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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

JANUARY 20, 2000

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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MEETING: PLANT OPERATIONS

NUCLEAR REGULATORY COMMISSION
2 White Flint
11545 Rockville Pike, Room T-2B3
Rockville, Maryland
Thursday, January 20, 2000

The committee met, pursuant to notice, at 8:30 a.m.

MEMBERS PRESENT:

JOHN J. BARTON, Chairman, ACRS
JOHN D. SIEBER, Vice Chairman, ACRS
GEORGE APOSTOLAKIS, Member, ACRS
MARIO BONACA, Member, ACRS
THOMAS KRESS, Member, ACRS
DANA POWERS, Member, ACRS
ROBERT SEALE, Member, ACRS
ROBERT UHRIG, Member, ACRS

P R O C E E D I N G S

[8:30 a.m.]

MR. BARTON: The meeting will now come to order. This is a meeting of the ACRS Subcommittee on Plant Operations. I am John Barton, chairman of the subcommittee, and Jack Sieber is the vice chairman.

ACRS members in attendance are George Apostolakis who is scheduled to attend, probably weatherbound at this time. He's at the hotel. George Apostolakis, late. The late George Apostolakis. Thomas Kress, Dana Powers, Mario Bonaca, Robert Seale, Robert Uhrig and Jack Sieber.

The purpose of this meeting is to discuss selected technical components of the revised reactor oversight process, including the updated significance determination process and plant performance indicators. The subcommittee will gather information, analyze relevant issues and facts and formulate proposed positions and actions as appropriate for deliberation by the full committee. Michael T. Markley is the cognizant ACRS staff engineer for this meeting.

The rules for participation in today's meeting have been announced as part of the notice of this meeting previously published in the Federal Register on December 28th, 1999.

A transcript of the meeting is being kept and will be made available as stated in the Federal Register notice.

It is requested that speakers first identify themselves and speak with sufficient clarity and volume so they can be readily heard.

We have received a request from Mr. Jim Riccio of Public Citizen for time to make oral statements concerning the revised reactor oversight process. We have received no written comments from members of the public.

On January 10th to the 13th of this year the NRC staff held a workshop to discuss lessons learned from the revised reactor oversight pilot program. For today's meeting, the staff is expected to discuss the pilot program results, major issues from the workshop and proposed actions resulting from lessons-learned and the resolution of the public comments.

We will now proceed with the meeting, and I call upon Messrs. Bill Dean and Michael Johnson of NRR to begin.

MR. JOHNSON: Good morning. My name is Michael Johnson from the inspector program branch, and the office of NRR. I have with me at the table Tim Frye, also from the inspection program branch. I'm going to say some brief words in terms of an introduction, and then Tim is going to go a little bit further in the introduction, and then later on as we go into the day after the NEI presentation we have Don Hickman who is in the crowd who will talk about performance indicators. Also we've brought along Doug Coe

who will talk about the significance determination process. And those are really the key two technical areas that we intend to focus in on today.

Just by way of introduction or background, as you're well-aware we've been working on developing the revised reactor oversight process. We've had several briefings for the subcommittee and the full committee on that process. We began a pilot program in June, in fact we briefed the ACRS last on the 2nd of June. And at that time we were just beginning the process.

We had established some evaluation criteria; we had put in place a series of processes to get feedback from internal and external stakeholders, including ongoing meetings with the staff, between us, the program office and the regional offices, for example, meetings between the NRC and NEI to get feedback and to continue to develop and work on issues as we went through the pilot program.

We have performed during the pilot program an internal survey of the staff to get internal stakeholder feedback. We have a Federal Register notice, put in place a Federal Register notice for formal comments from whoever would comment on the revised reactor oversight process.

We are conducting round-table focus group meetings in the vicinity of each of the plants, the pilot plants, to meet with key members of the public, external stakeholders,

to get their comments. We as was mentioned have just completed a series of lessons-learned workshops. We had an internal lessons-learned workshop that we conducted the first week of January, and then last week we had an external lessons-learned workshop. And all of those activities were aimed at getting stakeholder input on the pilot program to enable us to complete that phase, really the phase of trial, if you will, the revised reactor oversight process, so that we can learn lessons and move forward. And the results that we present today are really based on all of the feedback that we've gotten to date.

Let me just, before we move forward, let me just remind us of what the revised reactor oversight process looks like and what it's intended to do. And I really want to, I'm anxious to put the slide up and take it down before George gets here. Every time George sees this slide he has some interesting questions for us.

This is the framework, the revised reactor oversight framework. Again, it starts with the mission; it looks in the strategic performance area, areas, those areas being reactor safety, radiation safety and safeguards; and then focuses in on cornerstones.

The process is built around cornerstones. Cornerstones are that essential element of information, if you will, in particular areas that we find necessary to get

information about, such that we can have assurance that licensees are fulfilling the ultimate mission.

MR. POWERS: One of the questions that will probably come up sometime today is, how we address questions or inspection findings that affect both the reactor safety and radiation safety, for example. And in many of your flow charts you come down and you say, is it one or the other. Well, what do you do when it's both? And if you tell me well, it's a preponderance argument, tell me how I decide it's a preponderance of one or the other. I mean it's one of those things that I'll know it when I see it, or is it one of those things that I can make a decision that everybody will agree, or at least understand, how I made the decision.

MR. JOHNSON: Okay, Dana, I've got that question written down, and we'll I'm sure take that on before we --

MR. POWERS: Well, it comes up in connection with the slide in that for reasons I've never fully understood, there are a couple of lines drawn from reactor safety to barrier integrity and emergency preparedness, but not to mitigation systems, and radiation safety to public and occupational, but not to barrier integrity or -- I mean why those two particular lines and not other particular lines has never been very clear.

MR. JOHNSON: Okay, I understand. Well, let me

just say with regard to discussing, let me come back to the question. Let us come back during the day to the question about how we address issues that in fact follow multiple course lines.

MR. BARTON: You'll probably have to address it when you go through the flow charts.

MR. JOHNSON: Right, so we'll note those questions and move on. But this is the framework again, and the framework is very -- the process is very based on cornerstones, very much based on cornerstones. And in fact for each of those cornerstones what we do is we in fact perform inspection, risk-informed baseline inspection and other inspection. We look at performance indicators, performance indicator results. The insights from inspections are put through a process that evaluates the significance of the findings, that is the significance determination process that we're going to spend a lot of time focusing on today.

Again, we're going to spend time focusing in on the performance indicators, the combination of those for each of the cornerstones then apply it against thresholds, give us insights as to what the performance is, and it's an entering argument to an action matrix. That action matrix is how we decide in fact what actions we're going to take based on performance. And I'll show you an action matrix in

a second.

Those actions can include management meetings, licensee expected actions, other regulatory actions that we're going to take, follow-up inspection that we're going to take. The action matrix also talks about what kind of assessment, who would sign the assessment report and in fact we have an assessment meeting, and in fact it's specific as to what level of NRC management will be at that public assessment meeting.

Coming out of the action matrix we can in fact have more inspection, so that then completes the process. That's in a nutshell the revised reactor oversight process.

And I mentioned the action matrix. Let me just put up a somewhat dated version of the action matrix. We're continually refining the action matrix based on insights that we have, but the concept of the action matrix then is, once again, once we have insights based on performance indicators applied against a threshold, and once we have inspection findings that we run through the significance determination process, those then are entering arguments in this action matrix, and you can see as you move from left to right, if you have for example a single PI that is in the white area or a significance -- an inspection finding that in fact based on the significance determination process is white, that puts you in this column and you can see that we

in fact would do a baseline inspection, but in addition to that we'll do supplemental inspection focused on that specific area which resulted in a crossed threshold.

And so it's really this action matrix which helps us lay out both for our staff, for the licensee and for the external stakeholders, what the range of responses will be for the NRC based on the performance as measured through the PIs and through the inspection findings.

That's just a real quick overview of the process, a reminder, because we haven't gone through this, and it's been a while since we were talking about the process.

Now, if there are no questions, what we're going to do again throughout the day is to focus on our part on the two specific technical areas of concern and I think of interest to the ACRS, that being the PIs, performance indicators, and the second area being the significance determination process.

MR. APOSTOLAKIS: Mike, excuse me, I'm sorry I was late. The significance determination process is different from the action matrix?

MR. JOHNSON: Yes, it is. The significance determination process is the process that we use to gauge the significance of inspection findings. The output of that significance determination process is the entering argument, along with the PIs against thresholds for the action matrix.

Now, Tim is going to talk about, provide some words in introduction or background, if you will, to talk about the very high level pilot program, what it was we were intending to do overall in the pilot program and what some of the results were. And then after Tim is finished, and then after NEI has spoken and we get a chance to come back, we'll focus very specifically on the SDP and the performance indicators. Tim?

MR. FRYE: Thanks. Good morning. As Mike mentioned, my name is Tim Frye, and I work in the inspection program branch of NRR. For the last year or so I've been responsible for first developing and then coordinating the pilot program that is being conducted for the revised reactor oversight process.

As Mike mentioned, although the focus of this briefing is on the pilot program results and lessons-learned for performance indicators in the SDP, we'd first like to present a brief overview of the pilot program results in general.

What I'll do is, I'll discuss the overall pilot results and lessons-learned, issues remaining for initial implementation of the oversight process at all plants, some longer term issues, and a schedule to support initial implementation. And then we'll follow that up with more detailed discussions on PIs and the SDP.

First a quick overview of the pilot program. As I'm sure you're all aware, a pilot program was conducted at two sites per region. It was a six-month pilot program. It ran from May 30th to November 27th, 1999.

The purpose of the pilot program was to exercise the new processes, collect lessons-learned and revise the processes prior to initial implementation. And although the pilot program ended on November, '99, in November '99, the pilot plants have continued under the revised oversight process.

MR. POWERS: One of the comments this committee made on this plan when it was first brought before us, was that the pilot was too short. That it needed to go through a full cycle to see everything. And I noticed that in your comments of your review committees that you've frequently gotten a comment back, and an assessment of criteria, that insufficient information has been obtained in the pilots to determine whether criterion has been met or not.

With respect to the short term, do you think you need to run the pilots longer?

MR. JOHNSON: You're right. The feedback that we've gotten all along from ACRS, and we've gotten from others as we've gone into the pilot, was that six months was going to be tough, challenging to exercise. Many aspects or most of the aspects of the program we could test, but not

all of the aspects could we test in the short period of six months that we ran the pilot.

And in fact as you indicate, the results have come back to illustrate just that. For example, Tim is going to talk about the results generally, but one of the things that we want to measure are some of our agency outcome measures that are things like maintaining safety and improving public confidence.

And to be honest, even if we had gone with a year pilot or a year and a half pilot, some of those results are sort of the longer term things that are very difficult to measure anyway.

MR. BARTON: Mike, I think the problem that Dana brings up is that this was the committee's concern, and you've seen it in the feedback you've gotten from your workshop and the public comments. And you decided based on that feedback that you do have to make changes to this program prior to full implementation, and the concern is, full implementation is a couple of months away; there's a lot of things that you have decided need to be worked on, and those fixes that you're going to make won't have a chance to be tested because you're going to be in full implementation.

So you're not really going to know whether the fixes you made are the right ones, how effective they are,

and the last thing you need is a program that you're going to fully implement that doesn't have a heck of a lot of credibility from the public. And that's the concern that I've got reading all the stuff that's come out of the public comment and the workshop stuff.

MR. JOHNSON: Yeah, actually I should have answered the question more directly. I think our conclusion is that based on where we are now is that we have tested the majority of the program and have sufficient insights to know whether or not we can move forward, and we've concluded or are concluding that based on what it is we've learned and having incorporated the things that we know we need to shore up about the program, on the 2nd of April we think we'll be ready to move forward. We're comfortable with the revised reactor oversight process --

MR. POWERS: You thought that when you set it up, you went through the exercise, and you still think it -- did anything about this pilot program change your mind at all? I mean it seems to me that you --

MR. FRYE: Well, I think what Mike is saying, the objective of the pilot program was not to do a detailed program analysis, because we knew we wouldn't be able to do that based on the short time and limited number of plants.

But what we were trying to do was, at a pretty high level, see if the processes would work together and

look for fatal flaws that would prevent us from initially implementing the processes, and we didn't see those.

What we're working on now I think are refinements to the processes to make them work better.

MR. POWERS: Well, you're looking for fatal flaws, I mean just because you didn't find them in the short period doesn't mean they don't exist.

MR. FRYE: Well, that's true. That's true. And you know, when we talked about going to -- when we talked about what would happen after the pilot program, earlier on we called this next phase full implementation. Some of the earlier language we used to describe what we were going to do talked about full implementation. And we sort of changed our view a little bit to call it the start of initial implementation at all sites, and that's really a recognition of the fact that in a number of areas we're going to need to do continued development, continued refinement, I should say, as we go beyond April.

None of us have the expectation that the process is going to be perfect. One thing that we learned through the internal lessons on workshop and the external lessons on workshop is that there are issues that we're going to have to work on, some of which clearly have to be fixed between now and April; others of which we have longer, we can work on during this first year of implementation.

And that's what I meant when I said we think based on what it is we know about the process and what it is that perhaps, Dana, we don't know, but we expect to learn in the first year of implementation, that we know enough based on our pilot experience to go forward.

MR. POWERS: I guess what I'm really asking you for is why is it you're so confident?

MR. JOHNSON: We're going to show you. We're going to tell you throughout the day of why we're so confident.

MR. FRYE: I think like Mike said, we're not confident that the processes are perfect at this point and there won't be a need for continued refinement throughout the first year of implementation, but we are confident that they are meeting the four agency performance goals and that there is nothing fundamentally wrong with the new processes that would prevent us from trying them at all the plants and gaining more insights.

MR. JOHNSON: And the other point, well, the second thing I'll say is, in agreeing with Tim, is that, you know, one of the things we have to keep in mind is not just where we're going, but where we've been. And the pilot experience has told us that while the revised reactor oversight process may not be perfect, it is certainly in many aspects of the things that we care about in terms of

agency goals, the outcome measures and the program goals in terms of objectivity, you know, scrutibility or how easy is it to understand the process, predictability.

Much of what the pilot program has told us about the revised reactor oversight process is that it meets -- it represents an improvement over our existing processes. And so again, we're not here to say, and in fact the results will illustrate to you that the pilot program revised reactor oversight process as exercised in the pilot program, it's not perfect. But we think it's an improvement and we think based on the things that we're going to fix between now and April, and the things that we've mapped out to fix as we go beyond April, that it's good enough to proceed.

MR. POWERS: You know, when I was on the other side of the fence you always wondered whether activities at the sites may have been influenced by scheduler pressure and how that may impact safety. But I've got to ask you, do you feel that you're under scheduler pressure to put a program in place that really isn't complete, and it in its incompleteness may miss some indicators which could lead to safety issues at plants, but you won't be able to know that because of the changes you need to make to the process to make it better. Is this is a schedule issue only?

MR. JOHNSON: No, I would say no. And in fact, even if we had -- let me go at it the other way. Even if we

were to double the number of plants that we were going to pilot this process at, and then double the length of time, let's say go another 12 months or another six months on the pilot program, there are, you know, we still would not have 100 percent assurance that we had hit all the kinds of issues, all of the exceptions to the processes that we put in place, 100 percent confidence that we got the right set of PIs or the complete set of PIs, for example, you know.

And so again, what I'm saying is based on what it is we've been able to learn from the pilot and all of the internal and external stakeholder input that we've gotten on the process, we think we've gotten as much as we can get out of what it is we've tried to do with the pilot program, and we're at a point where we do need to take that next step to continue with the start of initial implementation, and then to move beyond.

MR. FRYE: Continuing on, some general pilot program results, pilot program feedback and lessons-learned indicate that the combination of performance indicators and baseline inspection program provide an adequate framework to assure that safe plant operation is maintained.

MR. APOSTOLAKIS: How does one reach that conclusion? MR. FRYE: Again, it's stakeholder feedback. It's the results of collecting PIs and exercising the inspection program. And we had no indications that we were

missing risk-significant aspects of licensee performance, that there were things out there regarding licensee performance that concerned us, that we weren't able to take action on. That would be the basis for that conclusion.

MR. JOHNSON: We didn't find any issues at the pilot plants that we felt would fall outside of the framework. I mean the framework is broad and all-encompassing. The issues that we found in the pilot fit within the framework. The issues that we found at non-pilot plants, for example, George, while they weren't under the process we constantly asked ourselves how would the revised reactor oversight process have handled this.

And the overwhelming feedback that we got with respect to the framework and the completeness of the framework have indicated to us that we just haven't found holes, significant holes, or really any holes. I don't think we had any feedback on the adequacy of the framework.

Now, there are questions about this outcome measure, the agency outcome measure of maintaining safety. And we stopped short of saying that the process will maintain safety, because we recognize that we need a longer term look, you can't just look at a limited number of sites over a six-month period of time.

MR. APOSTOLAKIS: So I understand that. Is maintained is different from well-maintained?

MR. JOHNSON: Yeah, this bullet means that the framework that we have in place, the revised reactor oversight process, is adequate. The framework is adequate to ensure that safety is maintained. And we will continue to look, to set up indicators, to measure for example whether safety is being maintained. It's an area that we need to continue to work on and make sure that safety is maintained.

But the framework, we believe, is adequate.

MR. APOSTOLAKIS: So is this then guaranteeing that we will not have another incident like the Wolf Creek, because now we have a framework that will catch these things before they happen? What exactly does the sentence mean, you know?

MR. JOHNSON: The sentence doesn't mean that we won't have another Wolf Creek. The sentence means, because the process, the process doesn't guarantee that you won't have a Wolf Creek. What the process does guarantee is that where there are performance problems we'll catch them at a level that will enable us to engage, again through the action matrix, to a point where we'll take sufficient action up to and including shutdown to ensure that the public is protected, adequately protected. That's what the process guarantees, and that's what that first part does.

MR. POWERS: I would read -- the sentence is

saying that we won't have any more frequently than we have in the past, Wolf Creek type drain-down events. Or WMP type events.

MR. JOHNSON: Yeah, that's --

MR. APOSTOLAKIS: Well, yeah, that's where I was going. I mean are you confident that this process is at least equivalent to what we have now, which may or may not be perfect?

MR. JOHNSON: And the answer is, again, we believe the framework is adequate. Such that this process is equivalent -- but again, this is an area that we want to continue to monitor to make sure that in fact we are maintaining safety, because that's one of the agency's outcome measures.

We had a meeting this morning with the Office of Research where we talked about what are the kinds of things that we need to set up to make sure that we can gauge in fact whether safety is being maintained.

MR. APOSTOLAKIS: How can a framework be adequate when it eliminates the safety conscious work environment as a consideration? By fiat or not, it may or may not be a problem, or your doing. But how can it be adequate when the rest of the world is saying that safety culture is the most important thing and so on, and we drop it in three paragraphs, as I remember, and two lines.

And again, I'll come back to Wolf Creek. Do you think, I mean the argument there is that there will be an impact on the hardware. Do you think that there was an impact on the hardware? They just opened valves. So you're not going to see anything.

MR. FRYE: Yeah, I think that's underlying the concern that we've heard from stakeholders on this issue, and we have heard that concern and we're evaluating and dealing with it. Just as you said, the basis for that concern is how cross-cutting issues such as safety conscious work environment are being treated by the framework, and PIs and inspection finding. But we made an assumption that these kinds of cross-cutting issues would be reflected in significant inspection findings and performance indicators, and while we haven't been able to draw any conclusive answers to confirm that, we feel confident that we can continue with the process and we will be continuing to evaluate that if that fundamental tenet is still true and --

MR. BARTON: But you don't even have a basis, it's your gut telling you that you think it's going to be all right, and I think that's what bothers us.

MR. FRYE: I think it's more than a gut feeling, because we did as best we could exercise that concept during the pilot program, but obviously we're not sitting here saying the pilot was sufficient to confirm that, and we've

heard the comment from stakeholders that there is a concern out there, and that's the point of trying this at more plants.

MR. APOSTOLAKIS: I'm sorry, when you say stakeholders, which stakeholders raise those concerns, the licensees?

MR. FRYE: We've heard it a lot from NRC stakeholders.

MR. APOSTOLAKIS: NRC stakeholders, NRC stakeholder means NRC people?

MR. FRYE: Regions, regions have concerns.

MR. APOSTOLAKIS: Regions, oh, that's nice to know.

MR. BONACA: Let me just ask you a question specific to this. I'm looking at the performance indicators from the pilot through the end of November. And as I expected, given the threshold that's high in my judgment, there are two whites. The rest is all nice and green. And I can tell you that next year you'll get the same situation. I mean there are some areas where you'll never see anything but the green, that's my guess.

So I have a specific question regarding the performance indicators, which is, do you feel that these indicators are insightful enough, for example, and that goes to the pilot, right, I mean you should get sufficient

insight to decide whether or not your thresholds are placed in the right location.

I mean I could not possibly respond to a table such as this with any action, because it doesn't tell me anything.

MR. JOHNSON: Can I suggest that we're going to spend, you're going to spend time with NEI and I assume, Tom, you're going to talk about the PIs, and we certainly are going to talk about the performance indicators and the thresholds. Can I suggest that maybe we hold some of the discussion on the performance indicators and the thresholds for that?

MR. BARTON: That's fine, Mike, as long as we cover it.

MR. SEALE: Could I plant one seed, though -- about six years ago or so, Zack Pate who was head of INPO at the time gave a paper at the executives meeting, the CEO conference for the utilities that I think drew a lot of attention across the board, both in the Commission and in the industry, having to do with reactivity management.

We've continued to have some reactivity management problems, in fact I think there was one recently. If one goes through and analyzes the significance of these reactivity management events, in nine out of ten or perhaps it's 99 out of 100, or it may be even rarer than that, you

will determine that the reactivity involved did not pose a significant risk to the plant. And yet the lack of control in reactivity management is clearly a symptom of a precursor, or is a precursor that could lead to a serious event.

I think we've had enough of those to recognize that that's something that we have to be sensitive to. When do we stop being risk-driven completely and go back to our basic understanding that there are certain, if you will, behaviors that constitute defense in depth, like reactivity control, that you're going to nail somebody with? I mean where is that in your assessment process?

