Official Transcript of Proceedings ACRST-3155

NUCLEAR REGULATORY COMMISSION

ORIGINAL

Title: Advisory Committee on Reactor Safeguards
Plant Operations Subcommittee

PROCESS USING ADAMS
TEMPLATE: ACRS/ACNW-005

Docket Number: (not applicable)

Location: Rockville, Maryland

Date: Wednesday, May 9, 2001

Work Order No.: NRC-203 Pages 1-257

NEAL R. GROSS AND CO., INC.
Court Reporters and Transcribers
1323 Rhode Island Avenue, N.W.
Washington, D.C. 20005
(202) 234-4433

TR04

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

+ + + + +

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

PLANT OPERATIONS SUBCOMMITTEE

+ + + + +

WEDNESDAY,

MAY 9, 2001

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Subcommittee met at the Nuclear Regulatory Commission, Two White Flint North, Room T233, 11545 Rockville Pike, at 8:30 a.m., John D. Sieber, Chairman, presiding.

COMMITTEE MEMBERS

JOHN D. SIEBER, CHAIRMAN

GEORGE E. APOSTOLAKIS, MEMBER

MARIO V. BONACA, MEMBER

THOMAS S. KRESS, MEMBER

GRAHAM M. LEITCH, MEMBER

WILLIAM J. SHACK, MEMBER

ROBERT E. UHRIG, MEMBER

GRAHAM M. WALLIS, MEMBER

MAGGALEAN W. WESTON, STAFF ENGINEER

STAFF PRESENT:

DAVID ALLSOPP, IIPB/DIPM

TOM BOYCE, NRR/DIPM/IIPB

EUGENE COBEY, NRR/DIPM

DOUG COE, NRR

A. EL-BANIONI, NRR/DIPM/SPSB

JOHN HANNON, SPLB/DSSA

DON HICKMAN, IIPB/DIPM

J.S. HYSLOP, NRR/SPSB

JEFF JACKSON

MICHAEL JOHNSON, IIPB/DIPM

PETER KOLTAY, NRC DIPM

ALAN MADISON, NRR/IIPB

GARETT PARRY, NRR/DSSA

PHIL QUALLS, NRR/DSSA/SPLB

MARK SALLEY, NRR/DSSA/SPLB

MARK STORIUM, NRR/DIPM

STEVEN STEIN, NRR/DIPM

JOHN THOMPSON, NRR/DIPM

LEON WHITNEY, NRR/DIPM/IIPB

PETER WILSON SPSB/DSSA

SEE-MENG WONG, NRR/ADIP

A-G-E-N-D-A

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

(8:30 a.m.)

CHAIRMAN SIEBER: The meeting will now come to order. This is a meeting of the ACRS Subcommittee on Plant Operations. I am John Sieber, Chairman of the Subcommittee.

ACRS members in attendance are Dr. George Apostolakis, Dr. Mario Bonaca, Dr. Peter Ford, Dr. Thomas Kress, Mr. Graham Leitch, Dr. William Shack, and Dr. Robert Uhrig.

The purpose of this meeting is to discuss the reactor oversight process, which today will include the significance determination process and performance indicators. The action matrix will be discussed at our next meeting in July.

We had our last subcommittee meeting with the staff on oversight processes on December 6th of last year. Maggalean W. Weston 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 published in *The Federal Register* on April 16th, 2001.

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 that they can be readily heard. I also request that all speakers please use the microphones to aid the court reporter.

We have received no written comments from members of the public regarding today's meeting. I think we should now proceed with the meeting. Mr. Mike Johnson of NRR will introduce the topic and the presenters. Mike?

MR. JOHNSON: Good morning. Thank you. I am -- my name is Michael Johnson from the Inspection Program Branch. I'm joined at the table by Doug Coe, who is also from the Inspection Program Branch. He is the Chief of the Inspection Program Section.

And as was indicated, we have a variety of topics to talk about this afternoon -- I'm sorry, this morning, and spilling over into this afternoon. And there will be a bunch of additional participants, including representatives from the Plant Systems Branch.

I've got John Hannon, who is the Branch Chief of the Plant Systems Branch; J.S. Hyslop and Mark Salley, who will be talking about specific issues

of interest to the ACRS and the significance determination process, and other participants.

So, you'll see participants cycle in and out for efficiency purposes throughout the presentation this morning and, again, into this afternoon.

As was indicated, today's briefing really does focus on the SDP and the performance indicators. This is, again, a continuation in a series of presentations that we've had, the last one being in December where we specifically talked about issues relating to the SDP and performance indicators.

We appreciate the opportunity to talk to -- talk to ACRS on an ongoing basis on these and other issues. We have, in the past, benefited from these exchanged.

And, in fact, in preparing for today's presentation, I read over the transcript from our last meeting, and we talked about many of the issues, I think, that are on ACRS's mind with respect to the ROP. And we'll continue dialogue on those very issues today.

So, it's been a fruitful -- a fruitful exchange for us. And we know that this fits into your schedule -- this meeting today fits into your

schedule, along with a presentation, I guess, in July -- Mag, is that correct --

MR. JOHNSON: Yes.

MR. JOHNSON: -- to talk about the action matrix and getting ready for September's session with the committee in preparation for your letter to the Commission on the ROP. And so, we're happy, again, to be in front of the ACRS to talk about these various issues.

