We would like to be able to get that information before coming with a proposal to change the regulation or not.

As far as other activities are concerned, as you know, we've been working and using risk insights in technical specification activities. South Texas is an example, have come to us and proposed changes to their technical specifications, to high-pressure safety injection and on-site AC power source.

We have made it a practice basically to make sure that for those cases, at least that configuration control becomes part of the technical specification changes, that is, while you can grant longer outage time for some components, that is not allowed if another component that

might appear in a sequence is also out for preventive or corrective maintenance. So that concept we're applying in

. 38

other areas makes sure that that's built in. But that's sort of ad hoc.

CHAIRMAN JACKSON: So if it's ad hoc, it begs the answer to his question.

MR. THADANI: Absolutely. What I was getting to was, in the pilot studies, we're certainly looking at that element. What I was saying was that even within the maintenance rule itself, we need to get some level of confidence that the utilities are actually paying close attention to on-line maintenance even though the rule itself says "should." That relates to enforcement activities.

CHAIRMAN JACKSON: Well, but on page 17 -- now I'm going to play Commissioner McGaffigan -- it says that because -- this is under the conclusions, "Because the provision in paragraph (a)(3) that states that licensees should assess the impact on safety when removing equipment from service is not a requirement, this provision is unenforceable. But at this time the Staff doesn't believe a rule change is necessary."

MR. COLLINS: Chairman, I think perhaps this is just a matter of a level of expectations, and I think there is probably some history that goes with this wording that it might behoove us to understand better.

But in any case, clearly, if we are going out and inspecting with the premonition that we want this done and

. 39

we're satisfied because licensees are doing it, but at the same time the licensees have the option perhaps not to do it, and we need to reevaluate whether we need to change the rule.

And I believe, based on the inspections that we have, we should be able to derive a fairly good database of, is this provision necessary for us to have confidence in the overall implementation of the rule? And if it is, then we need to be willing to make a recommendation to the Commission on whether the word should be changed.

CHAIRMAN JACKSON: Commissioner McGaffigan.

COMMISSIONER McGAFFIGAN: I don't want to keep beating a dead horse here, but the South Texas example is one where it's sort of unique. They have an extra train or an extra half a train or whatever that allows you somewhat more flexibility to get a spec change there, but even there you're sort of, through the back door, requiring configuration control. I think it's going to come out, I'll bet, in an in-service inspection and several of the other initiatives that are underway.

So all I'm urging is that you continue to think about being up front about it rather than having it come in the back door. If you all think it is necessary, let's put it in through the front door.

CHAIRMAN JACKSON: When do you anticipate having

. 40

all of your inspections done?

MR. CORREIA: The goal is July 1998, two years to do all sites.

COMMISSIONER ROGERS: Just before we leave this dead horse, I think it's important to understand why they're not doing this if they're not doing it.

It seems to me -- it's very puzzling to me. It seems to me this is so fundamental that we better understand why they're not just accepting this without any question in

doing it because it's -- you know, it's as plain as the nose on your face how important it is.

So if they're not doing it, I think we ought to really understand what the reasons are that they are apparently not doing it, because I think they're going to be as important as making the change in the rule, understanding what the underlying problem is, if there is a problem.

MR. THADANI: I hope we're not leaving you with the impression that the licensees are not doing it. I think the issue is how good an evaluation are they conducting, have they got the right scope when they look at, for example, a matrix. Let's say they cannot take certain -- two trains out simultaneously, one from system A and one from system B.

COMMISSIONER ROGERS: I don't want to go on with this, but if it's -- for this purpose, if it's an incomplete

and inadequate job, it might as well not be done at all. I mean, you've got to do it right, and so I think that the notion that something less than an adequate job is even contemplatable is troublesome to me. I think that somehow we have to get at that.

COMMISSIONER DIAZ: If I could beat on the dead horse --

CHAIRMAN JACKSON: Well --

COMMISSIONER ROGERS: Put a saddle on it and ride it.

COMMISSIONER DIAZ: I understood from the comments that, you know -- and I -- obviously it is true, that the issue of reliability is more complex and requires much more data, and obviously that's true.