MR. JOHNSON: That's a really valid point, and in fact that mirrors some of the feedback that we've gotten. When Tim talks about cross-cutting issues, human performance, and George's mention of safety conscious work environment, you know, we recognize, the staff, the NRC staff has told us that it is important. They believe it is important that we continue to be attuned to cross-cutting issues.

And in fact, George, to correct something that you said, it's not that the process doesn't consider those issues, the process, the framework considers those issues, but what the process says, what the underlying tenet is, is that if you have a plant that has problems with human

performance or with safety conscious work environment, or problem identification resolution, which is sort of related, that those problems will in fact be evidenced in issues that you can measure in terms of the significance determination process or in performance that you can measure in terms of the Pis, and will ultimately cross thresholds at a time that is early enough in the performance decline for us to engage.

Now, part of the discussion on cross-cutting issues has been that there is a lack of confidence on people's parts that threshold will happen, or that they'll cross that threshold early enough that there could be these things or activity control of human performance --

MR. SEALE: You can't be waiting until you have a failure.

MR. JOHNSON: And so what the process currently provides for is that where, for example, regions find a concern, a substantial concern with cross-cutting issues, even for a plant that is all green, we in fact will raise that issue, we'll talk about it in the mid-cycle assessment letter, the assessment letter that we send to the licensee and the public. We'll talk about it in the letter that we send out at the end in terms of putting the licensee and the public on notice that we found that issue and that we think they need to do something about it.

So you know, there is continuing dialogue on

cross-cutting issues, all of the cross-cutting issues and whether in fact we have properly put them in the framework, again, not whether we've put them in the framework, but do we have the right threshold, are we engaging at the right point. That dialogue will continue between now and April. We're going to set up a working group to continue the dialogue. Beyond April we'll work on the issue and continue to refine it, because we recognize that there are things that are cross-cutting in nature, and there is this level of discomfort with whether in fact those things will resolve the issues and get you across thresholds where we can get to the action matrix and take actions.

MR. APOSTOLAKIS: But this is a pretty significant assumption on your part that the issues related to these cross-cutting issues will manifest themselves in some indicator so you will see them. I mean if you can provide more convincing arguments or evidence that this is the case, that would be fine.

MR. FRYE: Well, there is a place for issues like this in the process, and an issue such as that would be evaluated by the SDP and Doug may be able to talk about this later in the day, but it would be evaluated by the SDP, and while it may not result in a white finding or greater, it would probably result in a green finding. So it's captured and highlighted in that respect.

We would expect licensees to take corrective actions for that, and that's the type of issue that would be the subject of follow-up inspection on our part in the baseline inspection program. There are provisions in the inspection program to review how the licensee took corrective actions for significant issues such as that. And we would be involved in that way.

So there is a place in the process for those kinds of issues.

MR. JOHNSON: But it's certainly true that you've hit on one of the -- if I were going to sort of characterize the major lessons learned, the major issues as we go forward, you've hit on one of them. That's certainly one of them that we need to --

MR. APOSTOLAKIS: Which one?

MR. JOHNSON: This issue of cross-cutting issues and how we treat cross-cutting issues. We'll talk about it in the Commission paper, we'll talk about it --

MR. BARTON: Can we have more discussion on it in our full committee meeting in February?

MR. JOHNSON: Absolutely.

MR. APOSTOLAKIS: Do we have to write the letter in February, John?

MR. JOHNSON: The 3rd of February.

MR. SEALE: In particular you mentioned inside the

NRC constituency, the stakeholders.

MR. FRYE: Right, internal stakeholders.

MR. SEALE: Yeah, I think we'd like to hear a little bit more about what their concerns were.

MR. JOHNSON: Certainly, we can do that.

MR. FRYE: Jumping ahead a little bit, I don't know if we were going to talk about it some more today, but we are preparing a Commission paper as I'm sure you're aware that will, in addition to documenting pilot program results and criteria results, will be documenting all those issues and what we're doing about it.

MR. APOSTOLAKIS: Does the basic inspection program, I don't remember now, look at how the plant prioritizes work? If you don't remember, that's fine. That's fine, we can check it out.

MR. JOHNSON: We'll let you know. Steve Stein, would you come to the table and sit at the mic? George has a question that I want to address right now, and we can come back to it. George?

MR. APOSTOLAKIS: The basic inspection program, does it check whether prioritization of work is done properly?

MR. STEIN: Yes. We had an inspectible area that we called prioritization of work, yes. We've modified some, we've combined some of the inspectible areas, but the

requirements go into that. We look at emerging work issues that come up at the plant to see that they are appropriately prioritized and worked on.

MR. BARTON: Does it also apply to the prioritization of corrective action items that result from inspection findings that you decide not to cite because it's in a corrective action program; does your program follow that, to assure that they get the right attention?

MR. STEIN: Mike is nodding his head yes. Not directly. The baseline program in corrective action space is set up for the inspectors to have the opportunity and requires the inspectors to go look at how well licensees are finding and fixing their problems. And the risk-informed bases for that tries to get them looking at the more significant issues.

So the lower level issues that we don't cite because they are not that significant and go into the corrective action program, we don't do a full follow-up on those, but we do sample the corrective action for issues that may result in a non-cited violation as a check to see that these lower level issues are still being appropriately addressed by the licensee.

MR. JOHNSON: And that's what my head nodding yes refers to, a periodic look that we do at licensees problem identification resolution, corrective action programs for

those issues that we flag to make sure that in fact they are in fact resolving issues and so on and so forth.

MR. SEALE: As I recall, when we heard about the decision to remove item five or level five violations from the citing process, there was still a commitment to do a sampling of the treatment of those items in the corrective action program, and I assume that's what you're talking about.

MR. JOHNSON: Right, correct. Yeah, what used to be level four violations are now non-cited, and yes, the baseline inspection program in corrective action space requires the inspectors to draw a sample throughout the year.

MR. SEALE: Has there been a, well, guidance, I guess is the best way to say it, for the inspectors to -- for the implementation of that particular requirement, and then I guess it's obvious to say it clearly feeds into the satisfaction of these conditions for the inspection programs.

MR. JOHNSON: Yes, the guidance is in the inspection procedure, written for that.

MR. SEALE: When did that come out?

MR. JOHNSON: April -- well, before the initial pilot.

MR. FRYE: It was developed for the pilot program

and exercised at several pilot plants.

MR. BARTON: We have to move on. You're talking about a Commission paper would be available in time for the February full ACRS meeting?

MR. FRYE: No, our schedule is having it issued February 16th to support the March 1st mission brief. I'm still on this slide. Stakeholder feedback also confirmed that the NRC's assessment of licensee performance and actions taken in response to performance issues are more objective and predictable to the public, and industry.

Risk informing, the inspection program and the enforcement process has allowed the NRC and licensees to focus their resources on those issues with the most risk significance. And based on the results of the pilot program --

MR. POWERS: Those are really not true, is it, what has allowed you to focus your actions on are those things that you think are most risk-significant during operations. The fact is that you cannot assess whether based on the process or the pilots whether the most risk-significant apply during shutdown operations are due to fire, based on your pilots.

MR. FRYE: Again, I think we'll be discussing that in more detail when we talk about SDP in the afternoon.

MR. JOHNSON: Yeah, can we come back to that,

Dana? We'll talk about that as one of the specific areas that we know we need to do. You've now hit on a second one of the areas that we know we need to do something with.

MR. FRYE: But the process isn't focused just on the power operation.

MR. POWERS: Yes, I understand, but the fact is that you have no evidence right now --

MR. FRYE: Oh, right.

MR. POWERS: -- to support the contention that --

MR. FRYE: We weren't able to pilot that aspect of the new oversight process, that's absolutely true.

MR. BARTON: But you say it reduces unnecessary burden but the feedback you get from a lot of internal people is that this process has increased the burden on the staffs in the region and particularly inspectors, which takes away time from inspectors looking at new significant issues.

MR. FRYE: The comment we received is the pilot program did increase burden somewhat, but there was a recognition that a lot of that was due to startup costs associated with the pilot, and performing a lot of things for the first time. And I think the stakeholders then also acknowledged that they expect as the process is implemented and they become more familiar with it, that they expect there will be some resource efficiencies that they'll

recognize.

MR. JOHNSON: Yeah, the feedback, actually the feedback with respect to burden has not been a negative one from the internal stakeholders. There have been concerns, you know, folks have talked about the fact that hey, prep and doc are going up, preparation and documentation time for an inspection are going up as opposed to the direct inspection time.

You know, when you look at prep and doc, what has gone up we believe is preparation time. We think that once we get the full implementation, documentation goes down. We think that's the right way to go. We think you ought to spend more time preparing. When you compare again this current process with the existing process, and the previous process even, and the PPR, you know, where you spend a lot of time at the end of a long period of time trying to figure out what it all meant, you don't have to do that with this process because you know on an ongoing basis what it all meant, because you've exercised the SDP and we're capturing the time.

So in terms of the burden, I think that's one of the areas where we a clear success. That's not at all like some of these other areas where we talk about having to wait and see.

MR. POWERS: If we look at the SDP process it

entails preparing some sheets that explore significant accident scenarios. And I'm sure we'll discuss a lot more about that. But for the pilot programs, you develop that knowledge from the IPEs, I think.

Now, aside from the fact that those IPEs have never been approved for this kind of process, were never reviewed, have frequently been criticized for not being representative of plants and are probably terribly out of date right now, I presume that at some time in the future that in fact inspectors will try to use something that's more comprehensive and more up to date. And in fact it will be from all evidence, an evolving thing.

And so this confidence that having done it once you'll gain a lot may disappear, because every time they prepare an SDP sheet they're going to have to use something more updated. I mean it is not going to be a rote preparation in the significance determination process sheets.

MR. JOHNSON: Can we save that, can we save our response, Dana, to your question? I've written it down, and Doug is going to talk about SDP, and SDP as we move forward. Again, I think SDP has been one of the real successes of the revised reactor oversight process. But there are challenges, as you point out, with making sure that the sheets that we have, the work sheets that the inspectors

will use once you get beyond the initial screening, that those remain, that those are in fact reflective of the true risk, true initiating event frequencies, the true mitigation remaining at the plants. We'll talk about that a little bit as we go forward.

MR. APOSTOLAKIS: Let's talk about those at the appropriate time, about the use of the IPEs. It seems to me there is a selective use of IPEs. I mean we just got an example, but the August 9th, 1999 response to our letter does that very well too.

We can't use them because there is wide variability in the quality of these models. We can't use them to determine plant-specific performance indicators, yet we can use them in the SDP process on the same page, and that response we can use them to look at the vulnerabilities.

So what is it that makes one part of the IPE useful to the process, and another part not?, you know,

MR. JOHNSON: Okay.

MR. FRYE: Okay, I think I'm ready for the next slide, moving on.

MR. APOSTOLAKIS: You are behind, I think.

MR. FRYE: A little bit behind schedule, but that's all right.

MR. JOHNSON: He got help.

MR. FRYE: Next thing I wanted to cover were some issues that we need to resolve, and this isn't a complete list, but these are some of the more significant issues that we need to resolve for initial implementation.

For performance indicators and SDP we'll be talking about these in more detail in later presentations. But for performance indicators there are several performance indicators where we're going to be looking to revise and clarify guidance, thresholds, definitions based on a historical data submittal that we'll be getting from all plants on January of 2000, actually tomorrow I think is when all the data will be coming in. So we'll be looking to look at some of the definitions in the thresholds before initial implementation.

MR. APOSTOLAKIS: If you look at this, and maybe it's covered in the next slide under long-term issues, it appears there are only implementation issues, and I really would like to see maybe in February, or later today, but February for sure, a list similar to this with the major assumptions that have been made in the methodology that are not really supported very well yet.

Now, that's a hard thing to do for someone who is developing a methodology. But so maybe the alternative is to list all the major assumptions that you think are made in developing this process, and then maybe we can address

together, you know, I mean I'm sure you will think about it, how valid some of them are, and others -- and as I say, maybe under your long-term issues you already have several of them.

But I don't want us to give the impression that there are only implementation issues. They are more from the mental issues, that we have to think about. And this is not unreasonable. I mean you are really changing a lot of things. So I'm not blaming you for having those issues, this is part of the process of developing something new.

MR. JOHNSON: Yeah, we can certainly do that. We'll think about it, maybe we can come back to it today. We'll certainly hit it on the 3rd of February, and we've already begun touching some of the assumptions like the cross-cutting issues, that assumption, and we'll have it --

MR. APOSTOLAKIS: Sure, yes, thank you.

MR. FRYE: For the SDP, and again Doug will talk about this in more detail, but we still need to complete the initial development of several aspects of the SDP dealing with internal events, containment, shutdown for example. There are implementations for other processes that we need to resolve for initial implementation.

For example, for enforcement, actually for PI reporting, we need to develop the guidance that will describe how the tendency of FAR 50.9 in enforcement will be

applied to PI data reporting inaccuracies.

For assessment, we want to work on clarifying the process for deviating from the assessment action matrix when it's necessary to do so. And for information management systems, we still need to trial run the internal systems that we'll be using for collecting and processing both PI data and inspection data.

MR. APOSTOLAKIS: Excuse me, let me come back to my earlier point. Mike, I violated one of my own, not principles, arguments that I raised in the past. When you list the major assumptions, actually it would be extremely useful if your view graphs had two columns. One is, how is this handled now, and how is the new process handling it. Because you are not really striving to develop the perfect process right now, but I think that would go a long way towards convincing people, perhaps, that this is better.

In other words, okay, we're talking about safety culture. Well, how is it handled now, and what are you doing about it, the cross-cutting issues, the safety --

MR. JOHNSON: Sure, I understand. I understand exactly.

MR. APOSTOLAKIS: That may be a little bit more work, but --

MR. POWERS: George, telling him that will make him immune to some of the criticisms and questions that

we're laying on him now.

MR. APOSTOLAKIS: Well, but that's only fair. That's only fair. I mean --

MR. POWERS: No, there's no rule that says we have to be fair.

MR. APOSTOLAKIS: No, no, but it's out of the goodness of my heart.

MR. SEALE: Softening him up.

MR. BARTON: Beware of Greeks bearing gifts.

MR. FRYE: Some of the longer term issues that will be -- we know there are issues for resolution, but we don't need to resolve them for initial implementation for a number of reasons. Either we need more data to resolve the issue, or -- that's probably the main reason.

For many of the PI definitions, we recognize the need to make them more consistent across the industry. One of the -- numerous comments we've received have highlighted the fact that for regulatory burden's sake if for nothing else, our indicator definitions and guidance for the revised oversight process need to be as consistent as possible with the PIs, for example, in WANO, and the maintenance rule. So we'll be working on that.

During the first year of implementation we'll be continuing with the program's self-assessment. It will be focusing on things such as inspection procedure, scope and

frequency and resources required for the inspection program. Again, we just didn't collect enough guidance. We think we're close on a lot of these things but we just need more data to revise scope and frequency and resources.

There still will be a lot of work for SDP after initial implementation, completing the development of many of the aspects of it including shutdown and containment SDPs. And as we've already mentioned, one of the big things we'll be doing during the first year of initial implementation is continuing to evaluate the fundamental tenet, that cross-cutting issues are reflected in the indicators we're collecting, both performance indicators and inspection findings, and testing that assumption with additional data and comment and making revisions as we need to.

MR. POWERS: I've not looked ahead on your slides, and so maybe you have more long-term issues, but I'm surprised not first among these is the challenge that you face in trying to get the levels in your significance determination process approximately the same between power operations and those things that will never have a quantitative background, and for instance, your safeguards and securities sort of things will forever be a more judgmental process.

And it certainly is not evident to me that the

existing significance determination process for those kinds of findings bears a risk equivalency to the things that you find in the power operations.

MR. FRYE: That's definitely one of the issues we do have, and it's reflected in the Commission paper. It didn't make the slide, but it is an issue we're working on to ensure that a white finding is a white finding across the framework, which you have to have that to allow the action matrix to work.

MR. POWERS: That seems like a real challenge to make that somewhat equivalent when there's no possibility really of quantifying one member on the --

MR. FRYE: And I haven't looked ahead either, recently, but I believe that is covered in the SDP slides as one of the issues that we're --

MR. POWERS: But it's highlighted throughout the material, I'm just surprised it didn't make this.

MR. SEALE: Perhaps a better articulation, though, also the process when you go from the specific question of risk significance to the general point of concern, even though the risk for the particular event involved was relatively low, lacked the reactivity addition problem, would help bridge that as well because clearly you want to indicate, I think you want to indicate that even where you have risk measures there are other considerations that bring

issues into the forefront.

MR. FRYE: The last thing I wanted to cover before turning it over to Tom Houghton for NEI is the schedule that we're on for initial implementation. We are as I already mentioned, we are developing a Commission paper, and the purpose of that is to forward to the Commission the pilot program results, lessons-learned, stakeholder comment, what we're doing about it, and the staff's recommendation for initial implementation.

A Commission paper is scheduled to be issued February 16th to support the March 1st Commission brief, and the schedule right now is initial implementation for all plants effective April 2nd, that's the schedule we're working towards, and we haven't found a reason that we can't meet that so far. There's certainly a lot of work to do. All the procedures need to be revised and commented on and finalized as an example of some of the work that needs to be done, but we're still on that schedule. We feel we can meet it.

As I already mentioned, we will be doing -- the work doesn't stop. Following initial implementation we'll be continuing doing program self-assessments as we collect more data, more evaluation, and we'll be making changes as necessary throughout the first year of -- not just the first year of initial implementation, but following initial

implementation the processes aren't static. I just want to make sure there's a recognition of that.

With the goal of doing continuing evaluation, collecting additional lessons-learned and reporting to the Commission again by June 2001 the results of the first year of initial implementation.

And that's all I had.

MR. BARTON: All righty.

MR. HOUGHTON: Good morning. My name is Tom Houghton. I'm representing the Nuclear Energy Institute this morning. I've been working on this project for about a year and a half now. Prior to that I was up at the Millstone Plant with Dr. Bonaca working on the root cause of the breakdowns and the recovery of the oversight department up there for about two years.

I guess I would like to start my presentation fairly far into it, and then with some conclusions I think to show where industry feels we are right now in this new program, and to address probably first the question about -- this is on the third from the last sheet that you have in my handout -- the PI results that came out.

I think what you've seen is the fourth quarter results from the staff, but during the process there were a fair number of white PIs that came out. And these were, a large number of these, were in the area of what I have SEC,

the security performance index, which is an index of a measure of the availability of the IDS and the E field type equipment for the protected area.

The safety, SSFF, is the safety system functional failures. There were a number of plants that exceeded the threshold for those. Quad Cities exceeded the scram threshold in its data that covered 1998. Let's see what else, Hope Creek had a quarterly surveillance failure of its RCIC, and that caused it to be in the white zone. Salem also exceeded RCS activity, and Quad Cities had a failure during a quarterly surveillance of its RCIC which led it to be into the white.

Power changes, FitzPatrick, this is the indicator that measures the number of unanticipated power changes greater than 20 percent, and FitzPatrick had exceeded that indicator. Some of the other ones that don't show up on here were in the more historical data, such things as the ERO participation which measures the participation of the emergency response organization such that they have to have performed in an evaluated drill, exercise or actual event over the previous eight quarters.

MR. BARTON: How come I don't see that against Hope Creek and Salem, when I thought they had, I thought I read someplace where they did have some problems with implementing EP, missing notifications, mis-classifying

events and I don't see any --

MR. HOUGHTON: Yes, that was handled under the SDP. What you do with the performance indicators, what you're looking at is an accumulation of errors over a set time period. The white at Hope Creek as I understand it was based on a repeat failure in actual events, and the significance determination process which complements this process picked that up.

MR. BARTON: So the other part of the significance determination process could pick up an issue like that, but it wouldn't be reflected in the performance indicators?

MR. HOUGHTON: It does count in the indicator. But you need to have dropped below a 90 percent success rate in the actual classification notification and PARs over a two-year period. What you measure is the total number of successful classifications, notifications and PARs over the total number of opportunities you had to do that, so --

MR. BARTON: Yet it really only takes one mis-classification in a real event and you're really in deep doo-doo.

MR. HOUGHTON: Absolutely right. And that's what the significance determination process goes after.

MR. BARTON: But yet that won't show that that's a weakness at that site, by the PI process.

MR. HOUGHTON: If there are enough of them it will

show it. If it's a singular event --

MR. BARTON: Well, there were more than one during drills. And all I'm saying is you know, in a real event you can't afford to have the one, but yet that weakness, repetitive weakness in drills and mis-classifying events still doesn't show up in this new process. Okay, I don't like it, but I hear what you're saying.

MR. HOUGHTON: Well, sir, it does show up in the process, which includes the significance determination.

MR. BARTON: All right.

MR. HOUGHTON: Any other questions about those historical --

MR. POWERS: Let's see, on the historical thing, did you run into any situations in the pilots where somebody was in the white, and the fact is he's always going to be in the white because of some peculiarity of design?

MR. HOUGHTON: We didn't run into that. The manual suggests that there may be instances like that.

MR. POWERS: Yes, it does.

MR. HOUGHTON: And the initial historical data is going to provide a good opportunity for us to see where the whole industry is in these indicators. There are some plant-unique designs which require a different threshold, such as the plants with isolation condensers. Some of the CE plants have different RHR configurations which will

require us to look at, and the NRC, to look at that data. Some of the PIs we're not sure about that were based on expert judgments, such as the security index, and you can see that there were a lot of white findings in that area, more than one would have expected.

MR. POWERS: It seems to me it's a bad idea to have a white indication for a plant always that it can just never get out of. I don't know whether you share that feeling or not. Is that going to be best treated by changing the definitions like in the NEI document, or should it be changing the PI or thresholds, or how do you think that should be handled?

MR. HOUGHTON: Well, I think we'll see when we have a significant period of data, and we're collecting two years of data or enough data to create at least one data point, which for the, for instance, the safety system unavailability is a three-year period.

There is a --

MR. BARTON: Tom, a question. Why are some of those three years and some two years and some annual and some 7,000 hours, and -- why can't there be, you know, a consistent basis so these things all kind of track?

MR. HOUGHTON: Well, a couple of reasons. A great number of them are on an annual basis, and that shows more recent performance. Some of those, though, that are annual

such as the scrams and the transients require normalization, because they only happen during critical hours. So those in fact are normalized in that one year period.

MR. BARTON: Thanks.

MR. HOUGHTON: Something like safety system functional failures is a one year period because that's more reasonable to expect, that that reflects the behavior in the plant. Some of the ones that are longer, such as the emergency planning performance and participation, is a two-year period so it will encompass the biannual required exercise and the company's exercise, and you don't do those that often, so that's why it's a two-year period.

MR. BARTON: I can understand that one.

MR. HOUGHTON: The security ones are one year; let's see, the ANS notification is one year. The risk-significant scrams, the scrams that are more significant, there are very few of them, and a one year period would probably be difficult to set a threshold that was meaningful, so that that's a three-year period such that we have a meaningful indicator.

The safety system unavailability is meant to cover a long enough period so that you have reasonable data. We followed from INPO, WANO, in that the use a 12 quarter rolling average for that, and that data that they had helped us determine the green/white thresholds, and it provided a

baseline of information.

I think that's -- is that --

MR. BARTON: I understand.

MR. HOUGHTON: So there were different reasons. We were aiming mostly for a one year indicator to indicate more recent management and operations and maintenance behavior.

MR. SEALE: It's interesting. I look at this, and it strikes me that in this short period of time it's very -- it's suggested that either the student is learning how to take the test, or the tester is learning how to ask the questions. Because if you delete security issues for five plants, which were in every quarter of the first four, the bottom numbers now become five, one, three, three, two. And doing the -- the first question then is, what happened with security at the end of the second quarter of '99, and the second one is, is it really true that people are learning how to do the -- they're learning the process?

MR. HOUGHTON: Yeah, it's an interesting -- it's human behavior, you know. If someone measures something, people are going to take action on it. It's a Hawthorne effect or if you'd like to think of it in that point of view, that there's reaction to being measured.

The security performance index measures -- it's an indirect measure, because it is just an indicator, because

it looks at compensatory hours. And under security plans, a guard going out to compensate for a field that is down is considered perfectly appropriate, okay.

So at some plants from an economic point of view in the past they would be more likely to over a weekend, say, or for some other reason, to post a guard out there rather than fixing the equipment more immediately.

Now that this is an indicator, okay, there's greater attention being paid to the performance of the equipment, and quite honestly some of the executives have said to me gee, I didn't realize that our equipment was down that long.

MR. SEALE: The problem has graduated to the front office.

MR. HOUGHTON: Yes, sir. That's also the case, I might add, in the ERO participation where plants had perhaps five teams for the emergency plan rotating through. And in the past quite often only the first team or two would be involved in the graded exercise. Under this system, some of the plants will be reporting white in the indicator for participation, because in fact they did have a large number of people on the roster and not everybody got to participate in things that were graded, where the pucker factor was higher.

And I think we'll see, in fact in historical data

which was before this, there were a number more which were white in that ERO participation.

The goal really is for everyone to be in the green. We're not hoping for a bell curve distribution, where there's always somebody singled out or considered to be not performing well. And we did take -- many of the indicators were derived from data for the green/white threshold, were derived from data from '95 to '97, and industry has continued to improve since then, so it should drive up into the green.

MR. POWERS: I guess it's really quite interesting and even exciting when you tell me that people in management positions have responded to the findings by saying gee, I didn't know our equipment was down so much of the time. That makes me feel like this may be a really worth-while process here.

MR. HOUGHTON: We think it is, and we also think that the significance determination process has improved the dialogue between licensees and management. The pilot program which included two plants from every region, the activities that went on, a lot of learning, of course, and it took more time than people thought.

But usually the issues focused around what's the risk significance of this violation or condition that I found such that they could get at what was really going on

and what was most risk-important.

The licensees liked that, that the talk was going on to the so-what of the violation, not that any -- compliance still is required and they understand that.

MR. BARTON: But Dana, if you've got an effective corrective action system, you've got the items prioritized and you've got them categorized by area, by component, by discipline or something, management should not be surprised, because management should know from the corrective action system and the reports that they get, that security equipment is on its can. So this process doesn't need to tell management that.

MR. POWERS: In principle, but I also appreciate the fact that the managers probably get reports on a lot of things, and maybe this brings up to the surface that was easy to skim over.

MR. SIEBER: Maybe I could make a comment. I've worked at a lot of plants, and a couple that come to mind are plants that I consider very good, and every plant that I've ever worked at uses performance indicators of one type or another. But if I contrast what I've seen here, compared to performance indicators that very good plants use, they have a lot more of them. Secondly, they're not all in the green, even though they're number one plants. And they're more discriminating, and the whole idea is to allow

management to focus on the issues that need improvement.

If I see charts like Dr. Bonaca put forward, that is all green, or your chart, it doesn't tell me anything. And so I wonder, you know, is the standard too low or is the mesh too coarse for us to really pick up the trends in advance of some kind of more significant event?

MR. BONACA: I would like to, and I agree with that. In fact I'd like to point out that INPO uses some indicators similar to this. And different from plants that are all in the green on these indicators, INPO rates plants one through five. And I am trying to understand, you know, there is a decoupling there almost between these indicators which seem to be a very high level, and non-discriminating, and the ratings that the plants get. And I wonder, you know, what this means in terms of the NRC process now that it's becoming similar, because it's using the same indicators but also has qualitative assessments. Is it going to happen the same way, that the indicators are not discriminating enough, and therefore you go back to the old system of using qualitative judgments to almost rank plants, although you don't provide a ranking here.

I mean there is a very strong similarity with what the industry is doing here, isn't it? MR. HOUGHTON: I guess I would say the overall ranking of plants that INPO does is a subjective ranking, and it's a ranking system

which industry is willing to accept someone's subjective judgment. I think when we're judging nuclear power plants from the Nuclear Regulatory Commission that we should be judging on objective standards, try to minimize the subjectiveness of it, and that the combination of the performance indicators which are objective and the significance determination process, which while it does involve some judgment is much more -- it's a much better tool for looking at how significant is this deficiency.

Following along with what Jack said, I've seen a lot of plants with performance indicators also, and I would -- I guess I'd make two points. The first is that it's almost like in systems theory when you look at higher and higher levels of management.

At the lower level, the top person doesn't want to know the 85 indicators that someone's using. He wants to know the outputs of that system. And the outputs from that system from the NRC's point of view are safety; from the board of directors the outputs are production numbers and cost numbers.

As you go down in the organization the level of detail and the number of performance indicators gets much more specific. It also, the second point is, it gets much more honed to what are the problems in the organization. These performance indicator systems change over time as to

what the particular problem is. If you're finding that you are having more performance -- more procedural errors, you probably will design some more procedural error type performance indicators.

When that problem goes away, it's not worth spending your time on that, so that you'll shift over to something else.

MR. BARTON: I want to question something you said. I would wish that upper management was interested in more than production and cost. If they're not interested in safety it's going to cost them more than they can afford.

MR. HOUGHTON: That was an omission on my part. I definitely meant that.

MR. BONACA: Yes, but going back to the initial -- if in fact these indicators are going to be generally green, as an example, and I know for a fact that INPO tracks are generally green at plants, and yet you have plants with ratings of one and two and three, it means the indicators are not discriminating enough. And that's the whole point I'm trying to make, is that are the thresholds too high, are they set in a way that they don't give you the information that you need.

MR. POWERS: I think maybe we're wrestling with the issue of whether these indicators are useful for managing a plant, and I think we would be much more

distressed if they were to set up indicators that looked like they were trying to manage the plant. These are like graduate school grades, and maybe not graduate thesis advisor comments, that they're reflecting if a safety assessment on how safe is safe enough rather than how can you get better and how should you manage this to cut cost.

MR. BONACA: Yeah, you see the point, and I agree with that, but when you have all indicators from INPO green that you get a three at your plant, that spurs a lot of activities to improve performance.

MR. APOSTOLAKIS: Mario, may I say this, in the staff's August 9th memo, the data used represented a distribution of the highest volume for that indicator for each plant, for the period of data collection, which was five years. So you remember those bars?

MR. BONACA: Yes.

MR. APOSTOLAKIS: That was the highest observed over five years, and then we take the 95th percentile of that distribution. Is it any wonder everything is green? And why they should be plant specific?

MR. JOHNSON: Michael Johnson speaking, if I could just cut in for a second, I'm dying to say something. Someone mentioned the fact that are the PIs or the performance indicator thresholds good enough for -- and I would add to that, that you need to keep in mind, good

enough for what.

If we were, if the NRC were trying to manage the plant I would suggest that they are not good enough, and you would want something that allows you to get down to a lower level, for example, to see what's actually going on at your plant. And in fact a number of the plants, several of the pilot plants have in fact established thresholds that are more aggressive than the NRC thresholds.

For example, there is a Cooper set of thresholds where there will be a Cooper white or a Cooper yellow based on some objective indicator that happens well-before you get to the NRC white threshold, because licensees want to make sure, management wants to make sure that they don't run, they don't cross these thresholds.

Remember, what we're after in terms of the revised reactor oversight process, is to allow that band of performance where the licensee manages their performance. And so these thresholds are set such that we pick up licensee management in situations where they are not managing within that acceptable band of performance.

And so that's what we had in mind when we set thresholds for the PI, particularly --

MR. BONACA: I don't agree totally with this. I understand where you're going, but if I look for example at emergency preparedness, you have cases where if you have a

procedure which is not properly implemented you would rate a white or a yellow. There are cases where you are managing in fact the activity as you did before.

So what you're saying, I understand where you're going, but it's inconsistent, and the point that Dr. Powers picked up before, again, depending on the indicator you're using there is inconsistency here. In some cases, just didn't manage the process. You're expecting that certain implementations take place, and then never find that. In other cases, when it comes down to initiators and systems performance, you're doing something very different, and that's what I don't like, there's a discrepancy there in the way it's being implemented.

MR. SEALE: One thing they list on the previous page there, there were plants where it's suggested to me that I want to go back and look at the corrective action program.

MR. APOSTOLAKIS: Are we going to be discussing the performance indicators later?

MR. HOUGHTON: Yes. And now, also.

MR. BARTON: Are you talking about them now? Are you talking about the staff's presentation of them?

MR. APOSTOLAKIS: Yeah, I think the questions are more appropriately addressed to the staff.

MR. BARTON: Moving right along, Tom.

MR. HOUGHTON: Let me just -- well, I think as usual you're hitting on all the key issues, so it's certainly good. Conclusions that the industry would reach --

MR. APOSTOLAKIS: You must be a very experienced presenter. You jump to the conclusion. This is beautiful. I congratulate you, sir.

MR. HOUGHTON: Well, someone gave me the horse --

MR. APOSTOLAKIS: I really congratulate you.

MR. HOUGHTON: We feel the oversight process is a significant improvement for all stakeholders. The information is available quarterly on the NRC's website, rather than once every 18 to 24 months. It's much more detailed information than a one, two or three subjectively developed score. The individual can click down and see the charts that were involved, and the raw data and the comments. They can click onto the inspection findings and see that, and they can I believe still click down into the inspection reports themselves, so that rather than having to go through the local library or the document room and search through records, they've got it and it burrows down right to it.

The industry stakeholders feel like they're getting more immediate feedback and they're getting more feedback which is related to the safety significance of

what's going on.

The performance indicators in SDP are not perfect, I don't have to tell you that. But we feel they're good enough to proceed. And you'll hear a lot of potential future PIs and changes to PIs and looking at these thresholds to see if they are good thresholds.

MR. BARTON: Good enough to proceed based on what? Why do you feel that way?

MR. HOUGHTON: I feel it's good enough to proceed because we have a better program than we have right now. The inspections have all been rewritten to look at risk; there are tools for the inspectors to look at what systems are most risk-significant for them; there are better attributes that look at the cornerstones of safety, so they know what the objective is, rather than there was a signature missing on page 15 of the surveillance test.

The performance indicators are there, they're providing more information. I think it's an improvement over what we have now, and --

MR. BARTON: But is it good enough to give you a warning on adverse trends? That's the bottom line. Or do you have to do more work on them before you have that level of comfort? MR. HOUGHTON: I think one should always look to see what improvements you can make to it. But I think this program is better, and by proceeding you're not

excluding the ability to make changes to it.

MR. SEALE: One of the concerns, though, is that around here it seems while you may have all kinds of intentions to keep working to perfect the product and so on, once it gets the imperial stamp on it, after the end of the rule-making and so on, it's sacrosanct for at least ten years. And that's the thing that concerns us.

MR. HOUGHTON: I think that based on historical data, that's probably good concern. We have gone quite far in looking ahead, though, in terms of performance indicators in that we know that there are ones that are missing that we want to add, and we know that there are areas that there can be improvements in, and we're going to formalize a process that's similar to what we've been doing over the last year and a half, such that we would have a process involving all stakeholders in looking at additional performance indicators and revisions to performance indicators.

And the sorts of things that obviously need to be done, is you need to identify a candidate performance indicator. Certainly that could come from anywhere. Validating the PI addresses the attributes of importance is important, that you make sure that this is information that will add to your understanding of the safety in that cornerstone, or whether it's just interesting information.

The third item, obtain concurrence on the proposed

PI and develop definitions and clarifying notes so that we know what we're talking about when we go out to collect historical data, if there is available, that can be collected. We had some problems early on in developing the performance indicators where we didn't have clear definitions, and so we were -- we wound up collecting different sorts of things and had to trace back and go through and get the right data.

MR. BARTON: Tom, historical data apparently is voluntary, and have all plants volunteered to provide historical data or are there still a bunch of holdouts and why, if there are?

MR. HOUGHTON: During the process we had a safety assessment task force which had about 15 members on it. And those members agreed to provide data. We also used a lot of the data that was publicly available or that was available through INPO. The AEOD indicators were used for transients, although the definition was a little bit different. The safety system functional failure data was there. Scram data was there. We used the INPO safety system performance indicators for that, so that we -- that information was made available, and the task force made available additional information through NEI.

For going ahead with this full program, it is a voluntary program. The chief nuclear officers have agreed

in their meetings at NEI that they will all agree to participate and provide data in the system. In terms of additional data, research has some already. Our task force is still willing and is anxious to go ahead with providing data for analysis.

MR. BARTON: Thank you.

MR. SEALE: This is a good point to ask you one question now. Earlier I mentioned Zack Pate's reactivity control paper to the operating officers.

MR. BARTON: CEOs.

MR. SEALE: CEOs, yeah. And also made the point that I have problems finding out where you go from the PIs with their risk signature to the general concern for reactivity management and accepting the facts that a non-risk significant error is still a valid concern as an indicator of potential problems in the future.

Now, my impression is that the industry bought into the concern for risk management with as much real, I won't call it enthusiasm, but real concern, as the NRC had. And it strikes me that it would be very worthwhile for the industry to look very carefully at this process and see where there are cases where you should be sure you have the capability to bridge from PI problems to these real fundamental, what I called earlier, defense in depth concerns for your plant performance.

If you can integrate that into this discussion, that would be a significant contribution, I think.

MR. HOUGHTON: A couple of thoughts. First off, you've very right that the industry did take aboard those comments, and I have worked on recovery in addition to Millstone at Salem and at Indian Point Three during their recovery from being on the watch list. And in all three of those cases, there was significant special training for operators in reactivity management and respect for the core. In fact I think that's what Virginia Power calls their program, is respect for the core, and they have video tapes that are used.

MR. BARTON: Well, the industry was required to, if it was an SOER came out, the industry had to implement programs on reactivity management. I don't know what happened at Nine Mile, but industry supposedly did implement the program. And yet events still occur on basic reactivity program breakdowns, and I don't know whether that shows up in -- that's a low risk item, but yet it's bothersome.

MR. HOUGHTON: Did you want to say something?

MR. SIEBER: No, go ahead.

MR. HOUGHTON: These indicators are not going to get directly at concern for reactivity management. That is an area of management --

MR. BARTON: Where will that get picked up? Where

does the process pick up the fact that people are still having reactivity management issues, even though they're low risk?

MR. HOUGHTON: They are --

MR. SEALE: They're precursors to something --

MR. HOUGHTON: They are precursors. They are entered into the corrective action programs. The sensitivity to reactivity management is very high. Those issues get high priority in corrective action programs. The indicators that do give us a clue that there may not be good practices going on, are things such as these transients. The transient indicator is not a risk-informed indicator, but it does show whether the operations and maintenance is being performed and whether people are paying attention to plant conditions.

MR. SEALE: What generates the SOER for the next kind of problem like this, if your inspection program does not include those concerns?

UNIDENTIFIED STAFF MEMBER: Well, let me defend Tom here, it's not his inspection program, it's ours, so I'd like to -- if Mike can -- let me kind of give you -- it's in the program. In fat we still have the process, and this is one of the positives that build on what we have. It's still identified, and I think Mike or one of the guys later will address, one of the big issues we have is the level of

documentation of what kind of things need to be in inspection reports. A reactivity problem that would exist would likely hit that level, it would be on the web page, it would be listed as green. Green doesn't mean we're interested, green means it still has to be fixed. And it may not hit a risk threshold in the SDP because it's still there, but it is clearly not ignored.

Now, the value of the new system is, it will be recorded, it will be there, which means quite honestly in the checks and balances, one of the pluses from the program is with visibility comes accountability, which means if groups and public interest groups want to challenge the fact we said that's green, we welcome the challenge, and I don't mean that in a defensive way, but welcome the opportunity to reexamine how we've called it. But it would be listed, it would be there, it would be highly visible, and at that level that would be hard for anybody to ignore, so it's not simply saying it's going into this 10,000 item corrective action program, and gee, it might or might not get done. It's going to have a higher level of visibility, and when you do that, there's no plant in this country that even wants us listing a green item underneath that indicator. They'd like to see it blank. Green still needs to be fixed.

That one we'll pick up, and it's a precursor to -- I'm going to ask Mike to make sure they cover how much is

enough in an inspection report. That because a very, very important question for us, at what level do you not document and what level do you document. So we do have that record.

MR. SIEBER: I guess one of the areas that at least I'm struggling with, and maybe some others, is the fact that we all recognize that there can be risk-insignificant events occur that has as a root cause or series of root causes things like inattention to detail, bad procedures, poor marking of equipment and there's a ton of stuff that's out there.

MR. SEALE: Just bad habits.

MR. SIEBER: Yeah, bad habits, and a lot of that we call safety culture, and nobody has really figured out how to define quantitatively what safety culture is. On the other hand, a big event that is risk-significant is going to be caused by these precursors, and the precursors aren't here. That's what the problem is.

MR. SEALE: Yeah. The reason I addressed the question, Tom, is that as John pointed out, a lot of the historical data is in the utilities, and they're the people that are best familiar with that to polish the facets on these exotic things, if you will. And so, you know, we're all in on this together, let's face it. This is a problem that faces everybody in the nuclear industry, whether they're a regulator or an operator.

MR. HOUGHTON: Issues of these precursors and looking for extent of condition, common cause, are incorporated in utilities' corrective action programs. And INPO has recently published a principles for self-assessment and corrective action programs. They've also asked utilities to respond to them, I believe by the end of March, on how they're doing relative to those principles.

So it is understood in this new process, the continuing importance of compliance and the continuing importance of a very rigorous self-assessment and corrective action program.

At the risk of stepping into the argument about performance indicators in the corrective action programs or safety conscious work environment, I think that one should have them. However, trying to set up an objective indicator with thresholds begs the question of the individual culture at each plant. Each plant has its own management style, it has its own workforce. There are different stages of maturity in safety culture.

A plant such as D.C. Cook now needs a program that lists every deficiency that could potentially occur so that there's learning going on. Plants that are in a more mature stage of performance, a lot of that is wasted effort, and you're drowning in very minor deficiencies.

So that I think that to try to derive common

indicators for performance, which is what we're trying to do here, wouldn't be able to succeed, and that's my opinion.

MR. APOSTOLAKIS: This should be plant specific. We are not trying to develop common indicators. Some of us are not --

MR. HOUGHTON: But to try to --

MR. APOSTOLAKIS: I understand what you're saying.

MR. HOUGHTON: You came from a different direction.

MR. APOSTOLAKIS: I know, but I think --

MR. HOUGHTON: But in fact they do have those indicators at plants. They have backlog requirements, they have aging for corrective action items. Those are in place, and they're going to get more attention because utilities realize that they're not going to succeed, they're not going to be able to be green, first of all, if they don't look to their knitting, if they don't look to those details. They're not going to be able to produce power.

MR. BARTON: Tom, do you have anything else?

MR. HOUGHTON: I would like to -- I'll step back to the beginning and go through fairly quickly, I hope, the impetus for the change as we see it, was there were long-standing concerns with the SOP and the watch-list process, and I think the staff and we agree that those processes were using a lot of resources --

MR. BARTON: I think we know, this is kind of history unless you want to make a specific point.

MR. HOUGHTON: No, I'll go on. The rationale had to do with continuing improvement by the industry. Recognition that nuclear power's industrial process which will have some error, and that --

MR. POWERS: Your industry interest in continuing improvement is fine, I applaud the industry for that, and think there's evidence that they support their commitment to this. What more has bothered me, because I've seen what happens when you have the safety program that emphasizes -- a regulatory program that emphasizes continuous improvement. And I wonder, when you take averages across the industry and use them in any sense for establishing thresholds if you don't -- if you aren't producing a ratcheting, what we might call ratcheting, but another context would call continuous improvement type programs.

MR. HOUGHTON: I guess on the one hand industry wants continual improvement. They'd like to direct the continual improvement themselves. They'd like to know where the bar is for acceptable performance that meets NRC's understanding of what is needed to be safe so that they would rather not have the NRC raise the bar, but they'd rather raise the bar themselves, because they have to trade off -- safety comes first, but beyond a certain level you

have so many resources and you have so much time, I mean and time is almost more of a driver than resources, because you can't get enough people around things to fix them, so the people is less a problem than the time.

MR. POWERS: I guess all I'm doing is raising a caution about advertising too much of continuous improvement. It's fine, the industry should do that, and I'm glad that they do that. But when we talk about this plant assessment, those words, and continuous improvement, should be very, very distinct there.

MR. HOUGHTON: Yes, sir, I agree with you. MR. POWERS: For exactly the reasons you say, when people are working on something, they're not working on something else.

MR. BARTON: Tom, is this a time we can take a break?

MR. HOUGHTON: Yes, sir, that would be great.

MR. BARTON: Recess till 25 of 11:00.

[Recess.]

MR. HOUGHTON: Mr. Chairman, did you want to --

MR. BARTON: No, we decided we are definitely interested in going through the specific PIs, individual PIs.