However, the issue of availability should be simpler and therefore more enforceable, and I think that definitely should give us the line saying we will not require you to start looking at reliability up to the last significant place, but we do require that you maintain a configuration that operates under conditions.

Is that correct?

MR. THADANI: Yes.

CHAIRMAN JACKSON: Do you know any of the "why's"?

COMMISSIONER McGAFFIGAN: Why the "shall" and the "should"?

CHAIRMAN JACKSON: No.

COMMISSIONER ROGERS: No. Why an inadequate job.

MR. SHACKELFORD: I don't think we've found any that are inadequate at this point. We found a wide variety of what I should call weaknesses. As I said, they go from -- risk monitor for a licensee is really an endeavor to monitor their entire plant on a real-time basis right down to what you might call business as usual.

I think licensees have always assessed the impact of taking equipment out for maintenance. The control room SRO, that's part of his job description, but we don't necessarily think that that's probably the most comprehensive way to do it, given the tools that they may have now. So we are looking harder at that than we may have in the past.

The maintenance rule requires them to look at all equipment out of maintenance, not just safety significant, frontline systems, and those are the types of weaknesses that we're pointing out, that while you still have to keep track of the tech spec outages, you also need to look at

these other systems that may challenge your plant.

And those are really the issues we're talking about here. And I think the industry has been receptive to that. They haven't necessarily been happy to hear our comments, but I don't think we've had a disagreement that

those are important issues to address.

CHAIRMAN JACKSON: In saying that you don't hear disagreement that these are important issues to address, does that mean, then, that you see a change?

MR. SHACKELFORD: As I said, I don't think you'd find a single utility who would say we're not going to do assessments before we take the equipment out of service. I think they will all tell you they've always done it and they will continue to do so.

The exact nature by which they do them and the level of specificity I think is what the issue is, and that's where the weaknesses which we have identified are coming into play.

CHAIRMAN JACKSON: Why don't you go on.

MR. CORREIA: Slide 8, please.

[Slide.]

MR. CORREIA: I mentioned earlier enforcement on 11 of the 20 inspections are complete. Two had no violations at all. One had a Severity Level III but no civil penalty, and eight had one or multiple Severity Level IV violations, and the remaining inspection findings are still under Staff evaluation.

CHAIRMAN JACKSON: Let me ask you a question. Have any of the violations or enforcement actions been related to what you might call the performance aspect of the

rule?

MR. CORREIA: I would say not as many as more of the programmatic problems that we've seen.

CHAIRMAN JACKSON: Let me ask you this second question. Can we make a statement yet as to whether maintenance, in fact, or equipment performance has improved since the implementation of the rule? Because in the end, that's what we want, right?

MR. CORREIA: Right. I think several plants have told me -- managers have told me that they're much more aware of equipment performance now than they were previously.

CHAIRMAN JACKSON: Well, I guess I'm asking a different question.

Do we have an inspection program that does, in fact, look at maintenance, and it looks at various things in terms of equipment failures, whatever? Have we done a marriage to know, or just in general, do we see any improvement in equipment performance?

MR. CORREIA: I think the latest data from AEOD still shows a high number of reactor scrams initiated from a balance of plant, which is one of the main reasons that the Commission wrote the rule. So in that aspect, I guess we have not seen a change.

CHAIRMAN JACKSON: So in the end, performance is

as performance does, my favorite phraseology. And the question is, if we still don't see any change, what are we getting?

MS. BLACK: I think one of the benefits we're getting is the understanding of unavailability that wasn't there before, either in non-tech spec systems or tech spec

systems that the licensees were in and out of, but never tracked total unavailability throughout the year.

MR. THADANI: Also, I might note that it's probably going to take quite some time before we can get objective information to see if there is a big difference. How we can send out the awareness is the issue.

CHAIRMAN JACKSON: So the awareness has increased but we don't know yet?

MR. THADANI: And I think it will take quite some time before we will know with objective information.

CHAIRMAN JACKSON: All right.

MR. CORREIA: Slide 9, please.

[Slide.]

MR. CORREIA: Slides 9 and 10 contain the clarifications we've made to regulatory guide 1.160. The ones I have listed on the slide are the ones we feel are the more significant ones, and I'd like to review those. And then if the Commission would like to talk about any on slide 10, we can do that also, if that's acceptable.