MR. HOUGHTON: Yes, sir. Well, I'll skip ahead. I did want to talk briefly about defining principles, because it gets at the issue of does the PI totally cover

the area or not, and are there things -- what things are missing from the performance indicators.

As I just said, the PIs don't cover all the areas. There is a combination of PIs and inspection. And that was a major effort following a workshop in September of '98 and throughout, till this time, looking to see where there were areas that weren't covered by things that you could measure, and what should be covered by inspection.

They are indicators of performance, I want to emphasize that, not measures, and they do measure -- some of the don't measure things at all exactly, such as the security index, which measures compensatory hours, not equipment availability.

MR. POWERS: I have never seen a quantitative analysis for those PIs that are associated with risks types of things. It says ah, yes, we've done this sensitive analysis for 16 different plants, and indeed this measure has this information content in it. Has that been done? I mean the NRC describes it in terms of a sensitivity study.

MR. HOUGHTON: The setting of the green light threshold was -- industry did some of that and suggested to the staff what we thought the thresholds ought to be. The staff took that same data and did their own verification. On the setting of the other two thresholds which are risk-informed, the staff did that analysis. We did not do

that analysis. So I don't have that data.

The baseline inspection programs define minimum necessary oversight. It is approximately the same number of hours as the current program, and from the pilot plants experience as I said, it has been looking at risk issues. And the effort is to make the PIs and the inspection findings have the same meaning, such that crossing a PI threshold or having a significant inspection finding would have the same approximate risk meaning.

And the enforcement process and other improvement we believe to this process is that enforcement is not the driver, enforcement looks at the risk significance for making its determinations.

And we believe that the action matrix will provide guidance to the staff so that it can use these indicators and inspection findings to determine what level of intervention is necessary. That's probably a good point to make, is that the purpose of these PIs and the inspection findings is, one of the important aspects of it, is to help the staff decide where to put its resources, where there are areas where they need to send in additional people beyond their baseline inspection program.

They have said, we have suggested, that self-assessment, if you did a good self-assessment that the NRC could just review that self-assessment, and if they were

satisfied with a trigger, reduce the baseline inspection. They said no, there is a certain level of assessment that they want to do themselves.

MR. KRESS: If the performance indicator thresholds are based on industry-wide averages, and the plant-specific inspection significance thresholds are based on plant-specific PRAs, how can we make a determination that they have approximately the same meaning, green for one being green for the other, and white for one being white for the other?

MR. HOUGHTON: That's a good question. The setting of the thresholds between the white and the yellow bands, and between the yellow and the red bands, were set on a common delta for damage frequency due to, if you increase the number of scrams you'd look, and using generic PRAs as I understand, and the staff will correct me and probably talk more about it, but the concept was how many more scrams would it take to increase the core damage frequency, say by ten to the minus fifth. And that would lead you to his white/yellow threshold.

Similarly, the SDP for reactors is set up such that to get to the yellow you would need a core damage frequency change of about ten to the minus fifth, so I think we're trying to apply a common yardstick across, even though there are plant-specific differences.

The PI development process started with a white paper, from our point of view started with a white paper that we wrote. We did a workshop in September of '98 at which the cornerstones were developed, and from that people were able to go out and look at what PIs and what supplemental or complimentary inspection was needed to cover the attributes of those cornerstone areas.

I won't read through all of these, but we've had numerous workshops, meetings, training, discussions, et cetera with lessons-learned workshops. Ours was primarily oriented towards how to do you do it, and what are the pitfalls for management and what's important.

We emphasized that compliance doesn't go away, and we also emphasized that you need a stronger self-assessment in a corrective action program if you want to succeed. And the NRC's workshop was just, I guess, last week and brought up remaining issues to be resolved.

The development of the PIs from the thresholds, we initially only proposed initiating events mitigating systems and barriers. And the arrows that you see going sideways on that chart, that's our fault, because initially we had started with saying that you had to have an initiating event which led to whether the mitigating system worked, which led to whether the barriers were there. And those arrows remained embedded in the diagram. That's why they're there.

Whether they should be there or not is another question, but that's why they're there.

As I say, NRC expanded to cover all the cornerstones. Where available we used industry data, and AEOD data. Where possible the green/white threshold was set under the concept that industry performance is very good now in the areas that we're measuring with the PIs, and therefore we would take the '95 to '97 data, look at that and look for outliers, people that were beyond the 95th percentile.

And when one looks at the data, one finds that those outliers usually are quite a bit outliers. You have a pretty flat distribution and then you have some peaks in there, so that they are outliers.

The barrier thresholds were related to the technical specifications, and the green/yellow-yellow/red were based on NRC risk analysis on more generic models. I think they did some sensitivities on different types and they can tell you that. Some of the thresholds for areas where we didn't have data before, such as in the emergency planning and security area, were based on expert panels, and when all the data comes in we'll find out whether they were good or not.

Some of the indicators do not have yellow or red bands, because you can't determine risk. For instance, the

transients, okay, all we know is that we know from looking at troubled plants that plants with high numbers or transients correlate with plants that have been in trouble, but you can't do the risk on it.

Similarly, the safety system functional failures, you can determine if someone has a lot of those or not, but you can't put a risk number on it, so there aren't yellow or reds. And similarly in the EP and security areas, we don't have red indicators because we can't put risk on that.

MR. BARTON: Even though you bring a loaded gun on-site which doesn't have -- you won't give me a red, huh?

MR. HOUGHTON: If you bring a loaded gun on-site and you're caught, that's the program working properly. The security -- the program is set up so that if you had two -- if you had more than two breakdowns in your program, however minor, you would get a white finding. If you had more than five breakdowns in a year, you'd have a yellow, not finding, a white PI, more than five you'd have a yellow PI.

If the person came in with a gun and was not detected, that would first of all be a hit against that performance indicator. Secondly, that event would be reviewed in a security significance determination process which looks progressively at how far the person gets and if the person can get to some equipment which is in a target set, okay, then you feed into the reactor SDP and look at

what the risk significance would be, whether that person actually damaged the equipment or whether the person could have.

So it does feed into risk for a gun, for instance. Let's see -- steps necessary to implement the PIs, I've covered this before, I won't go over that. Let me skip ahead into the -- we'll go into the PIs themselves, and I'll put up the purpose for each on the screen and invite your questions that you have about the performance indicators and answer them the best I can.

Any questions about the unplanned scram performance indicator? It's measured over a four-quarter period, and it's normalized to 7,000 critical hours similar to what INPO did. That represents about an 80 percent capacity factor in a year.

MR. BARTON: The only question I've got on scrams is why is the threshold so high? You rarely have 25 scrams in a year. That's unrealistic. How did we get the 25?

MR. HOUGHTON: Okay, the staff will give you a more detailed answer. My answer is, is the --

MR. BARTON: I thought these were your indicators. These are industry's indicators, aren't they?

MR. HOUGHTON: These are NRC performance indicators. NRC has approved all of these indicators.

MR. BARTON: The NRC developed them? MR.

HOUGHTON: They were developed in public meetings.

MR. MARKLEY: Tom, are you meaning to say that the NRC proposes to endorse these as the new process, that they are not yet the approved PIs? Is that --

MR. JOHNSON: This is Michael Johnson, let me -- these are the performance indicators that we plan to go forward with. They were developed as Tom has indicated through meetings between NRC and the industry and other stakeholders, and in fact what we plan to do is to issue a regulatory issue summary that says, just as we did for the pilot plants, as we go forward with full implementation, use, refer to the NEI document, which lays out the guidelines that Tom is describing in reporting PIs to the NRC.

So Tom, either Tom can address questions regarding the specifics of the PIs, or we can do it -- we can do it now or we can wait, however you'd like. We ought to be giving you the same answer to the questions that you're raising.

MR. POWERS: Well, the one question that I have that may address John's question as well is, is there something I should have read that says okay, we looked at some pretty good risk analyses and we found that this performance indicator has the following information worth. And that at the following levels, it starts correlating with

risk. If you've got an answer --

UNIDENTIFIED STAFF MEMBER: What you should look at I think is appendix H of double-O seven. And a short answer is that what we did is we took a group of PRAs that we could -- some of them were licensee PRAs, some of them SPA models, and we played around with those parameters to see at what level we would get a delta code damage frequency of ten to minus five, ten to minus four.

The reason the number of scrams is so high for the red threshold, is that these really represent uncomplicated reactor trips. And basically they don't have a great contribution to risk. It's the initiating events like small LOCAs, tube ruptures, losses of off-site power that tend to drive the risk. This is just a reflection of the fact that an uncomplicated reactor trip is not a big risk driver, and that's why the threshold is so high.

So to that extent maybe it explains that this particular indicator is not that discriminating, certainly at the -- you don't expect to get to the red level.

MR. SEALE: If you had 25 scrams, how long would it take you to accumulate 7,000 hours of critical --

[Laughter.]

MR. BARTON: About five years.

MR. HOUGHTON: It's in a four-quarter period, so you're normalizing, and so that would hurt you. Actually it

would drive the -- since this is a rate, it would drive you up.

MR. SEALE: So you'd actually only get about ten.

MR. HOUGHTON: We could do a couple of calculations, but the management team would be gone before you got to more than five.

MR. SEALE: The moving van business would be pretty good in that region.

MR. HOUGHTON: That's right. The second indicator is the scrams with loss of normal heat removal. This is an indicator which the NRC proposed internally, and put forward because they wanted to measure scrams which are more significant. Now, this was not proposed by industry.

And this indicator measures the number of those scrams in which you lose your normal capability to remove heat to the main condenser --

MR. POWERS: This is also a indicator that seems to have provoked an enormous number of what you've titled in your document, Frequently Asked Questions; it looked like only one guy asked it. Did he ask it over and over?

MR. HOUGHTON: Right, frequently asked questions are really infrequent, because everybody has their own question. But we do collect those. They're answered in public meetings, they're posted on the NEI internal website for our members, and the NRC is posting them to their

website.

MR. POWERS: Well, this one seemed to have provoked an enormous number of them.

MR. HOUGHTON: It does, because in the beginning we weren't -- I'll speak for industry -- we weren't really sure exactly what sort of scram we were trying to measure, and people have lots of ways to cool down, fortunately, so that --

MR. POWERS: Purposefully.

MR. HOUGHTON: And purposefully and by design, so that there were lots of situations that have occurred at sites where they've been able, either by design or operations, they're supposed to trip their feed pumps or shut their MSIVs, those would not count because those are expected activities. And we're getting --

MR. POWERS: By the way, I'll say that I think that's one of the big values of the NEI document is to make very clear in your responses that purposeful things don't count against you. That does not come across in the NRC document, but you did a very good job of that in your responses to the frequently asked questions.

MR. HOUGHTON: Thank you, but I'll let the staff take some credit too, because they approve what gets proposed and they've added a lot to that.

MR. BARTON: Regular scrams are over an annual --

MR. HOUGHTON: They are over the past four quarters.

MR. BARTON: This is 12 quarters?

MR. HOUGHTON: And this is 12 quarters, yes, sir.

MR. BARTON: Why the difference?

MR. HOUGHTON: The difference, and I'll let the staff speak, is that there are very few of those that occur over a single year, and to try and set thresholds was pretty difficult. Is that --

UNIDENTIFIED STAFF MEMBER: That's right. The scrams with loss of normal heat removal are in that intermediate frequency range, and you really don't expect to get very many. So we're just trying to extend the interval to see that we can capture some.

MR. HOUGHTON: The third indicator in the initiating events cornerstone is unplanned power changes per 7,000 critical hours. This was data that was part of monthly reports and AEOD data. It was measured slightly differently. It was anything, any power change over a 24-hour period, average power change over a 24-hour period that exceeded 20 percent.

MR. BARTON: What's the basis for 20 percent?

MR. HOUGHTON: The basis for 20 percent really was a judgment that a power change of that amount was significant. We couldn't -- we discussed 15 or 20 --

MR. BARTON: It used to be 15, wasn't it, at one time?

MR. HICKMAN: This is Don Hickman. The original requirement for this is from the monthly operating report. The report changes an average daily power level that exceeds 20 percent. And one of our desires was to be as consistent as possible with previous reporting, so that kind of drive us towards the 20 percent rather than the 15.

MR. HOUGHTON: This indicator is one of the best predictors, as you can probably expect, of poorer performance at a plant. Because if you're having transients of this magnitude which are not planned, you're seeing poorer operation, you're seeing maintenance mistakes, that sort of thing. But it doesn't have risk-informed higher thresholds, because those couldn't be calculated.

The next indicator is in the mitigating systems, and these are safety system unavailabilities. These indicators, and there are four for each basic reactor type, P and BWERs, these are very similar to the indicators that INPO/WANO were collecting as their SSPIs. We modeled the words as closely as we could to the words that were in the WANO/INPO guidance to utilities. There are some differences, and there continue to be some issues that we're working on.

As a future item both the staff and industry want

to try and work towards more common definitions, but right now there's a maintenance rule with the way things are defined there; there's the WANO indicators; there is this program, and there are PRA models, all of which use somewhat different definitions. So we want to drive to a common set of definitions, and there is an effort through EPIX with NRC representation which is trying to do that.

There are different purposes, though, for these different indicators. So that starts to drive the differences. The indicator is a 12-quarter rolling average. It is sensitive to a -- it includes planned, unplanned and fault exposure hours. Fault exposure hours are those hours from the time of a failure on demand in which you have to determine if you can when that demand or when that failure occurred. If you can't, then you go back to the last time that you successfully tested that piece of equipment and take half the period of time.

That's what WANO/INPO used. I think everyone is not completely happy with that. We'd like to go to a reliability indicator, but we didn't have data or methodology to do that. So that's on the plate as a potential future area. If that occurred we would probably drop out the fault exposure term.

The fault exposure term can lead you from being a middle of the green band, good performance with a quarterly

failure of a surveillance test to being in the white band. It would also be looked at through the SDP, so it would really be getting two looks.

We have created a method once the -- however, the downside of that is that it's going to stay lit for a long time, and just like you don't want lit indicators in the control room when the condition has cleared, there is a provision in the manual such that once the condition is corrected and the NRC has agreed that the correction has taken place, and a year has gone by, that you can reset that indicator, so to speak. In other words, a year has gone by, did not get put in this rev D of the manual, and that was a known oversight and that is going into the rev zero which will probably be published about -- in early March.

MR. BARTON: In your documents, in removing, resetting fault exposure hours, it says fault exposures hours associated with the item are greater than 336 hours --

MR. HOUGHTON: That had to do with -- Don, can you help me out with it?

MR. HICKMAN: That's a 14-day interval for monthly surveillance tests.

MR. HOUGHTON: It would be a fault exposure from a monthly PM. We didn't want to have people take out fault exposure hours that were so small that they were meaningless, and we felt that was a --

MR. BARTON: Okay.

MR. HOUGHTON: Other questions about the unavailability indicator?

The next indicator is the safety system functional failure, and this was another AEOD indicator which did show some good correlation with poor performing plants. We had some difficulty in the beginning defining the indicator, and after a period of time and working through, we came up with the definition you see here, and it relates to 5073 part A25, which is part of the LER reporting requirements, so that if you have a condition or event that alone prevented or could have prevented the fulfillment of these four functions, that would count as a safety system functional failure. And again, there's no yellow or red thresholds for this indicator.

The next indicators are the barrier indicators --

MR. BARTON: Before you get to that, NRC used to have an indicator on safety system actuations. Whatever happened to that?

MR. HOUGHTON: We did start looking at that. Don, do you recall the --

MR. BARTON: It used to be pretty meaningful, if you had a lot of those it told you you had some problems.

MR. HOUGHTON: Well, we do, and --

MR. HICKMAN: That's correct. That was an AEOD

indicator, and it captured actuations of safety systems other than scrams. That indicator pretty much tracked with scrams. When the industry did their scram improvement project and reduced the number of scrams, then the number of safety system actuations came right down with it. So it was in a large sense redundant.

MR. RICCIO: May I address that?

MR. BARTON: Sure. Get to the microphone and give your name, please.

MR. RICCIO: My name is James Riccio. I'm with Public Citizen. I would tend to disagree with Don's analysis of the SSAs. I found them to be a very important indicator. I also found that over periods of time the industry tried to game it. They reworked the definition to only include the SSAs that were actually required, and then they wiped it out altogether in the new program.

There's been several rewrites of what the SSAs were in the previous AUD program, and I think it's an important indicator, and think it's more important that some of the ones that are being used right now.

But, you know, the basis of the SSA was rewritten several times to try to basically downtrend it over the years.

MR. HICKMAN: I think the problem primarily with the SSAs was that there was disagreement with the industry

over whether we should count spurious SSAs, and the reporting rule says that you report all actuations, manual or automatic. And that was always our position. We weren't certain that we were getting that from licensees. In fact we know in some cases we were not getting that. That was another reason for it, I guess.

MR. BARTON: So is that the reason to eliminate the indicator? I understand your comment about actuation going down, but --

MR. HICKMAN: When you look at our --

MR. BARTON: It's not direct.

MR. HICKMAN: With the cornerstone concept that we have a safety system actuation is not itself an initiating event. A lot of times it's kind of a response to that, but the scrams are directly the initiating events, and a safety system actuation may be concurrent with that, but in our cornerstone model what we really wanted to pick up was the scrams. It's kind of difficult to see how safety system actuations fit into either the initiating event cornerstone or the mitigating system cornerstone. Didn't seem to have a place.

MR. HOUGHTON: The barrier performance indicators, first of all the RCS activity, and the indicator is a measure of the tech spec required sampling at steady state power. And the thresholds are 50 percent of the tech spec

limit and the tech spec limit.

The second barrier, RCS leakage, the indicator is the identified leakage, or if a plant does not have tech specs requirements for identified leakage they can use total leakage. And again the thresholds are set at 50 percent and 100 percent of the tech spec limit.

MR. BARTON: Whatever happened to unidentified leakage which is also in the tech spec? That just dropped out of this whole program.

MR. HOUGHTON: Some people have -- there are different combinations of tech specs which have different requirements for identified and unidentified and total leakage. And the concept was this indicator is looking at the performance of the plant in controlling leakage, and the tech spec limit for unidentified is quite a bit smaller than the limit.

MR. BARTON: Sure is.

MR. HOUGHTON: And we felt that the identified or the total leakage got at what was the purpose of this indicator, which was to determine whether more licensee and NRC attention was necessary in looking at programs which limit leakage.

MR. SEALE: That sort of sounds like an affirmation of the idea of what you don't know won't hurt you.

MR. HOUGHTON: Well, the unidentified leakage continues to be in tech specs, and it continues to be tracked and used. So it is --

MR. SEALE: It's not a performance indicator.

MR. HOUGHTON: And it's not a performance indicator.

MR. SIEBER: From a safety standpoint, though, the unidentified leakage I presume would be more important than identified leakage. I mean that's what I used to watch every day.

MR. HICKMAN: This is one of the issues that I'll show in my presentation, is a longer term issue that we intend to address, the meaningfulness of the definition of several indicators including this one.

MR. HOUGHTON: And a third barrier indicator is the containment leakage as measured by type B and C valve testing with the threshold set at point-six.

MR. KRESS: Are there any indicators that are aimed at looking at bypass events with containment, such as the things left open that shouldn't have been?

MR. HOUGHTON: In terms of air locks and things like that?

MR. KRESS: Yes.

MR. HOUGHTON: That would be covered under the inspection program and under the --

MR. KRESS: You would look for that?

MR. HOUGHTON: Oh, absolutely, that's right. And there is effort to look at an SDP for containment, and we haven't seen that, so we don't know where that is, but it's certainly covered under the inspection program right now, which because we don't have that indicator, we looked at doing that and I don't think that -- there were so few events, I mean they're very important, but there are so few events that you have a performance indicator that has nothing on it.

MR. KRESS: Never trip it.

MR. HOUGHTON: Right. The next cornerstone is emergency preparedness. The first indicator to talk about is the drill exercise performance, and this indicator looks at a ratio of the number of successful opportunities to classify, notify or do PARs over the total, the successes over the total number of opportunities over a two-year period.

So what the indicator is measuring is how people do in graded exercises or in actual occurrences where they need to classify, notify or execute PARs.

The second indicator is strongly correlated -- strongly interacts with it. It's the ERO drill participation. And this indicator says for your key members of your emergency response organization, what percentage

have participated in a graded exercise drill or actual event over the past two years.

So the combination of these say that you have to have a 90 percent success rate by at least 80 percent of the staff that are currently on the roster.

MR. BARTON: How would I come out if I'm doing, now, I have to do biannual drills --

MR. HOUGHTON: There are biannual state --

MR. BARTON: Biannual, right?

MR. HOUGHTON: Right, and biannual --

MR. BARTON: The drills that are graded by NRC are now every two years?

MR. HOUGHTON: That's correct.

MR. BARTON: What happens to this indicator if during the graded drill I blow a PAR?

MR. HOUGHTON: During a graded drill?

MR. BARTON: Yeah, will I still be green?

MR. HOUGHTON: Well, you have to go through the flow chart to see what the situation is in terms of what level it was. The higher levels of classification, I believe, I don't have it in front of me, I believe you could have a white or yellow. It would also go through the significance determination -- let me -- I'm sorry.

For the performance indicator it's based on the percentage that you've been successful in. That failure

would also go through the EP significance determination process, which for the more significant failure to classify or notify could lead you to a white or a yellow indicator. The first one.

So the program compliments itself. Numerous of these PIs do that. For instance, any scram, NRC is going to look to see whether there were complications to that scram, and they have a separate event SDP which looks at how significant that event was, and whether they need to send in a supplemental team or even an IIT or AIT.

So even though you would not cross a threshold, the event itself is looked at.

MR. BARTON: What's the public going to see on this process, just the PIs?

MR. HOUGHTON: No, sir.

MR. BARTON: Is the public going to know what the SDP is all about?

MR. HOUGHTON: Well, this is a representation of what the NRC's website looks like. It's not -- if you've seen it -- if you haven't seen it, I recommend that you look at it, because it's very interesting, but the website will show your performance in performance indicators, and it will show the most recent quarter's results, okay, so that if you're interested and you see a indicator which is not green, you can click with your mouse on that window and you

can see the chart with the trend over the last five quarters; you can see the raw data, and you can see any commentary that's been made on it. You're required to comment if you've crossed a threshold, for example.

At the bottom of the chart you'll have the most significant inspection finding in that quarter in that cornerstone for each of the cornerstones. So for instance, in this case if we had a failure to classify properly of significance that it got a white or a yellow, that would appear in the window. You click on the window, you get a synopsis of the finding. You click on that and you get the inspection report right up.

So it's three clicks away from the raw information for the public.

The third indicator for the emergency planning cornerstone is the alert and notification system reliability, and this indicator is looking over the past year at the percentage of successful siren tests. So it's the number of successful siren tests over the total number of siren tests. It measures reliability, not availability. Availability is placed in corrective action programs and reported as necessary, and is reviewed through the SDP process if necessary, but it is a reliability indicator, not an availability indicator.

It is very similar to what FEMA requires, which

was another effort that we were doing to be consistent between agencies. The differences are so slight now that NEI is going to go to FEMA and request that we have a national consistent indicator for this. It differs now from region to region of FEMA, and it differs from plant to plant, so we'd like to have a common indicator for this.

So those are the EP cornerstones --

MR. BARTON: Before you go off the EP, the emergency response organization drill participation. If you look at that one, in your clarifying notes you talk about what participation includes. It looks like it's too focused on attendance at drills and I don't see where you measure capability to perform the function through key ERO people.

MR. HOUGHTON: Well, the participation and the performance indicators are interlinked. You can't get credit for participation unless you're in an exercise or actual event which is being graded. And so that you're in a situation where the team is being officially evaluated to get credit for participation.

MR. BARTON: But you don't get evaluated as a mentor or a coach. You get evaluated in a drill as to your performance in your position.

MR. HOUGHTON: Right.

MR. BARTON: And you may get evaluated if you're a controller, as to whether you did an adequate job in

controlling the scenario. But I'm not aware that people get evaluated as mentors or coaches, but yet you're taking credit that if I'm a mentor or coach during a drill, it counts as participation.

MR. HOUGHTON: You're absolutely right.

MR. BARTON: But I haven't proved that I can actually be an emergency director, emergency support director.

MR. HOUGHTON: Randy Sullivan could probably address this question for you, not to throw it off. My answer would be is that you are participating during a graded exercise so that you have a realistic learning experience going on, even though you weren't --

MR. BARTON: I mean an exercise, the NRC is there, I'd better not be coaching somebody. Okay, if you don't have an answer I'll dig into it, but I think that's a problem.

MR. SEALE: If you only have one of these exercises every two years, how do you get 80 percent of your people graded?

MR. BARTON: They've got to do it through quarterly drills.

MR. HOUGHTON: It requires you to run more drills than are currently required, so in fact you're increasing --

MR. BARTON: And you do an internal grading and

you do critiques and corrective actions and all that in your quarterly drills.

MR. HOUGHTON: So you're in fact having --

MR. BARTON: You're only going to get graded by NRC one team every two years or something like that.

MR. HOUGHTON: The occupational radiation exposure control effectiveness performance indicator measures -- indicates instances in which barriers are broken down to areas in which the field is greater than one rem per hours at 30 centimeters. And it also counts situations in which an individual receives an unplanned exposure of more than 100 millirem more than was expected for the job.

So this indicator measures both actual exposures more than expected and breakdowns in barriers to areas with high fields. For example, if a door was left unlocked or the keys were out of the control of the procedural -- of the procedures, which is either the radcom manager or the shift supervisor.

MR. BARTON: I've got a question for you.

MR. HOUGHTON: Yes, sir.

MR. BARTON: In your clarifying -- well, it's not a clarifying note, it's under the definition of the terms on this indicator, it says, those criteria for unintended exposure element of this performance indicator applies to individual occurrences of access or entry into an area.

Those criteria do not apply to accumulated dose received as a result of multiple occurrences of access or entry during the course of a job.

I'm not sure why that is.

MR. HOUGHTON: I'm sorry --

MR. BARTON: It's lines 14 to 17 on page 90 of your document.

MR. HICKMAN: The indicator is counting significant unintended doses, but what it's not doing -- I'm not sure if that comment refers to the number of people. If you have four people, that would be violating the high ratio there, that's a different issue. What they're talking about is if you have a small unintended overdose several times, they're not going to accumulate those to see if you've exceeded the 100 millirem. It's talking about a single occurrence of greater than 100 millirem, which is considered to be significant.

MR. HOUGHTON: The public radiation safety indicator assesses the performance of the radiological effluent monitoring program, and it consists of effluent occurrences or those that exceed any one of five identified limits. Limits are whole body and organ dose limits for liquid effluents and gamma, beta, and organ dose limits for gaseous effluents.

MR. MARKLEY: Tom, I've got a question for you on

the radiation protection one. If you had a work crew that went in and one of the individuals received 100 millirem, then they came out for lunch and went back, even if he didn't pick up any more, I mean so that's two entries. It wouldn't count then? MR. HICKMAN: It's for a job.

MR. MARKLEY: For a job, same job --

MR. HICKMAN: It's the same job, and there's an intended dose for the job. If he exceeds the intended dose for that job by 100 millirem or greater, it would count regardless if he came in and went out for lunch and came back in.

MR. MARKLEY: Regardless of the number of entries to do the job.

MR. HICKMAN: Right.

MR. BARTON: But it doesn't say that.

MR. HICKMAN: I think what they're referring to there also is if you had a job with an intended dose, and you had four workers exceed that intended dose by greater than 100 millirem, that's not four events, it's one event. Because it's one lack of control. So those are the two issues regarding what do you count.

MR. HOUGHTON: Dr. Barton, thank you for the frequently asked question, and we'll get that, that's a good question, and we'll get it addressed.

Moving into the physical protection area, the

first indicator is a security equipment performance index. This index provides an indication of the unavailability of intrusion detection systems and alarm assessment systems, and it uses rather than available hours, it uses the surrogate of compensatory hours. A major reason for doing this was that that information is readily available, it's a requirement that those hours be logged by security departments.

This indicator is the one that industry is having the hardest problems with, because different plants compensate different ways at different times. They all log the hours, but they do them different ways. For instance, you might be able to have a camera cover a zone rather than a compensatory person. You might be able to have one person count for two zones or something like that.

Also the thresholds were picked by a panel who felt that five and 15 percent number of -- percentage of the time were good indicators. We're not sure about that right now. We're also not sure about the -- this is another indicator which has a normalization factor in it. If you think about a large site versus a small site, a large site is going to have more zones, more cameras, more E fields than small site. And if we're just using the total number of comp hours over the total number in a year, thinking of this as one system, in fact then you penalize the plant with

many more zones.

There was an attempt to normalize that, and there is a factor in there. However, it's not completely successful in normalizing such that if you were to look at individual zones you'd wind up with having to have an availability of .9999, if you had about 30 zones.

So there are some concerns about the indicator and what they drive you toward.

MR. POWERS: The thresholds for the changes in these judgmental performance indicators just seem different from those that there's a more quantitative base to it. I mean they seem much more restrictive.

MR. HOUGHTON: And in looking at the regulations and looking at other things, there wasn't any data in this area. And there aren't requirements for availability for the system. There are requirements for reliability and for being able to detect certain size things at certain heights and certain shapes and so forth, but those were not deemed readily available with a common standard.

The security group at NEI is working with the staff to look at what could be better performance indicators in the future. One possibility that they might look at is doing something like what the EP drill, performance indicator does, where you look at successes and failures under certain situations. But that's a future development

which would not --

MR. POWERS: I hope they also look at the thresholds in there, because it would be nice to have some commonality. Again, a white is a white, whether you're talking about CG systems or security systems. I don't know how to do it myself, but -- and it may not be possible, but it's just not -- this is not transparent to me that they're equivalent.

MR. HOUGHTON: Your perception is very correct, it's not transparent. The closest thing it does, though, is it does try to say for this indicator is the unit outside the normal bounds, and so that green/white threshold could have some meaning, but we don't have enough data yet to do that, so that when the indicator data does come in, since we didn't have data before, the staff intends on looking at that data and determining where that green/white threshold belongs.

MR. BARTON: We've got another one on security. On page 98 on your clarifying notes --

MR. HOUGHTON: Yes, sir.

MR. BARTON: When you're talking about scheduled equipment upgrade, you've got a problem with the equipment so you need to do something, normal maintenance won't correct the problem with the security equipment, and you have to do an evaluation and you determine you need a

modification or an upgrade. You say compensatory hours stop being counted for the PI after such an evaluation has been made, that you need a modification, and the station has formally initiated the modification. That means tools on the job or it's in the engineering, technical do list. When do stop counting?

MR. HOUGHTON: It's on the mod list.

MR. BARTON: It's where?

MR. HOUGHTON: It's on the modification list in --

MR. BARTON: It's on the list. I may do it in two years, you're going to stop counting the time.

MR. HOUGHTON: The indicator is supposed to measure whether they're controlling, what they're doing, and comping is under physical security plans perfectly appropriate, so that we feel that by not counting those hours after the problem has been recognized and it has been put into the modification program, with good faith, I mean, you know, if there's not -- in all of these indicators the staff is doing its inspection, and the staff is free to look under their inspection modules at the activity that's going on.

During the pilot program there were one or two instances where the staff was not satisfied with the judgment of the utility, and they were challenged on that and those issues were brought forward. Some of the issues

were fairly technical or fairly involved with wording differences, but the staff challenged the utility.

MR. BARTON: Where does that show up? That shows up in an inspection report as a discussion item. Does it go any further than that?

MR. JOHNSON: Generically speaking, challenges to PIs, for example, we do the PI verification inspection. To the extent we would find problems with that PI as reported, it would be documented in the inspection report. And as Don is going to talk about in a little bit, we will have a process that says, you know, given the kinds of things that we're finding at plant A with respect to PI B, we've lost confidence in the ability of that to report that PI, and then we'll have in the inspection program additional inspection that we do because we can't rely on that PI.

So we have a process, we'll have a process that enables us to go further, where we don't believe that the licensee is reporting accurately on a PI.

MR. BARTON: Thank you, Mike.

MR. HOUGHTON: The last two performance indicators, the first one deals with personnel screening program performance and it looks at the number of instances of program breakdown in the personnel screening program. So for instance this would not be catching the man bringing alcohol in or bringing a gun in, and actually catching them

or a breathalyzer test, doing as the program was intended, it's breakdowns of the program. And of course as I said before, this also would be looked at if necessary through the security SDP.

The last indicator looks at the fitness for duty and the personnel reliability program and does the same thing. It looks for breakdowns in the program, and sets limits for thresholds for that.

Those are the performance indicators. The document you're looking at, the NEI 99-02, has general reporting guidance in the background section and has specific guidance on historical submittal which will be, tomorrow I believe is the report date; it has the table with the thresholds listed in it; in the back it has frequently asked questions; frequently asked questions are brought either by the NRC staff to NRR, or they're brought by licensees to NEI and we hold biweekly meetings, public meetings at which these questions are addressed. NRC has the final say in those meetings.

The PIWEB is the mechanism by which the performance indicators are being -- it's part of the process by which indicators are being reported. These are being reported electronically. The information goes to a common server at NEI where the utility can look at its data. When it's satisfied that it's correct, the data comes back to it

in a data stream format. They then send the data to NRC, because it's the licensee's responsibility to send the data. The NRC sends an e-mail back which shows what was sent, so that we avoid problems in data errors.

That's basically the process of how that information goes back and forth. Any questions about those administrative aspects of the --

MR. BARTON: I've just got one general one on the PIs. What's the new oversight processes based on, items that were considered violations are now non-sited and the issue is placed in the licensee's corrective action system; how are we measuring the effectiveness of the licensee's corrective action system? There's no PI in the corrective action system. Is this being done strictly through inspection or some other methods?

MR. HOUGHTON: Yes, sir. As opposed to the old program, the new program has ten percent of the resources in every inspection devoted to looking at the corrective action program, and there's a separate module of 200 hours that looks specific on an annual basis, that looks at the corrective action program.

MR. JOHNSON: As a matter of fact, John, that much of the program has not changed very much at all. We for a long time looked at those kinds of issues as a part of the routine and the periodic problem identification resolution

inspections.

MR. BARTON: Thank you.

MR. HOUGHTON: To wrap up --

MR. BARTON: You already gave us your conclusion slide two hours ago. Go ahead.

MR. HOUGHTON: Yes, sir, okay, conclusions on PIs, we feel they're indicators, not measures, and they're not perfect. They don't address all aspects of performance, and that's what the complimentary and supplementary inspection does. We will have improvement in the future as we go through these, and we have mechanisms set up already to develop new PIs or to change PIs, and I wanted to put this slide up just for a second, because I think it looks at a lot of the concern that a number of people have about the program, and that's cultural issue.

We believe that on the NRC part there is genuine concern about the program by some of the staff, and that it's an issue of realizing these are industrial processes and there will be some minor errors that occur.

It will get more of a focus on risk-significant issues and less on process issues, which has been the bulk of the violations in the past, and they're all of a very minor nature. And we're looking for consistency across the regions, and I think the staff has set up a program to do that in terms of assessing the significance determination

process.

The industry has a very strong need to keep in mind that compliance does not go away. And this is a key point that gets stressed at the pilot plants. They also need to realize that there's less reliance on the resident coming in and telling them the answer, and it's their responsibility, they hold the license. So their self-assessment and corrective action programs need to be good.

And they also need to determine how these performance indicators and SDP findings integrate with their management assessments. As someone said, I think it was Jack, you have layers of performance indicators below these top level indicators that tell you what's going on and the details of the processes. And these indicators are the safety output from that.

So utilities won't manage solely by these indicators, and my conclusion slide that I showed you before, industry full supports the program. We feel that there are some things that need to be resolved before we start, one of which is the reporting period, which in the pilot was 14 days for a monthly performance indicator report. We feel a more appropriate time to get accurate data is on the order of 21 to 30 days.

I've talked about some of the other issues --

MR. POWERS: Is there significant resistance to that? I mean the problem does come up, and there's always a problem, and two weeks did seem like a little --

MR. HOUGHTON: Two weeks is very tight. And although the enforcement guidance memorandum, which I think just came out about historical data submittal talks about enforcement discretion, you don't even want enforcement discretion. You want to be accurate the first time. And 14 days, it's calendar days, it's not even work days, pushes that. But for the pilot where we're having monthly reports, if we were much later than 14 days it would have overflowed onto the other, so we're coming to an accommodation on that, but 14 is too short.

The future development will strengthen the program. We feel this process meets the objectives the NRC has stated, and as I say, we're ready to go ahead. We think the issues that need to be resolved can be resolved, and we think that we're going to learn by doing, you know, you reach a point where unless there's something that's really a show stopper or really degrades safety, and we think this program even as it is increases safety, you need to go learn it.

Thank you very much.

MR. BARTON: Thank you.

MR. HICKMAN: Good morning. I'm Don Hickman, and

I'm the task lead for the performance indicators. I'm going to present to you the lessons-learned, results of the lessons-learned workshop. Let me start right in with the criteria.

There were two criteria associated with performance indicators in the pilot program having to do with accuracy of reporting and timeliness of reporting. With regard to accuracy, the method of determining that consisted of the PI verification inspection, inspections performed by the regions as well as the comments submitted by licensees in their data submittals, when they would annotate the PI to indicate whether they had to correct previously submitted data.

We have not received all of the results of the pilot inspections from the last couple of months of the program, but in the preliminary look we've determined that the first criterion on accuracy was not met. Of course we don't have to have them all. If we have at least two of the plants that had a problem, then we know we didn't meet the criterion.

However, I need to point out that during the course of the pilot program we saw significant improvement in the reporting, and the number of errors decreased throughout the program. We expect that that trend will continue.

MR. BARTON: What assurance do you have that when you go out for 100-and-something plants, that the plants that haven't been part of the project are going to be able to meet this?

MR. HICKMAN: Well, we expect there's going to be a learning curve on the part of those plants as well. But we learned a lot from the pilot program. Several things that caused the accuracy not to meet our criterion, one was that we made some changes to definitions which I'll talk about later, as the program went on. And that meant the licensees then had to change their processes, so there was just a learning curve on the part of the licensees.

MR. JOHNSON: If I can just say a couple of words, as Don indicates we found a lot of problems with people reporting accurately, but only in about a couple of cases were those inaccuracies substantive enough such that a threshold would have been crossed. So in many instances, most, in fact the overwhelming majority of the instances, we were talking about minor changes in the PI after the adjustments were made for the inaccuracies. That's one thing that gives us comfort.

The other is, we're going to do a couple of things, long-term, I guess Don is going to get to them later on, with respect to -- perhaps Don will mention it later on. I'll say it right now and save him the trouble.

One of the things we're going to do is we're going to do a temporary instruction, we're going to implement a procedure at all plants early in to implementation to look at their PI reporting, to see if in fact there are programmatic problems with the way they report PIs and using the NEI guidance. We're going to do that early on.

Secondly, we're going to come back later on into implementation and then use the PI verification inspections to make sure where there were problems, those problems have been corrected. So we're going to pay a lot of attention to PI accuracy, given what we've found in the pilot program.

MR. HICKMAN: With regard to the timeliness criterion, I think Tom mentioned that all of the pilot plants were able to report on time during the pilot program, but there is concern about the effort that's required to do that, and I'll address that again later too.

Moving to these general categories, those having to do with the documentation, the description in the document, the calculational method, the definitions, a separate category was the thresholds. Then there was some programmatic issues that we identified as not included that we would have to develop. And then the last category is other.

During the pilot program we made a number of changes. In fact, 13 of the 19 indicators were changed

during the process, and I've listed the more important ones here.

The first one is the one that Tom mentioned about the T over 2. We did add the provision to remove that, T over 2, hours associated with a single event or condition on the basis of three conditions being met, and he mentioned those. That it would have to be included for at least four quarters, then it would have to be fixed and the NRC would have to have approved the fix.

Safety system functional failures caused a lot of problems. We totally rewrote that to make it more concise and more clear, and that's helped a great deal.

RCS activity, the question there was whether we needed to measure after transients or steady-state only, and in consultation with the staff we determined that the steady-state measurements are the appropriate ones to use.

The drill exercise performance, Tom mentioned the link between ERO participation and the drill exercise performance, and that would only allow licensees to count participation if they graded the performance during that drill. Licensees wanted the leeway to be able to run training exercises in which certain key members may be in there for the first time, and they didn't want to have to count that type of a training exercise against statistics. And we did not have a problem with that. We rewrote the

guidance to allow them to exclude certain members who were in the drill strictly for training.

MR. POWERS: Several times you said you have rewritten things, and just -- I have a version labeled January the 8th. Does that have the rewritten --

MR. HICKMAN: What are you looking at?

MR. POWERS: I have recommendations for reactor oversight process improvements dated January the 8th.

MR. JOHNSON: No, Dana, when Don says we're rewritten the guidance, what he's referring to is we've given changes to NEI that have been incorporated in the NEI guidance document. The latest revision is 99-02 rev D.

MR. BARTON: Draft D, is it in there?

MR. JOHNSON: Rev D.

MR. HICKMAN: Right, they're in rev d.

MR. JOHNSON: They're in there.

MR. BARTON: They're in there, okay.

MR. HICKMAN: Right, those are in rev D.

MR. BARTON: Just if we have a specific question on this, so if you change things we want to make sure we're on what's been changed rather than something that's of historical interest only.

MR. HICKMAN: The category of issues related to definitions, there were a number of those. We picked out some of the more important ones here. The unique plant

configurations for the safety system unavailability, we of course found that there are plants that do not have a high pressure coolant injection system in the BWRs, Oyster Creek, Nine Mile. All the CE plants have a different configuration that what is described, was described in the WANO document, which is the same description that we used. And that description fits better with a Westinghouse plant, a four-loop Westinghouse plant.

So there's issues there that we have to resolve as to what is the -- how do we determine safety system unavailability for those different configurations.

The scrams with loss of normal heat removal, what we intended was that to avoid a count in that indicator you needed to be able to cool down and depressurize the reactor to the point where low pressure systems could take over the cool-down. What we wrote was that you had to get to hot shutdown. Unfortunately for a BWR hot shutdown is mode switching shutdown and greater than 212, so there's no cool-down required for a BWR, and we need to fix that.

The security equipment performance index, Tom mentioned some of the problems with the definition. There's in general a pretty large wide-spread misunderstanding of this indicator. We are going to look at it. When we get the historical data tomorrow we'll look at it to see if the threshold needs to be changed.

The indicator does directly compensate for the number of zones at a plant. There's a linear relationship between the number of zones at the plant and the indicator. However, it doesn't measure unavailability. It measures compensatory hours, and if you look in the document you'll see that there are a number of situations where the compensatory hours are not counted, and the best example is preventive maintenance.

This was to spur licensees to do preventive maintenance rather than wait until the system breaks, and we wouldn't count that against them. But if they wait until it breaks, then it would count against them. And preventive maintenance can be a significant portion of the unavailability of a system. It doesn't count, and you pointed out the situation where when you decided you're going to make a change we stop counting.

We will continue to look to make sure you make that change in accordance with your plan and your schedule, but we would stop counting. Another thing we don't count is unavailability due to weather. A sun glare into a system that's not designed to accept that.

So what we're really measuring is the compensatory hours, and that's what really needs to meet this .9975 number. In actual fact, when you look at the result -- oh, another thing I should point out, be careful of counting the

number of plants. We should count the number of zones when you look at the data. And in the pilot program, there were eight zones. Thirteen plants, but there were only eight zones. There's a common zone at Hope Creek and Salem.

Two of those zones were in the white. And when we selected the pilot plants, we selected plants that would have a range of performance. So the results are not at this point particularly disturbing to me, especially when you look at the other plants who are well into the green zone. The threshold is five percent. There were plants that were under one percent, a number of them.

So we think it is an achievable number, but what we have to look at is what has the history been over the last few years. We will do that. We will establish the threshold the same way we establish the thresholds for all the other indicators.

Thresholds may not be set appropriately, again, this is the relationship to the security index. There's either of two fixes that could be made to that, changing the definition or changing the threshold.

Safety system unavailability, we set most of the thresholds based -- green/white thresholds -- based upon industry performance. There are a few of those that were changed to be consistent with industry goals or with allowed outage times. And so we want to look at those.

The barrier indicators are set as percent of tech specs, and some of those may be too high to be very meaningful.

With regard to the guidance, we know we need to have a process for making changes, additions or deletions from the list of performance indicators. It needs to be a methodical controlled process, so that we don't introduce errors along the way and that we're certain of what we're doing.