Regulatory guide -- Rev. 2 to regulatory guide 1.160 endorses NUMARC 93-01, Rev. 2, with clarifications.

For example, one of the clarifications we have made are those non-safety-related SSCs whose failure could cause a scram. We've tried to clarify when one of those systems should be in the scope of the rule, to say that if it has failed at a particular site and caused the scram, obviously it's in the scope.

Then, if it has caused a problem at a similarly configured plant, the licensee should seriously look at whether or not that system in his plant or her plant should be within the scope of the rule.

Or if there's an existing analysis that said, if this system fails, it will result in a scram, that would place that within the scope of the rule.

I talked earlier about certain SSCs that are used in EOPs and they're used to mitigate accidents and transients, such as emergency lighting and communications are very important, even though they directly are not used to mitigate the action functions.

We talked before about MPFFs as a reliability indicator. We have now concluded on a regulatory guide that this is acceptable provided that there is a sound technical basis for whatever number of MPFFs the licensee chooses as a means of monitoring reliability.

Structures, we touched on earlier. We've added some additional guidance in our reg guide, in addition to what changes were made to 93-01, to say that structures should be monitored differently than active mechanical and electrical systems and that condition is a better process or method of monitoring the condition of structures, and that actions need to be taken to correct the problem before failure occurs, if there should be an indication of a problem, corrective action taken and placed in (a)(1) with goals in monitoring before a failure.

COMMISSIONER DIAZ: Excuse me. Could you give me an example of a non-safety-related SSC that is relied upon to mitigate accidents?

MR. CORREIA: That could be -- feedwater systems or condensate systems typically are non-safety related. They could be used as a core cooling system. I think the condensate system was the non-safety system at Saint Brown's

Ferry when they had their fire. That's one example that comes to mind.

COMMISSIONER DIAZ: And we classify them as a non-safety system because it's not in the Q list? Is that --

MR. CORREIA: It doesn't meet the definition of 50.65 for safety related, yes.

COMMISSIONER DIAZ: Is that the clear interface? Is it in the Q list or it's not?

. 48

MR. CORREIA: Quite often, Q lists contain more than just safety-related SSCs. Most licensees are fairly conservative with the Q lists.

Normally operating SSCs of low safety significance, the clarifications to the reg guide. Typically these systems are monitored at the plant level, again, such things as plant scrams. Some licensees are only monitoring against automatic scrams. We wanted to clarify that unplanned manual scrams are just as important also and should be monitored for these types of systems.

Are there any particular items on slide 10?

COMMISSIONER DIAZ: Number one.

MR. CORREIA: Number one, safety-significance categorization process. The only point we wanted to make here is that the process used to implement the maintenance rule, to categorize SSCs, is either high or low safety significance. It's specific to the maintenance rule and doesn't necessarily -- or cannot necessarily be used in other applications, for example, greater QA or ISI or IST approaches.

We do recognize, though, that we are doing a lot of work in this area and if at a future time there is information that is developed in the SRPs or the reg guides for the PRA implementation plan that could be beneficial, we would again revise the reg guide to reflect that.

. 49

COMMISSIONER ROGERS: It's really not a question, but it's an observation, that is that in this definition of maintenance, we are focusing very much on what we regard as related. I don't want to use the terminology incorrectly, but it has some connection with safety. Let's put it that way.

And I wonder whether you've seen any effect or you think there might be any effect as the plant focuses its resources this way, on plant housekeeping, whether, for example, the place starts to look worn out, even though the important equipment is in good shape. I'm not going to comment on whether that's good or bad.

I think it may relate somewhat to a general state of attitude and safety culture, but I wonder if that is something that one might expect to happen in the future as a result of our move in this direction and the economic stresses that are coming to bear on licensees.

MR. CORREIA: Certainly material condition is one of the items that all baseline inspections cover, and I think, to date, generally the reports are fairly good, that material condition is generally good, that I think there have been certain cases that on a certain particular piece of equipment, that it may be less than desirable. But it may be for a very good reason. Perhaps they just finished a major overhaul and haven't had a chance to bring it back up

. 50

to some specification.

I really don't know if we will see changes in that area because of the stresses you mentioned.

COMMISSIONER ROGERS: I wouldn't be surprised. I think we may have to decide what our position is in that case, if any.

CHAIRMAN JACKSON: How do we deal with the issue of living PRAs and their effect on categorization of systems and performance requirements? You know what I mean when I say living PRAs?

MR. THADANI: Yes, yes. That is one of the elements in the various pilots that we're working on, and the concern we have -- first of all, as one makes changes, one needs to keep track of those changes and needs to know on a real-time basis the plant as is versus reflection of the study itself.

So we are looking at finding ways for those licensees who want to use these techniques to make changes or seek relief in some areas, that they do need to keep track of those changes, that that would basically be a living PRA, so that at any given time, we know the PRA does reflect the plant as is rather than what it might have been like six years earlier.

So that's the path we're on as part of the PRA implementation plan.

. 51

In this case, they have to make an assessment -- I believe it's every two years -- to see what the plant performance was and, in fact, whether it might change their initial judgments. They have to revise their earlier decisions. They do have to make an overall assessment, I believe, every two years for the program.

CHAIRMAN JACKSON: And that includes looking at an updated risk profile?

MR. SHACKELFORD: We have been looking at that issue in the inspections. We've asked that question. Those licensees are using the PRA to derive performance criteria or ranking.

We typically ask them questions about their plans to update and go even further about how their current PRA, what's the time frame of the data in the model that they're using for that.

In those situations where we find problems, we certainly document them. We're not enforcing a living PRA requirement on anyone, of course, but I think the biggest issue in that area we've seen are a lot of licensees may be using what you might call outdated data as opposed to outdated models.

I mean, they pretty much reflect the configuration of the plant, but they may be using generic data or data that hasn't been updated in several years.

. 52

In those cases, on a case-by-case basis, where we think there might be a problem, we'll make challenges on a specific point, but that is part of the inspection process.

MR. THADANI: We would expect, as, for example, if new information comes out -- and it could be NRC issues generic communication because we learn something new -- clearly those factors have to be considered by the utility in the assessment of its program.

CHAIRMAN JACKSON: You were asking about page 10. Tell me about MPPFs related to the design deficiencies. What do you mean by this? Can you give an example?

MR. CORREIA: As a point of clarification, that should have been MPFF. I apologize.

The issue came up during the pilots, I believe,

where licensees, for economic reasons, had decided not to change the design that was -- of a piece of equipment that was giving them performance problems.

Understanding that, we said our expectation was, you should enhance your preventive maintenance program as much as reasonable to assure that future failures don't occur, increased frequency of tests or surveillances or changes to consumables or whatever, but just to live with a bad design and walk away with it without some type of change to the maintenance program we didn't think was acceptable. We just wanted to clarify that point in the regulatory

guide.

COMMISSIONER DIAZ: Number of SSCs in category (a)(1)?

MR. CORREIA: That's what Suzie mentioned earlier. During the pilots, for some reason, some licensees felt that (a)(1) was a penalty box. It might trigger some huge NRC inspection if they had too many SSCs in (a)(1). We just want to make sure everyone understands that that is not the case, (a)(1) is a requirement. As long as they meet the requirements, there's no problem.

Any others?

Slide 11, please.

[Slide.]

MR. CORREIA: I believe we've touched on all of these items. Certainly Ashok did. We mentioned communications was very critical during the developing phases, and we still believe it is today. We continue to believe that open and effective communications with the industry and the public is essential to the success of implementing the rule.

Pilot programs, we believe, are very important. We learned an awful lot, and it was also easier to do during a non-enforceable environment. It was easy to discuss issues openly with licensees.

Ashok mentioned that guidance was developed

through the iterative process. The industry developed 93-01. We discussed it over a two-year period. We did the pilot programs; it changed somewhat again. We revised our regulatory guide twice since then, all through information that we gathered during each phase of the implementation of the rule.

Ashok mentioned training. Also, we've trained in varying degrees over 900 people in the NRC on the maintenance rule.