I think we mentioned briefly earlier that we need to have a process, some guidance on what constitutes an invalid PI at a particular plant. And then the issue that has arisen here lately with regard to Cook is that we need to have a PI program, define a PI program that's useful when a plant is in an extended shutdown.

Of course many of the indicators are not useful then, but --

MR. BARTON: How about indicators for plants that are in normal shutdowns and refueling; we don't even have that yet.

MR. HICKMAN: Right. And those are maybe useful --

MR. BARTON: When is that going to happen?

MR. HICKMAN: Those are maybe useful also for the first part of a shutdown, but you're right, we have to work

on just a normal refueling indicator for normal refueling, and we also need to work on what do we do with the plants in extended shutdown and particularly what do we do when it comes out of that shutdown to reestablish performance indicators.

MR. BARTON: Which ones are you going to do first, refueling shutdown or extended shutdown?

MR. HICKMAN: We're working on both right now.

MR. BARTON: Working on both.

MR. HICKMAN: Research is working on shutdown, and we need to define this extended shutdown.

Other issues, we have this frequently asked question process, and we are going to document that and formalize it for resolving interpretation issues. The reporting period issue you've heard about. The choices there, at the workshop we decided we would consider either 21 days or 30 days as possibilities for extending the period.

Consistency of definitions, within the NRC we've made a considerable effort to come up with consistent definitions amongst all the players, and that would be the people in this program, the maintenance rule people, the people responsible for 50-72, 50-73 reporting and NUREG 10-22, and the PRA people. And I think we're a long ways in that direction. I think we've achieved pretty much

consistency there.

With regard to WANO, we'll work with them. We don't have a whole lot of control over WANO.

And the last issue there is the potential for double counting if we get a white indicator and a white inspection finding that relates to the same issue.

The next couple of slides, I've taken those same issues that we listed and categorized them by the time frame in which we intend to address them. The issues that need to be resolved prior to initial implementation are shown, and then the longer-term issues.

MR. BARTON: On the longer term, you say consistence of definitions with WANO?

MR. HICKMAN: Right.

MR. BARTON: Why is that on long-term?

MR. HICKMAN: WANO, I think many people in INPO tend to agree with some of the things that we've done, but WANO is a different organization. It's got a lot of foreign influence. I mean it's a world-wide organization. It takes a long time for them to agree to making any kind of changes. Tom may have some comments on that.

MR. HOUGHTON: Yes, you know, in addition there are different, for definitions, these indicators that we're using now count support system failures against the main indicator, and there are maintenance rule activities and

PRAs where you separate support systems from main systems, and that's going to play a role in definitions as well.

MR. BARTON: Thank you.

MR. POWERS: You said the 12 issues from all four categories including, and you listed five. What are the other seven?

MR. HICKMAN: I can get those for you. I have them in my --

AN UNIDENTIFIED STAFF MEMBER: I guess it must be trivial or something like that, dotting i's or crossing t's or something.

MR. HICKMAN: Well, I tried to pick the most important ones figuring that we didn't have time to go over all of them, so they're of less importance. If you'd like me to I can get those for you and provide them for you later.

MR. POWERS: Yeah, it would be useful to get them.

MR. BARTON: Do you want to get them to Mike then?

MR. HICKMAN: Okay, sure.

MR. SIEBER: I think there's sort of a management observation that one could make about performance indicators. Once you define them and then tell people this is going to show how you rank in the world, all of a sudden they take on a new significance that they didn't have before, because there is only so much interest that you can

put forward to all kinds of ways to manage, something else will probably go down.

Do you feel good enough about performance indicators that you have that you're willing to have these take on this extra focus at the power plants?

MR. HICKMAN: We've made a concerted effort throughout this program to try to minimize effects of the performance indicators that would cause licensees to do something different than what they would normally do. And we address that any time we make a change. And there's a number of cases where we have deliberately done things a little bit differently just so we would try to minimize that effect.

There are still some of those out there, but the only way we're going to resolve those is to try the program. And work those through. And we are still doing that. Virtually every meeting we talk about those kinds of issues.

MR. SIEBER: It would be my opinion that it's going to happen whether you want it to or not. It will just take on a new importance.

MR. HICKMAN: Yes, you're right.

MR. BONACA: Among those issues, I mean we've already discussed that, but normal refueling outages should be there, and should be --

MR. BARTON: Yeah, you need to add that.

MR. BONACA: It's very important. In fact I've spoken with --

MR. BARTON: You don't have it there yet.

MR. HICKMAN: Oh, the shutdown indicators?

MR. BARTON: Yeah.

MR. HICKMAN: Yes.

MR. BONACA: There is an issue forming in the industry, I mean a lot of CEOs feel pressed by their leaders which are going to shorter and shorter shutdowns, and that's an area where you're going to have things happening, potentially, and I think that has to be at the top of the list in my judgment.

MR. JOHNSON: The reason why we think we can proceed, even with the fact that we are still developing these shutdown PI, is we do in fact have baseline inspection that we do for plants that are shut down, and in fact we're going to have help as Doug is going to talk about, the SDP. We're looking at beefing up or having the SDP provide coverage in that area, and that's not currently available to us.

So we'll talk a little bit more about it, but we have a comfort level with the fact that either through PIs or through the baseline inspection, even for plants that are shut down, we will look and find issues and raise them.

MR. KRESS: The issue of when to declare a PI

invalid, do you consider that a plant-specific issue, it may be invalid for some plants but not others?

MR. JOHNSON: The bullet refers to, yes, very much plant specific. We're talking about whether with respect to the way the PI is being reported, the way that licensee is interpreting and implementing the guidelines, whether we have confidence that that PI is in fact accurate. So yeah, that bullet I think goes very much to the plant-specific nature.

But on a longer term we've committed and intend on looking at the overall program to decide whether the PIs are giving us what it is we think we need, and so we'll make adjustments based on that also. And that's what we're prepared to talk about with respect to PIs and lessons-learned from the pilot. There was a question, there have been continuing questions and discussions about the web page and the number of greens and whether the thresholds -- do we need to -- have we talked about that enough, or should we spend a couple more minutes talking about --

MR. BARTON: Is the committee satisfied with -- I guess you're off the hook, Michael. Thank you. Before we break for lunch, Dr. Apostolakis, although not on the agenda, has requested some time to address the subcommittee.

MR. APOSTOLAKIS: We can do it now or after lunch.

MR. BARTON: Or after lunch, okay.

MR. APOSTOLAKIS: It's on the specification of thresholds for performance indicators. So please come back.

MR. JOHNSON: Oh, we'll definitely come back. Incidentally, there's another piece of this on the significance determination process that we wanted to --

MR. BARTON: Right, at 1:00 o'clock, right?

MR. JOHNSON: At 1:00 o'clock. We'll be back.

MR. BARTON: We'll now recess till 1:00 o'clock.

[Whereupon, the meeting was recessed, to reconvene at 1:00 p.m., this same day.]

A F T E R N O O N S E S S I O N

[1:00 p.m.]

MR. BARTON: Professor Apostolakis, would you like to enlighten us on your hand-prepared slides here?

MR. APOSTOLAKIS: Yeah, I prepared them this morning. But let me give you a little bit of background first. We wrote a letter on June 10th, 1999, where our first recommendation was that the performance indicator thresholds should be plant or design-specific.

MR. BARTON: Correct.

MR. APOSTOLAKIS: And in the discussion we started out by saying a major lesson learned from PRAs is that the risk profile of each plant is unique. So it seems to me that it stands to reason, if the risk profile is unique, then you want to maintain that risk profile or to have evidence and assurance that the risk profile is maintained, your performance indicators have to be plant-specific as well.

Now, the staff responded with a memorandum on August 9th, 1999, where they agree that the PI thresholds should be plant-specific, but then they go on to explain why they did what they did. And I think the main reason is really time pressure.

They recognize that there is random variability and we're not really interested in that, we're interested in

the systematic change of the failure rates and so on. So as I said this morning, they use data that involved the highest value of an indicator for each plant for the period of five years. Then they plotted these for each plant, and they selected the 95th percentile of these highest values.

So a consequence of that is that the thresholds are too high. And a consequence of that is that you will see too many greens, which several members around the table this morning pointed out. And not only that, but I just happened to look randomly almost on the comments, the public comments on this project, the comments from the State of New Jersey, where they say by the end of the pilot, at 13 pilot plants two performance indicators were white. None were yellow or red.

That is out of 242 performance indicator possibilities, only two indicators were green. And then they --

MR. BARTON: Were white.

MR. APOSTOLAKIS: They say green. And then they ask, is a system where the results reveal 99.17 percent green indication a system that is meaningful? This is the question they ask. So --

MR. POWERS: I guess if they posed the question to me, my tendency would be to say why not.

MR. APOSTOLAKIS: Because you are not really

monitoring the actual status of the plant.

MR. POWERS: I'm not trying to. I'm not setting up a system to run the plant. I've not set up a system to manage the plant. I've set up a system to assure me that the plant is run so there is adequate protection to the public. I want all my indicators to be green or good in some way. I would expect 100 percent. That's my expectation.

MR. APOSTOLAKIS: But the problem is, that could be one interpretation. Another interpretation could be that the thresholds are too high. And I'm not using that alone as an argument. I also told you how the thresholds were set using highest values and then taking the 95th percentile of those highest values.

MR. KRESS: Clearly, George, you could choose thresholds arbitrarily and change these greens to the high point if you wanted to. You could choose any number you wanted to as thresholds.

MR. APOSTOLAKIS: What you don't want to do is to have thresholds that are either too high in which everything comes out smelling like roses, or too low so that you are expending resources again on things that are trivial or insignificant. But that brings me to the fundamental question. What is the purpose of this oversight process? We heard several times this morning that we want to maintain

plant safety. Now, in the risk arena, since these are, you know, and for the risk-based performance indicators, that tells me that we want to preserve the risk profile as it is now, because we have approved it now. We don't want it to change in an undesirable way. And since the risk profile is plant-specific, my indicators have to be plant-specific.

Now, let me give you an idea as to how I would go about doing it.

MR. KRESS: But can we debate the question that we want to preserve the plant-specific risk profile as it is now?

MR. APOSTOLAKIS: Yes. I think that's what it is with -- well, maybe a more accurate way of putting it is, we don't want it to change in the wrong direction. I mean if they make it safer that's great.

MR. KRESS: Another objective would be that you don't want a risk profile to approach an unacceptable level, rather than changing the --

MR. APOSTOLAKIS: I don't think that's the -- I mean it's included in the objectives of the oversight process, but it's not the only one. It's not the only objective.

MR. KRESS: But you would come up with a different answer if that were your objective, that you didn't want it to approach very closely to an unacceptable level.

MR. APOSTOLAKIS: Sure, but even then I would argue it would have to be plant-specific. Because the profile is already plant-specific.

MR. KRESS: Well, I would argue that that argue against plant-specific, because an unacceptable level is an absolute -- and rather than a plant profile, it's the delta change --

MR. APOSTOLAKIS: Sure, the level itself. But remember now, each indicator looks at a specific thing. So what's missing, if you don't make it plant-specific, is the context.

MR. KRESS: Okay, I understand. That would say it ought to be plant-specific, you're right.

MR. APOSTOLAKIS: So I remember that the unavailability of diesels, although this is not an example in diesels, but it's just an example -- well, before I go into them, there is a real issue here of how one would handle the uncertainties. And we have the two kinds, the usual two kinds. We have the aleatory, the randomness, in other words an indicator may be above the threshold, but this is a random occurrence I shouldn't worry about. What I really worry about is a change in the underlying epistemic distribution of the failure rate. So I have to be able to monitor those two.

Now, the staff says that in order to manage the

random variations they went with those highest values and the 95th percentile of the highest values. Which leads to very high levels. So here I have the 50th percentile of the failure rate per demand of a component as one in 100, and the 95th, ten to the minus one, one in ten, okay.

And let's say that, although this is something to be determined by calculations of this type, but let's say that I will collect 12 data points in a year. I do a test once a month. So the number of tests is fixed.

Then I ask myself, what is the probability that there will be K or more -- there will be K -- exceedences of the threshold, given that the underlying failure rate is either the 50th percentile or the 95th percentile. So I'm treating the epistemic distribution as a parameter that I can play with.

If I work with a 50th, let's say the failure rate is ten to the minus two, the probability of K being one or greater in the 12 tests is about ten percent. If I use the 95th percentile, then the probability that it is greater than -- that it would be greater due to random causes than one or equal to one is .7. So let's say I do get one. In a year, I have one.

That will tell me, and this is now where I'm getting into a territory where I haven't really thought about it very carefully, that would tell me that as far as

the 50th percentile is concerned, there is some movement towards higher values, because the probability of this observation being random is very low.

However, I'm still within, I think, the 95th percentile, because the probability due to random causes of seeing one, given the 95th percentile, is pretty high. So this is an event that's not unreasonable from the random point of view.

Then I do the same thing for two. Let's say I see two. Now, the probability that due to random causes I could see two, given that the failure rate is ten to the minus two, is awfully small. So now I am fairly confident that this is not the failure rate any more, unless I'm willing to accept miracles, that an event of .007 probability has occurred.

And the probability of course due to random causes of seeing two, given the 95th percentile, has been reduced significantly. So my conclusion from this would be yeah, I'm moving away from the median, but I'm not sure I'm above the 95th percentile as determined at some time. Because the probability of seeing a random occurrence of K to two is not that low. It's not a miracle any more.

But here, and maybe I could call that white, I don't know. But then of course if I go to three, the probability of seeing three with a ten to the minus two

median, or a probability of seeing three with ten to the minus one, 95th, are both low. And I'm really worried now. I'm really moving out. I'm probably above my 95th percentile. I'm clearly away from the median in the wrong direction, and I'm probably higher than my 95th percentile because there is only a ten percent chance that I would see three.

So this is a way of handling the randomness which is inherent in K, because the thing may fail once just through random causes, and also the epistemic part which is really what I'm interested in. The actual change in the failure rate, not the number of occurrences. The number of occurrences tells me something about the failure rate.

Now, this leads to another issue. Which Q50 and Q95th are you going to use? Well, this issue now of living PRA comes into the picture, because the plant is supposed to use its plant-specific data, number of failures per test and so on, to update periodically its failure distributions.

So what I'm saying is, maybe every two-three years we update the PRA, which now will allow us to look again at what Tom mentioned, is the whole thing acceptable. Then if you declare it acceptable for the next three years, until the next update of the living PSA, you will be using the Q50 and Q95th of that update.

In other words, for the next three years I want to

make sure that what I approved, approve today, it will still be valid. And again, one can start arguing, what is red, what is green and so on. But I think this will start raising flags as the number of failures is increasing.

MR. BARTON: George, there's no requirement to update PSAs.

MR. APOSTOLAKIS: No, but this is something that a lot of people are talking about. Because the issue of what are you comparing with comes naturally. So if you -- now, another point that was raised I think by your public comments, I don't remember it mentioned this morning, is why do you use red and green and all that. I mean I think it's New Jersey who raised that.

MR. POWERS: Yeah, why the colors, that's a New Jersey --

MR. APOSTOLAKIS: Yeah, the colors eliminate the details. Why don't you look directly at the numbers, and in fact why not normalize distribution of indicator data, they ask. Why are class grades sealed to a normalized curve? So you can differentiate good students from those that need extra help. I notice the care taken to avoid bad students, you know, those who need help.

MR. POWERS: Because we don't want to interfere in their self-respect, right? MR. APOSTOLAKIS: So I mean all these issues have been thought through by the quality

control people. I'm not telling you anything new here, except perhaps the epistemic part. So why not have figures like this, where you have the first 12 tests, then 24, 36 and so on, and up here we plot the observations, because according to my assumption here you observe only every 12th test every year.

Let's say the first year I observe zero. Great, according to my probabilities I'm white. The next year maybe one. Maybe according to my probabilities the agency doesn't do anything but the licensee has to take some action. Then I go back to zero and so on. The important point, though, is of course it's very important to know whether you go above the limit here. Let's say the limit is at one, whether you go above. But another point that's very often overlooked in quality control, which gives a lot of information, is what if you are below the curve, but you see some pattern; with zero-one it's difficult to show, so let's assume that it's -- the threshold is two, okay, for the sake of argument.

So what if you see this, zero, one, zero, one, zero, one, zero, one. In all of these you are green. Now, wouldn't any engineer say why on earth am I seeing zero-one, zero-one, one after the other? In other words, the shape of this imaginary curve if you connect the points, is also important information. It's not just the color, because all

of this is green now.

MR. POWERS: George, I don't think anyone is --

MR. APOSTOLAKIS: Of course you're not going to see zero-one, zero-one, zero-one, but --

MR. POWERS: But I mean just suppose that you saw a pattern of some sort, but still within the green; and I don't think anybody would contest at all an engineer from the plant saying I wonder why this is, and going and chasing it down.

The question is, does the regulatory authority have any obligation to force the plant to chase it down.

MR. APOSTOLAKIS: I think it has an obligation to know about it. What the action is, I may agree with you, that maybe it's not our business. But the other thing I would question is whether, with a lack of tools like this, you are relying too much on the competence of the plant engineer to actually observe that he sees zero-one, zero-one, zero-one. See, that's the value of these tools, that it's there, it's on the wall. And maybe it's not one engineer. You know, people come and go.

MR. BARTON: System engineers, George, by the way the plants are now structured, would be the guy that would be trending this data, and --

MR. APOSTOLAKIS: So you're saying this is happening already?

MR. BARTON: Yeah, sure. It is.

MR. APOSTOLAKIS: If it's happening already, so much the better. But this is not happening already. And this is my main argument, the other is incidental.

So it seems to me that there is a way here of handling this issue of green, white and red, by deciding what is it that we want to tolerate and so on. Now, this is a lot of work. I don't question that. And I think it's unfair to ask the staff to do all these things which are only part of the million other things they have to do, I mean I'm very sympathetic that you guys have a big problem.

But I am not sympathetic declaring arbitrary dates like April 1st of this year to send this to all the utilities, because if I've learned anything from experience being on this committee, is that once something is being used it's awfully hard to change it later. And it seems to me that it is really important for us to understand what we're trying to do, and propose something that makes sense, even if it is incomplete.

The problem I have now with the existing scheme is that it doesn't make sense to me, at least.

MR. POWERS: And it's incomplete.

MR. APOSTOLAKIS: And it's incomplete. So I repeat, I am really very sympathetic with the staff and the time pressures around them, but maybe we can recommend in

our letter later that there are certain things that have to be cleared up, and the deadline of April 1st should be moved.

MR. KRESS: Don't you think this type of approach would unfairly penalize the low-risk status plants, the good plants?

MR. APOSTOLAKIS: No, no, because this is my plant I'm talking about. So if my plant happens to have a distribution for this -- for the diesel generators, say, that is good. That's very low. Then I will be using my Q50 and Q95th for my plant, okay, the whole distribution. And all I'm saying is --

MR. KRESS: But what I'm saying is you're going to be expending a hell of a lot of effort to keep that extremely good performance of this indicator down there when you don't really need it down there, because it probably is not that risk-significant for your plant.

MR. APOSTOLAKIS: This is a higher level issue when you decide what performance indicators to use. And this is not inconsistent with what I'm proposing. My assumption here is that you have decided to monitor this already. Now, if --

MR. KRESS: Because it's risk-significant for your plant?

MR. APOSTOLAKIS: Yeah, it plays some role. I

mean if you decide that it's importance is not really --

MR. KRESS: But would you entertain the idea that it's only risk-significant if it's degraded performance affects the difference between say a CDF and an acceptable CDF by a certain percent, as opposed to an absolute change?

MR. APOSTOLAKIS: That would be too high a level I think for using it to define the oversight process. That would be a major revolution in the way --

MR. KRESS: But that's a way to quit beating on good plants.

MR. APOSTOLAKIS: But what you're saying is that I will have one performance indicator, the core damage frequency. And I don't think the agency is ready for this, if ever.

MR. KRESS: No, I'd have a lot of core damage frequencies, I would just calibrate them in terms of -- a lot of performance indicators. I'd calibrate them in terms of core damage frequency, and in terms of the percent effect of the difference between the chief level and acceptable level.

MR. APOSTOLAKIS: I can see a scheme that starts that way, in fact the staff I think tried to do it with the greens, seeing what is the input from the core damage frequency. You can start that way, work backwards, to determine the performance indicators you want to have. But

then for each one, I suggest that this is the way to handle it.

But I'm starting with the premise that what we want to do between the periodic updates of the PRA, if there are any, is to have assurances that what we approved on January 1st, year 2000, will be the same within some statistical fluctuations, until December 31st of the year 2003, when I'm going to revisit my PRA. This is my basic premise here, and it's consistent with what the staff is saying about maintaining or improving safety and so on.

Now, if we want to change that, and change the rules, and work with core damage frequency, I'm sure the structure will have to change. But ultimately you have to come to this. This addresses the issue given an indicator of what do you do. I think what you're saying is really, what are the indicators. So I would say these are two different issues.

MR. KRESS: Well, I'm not arguing with the indicators. I'm just determining when you go from one color to another, as a function of a percentage change rather than an actual change.

MR. APOSTOLAKIS: Yeah, but I think you're going to really revolutionize everything. I mean even in 50-59 they were unwilling to do that. What really makes much, much, much more sense -- but this is maybe the next battle.

So I hope I made clearer, maybe not entirely clear, but clearer where I'm coming from and what my concern is. Because I don't think I expressed this -- and by the way, it's not that I'm brilliant or anything, this is the idea of quality control. I mean people have been doing this for 78 years now. Not with two Qs, one Q.

So the main idea of quality control is, what is the probability given my failure rate or exceeding a certain number. If that probability is very low, and I see that number, either I accept a miracle or something is wrong. And I'm looking, I'm going to start looking. That's really the basic brilliant idea that Shuhart had in the 1920s.

MR. KRESS: Now, are you planning on using the failure rate from the fleet of plants for each performance indicator?

MR. APOSTOLAKIS: No, this is plant-specific. This is plant-specific.

MR. KRESS: Do you think you have enough data to do that?