COMMISSIONER DIAZ: Is that -- do you have a breakdown whether that's regions or quarters?

MR. CORREIA: By regions, I don't. By far, most of the inspectors are in the regions. I think we've trained over 130 inspectors that do the baseline inspections, close to 400 other inspectors that may have some involvement with the rule, like resident inspectors, though I have to admit, Region IV did have every resident -- or one resident at every site take the full three-day course, and the rest are NRR Staff that may have some dealing with the maintenance rule.

Ashok mentioned earlier that we believe the rule can be consistently inspected and enforced through the communications that we've had with the regions and licensees and to the enforcement panel that's established.

Resource requirements have been high through the

iterative process of developing guidance, inspection procedures, meetings with the public, workshops, and what we're doing on the baselines to maintain oversight.

CHAIRMAN JACKSON: Do you expect that to continue at that level?

MR. CORREIA: I believe until the baseline -- baselines are complete, it will. They will.

MR. COLLINS: Madam Chairman, I think it's important to note here that we're dealing with history also. This is one of the first inspections of this type. We're taking 30 to 40 years of agency momentum as far as types of inspections, qualification of inspectors, enforcement approach, and we're trying to turn the corner with the initial inspection here, and it takes some time.

It takes some orientation; it takes some recalibration and sorting through the results and understanding where we are, and adjustments, as indicated by the revisions to the guidance.

So I would anticipate, if we continue on this type of track, that the initial resources as far as the development might be somewhat the same, maybe even a little less, but the actual practitioner application and the thought process that it takes to shift gears from deterministic to performance-based will be easier as to generations of inspections continue on.

There will always be, in our mind, initially a programmatic inspection for the application of the rule, and any more performance-based routine follow-up, typically by the residents. In the maintenance rule here, it is more event driven than it is programmatic.

The real insights to the maintenance rule, I believe, will be forthcoming as a result of challenges to the plant that result from component malfunctions, and using the programmatic inspections, we'll go out and take that cut and look back into the rule based on a malfunction and determine whether the rule is being applied appropriately. That will be the real insights into the long-term application of the rule.

COMMISSIONER ROGERS: Well, it also may be that you want to look and see what the effect is on the license renewal activities that we get into, that this may be partly an investment in a sense, unrecognized at this point, but as licensees come forward with applications for license renewal, it may be that this investment will pay off in that area.

MR. THADANI: Absolutely. In fact, for past structures and so on, this becomes critical for license renewal activities, and that's why the procedures that Rich mentioned earlier in terms of guidance, we have tried to make sure that the guidance we're using here would be

sufficient even when we get to license renewal activities so we don't have to come up with yet different guidance to look at the same structures.

So you are quite right, and our internal activities we have integrated that way.

COMMISSIONER DICUS: Mr. Collins may have -- may have answered this question, but it is on the resource commitments. I want to pose the question in terms of future resource commitments, particularly in light of the fact that we may well continue down this road of looking at regulations that are risk-informed, performance-based and

new kinds of regulations that may be written.

And in the lessons learned here, and particularly -- and it's referenced a bit I think in the paper itself, are we to assume that future regulations of this nature might also be very resource intensive, certainly on the front end of those regulations, or are there lessons learned that perhaps future regulations might not have to be so resource intensive on the front end of the regulation?

I raise the issue in terms of long-term budgetary planning, because if this is a course that the Commission may well be going down, we have to continue -- concern ourselves with the year '99 and 2000 and so forth budgets, are we going to need to consider these things as well?

CHAIRMAN JACKSON: Before you answer it, I'd like

for you to answer it in the context of what kind of resource requirements go into our initial implementation of any new rule that's of significance.

MR. THADANI: I'll give you a judgment. It seems to me that the maintenance rule is quite broad. It's our first -- by and large, it's our first truly performance-based rule, and therefore, probably we have had to expend more resources than we might have for future changes in the regulations.

But I think the real issue is the degree of increase in resources is going to depend on the type of rule we have in front of us. This affects the whole plant and it's pretty complex. If it's a fairly simple rule, I don't know that there would be much impact.

But if we were to, let's say, revamp fire protection radically to go to performance-based, I would anticipate that, again, the initial resource commitments could be pretty high, because the idea behind these approaches is: let's agree on what kind of a program makes sense up front and then we'll walk away.

The agency basically would say, okay, we will not get involved unless there are some signal indicators that there may be a problem, and then we will react to that.

CHAIRMAN JACKSON: You don't really mean we're going to walk away?

MR. COLLINS: No, we don't.

MR. THADANI: What I meant was, we have placed our residence in other people watching. When I say walk away, a significant intervention on our part would come if we have reason to believe that there may be a problem.

It seems to me that it is very important that the ground rules be agreed to up front and both sides need to understand, and because there is so much -- because the whole idea is to provide flexibility, one should have some agreement on what does that really mean up front.

So it seems to me that one would have to do early performance -- for performance-based rules, programmatic inspections very likely would have to be done.

And if I use this experience, then that says you probably have to spend more resources. How much more, I think, is going to be determined by the scope and range of activity we're talking about.

But I think it does mean, up front, an increased resource commitment.

CHAIRMAN JACKSON: But isn't it also a function of the expertise of the Staff going in?

MR. THADANI: Definitely. And because the concepts utilized are pretty multidisciplinary -- and that

means you have to get all those resources together and go take a look, and it's -- quite frankly, it's been very tough
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on us to support these inspections.

The gentleman sitting to my left can tell you how often we called him, because the PRA resources are tight. There's no question. We have a lot of activities that are going on, and we had to beg, borrow, and do everything we could to support these inspections, and I anticipate similar challenges if we have major rules that are revised.

MR. COLLINS: Really, I think the most efficient way is very similar to the way the maintenance rule was handled in that there's a performance-based, fairly brief rule with stated goals -- we can argue about the one, and that's our last bullet -- that the industry provides some measure of input as far as the guidelines for application.

And that's recognized by the staff and in fact endorsed by the Staff, and that's a fairly clear-cut process which I think in the future we should continue to embrace whenever it's appropriate.

The resources, to my mind, come in when you're trying to inspect a performance-based rule at each site, where each site has options for implementation, have perhaps very different structures and resources available to them, so you cannot go out and do the same inspection on each site.

So to gain confidence that the performance-based rule does have enough of a platform for us to then turn to
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measure only performance of that rule, we have to do a very in-depth, very focused inspection on each site, and that's difficult.

I don't see that changing very much. I think we still have to do those types of inspections on the performance-based rule.

The payback, hopefully, is on the back end of the process where we free up our on-site resources to look at other issues or to redirect them in other areas, and then we allow the licensees in their performance-based realm to focus on what they believe is important, not what the agency
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CHAIRMAN JACKSON: -- has agreed with them is important?

MR. COLLINS: Right.

CHAIRMAN JACKSON: So how do you measure those?

MR. COLLINS: I think that's a good question. It's a fair question that was stated, Madam Chairman, and I wrote it down. We have to be able over a period of time to measure that this rule has met the mutual goals that warrant the type of investment that was made. And we owe you that answer.

CHAIRMAN JACKSON: Anything else?

MR. CORREIA: The last item I think we've talked about quite a bit, but from an enforcement perspective, the
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rules must only contain requirements.

The last slide, please, number 12.

CHAIRMAN JACKSON: I'm confused. Is this new information? You say rules should only contain requirements.

MR. CORREIA: We're referring to the (a)(3) part of the rule that says they should do safety assessments versus shall do safety assessments.

MR. COLLINS: We covered it earlier in the discussion.

CHAIRMAN JACKSON: Not exhortations but requirements?

MR. CORREIA: Yes.

MR. THADANI: There's something in the rule, but the rule itself says should be done, but we're having a hard time enforcing it, so it's the language in the rule.

CHAIRMAN JACKSON: I think there's a lesson there in terms of, A, what gets propagated to the Commission in terms of a proposed rule, and B, the scrutiny the Commission gives to a rule and what it signs off on or may, in fact, modify, okay, to make an exhortation as opposed to a requirement. So I think there's a lesson for all concerned in that regard.

[Slide.]

MR. CORREIA: Slide 12, status of future

activities we're working on or planning on working on. Again, we plan to -- our goal is to complete all baseline inspections by July 1998.