MR. APOSTOLAKIS: If I don't, I have to collect it. I mean otherwise what good are the IPEs? I mean I don't know how they are deciding what, in the maintenance rule, what the thresholds are. I mean this is not out in the clouds, it's happening to a large extent, it's happening in the sense that you have the thresholds in the maintenance

rule. And you have the --

MR. POWERS: The licensee gets to set those thresholds in the maintenance rule, and --

MR. APOSTOLAKIS: We can tell the licensees, here is what we want you to do, then do it. And how do they set them? By taking into account their plant-specific history.

MR. POWERS: And not by using the IPEs.

MR. APOSTOLAKIS: The staff does not have to set K. The staff can say, this is what we would like to see; you, Mr. Licensee, do it. And if you want to deviate, tell me why.

MR. JOHNSON: George, Mike Johnson.

MR. APOSTOLAKIS: Yes.

MR. JOHNSON: Can I ask a question?

MR. APOSTOLAKIS: Hey, Mike, we are in person here. I'll think about it and take action --

[Laughter.]

MR. JOHNSON: Thank you. You made a statement something like you didn't see how -- I love this -- you didn't see how the staff can move forward in April without an approach such as this for the PIs, but I guess I wonder, I mean you must recognize we don't have that today. It's not a part of our current process. All we've done is make evolutionary changes in our inspections. We've figured out things or made an estimate about things that we think will

be indicative in terms of performance of licensees. We've tried to risk-inform it, and we've said that that is an improvement. And you're almost -- I almost hear you saying that because it's not perfect, we shouldn't proceed.

MR. APOSTOLAKIS: No, I'm not saying that, Mike, because all I'm saying is there are certain -- I don't know where people got the idea that risk-informing the regulations is a straightforward matter, and you can do it by fiat, do it in three months, do it in six months, publish it in seven months.

There are certain things, and this is an area, where you are bringing really new ideas, new information which is inherently probablistic into a process. And there are certain things we have to think about. How exactly do people handle these things, and we are fortunate enough to have the quality control people doing it for years.

So what I'm saying is, it's not really a matter of seeking perfection, but it seems to me it's so fundamental to think at this level, and I'm sure it will not survive in the form that I just presented, but if we start with this, we put two or three smart guys thinking about it, taking into account all the difficulties that were raised by Dana, by Tom, by you and the others, eventually we'll have something that will have a sound foundation, and I think until we do that, and another area by the way is the action

matrix, which I would like to understand a little better, until we do that I don't think we can go out and send it out, because you are already having the first indications of unhappiness from practical people who say, you know, why not normalize the distribution; how good is this.

And I think they're looking at it from the practical perspective, and all I'm doing here is I'm explaining to you from a theoretical perspective why you are seeing these things. Or at least if somebody came here and put similar view graphs up there and say, this is why we're not doing it, I would be very willing to be convinced. But ignoring it is something that I cannot accept.

MR. BARTON: George, can we ask the staff to come back in February at the full committee meeting and discuss this line --

MR. APOSTOLAKIS: I think that's an excellent suggestion.

MR. BARTON: -- and we as a committee will have to decide how we want to handle it in the letter we present to the Commission in March, and maybe something to the EDO in February based on an interim report.

MR. APOSTOLAKIS: I think this is the best we can do right now, yes.

MR. BARTON: Thank you. Michael, do you guys want to pick up on the determination process?

MR. JOHNSON: Yes.

MR. COE: Good afternoon. I'm very pleased to be here again. My name is Douglas Coe. Since 1995 I've been a senior reactor analyst in the office of NRR. My job has been to help improve the agency's ability to utilize risk insights in the inspection program.

Just by virtue of introduction or setting the tone here, I'd like very much to actually take up Dr. Apostolakis' suggestion and give you a little bit of before and after kind of a perspective from my own personal experience, if you'll indulge me just for a moment.

About ten years ago I was senior reactor -- or senior resident inspector at a plant, and I was charged with the indoctrination, the training and the qualification of two inspectors who worked for me. They were good people, and I tried very hard to be a good mentor. And one of the things I tried hard to do was to give to them a sense of what's important and what's not, which is what they really needed to be good inspectors.

And I struggled with this question and I tried to write things down, and the best that I could come up with at that time was well, if the licensee exceeded a safety limit, that was probably the most important thing. If they exceeded a limiting safety system setting, well, that was probably next in importance. If they exceeded an LCO that

was one step down below that. And if they violated other regulations or requirements below that, then that was the fourth level.

What I found was that all of our issues were pretty much in that last bucket. And there was no way really to differentiate the different issues. A short time after I took that position, the licensee at the site that I was at identified a significant vulnerability, it was during the time that they were preparing their IPE. And they fixed it. And there was no regulatory violation associated with that.

And I took away from that a lesson. The lesson was that there are ways of looking at the importance of things that we weren't very familiar with, and I will admit to you that the first time that the IPE issue was brought to my attention, the first words out of my mouth were, does it violate any regulations or requirements.

Later after I became a senior reactor analyst I brought that lesson to this job and I continue to try to find ways of exploiting the risk insights that we had available to us towards the betterment of the inspection program. And I have to be honest, I think we did some good work in training; we did some good work in putting forth guidance; but it wasn't really as successful as I had hoped, until now.

And I'd like to go ahead and take you through a few of the things that we've talked about internally and through the public workshop that we just had last week regarding the significance determination process and the issues that we need to consider and in some cases modify the guidance before we go forward.

The two criteria that came out of the pilot program were efficiency and effectiveness. Efficiency was, could we do the work in a -- the SDP work in a timely manner, and effectiveness, would we be -- could we have confidence that we were assigning the right safety significance values to the things that had gone through the significance determination process.

What we concluded was that from an efficiency standpoint the SDP process did not meet our expected goal, our intended goal, principally because the reactor safety SDP which involved the utilization of risk insights couldn't be completed within the 120 days that we had targeted for ourselves as the goal. So we definitely recognize that efficiency improvements are needed in that area.

MR. COE: Doug, tell us why that was the case? Well, principally it was because either there were engineering analysis questions that could only be answered through more extended engineering analysis that the licensee proposed to do, and that we agreed would be appropriate to

answer the question, because depending on the answer the issue either continued or it went away. And another case, we engaged in a dialogue with the licensee regarding the assumptions of their risk analysis that they brought to the table, which we offered an opportunity for them to do.

And therefore the lesson learned out of this is that we need a better defined process, a business process to conduct the phase three reviews in. At all times though, the agency I believe felt that it was our ultimate responsibility to make that final determination, and that it was our obligation to ensure that the basis for our decision was made clear, even if it wasn't necessarily agreed to by the licensee.

MR. SEALE: To get a better understanding of what our aspirations are when we talk about the need for a better PRA, which often is measured by the gleam in the consultant's eye of the proposal to it, would you expect that the deficiencies that limited you in this case might have been addressed if there had been a, quote, "better" PRA or better IPE or whatever?

MR. COE: Well, first, I don't believe it was a deficiency, but it was a difference that caused the dialogue and the extended dialogue, and certainly in an ideal world the licensee and the NRC would both have access to a single PRA that we all agreed to was an appropriate representation

of the plant and that we would feel confident in using it for the specific issues that we were trying to assess.

So I have to answer your question yes. If there were such a PRA that we all agreed to, it would certainly make life a whole lot more easy in this area.

MR. SEALE: I think we need to begin to stress what we get from a better PRA, rather than -- in specifics, rather than just saying we need a better PRA, and you've given us an example here, one place where that would be --

MR. COE: I would add too, that because we have to live in this world of differences it's particularly important that the decision makers who finally decide what the -- or accept what the determination of significance is need to clearly understand the underlying basis for that.

In the past, historically, we've relied upon risk analysts within the agency, and their dialogue with their counterparts in the licensees' organizations, and in a lot of cases the influential assumptions that underlie the risk analysis models weren't always, I don't think, clearly understood by the people who made the final decisions. And what the SDP represents, which I don't believe has been offered before, is an opportunity for the underlying assumptions to be revealed in a very explicit way. And this would serve not only to help inform the decision maker's process of deciding what the significance is, but also helps

the inspectors themselves understand what drives the risk at the particular plant that they're at.

So given that we're living in a world of difference in terms of these models, it's particularly important that we communicate clearly with each other about the reasons why the differences exist, and this is why I think that what we've tried to do with the SDP is toward that end.

MR. JOHNSON: And in addition to that, let me just make sure that I state, you know, even in a world where we would have perfect PRAs and perfect agreement on the results of PRAs, there are always going to be things that add to inefficiency, what we call inefficiency as we try to measure this criteria.

We have, based on the pilot program and the revised oversight process, made a concerted effort to do more in terms of, I'll call it due process. Lawyers get a little bit nervous when I say that, but to provide an opportunity for licensees to understand the issue and the significance as we see it; to give us feedback on whether they think we've come out at the right place with respect to the significance of the issue, with respect to whether they think that the actions that we're taking are appropriate, and some of that builds into the time delays between the time when we think that we've got the right call and we've

decided that we agree on the right call and we're moving forward.

So I guess I just wanted to state that, and in a perfect PRA doesn't make that kind of concern go away.

MR. COE: The other criteria was effectiveness and the standard that we tried to achieve and did achieve, we believe, was that there were no apparent risk-significant inspection findings that inappropriately screened as green. Meaning that we simply didn't find any issues that we evaluated as potentially risk-significant that would have been screened out in the early stages of the SDP evaluation.

MR. POWERS: When you say that, are you using risk significant in a strictly quantitative -- what I'm driving at is that you presumably could have had green findings with respect to say fire protection, but you might not have any quantitative risk analysis that you could draw upon to judge that.

MR. COE: Right, actually fire protection issues, we do have a draft SDP for that we're --

MR. POWERS: You have a draft SDP --

MR. COE: -- we're trying to use. So --

MR. POWERS: But do you have a useful risk analysis?

MR. COE: Well, the fire protection SDP, essentially the output of that is a fire mitigation

frequency, which is then used with the -- as an input to the plant-specific reactor safety SDP for that plant. So we're trying to get to a quantitative estimate of fire protection, but I think I have to be careful here, because we also have the other cornerstones that aren't necessarily tied directly to the quantitative risk analysis, and that was mentioned earlier.

And those, I think the question was asked earlier, and it's a good question, how do you ensure the consistency or how do you treat the colored findings in these other areas since you can't really tie them to the risk matrix that we were using in the reactor safety area. And I think that's part of your question as well.

MR. BARTON: What I'm trying to understand is, you've got -- did you get a green finding in some of those areas where you don't have any quantitative measure, and you couldn't answer this question.

MR. COE: Right, you could not. And really, and again I have to be careful, my involvement has been primarily with the reactor safety SDP and so I don't mean to exclude the other cornerstone SDPs. And I'm sure you can remind me of that when I slip up, so -- okay.

The SDP observations. The first bullet has to do with the difficulty in timeliness, and again, this particularly goes back to the reactor safety SDP and the

risk analysis that stands behind those issues.

The second bullet acknowledges that we have yet to develop a containment SDP or a shutdown significance screening tool, and that because of that, any issues that surfaced in those areas in the inspection program had to go directly to our risk analyst for evaluation. And that is what we call a phase three review, where the risk analyst gets involved.

MR. BARTON: What's the schedule for completing that?

MR. COE: Pardon me?

MR. BARTON: What's the schedule for completing that?

MR. COE: The schedule for completing the containment SDP and some kind of a screening tool for shutdown significance is prior to implementation.

MR. POWERS: When you send these things, say for a shutdown finding, to the risk analyst, what does he do?

MR. COE: In the case of the shutdown issue we have at least one individual in the headquarters staff who has specialized in that area. Unfortunately it's only one individual, but that individual has access to shutdown models and has done this kind of analysis for some years now. In the area of containment, we have I believe referred that to our containment specialists. I can't give you any

specific examples unless anybody else can.

MR. POWERS: So they pull out these peer reviewed, well-recognized, published models and apply them?

MR. COE: Well, in terms of the shutdown case, I don't -- the models that are used were built on or based on or at least influenced by the models that the staff used when they were developing the basis for the shutdown rule a number of years ago. And that was a great deal of work that went into that, and that work and those models were carried forward and form the basis for what we do now in terms of shutdown risk analysis. And that's my understanding. And I have to say that's about the limit of my understanding of the shutdown models that we use.

MR. POWERS: I'm just trying to find out if you guys were hung out.

MR. COE: I don't believe that inspectors are hung out at any time when the basis for what either we're saying or the licensee is saying is made clear, and therefore becomes subject to challenge by anybody who could understand what the basis is.

The third bullet has to do with the development of the plant-specific phase two work sheets. We've undergone a process that in one year's time has produced a set of work sheets of a very simplified functional level PRA model on paper that is based on the only information that we really

had available with respect to the details of the licensees' own risk analysis, and that's the IPE. We started with that starting point with the acknowledgement that that was just a starting point, and we undertook a number of initiatives to improve that.

For the pilot plants we visited each site to get information and feedback from the licensee staffs regarding any changes that they made to their plant since the IPE or any analysis changes that they made that have resulted in improved risk insights. In addition, we felt that it was absolutely necessary to run a series of hypothetical test cases through our simplified model and test the results against the licensees' full detailed model.

We've done that at two plants and we're planning to do that at a third pilot plant. The first two pilot plants that we did that at revealed that there were certain core damage sequences that we were missing because of the high level nature of the tool that was developed. And it's becoming apparent that we need to do more work to add these important sequences that are generally very plant-specific, and have to do with the various inter-system dependencies that cannot or were not accounted for in the high level functional model that we've started with.

MR. POWERS: I got the impression from what I've read in the inspection manual draft that the screening

processes that you've developed have troubles when a finding affects more than one sequence.

MR. COE: Okay, I'm not aware of that particular concern because the process of the SDP in the reactor safety area requires you to very clearly and explicitly state your assumptions. And then as you work through the process you need to adhere to those assumptions.

If the assumptions of equipment unavailability or safety function degradation are carried through all of the work sheets, any time that safety function appears that is satisfied by a particular piece of equipment that's found to be degraded, that is intended to be assessed in that sequence, and there could be certainly very many sequences depending on what equipment is found to be degraded or unavailable.

What you might have heard is that there is a question about this SDP tool in the reactor safety area that is acknowledged that it will not add up the contribution to each of the individual sequences that might be affected by a particular equipment degradation. And the simple answer that we've arrived at in order to be able to utilize this tool is a simple counting rule. And obviously a computer-based PRA model will very carefully and rigorously add up every -- each contribution for every sequence that could be affected, and of course we're not at that level of

detail with this tool. I don't know if that addressed your question.

MR. BARTON: Well, all your doing is confirming, my understanding, it's a summation problem.

MR. COE: Well, it's a summation issue that we've tried to address by this simple counting rule. Again, we've tried to make the SDP tool a conservative tool such that we won't miss, or that will lead the inspector to think in areas that would lead the inspector to, you know, a risk-significant issue should one exist.

MR. APOSTOLAKIS: There's several times that the issue of PRA quality was raised, and statements like we're not there yet and so on were heard. I think again we should not turn this into a test of how good a PRA is, because this is not the issue. That's why I will come back to my earlier recommendation this morning. Perhaps in February you can present two columns to us on the slide, how are things done now, how things will be done in the future, what is better, how much information do you need. And I don't think you need a perfect PRA to do that. Because, you know, there is a danger of eventually, you know, turning off people and say, well, gee, he doesn't have a perfect PRA so he doesn't know what he's doing.

But that's not the issue here. You are trying to improve an existing process. So you know, you mentioned in

fact at the beginning of your talk that at least with this process now things are out on the table so people can look at the assumptions that were hidden earlier.

Now, that's a pretty good observation. Then of course the question of how well you are handling it within your process is a legitimate question. But that comes after you've convinced people that what you're doing now is at least as good, I mean what you plan to do is at least as good as what you're doing now.

MR. BARTON: George, how do you handle the issue that many of the IPEs are greater than ten years old, and a lot of them have not been updated, and -- how does that impact --

MR. APOSTOLAKIS: I think we should abandon this idea that they IPEs are what they are and they cannot be changed. I don't understand how anyone -- well, I can understand it actually. It's very nice to want the benefits of risk-informed regulation without risk information, I'd love to --

MR. BARTON: The question is, we haven't, they haven't been updated for ten years and yet we're going through with this process.

MR. APOSTOLAKIS: Then they should not have the benefit of this process. It's as simple as that. We keep raising the issue when it comes to, what is it, risk

informing ISI, risk informing IST, but the IPEs are no good, the IPEs -- well, okay, if your IPE is not very good, all these things are voluntary.

MR. COE: May licensees have utilized their current PRA models to comply with the maintenance rule. And we had a baseline maintenance rule inspection that went out and examined at least on some level the licensees' work in that area, to ensure that they had a model that represented the current plant configuration and that it was good enough for the use in the maintenance rule.

So I think it's true that --

MR. BARTON: That was basically the categorized systems, right?

MR. COE: To bend the systems into different -- into the risk significant and non-risk significant categories, and may licensees used that model as well to do the A4 evaluations, which are now becoming mandatory under the rule change.

I guess our thinking is, and so far what we've found is, is when we go visit the licensees most, at least to date, licensees have been keeping their models, at least attempting to keep them current on some level. But I return to the point that Dr. Apostolakis made that is so important here, and that is that once the assumptions are made clear to all parties, they're subject to question, to challenge or

to acceptance based on a much wider population of individuals who could assess them to that degree.

In the past, again, those assumptions were often hidden and required a risk analyst to be able to understand them, understand their influence and represent them somehow to communicate to the decision makers who are going to use those insights in order to make a decision. We've brought the whole risk framework down to or into the decision making process, and as has been noted in a couple of National Academy of Sciences studies, involving the participants, the stakeholders in a process of understanding risk insights is really the best way to communicate and to share that information and to gain acceptance in the final results or the outcome.

MR. APOSTOLAKIS: That gives me another opportunity to say something. When we say stakeholders, very often we mean the industry and other public groups that are interested in nuclear issues. And Professor Wallace has made the point which I agree with, that a very important stakeholder for us is the technical community. Let's not forget ourselves.

And again, what I presented earlier had that in mind in part, that, you know, there is a whole technical community out there of statisticians, of quality control engineers and so on who is very familiar with these methods.

And I think it's important for us to convince the technical communities that we know what we're doing, that we are using sound methods.

In fact I would say that these are sometimes the most important stakeholders, because if they declare that the agency is not using sound methods, then the other stakeholders will grab that and run with it.

So that really is not directly addressed to you, Doug, but it reminded me of that. Let's not forget those communities, the technical and scientific communities who are important stakeholders also for this agency.

MR. COE: Absolutely. Gareth, did you want to add anything?

MR. PERRY: Yeah, this is Gareth Perry from the staff. I just wanted to support one thing that George said, and that is that --

MR. APOSTOLAKIS: But you will not tell us which one.

MR. PERRY: I will tell you which one. And you can exclude the others if you like. And that is that we don't need perfect PRAs for the purpose that we're using them here. And the IPEs are probably pretty good for that, with one possible exemption which I'll get to in a minute.

Basically all we're drawing out of the IPEs for the SDP is basically the accident sequences at the

functional level and the configuration of the systems that are used to meet those functions. And at that level I think most of the IPEs are probably pretty good.

The one possible area where they could be weak, that's the area of the common cause initiators, where some IPEs did not do a very good thorough search for them. But primarily I think we'll catch the bulk of the significant accident sequences.

MR. POWERS: When the review of the IPEs was going, before the IPE insight document came out, the committee received a copy of a letter from Mr. Darby, I believe, in which he made a variety of, raised a variety of concerns about the IPEs including lack of fidelity to the plant, omission of critical accident sequences. The insights document goes through and collects a lot of insights, but there's a codicil in all of that that says, gee, and we don't understand why sister plants have such differences in risk. And they said well, we'll look at that in the future.

So now why again do you think the IPEs are so useful for this risk significance determination when there are these kinds of questions?

MR. PERRY: I think it's because what I said was we're not concentrating on the numerical results of the --

MR. POWERS: Well, I mean these things are getting

to the point of omitted accident sequences.

MR. PERRY: Yeah, and the ones that they are most like to have omitted are those that come from the common cause initiators, from the system --

MR. POWERS: I know for instance not in the IPEs, but in the IP triple Es I know that there's questions over whether plants have included sequences made possible by self-induced station blackout. I mean that's a fairly significant thing, it's not common cause -- I mean you can call that a common cause failure, but it's a fairly significant thing to omit.

MR. PERRY: Yeah, and I think we're not saying that this process is going to be perfect, but maybe I can throw the question back at you. If we're not going to use the IPEs and the licensee models, what are we going to use, because we don't have PRAs for all the plants. We're trying to make --

MR. POWERS: Well, at this point the question is, why don't we?

MR. PERRY: There's no PRA rule that I know of.

MR. POWERS: No, no, but I'm asking why the staff doesn't have PRAs of all the plants.

MR. COE: We're in the process of developing them. But that's a long-term project.

MR. PERRY: That's a very long-term project.

MR. POWERS: I guess I'm delighted to hear it.

MR. APOSTOLAKIS: If there is one part of the IPEs that is fairly reasonable I think what Gareth mentioned, because all really the engineers were asked to do was to put down in the event and fault form accident sequences. What can go wrong at the plant, which is something that people have thought about. I mean they didn't have to learn PRA really to do that. I mean event is a trivial thing.

MR. POWERS: Well, George, I mean it may be a trivial thing, and I'm certainly not familiar with all the IPEs, but I am very familiar with the letters that the committee got in which the statement was made that there were accident sequences left out.

MR. APOSTOLAKIS: And I'm sure there were, yeah, I mean 103 IPEs, there were probably some left out. But I think the accurate statement is whether there is any value anywhere in the IPEs, it's in the events, not the numbers.

MR. POWERS: Well, I guess I just don't understand why such a seminal thing, to which the NRC's management responded by saying that wasn't the point of the IPES, and they were unconcerned about it, but it seems like it's very concerning here if in a qualitative sense there are failure pathways that are not addressed. I mean it seems to me I would be bothered by that.

MR. APOSTOLAKIS: Sure. It depends on how

important these failure parts are and so on, or if they are known to the staff.

MR. COE: That's a good point, and it's one that I've thought about. And I can tell you that a year ago when this concept was first developed, the idea was to ask the inspector to conjure up the accident sequences that would be affected by the equipment that was found to be unavailable.