We have drafted an information notice based on lessons we've learned from the baseline so far. We expect that to be issued next month, and, again, communicate to the industry what we found, what kind of information they should be considering.

We will now revise our baseline inspection procedure to reflect changes to our regulatory guide. If we keep it current, we think we can have that done by this July.

We are also working on a Home Page to share with industry, maintenance rule documents and information that are already publicly available but haven't been easily accessible through the Internet. Our goal is to have that completed by this June.

The Office of Enforcement plans to revise the EGM that we are currently using for the maintenance rule. We have discussed with them options on how soon that could be done. We basically feel we have enough experience now with the baselines to go ahead and clarify some of the guidance that's in the EGM at this time.

We are also working with the Technical Training Division at TTC to transfer the training program from NRR

now to TTD for them to -- for future training. We hope to have that transition completed by the end of the year.

CHAIRMAN JACKSON: Let me ask you a more mundane question. What's the typical makeup of the expert panel, and is there consistency or does it vary from plant to plant?

MR. CORREIA: Typically, there's representatives there from plant operations, maintenance, engineering, certainly the PSA area, and most licensees will bring in the system engineers for the particular system they may be evaluating. I think most are pretty consistent with that makeup. Some involve quality assurance personnel also.

CHAIRMAN JACKSON: Any further comments?

COMMISSIONER DICUS: One last question. We consider this basically a fairly successful rule. I think that's a fair statement. Some members of the nuclear power plant industry have raised some criticisms of the rule and I would ask if those -- if you believe those criticisms are fair or reasonable or valid, and if so, what are we doing to address them.

MR. CORREIA: One of the issues that came up early on was this issue of using MPFFs as a measure of reliability. We felt the guidance was clear. It was discussed during the development stages of the guidance document in the '91, '92 time frame, and we responded to the

industry concern that way, what our expectations were in that area.

Another concern of some licensees is that the baseline inspections are very programmatic, as Sam mentioned. We need to do programmatic inspections to gain the confidence that licensees have established programs that will effectively monitor the effectiveness of maintenance, and until such time, I think we need to evaluate very broadly, horizontally, the programs they've established to implement the rule.

Once we have confidence that the programs are in place, it's stable, then I believe we can focus more on performance issues than the programmatic issues.

CHAIRMAN JACKSON: Okay. Commissioner.

COMMISSIONER ROGERS: Well, just one -- I'm sorry.

COMMISSIONER DIAZ: Go ahead.

COMMISSIONER ROGERS: Just one point, and that is -- a general observation, and that is that in trying to develop measures of how successful or not this is, I think there are both quantitative measures, failures, scrams, so on and so forth, but there's also the impact on what I'll call the safety culture of the plant.

Right now, I think it's sort of an article of faith with me that the more ownership that the plant people actually feel towards their plant, ultimately the better

results and the more safe plant you're going to get.

But that's really an article of faith more than demonstration, and I think that it's something to watch, that whether this -- this approach of a performance-based rule which ultimately looks at results -- that's the idea in the end -- looks at results more than methods, although we have to go through our programmatic inspection program to make sure that we have some confidence that they can deliver what they may -- what their objective -- performance objectives turn out to be.

Once you get through that, and that will take some time, whether one then finds that the general attitudes within the plant are strong with respect to taking initiatives to do things the best way themselves and to use their resources in the best way, and that's a subtle measure, but I think it is something to watch for because, to me, that's one of the long-term benefits that I would hope to see come out of this general approach.

CHAIRMAN JACKSON: Commissioner Diaz.

COMMISSIONER DIAZ: Thank you, Madam Chairman.

Although it might not be obvious from my previous comments, I do love the maintenance rule, and let me tell you why I love it.

Rather than just looking at the rule and the language and the problems, I think for the first time, we

took a risk and went out there with something that was not completely known, and probably for the first time, in writing, we went and said, those known safety-related systems which might be safety related, okay, that we know about and you know about have to be treated in an equal part

with safety-related systems.

That was a great thing to do, because we have known they're there. Everybody has known they're there, and we keep feeling around, as it were, and we say, look, it doesn't matter what we call it. If they are really, you know, important to the safety of the plant, they have to be addressed, and I think that was a major thing.

On the other hand, there are some words in here that do need to be fixed, and I think you realize that there is a little bit more specificity that needs to be described, that the rule actually does apply to all those systems, structures, and components that are in the plant during not only the design basis and so forth.

I do think that we have done some great strides in that availability should be clearly and further, you know, analyzed and enforced if necessary, while we need to go on our own learning curve on reliability, but I really commend you. I think it's just going the right way.

CHAIRMAN JACKSON: Well, thank you. I'd like to thank the Staff.

MR. CALLAN: Chairman, I think I'd like to just make one comment and remind you, Chairman, of the June 1996 senior -- Staff briefing at the senior manager meeting before the Commission at which time you, in closing, went to each of the four regional administrators and asked us our opinion. This is a month before the rule was implemented, and asked us our opinion, our prognosis of how we thought the rule -- how we thought it would go.

And as you know, regional administrators are a tough audience, a skeptical audience, and I think you heard -- if you remember, you heard a lot of concern from each of us, a lot of trepidation from each of us.

It was not a scientific survey, but my sense is, speaking for my colleagues, I think if you were to poll each of the regional administrators now, I think you'd get a sense from them that certainly their worst fears weren't realized and probably that they view the implementation as one of our more successful endeavors. I think it's gone quite well.

And one final comment. When you look at resource expenditure in implementing a rule of this nature, I think you have to also consider that if those resources weren't used in implementing the maintenance rule, a lot of resources would still be poured into maintenance in a different way, and it wasn't that long ago, how many years

ago, we expended significant resources doing maintenance team inspections.

MR. THADANI: Right.

MR. CALLAN: I think the resources we spent doing maintenance team inspections as an initiative would rival the resources that we spent implementing this rule, and I think -- in all candor, I think we would all agree that the results of the maintenance team inspections were probably a disappointment, given the resource expenditure.

So maintenance is one-fourth of the process. We do inspect maintenance, and I think certainly the regions do not begrudge the resources spent implementing the rule, and those resources would have been spent doing maintenance anyway.

So I don't know how you parse that, how you split that away and just look at the delta resources of overhead in implementing the rule and not the total resources, and so

that's it.

CHAIRMAN JACKSON: That's the important point.

Well, thank you again and it's been a very informative briefing. I thank all of you.

I think that considerable progress, in fact, has been made in implementing the maintenance rule, and, Mr. Callan, your comments relative to the opinion of the regional administrators helps to reinforce that perspective.

. 70

And as you've heard, obviously the Staff should continue to focus on insuring consistency in the implementation and enforcement across the industry. As many of us have said, the maintenance rule is often referred to as an example, maybe the first real one of a risk-informed, performance-based regulation. That's certainly the way I've been advertising it.

And because of that, the lessons learned from its implementation should serve and must serve as a useful guide to assist NRC in the future development and implementation of risk-informed, performance-based regulation.

And in that regard, I will bring three things to your attention. One has to do with this issue of -- and Commissioner McGaffigan made this point before he left, is asking you to consider again this question of whether the category (a)(3) safety assessments, whether there needs to be some clarification in terms of the language.

What you said about requirements should be in the rules as opposed to exhortations, and I think you need to come back to us on as short a time scale as we can work out here with some more definitive statement in that regard, because we've had histories in the past of saying, well, we don't think we need to do anything, and then -- I won't be here, but 15 years from now, we'll be talking about what we could have done and should have done.

. 71

And in the meantime, I think you should -- as you go forward, I'd like to see some sense of how you're going to track the efficacy of configuration control a la the rule in our regular inspection program, even as we get information through these baseline inspections from the plants that haven't had them so far.

And secondly, I think it is very important that this issue of being able to measure how efficacious the rule is in terms of the net effect of the quality of maintenance, that is, on equipment performance -- and again, I think this is rooted in a basic inspection program, but it has to be tied into the judgments we are making on the efficacy of the rule itself, and then the issue of clarification of language used is always out there.

So unless there are any further comments, adjourned. Thank you.

[Whereupon, at 4:27 p.m., the briefing was adjourned.]