We very quickly realized that that was a great burden on the inspector, and we wouldn't be able to have a successful tool. So we generated the sequences for the inspector, but what's not -- what needs to be emphasized even more through out training and in our guidance is that the inspector is not limited to the accident sequences that are represented on this tool.

In fact a sharp inspector who can identify through whatever means is available other accident sequences that could be represented within this framework might very well be able to postulate that, you know, these sequences would contribute significantly to a core damage risk, based on some problem that was identified.

So one thing that I do want to stress is, is that the tool provides a framework and it offers up some, you know, as many of the sequences that we can identify that we believe could be influential. But it does not preclude the inspector from adding their own.

The last bullet on this page is the oversight panel, and the need that we observed in continuing that panel to ensure that there's consistency across regions and across time, and to ensure that the SDP philosophy is maintained and the guidance is appropriate, and I think we've been able to do that.

MR. BARTON: Is this panel's representation from all regions?

MR. COE: Yes, sir, it is. All the regions, research, office of enforcement, NRR, PRA branch, inspection programs branch.

Prior to implementation, there are a number of issues that came out of the public workshop last week. I've highlighted the important ones here that we need to address. Consistency of the SDP entry condition and the treatment of problematic identification resolution issues.

MR. POWERS: Is that what was abbreviated PIDR in the inspection manual?

MR. COE: Help me out here, Steve. If the context was corrective action programs, then the answer is yes. But this point was raised earlier, and so it goes to the consistency across all the different SDPs and the different cornerstones.

The next one down is also a consistency question, to ensure that the SDPs in all cornerstones have similar

importance for same color, and we mentioned that earlier.

A third bullet was a need to account for external event initiators in the reactor cornerstones SDP.

MR. POWERS: When you use that term, external event, you're talking about not fires, but other kinds of external events?

MR. COE: Actually we're trying to stay consistent with the IP triple E here, and we do include fire, flooding, seismic and weather. And I need to explain, because I see the puzzled look. We have a fire protection SDP which addresses the degradations of fire protection equipment, detection equipment, mitigation equipment and so forth. And the spacial issues that occur arise when fire protection equipment is degraded.

That feeds into the SDP as an input, as I mentioned earlier. What we don't have yet is a way to assess say, for instance, front line equipment with respect to their mitigation capability for events that are initiated by these external event initiators.

In other words, I might have a diesel generator, and we found this to be true in at least one case, where if it was taken out of service the risk change according to the licensee's model is influenced most by a fire event, event initiator.

MR. POWERS: That's very common.

MR. COE: Right, so we acknowledged that what we have presented so far in this tool is simply a listing of internal event initiators, and it omits or to date omits the external initiating event, initiators.

We don't feel that we can -- we know that we cannot completely resolve this issue before full implementation, if in fact the final resolution is the development of additional work sheets with these sequences on them. So what we're proposing, or I think what we will propose, is a screening tool, and this was one of the outcomes of the public workshop last week, that we can identify -- we can ask a series of screening questions that would identify the possibility that this particular finding that we're assessing could be influenced by external events. We haven't developed the tool yet, but it's on our to-do list. If there was a chance of being potentially influenced by external event initiators, we would expect that that would come to panel of analysts and other experts to assess its further significance.

The final bullet here is the need to improve the efficiency of phase three reviews, and also the industry was advocating defining an appeal process for the risk analysis review itself, so we have that under consideration.

On the next page, the need to document the process for revising, implementing and validating of training,

because we have SDPs that are still under development. We want to continue to do the kinds of things that we've done to date to ensure that we have a tool that's usable, useful and conservative.

We need to be more clear in our inspection reports, that we are not calling white findings -- or that our correspondence is when we say white that does not connote a more adverse situation than is intended. The reason for this comment from the industry is essentially that there are do date, because of the, at least the experience with the pilot program, so few whites that when they occur they stick out like a sore thumb. And draw a lot of attention. And yet we have tried to establish the white band as one in which we need to begin to be involved in a monitoring sort of -- in a further more involved monitoring way, but that it's still acceptable operation as long as the licensee is identifying and correcting the issues.

We also need to define the process for addressing those issues that are white or greater, but that still conform to the licensing basis, and this is a very important point. If we're going to utilize a risk metric to assess licensing performance, then it may not -- we may identify areas where performance is deficient which causes a significant enough risk increase to put us in a white range, perhaps, that may not involve a regulatory issue, and I

return to my very first example as a case in point.

What do we do? I mean if it was high enough we might consider back-fit, under the back-fit rule. If it's not, what do we do? And that's an issue that's on the table that we have to decide.

And finally, I mentioned the fire protection SDP, and we have had comments that it is quite complex, more --

MR. POWERS: It's very clever, except there's one feature of it that really puzzles me, and that's the fire ignition frequency. In the formulas, I believe it's the base ten logarithm of the frequency that's entered into the formulas, and not the fire frequency itself. Is that correct?

MR. COE: If it's the -- you mean if it's the exponent of the base ten fire frequency?

MR. POWERS: It's the base ten logarithm of the fire ignition frequency, actually.

MR. COE: Yes, I believe that's correct.

MR. POWERS: It would be useful to explain that in the document. Because you come in and you see these frequencies and they're trivial compared to all the other numbers, so everything is dominated by the mitigation capabilities, and not by the initiation capabilities.

MR. COE: That's a good point, and there is a lot of clarification that we need to make, I think, to the fire

protection SDP.

MR. POWERS: Yes, and there are many other things in here, in this draft manual, that need some help. For instance, inhabitability definitions need to be looked at again. And there are a variety of things, tables have different units than the text, and things of that nature make it difficult to follow it.

MR. COE: We do have some work to do, we know that. I'll take down your comments, appreciate that.

That's all I had to talk about unless there are any further questions. Mike?

MR. JOHNSON: Yeah, I just had a couple of words I wanted to say in closing, if there are no questions. I wanted to remind us, take us back to a question that you all asked when we started the presentation and that went something like, you know, how do you know the process is better, how do you know it's good enough to go to implementation in April, so on and so forth, things along that line.

And we've talked, we've hit various pieces of it, and I wanted to just say it succinctly at the end, as succinctly as I possibly can in two minutes.

You know, we've made changes, a bunch of changes on a bunch of spectrums with respect to revising our oversight process. Some of those changes have really just

been evolutionary sorts of changes. We have, for example on the baseline, as Tom indicated and we agree, we are doing essentially the level of inspection that we do today in the core program for plants that are not in the pilot program. We have approximately the same level of inspection. We look at approximately the same kinds of things in today's core program.

What we've done in the revised oversight process is we've risk-informed it; we've focused in on the sample and the frequency; we've taken an effort to make sure that we are as clear as possible for inspectors with respect to what the thresholds are that they ought to document; and so we think that means, that represents an improvement on today's core program with respect to what the risk-informed baseline program offers.

If you look at PIs, and the way we use PIs in the existing process after much chiding from the Commission, after an effort by Arthur Anderson and some of the previous briefings that we've had before you all in previous years where we've talked about relying more on PIs in terms of trying to figure out where the performance of plants stands, the revised reactor oversight process has made an effort to tie in performance indicators to those areas that we think are important, that is the cornerstones, we've done that. We think we have more information about the performance of

plants. Based on those performance indicators along with the inspection, that robust inspection program that we've had all along, we think that represents an improvement over today's process.

We talked briefly about the significance determination process. There's much to be concerned with with the significance determination process. We've talked about PRA; we've talked about the fidelity of IPEs and the efforts, and should licensees do something to keep them living, and all the weaknesses and vulnerabilities. But if you think about what the SDP has to do, it simply has to enable an inspector to figure out whether things that they find in the field are important. The important ones for which we'll give them additional help, from the unimportant ones. And if you look at today's program, we leave that to chance, to be quite honest with you, we leave that to the abilities of the inspector and their branch chiefs and their well-intentioned management. The SDP represents a structured approach to provide the ability to do that sort of distinction, if you will, between what is significant and what is not significant.

I would suggest that the primary value of the SDP is not even phase two and beyond, the phase two screening tool, the plant-specific work sheets. I would suggest that the value, the real value of the SDP is in the initial

screening tool, because in days gone by that's where we spent a lot of our effort in terms of doing additional follow-up and writing things in inspection reports.

And so we believe again, even with it's flaws, even with the holes in the SDP, even with the clear vulnerabilities, we talked about external events, that the SDP represents a meaningful improvement over today's processes in terms of enabling us to figure out and inspectors to figure out what is significant and separate that from what is not significant.

There's a revolutionary change in the revised reactor oversight process, and that deals with this notion of thresholds, that there is a licensee response plan. We talked today about the fact that cross-cutting issues, there is a level of discomfort about the cross-cutting issues. That's sort of revolutionary. Today we consider cross-cutting issues. We can write about at a very low threshold those cross-cutting issues. The revised reactor oversight process says it's going to be reflected in issues and PIs, the thresholds, and yes, there is a challenge we need to continue to work on that we've talked about, the fact that we will continue to work on it, that's a revolutionary change.

But I would submit that our treatment of cross-cutting issues as proposed in the revised reactor

oversight process is an improvement over what we have in today's process. And so the sum of what we've presented, and based on what we've learned from the pilot is, we believe that in the spectrum of areas that we've talked about, again noting the fact that there are issues that need to be worked on between now and April, and there are issues that we need to work on in the longer term, the bottom line is we believe that the process, the revised reactor oversight process is ready or will be ready on April 2nd for implementation, the startup of initial implementation, and that it represents a meaningful improvement over the existing process.

And so I just want to take us back there, when you look at what is wrong with the revised reactor oversight process, I want to make sure that we're mindful that we compare it to not what is perfect but what it is that we have today. And I think when you do that, we're on the right track.

MR. BARTON: Well, after that sales pitch I don't know what to say, except I just warn you, I think this committee is concerned and I think where you're headed is an improvement over the existing process. I think where we're coming from was, you know, are you sure it's really ready to go implement it in 100 plants, because if it's not, and you've got the stakeholder comments and you can see where

there's a lot of uneasiness, there's a lot of doubt whether this system is really better than the existing system.

And when you roll something out, it better be pretty darn close to what you want the new system to be, because if you lose credibility in the first six months or nine months or first year of this new process, you've really dug yourself a hole. And then I don't know how you get out of that one, so I'm telling you, you'd better --

MR. POWERS: The problem is the corrections now take place in a fish bowl.

MR. BARTON: That's right. So you'd better be sure the process you go out with is pretty solid, it does have the capability to identify what is risk-significant, and that, you know, you don't have utilities that have major problems within the next year or so with this new process in place and everybody saying to you, how come you didn't now it was happening. That's what we're concerned about.

MR. JOHNSON: I understand.

MR. BARTON: And we're sold that you're really at that point, and that's why we need to talk some more in February.

MR. JOHNSON: And in February 3rd, I just want to tell you that what we think you told us to tell you on February 3rd is to address George's -- to come back with a list of major assumptions, talk about what the current

program provides and how we would handle it in the revised reactor oversight process, we'll certainly do that. There was a question about cross-cutting issues that we're going to come and spend some more time on on the 3rd of February. And was there something else, I think --

MR. BARTON: I've made a list of them that I think before we wrap this session up -- and I haven't gotten input from all the members -- but I'm going to ask all the members for input as to what they think we need to hear and discuss with you on February 3rd.

But between what George came up with and some notes that I've taken, there's probably six or seven issues. You hit three or four of them right then there. I don't have input from the other members yet, but before the session wraps up today you'll know what we're going to ask you to come back and address in February.

MR. POWERS: You promised to address what you do in these screening processes when a finding affects two things. For instance, if it affects both radiation safety and some of the reactor power cornerstones, which it presumably could.

MR. JOHNSON: Thank you.

MR. BARTON: Thank you. Mr. Riccio?

MR. RICCIO: Once again, thank you for taking the time to hear from me. I'll try to make this short and

sweet. One of the reasons I like coming here is because I hear most of the questions I was going to raise being raised by you gentlemen already.

MR. BARTON: That does help, doesn't it.

MR. RICCIO: It really does, yeah. Unfortunately I don't hear that at the Commission. There were a few things that I think really need addressing. I think Dr. Apostolakis nailed it right on the head when he said basically that we are -- well, actually, I'll paraphrase. Basically I think we're institutionalizing deviants. We're basically measuring to the high water level of where the poor performance was, and then saying if you don't reach that again you're okay. I think the thresholds have to be addressed.

There are several things, and actually there's been a nice giant elephant in this room since this morning that no one has really brought up, and I guess that's why I'm here. I saw the members passing around a copy of Inside NRC, and I will say that the public does think that there has been an improvement in the process in that the data will be available in a meaningful time frame, where we then can then take action to try to bring upon some regulatory action by the agency.

And I will read it. According to an article in the January 17th Inside NRC, approximately 45 percent of NRC

regional employees who participated in an internal NRC survey said they did not believe the agency's new reactor oversight process would catch slipping performance before significant reductions in safety margins.

MR. BARTON: That's one of the points I've got on my list for the staff to address in February, is that issue that's out there in the regions that was written up in the recent Inside NRC. Because we don't understand it either. We'd like the staff to --

MR. RICCIO: What's a little more damning I think is the fact that only 19 percent of the respondents thought that they actually would catch problems in performance prior to there being a significant margin of safety reduction.

MR. BARTON: There's some items in there that are kind of bothersome.

MR. RICCIO: I would recommend looking at the second day, I believe it's November 16th of the pilot plan evaluation panel, where they brought in some of the folks from the regions. That's where they discuss a lot of the problems with reporting requirements that happened at Quad Cities. Basically that's where you had a lot of the belief that -- they weren't positive that they would get accurate reporting because they hadn't received any accurate reporting yet.

The problem from a public perspective is that the

comment period on the proposed process closed before we even had any valid data. And actually we had it extended, and it still closed before we had any valid data to base any judgment upon. And in fact when more data did roll in, it actually changed some of the yellow/white indicators.

There were some issues raised during the workshops and the pilot evaluation panel. There were some discussions about changing or being able to deviate from the action matrix. This is what got the agency in trouble before. If you have a matrix you damn well better stick to it, because the problem in the past wasn't that you didn't have the data; AEOD did a very good job of compiling data, and the data was there for the senior managers to determine whether or not a plant was performing well. They just failed to act upon it.

And so when we see your managers still have the authority and the ability to override decisions that are made at the regional level, we're going to be right back where we were with Millstone and Salem and other plants.

And I'll just quickly close this up with one more thing I've been harping on about the indicators. And like I said, I've participated in the pilot evaluation panel, I've participated in the workshops. And I would have to say that as a member of the public, I'm probably more familiar with PIs than anyone else.

NRC went out and spent an exorbitant amount of money to pay Arthur Anderson to take a look at this process. Arthur Anderson came back and said, you need an economic indicator, because under competition the threat exists that reactors in their desire to cut costs will cut safety.

I've been harping on this, and there seems to be little or no indication that we're ever going to have an economic indicator. The agency was made aware of this because of the problems that existed at the Commonwealth Edison plants, so it's beyond just Arthur Anderson. The Commission has already recognized this, and they failed to take any action on it.

One last thing. There seems to be some indication that the reason we have all these lovely work sheets which really aren't scrutable --

MR. BARTON: Are you talking about the SDP work sheets?

MR. RICCIO: Yeah. The indication is, the reason we have the work sheets is because the NRC was unable to get a repeatable determination out of the process. And now I'm starting to see why Mr. Powers has been talking about risk-based stuff as being regulation by religion. If you can't repeat the process, that's not science.

I understand the work sheets are there to try to help people work through and achieve at a repeatable

process, but it seems to me that we haven't achieved that yet. Is the process ready to be rolled out, is it ready for prime time? I don't think you have a lot of choice. Is it an improvement over the previous process? In some regards yes, in terms of the timeliness of the data, in some regards no.

I feel what we really have here, and I agree with Mike, there has been a revolutionary change; the revolutionary change to my mind is that this new process regulates the regulator, rather than the industry. These thresholds are set to say when the NRC may do something.

If you go back and read the Atomic Energy Act, they got the authority to do anything they damn well please so they can justify it on the basis of public health and safety. I understand that we're trying to marry these two, but my problem is that we're basically putting handcuffs on our regulators, and I don't really feel that's an appropriate means to regulate this industry.

I thank you again for your time and consideration. I wish I could figure out some way to get myself down to Clearwater, but I don't think that's going to happen.

MR. BARTON: You can either drive or take an airplane, you know. There's an airport near there.

MR. RICCIO: I don't think I can get my organization to pay me to come down to Clearwater. If you

have any questions, I'd be happy to answer them.

MR. BARTON: Thank you for your insights.

MR. POWERS: Very good points.

MR. RICCIO: Thank you.

MR. BARTON: All right, do you guys have anything else to wrap up with, or are you done?

AN UNIDENTIFIED STAFF MEMBER: We can only get in more trouble, and we'll be glad to come back in February. So we'll see you in February to be pretty specific to the question. The more specific your questions can be, the more responsive we're going to be able to be on the whole avenue.

One point, success in this program is, there's a body of indicators in inspection and information that's going to flow in. Will in fact that cause us to shift from an indicative mode to a diagnostic mode before margin is eroded at any one facility; if we shift from an indicative mode to a diagnostic mode before margins eroded, then we've been successful. Which recognizes that we shouldn't get too hung up on the yellow and the red. The fact of the matter is, once a facility is off normal, which is the green/white threshold, which is not a risk threshold necessarily, once they're off normal we become more diagnostic, and it's interesting that we had no discussion today of what does that mean.

In fact the staff has put a lot of work into

trying to articulate what more diagnostic means, because that's when you start digging in to looking at the cross-cutting issues, because now you're on a different scale.

MR. BARTON: We'll discuss that in February, then.

THE UNIDENTIFIED STAFF MEMBER: I'm raising it because that to me is just a very, very important point, and we do go onto a different scale. And then the SDP becomes really important, because now the indicators aren't driving your additional actions once you get diagnostic. The actual inspection results in the additional observations start driving the agency.

MR. BARTON: I think we'd like to talk about that.

THE UNIDENTIFIED STAFF MEMBER: Yeah, and we didn't get to do it today, and this has been --

MR. BONACA: This is an essential point in my concern, and I would like you to think about this particular scenario, where you have all the performance indicators being green or simply no comment for the plant. And now you have some of the other performance indicators which are softer and we have asked for, and you said you don't need to put them in, and you have significant insight for those, and now try to address the point that Mr. Riccio made about you have your hands tied by indicators that show good performance. And it's very hard to bring up other insights

from the corrective action program or whatever when you have indicators that are saying this plant is fine.

Now, this is not a unique case. It's an experience which as been common also for the INPO indicators for a number of years. Power plants oftentimes have all these good indicators and yet they have problems, and it was very hard internally for the plants to address it with management, because they were all green.

THE UNIDENTIFIED STAFF MEMBER: Yeah, and we'll be happy to cover that, because that's the other shoe is, there is still a degree of freedom to the inspector even within the risk-conformed baseline to funnel his efforts to exactly what information in what we're now calling a plant status lump of time, to focus his efforts on that. Which means the indicators get set aside, you're looking for a white finding from inspection, which then has the same impact as a white finding from a performance indicator. And again, it kicks us into the reactive mode.

Now, we need to kick into the reactive mode at the right threshold as in integral whole. And we think we'd like to discuss that in February, because it could become very integral to the whole thing.

MR. BARTON: At this point I'd like to go around the table and see if any individual members have got issues that they feel need to be clarified, or something we didn't

hear today that you'd like to hear in February while the staff is here, or at least let me and Mike know, we'll get a list of questions to the staff early next week.

But for now, let's go around the table. Bob?

MR. UHRIG: I do have one question. I guess I would like to know what has been given up by going to this process from the previous process. I remember a conference in Amelia Island, there was at least one vice president of a utility who basically said his main concern was that there was no longer the intense drive to improve things. It was rather to meet a minimum level, and that's an issue that might be discussed.

MR. BARTON: Bob Seale?

MR. SEALE: Well, I mentioned earlier my concern for the question of the internal constituents, particularly the regional people, the inspection people. And I guess that's the main thing. I'll also be interested to hear what you have to say about beyond the first level, the reds and the yellows.

MR. BARTON: Mario?

MR. BONACA: I already voiced my --

MR. BARTON: Okay, so we've got it captured. George?

MR. APOSTOLAKIS: Well, I already said what I would like to see.

MR. BARTON: And I've got it captured. This is anything else you want. I think we've got it captured. Jack?

MR. SIEBER: I think I stated everything I wanted to, but I still remain concerned about cross-cutting issues.

MR. BARTON: And we're going to have the staff to have further discussion with that issue. Dr. Kress?

MR. KRESS: I'm not sure whether these have been covered or not, so I'll throw them out, and if they have then duplication won't matter. One of my issues is, suppose we go ahead with this program and you wanted to monitor it on the long term to decide whether it's being fruitful, whether it's valid or not. What criteria will you use to judge its success in the long term. That's one. What will you look at to see whether this is successful or not. And that's question number one.

Number two, I agree, this is just repeating, I agree with George that we ought to address this issue of plant-specific and where the thresholds are set. I would like to have a little more discussion on why we think the IPEs are sufficient to use for this. I think that was covered already. I would like to have a little more justification for throwing away the safety system actuation as a performance indicator.

MR. BARTON: That's a good one.

MR. KRESS: I'm not sure we had that on the list or not.

MR. BARTON: No, we talked about it earlier but I didn't capture it, so it's a good thing you brought it up.

MR. KRESS: Well, I guess that's all I would add. That's all I had in addition to the others.

MR. BARTON: All right, the plan then would be we'll get this list of questions, because I've got about six or seven of them here, I'll give them to Mike, that we will get to the staff early next week.

The plan will be in February to have further discussion with the staff and industry at the full committee meeting, and depending upon the deliberations and what we hear there, we may issue a letter to the EDO addressing our concerns, whatever we have at that time.

The staff told us this morning that we will get the Commission paper sometime around the 16th of February, which means -- and we have an SRM to respond to the Commission with a report from the full committee by the middle of March, so I think as much as this may be a little painful, we'll probably have to have some kind of update at the March ACRS meeting also, at which time we'll prepare our report to the Commission on this process.

Any other questions or comments from any of the members or the staff, the public? If not, then this

subcommittee meeting is adjourned.

[Whereupon, at 2:35 p.m., the meeting was concluded.]

REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

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Rocky Hopchas

Rocky Hopchas
Official Reporter
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