In preparing for today's presentation, we provided background materials. One of the primary background materials are SECY-99-007, or excerpts from SECY-99-007, that provide a lot of the basic information for the concept of the ROP. And we've talked about many of those issues many times with the ACRS.

In addition, Inspection Manual Chapter 0609, which is our manual chapter that talks about the significance determination process, was provided. And we'll spend, again, a good portion of what we do today talking about and responding to questions on the significance determination process.

We were able to work closely with Mag, I think, to understand what the issues were that you wanted us to cover. Hopefully, we've been able to

factor those into our presentation. And I know to the extent we haven't been able to, you won't be shy in getting us to address the issues that you care about.

Today -- next slide, Doug -- we're going to really focus on four, specific things. First of all, I want to just say a few words about the initial implementation status, and that is, that overall result of the ROP to date, to bring you up to speed with respect to where we are.

Then, after that, we will get directly, again, into the significance determination process. We've got a series of examples that we want to go through with you to help you better understand the significance determination process and how it is being implemented.

And in addition to some examples in the reactor safety area that Doug is going to talk about, we specifically will cover some fire protection -- the area of fire protection, the fire protection SDP, and an example in that area, again to help the ACRS better understand how we're implementing the significance determination process.

Following that, we have a topic on performance indicators, again to respond to your questions on performance indicators and the issues,

again to continue the dialogue on issues that we've talked about with respect to performance indicators and respond to your questions.

And finally, we want to wrap up with some -- we call them selective issues, but they really are overall topics, if you will, that don't relate necessarily to the individual topics that we would have hit in getting there; so, again, an agenda, I think, that responds to the questions that we know you're interested in.

Next slide. Let me just say a couple of words about the overall results. We are -- we have wrapped up the first year -- or, I should say, are wrapping up the first year of implementation of the ROP.

Last week, as a matter of fact, Regions 2 and Regions 3 -- Region 3 conducted their end-of-cycle reviews. The end-of-cycle is the review that happens at the end of the assessment year in which the regions look at what has gone on in that year with respect to the performance indicator results, the trip thresholds, and the inspection findings of the trip thresholds in terms of looking at, again, what actions the Agency took in accordance with the action matrix and getting ready for issuance of the annual

assessment letter that provides to the licensees and to other external stakeholders the results of the oversight process for that particular year.

Following the end-of-cycle, there will be an Agency action review meeting. And just to put this -- the Agency action review meeting in context, think of the Agency action review meeting as a revamped senior management meeting.

Again, it is the meeting of senior managers somewhat different from the previous process in that this meeting really is an opportunity for senior managers to review and provide an affirmation, if you will, of the results of the ROP with respect to plants that ended up with significant performance problems, and that means, for us, plants that ended up in the action matrix in the multiple repetitive degradative cornerstone. So, these are plants that have really had some performance issues.

But secondly, in the Agency action review meeting, we talk about industry trends, and what have industry -- what has industry trends told us about whether we've been able to maintain safety.

And finally, we look at self-assessment results -- the results of self-assessment for the first year of implementation, and what are the lessons

that we've learned, and what is the feedback that we've gotten from stakeholders, and what changes do we need to make to the process based on those? So, that's where we are in the process.

MR. LEITCH: Could you say again what you call that meeting?

MR. JOHNSON: That is called the Agency action review meeting, the AARM, the Agency action review meeting.

MR. LEITCH: Thank you.

MR. JOHNSON: We believe that we've substantially exercised the ROP during the first year of implementation. If you were to look at the action matrix in terms of where plants fall in the various columns of the action matrix, we had a number of plants, a majority of plants, in the licensing response band.

We had plants that ended up in in the regulatory response band. We ended up having plants that were at degradative cornerstones. That is a further degradation of performance. And in fact, we had a plant -- a plant IPS, Indian Point 2, that ended up in the multiple repetitive degradative cornerstone.

That has enabled us, because of those cross thresholds, be able to exercise all of the

supplemental inspection procedures. We've been able to do all of -- to do our event follow-up procedures. I almost said "all of our event follow-up procedures," but I stopped myself, Doug, because we didn't have an IIT, thank goodness.

But we've got -- we've had a wide range of performance, and therefore, a number of opportunities to exercise many aspects of the ROP. And we think that's been a good thing.

We've made several significant changes based on lessons learned to date where we found what we believe were flaws that needed to be corrected that we couldn't wait on.

But our intent in going into the first year of initial implementation was to try to maintain the process stable, if you will. And so, we held off making wholesale changes until the end of the year where we could do a more considered self-assessment on what changes we needed to make.

And you'll see those changes talked about -- being talked about in a Commission paper at the end of the year. And again, this will be talked about at the Agency action review meeting, and we'll brief the Commission on those results in July. 1

DR. APOSTOLAKIS: But you'll talk about

them today as well?

MR. JOHNSON: I would suggest that we talk about them maybe in the meeting in July. We'll be closer -- we'll have a better opportunity to have done the roll-up of self-assessment activities.

We'll be closer to the Commission briefing, and we can give you a better idea of what we'll be telling the Commission.

Finally, we believe that -- and we'll -- I'll just remind you that we've talked all along about establishing some objectives for the ROP. And you're well aware of those because you helped us form those.

We wanted this process to be more objective, for example, to be more understandable and predictable. And we think that the process has, in fact -- is more objective, and more understandable, and more predictable, and the other attributes that we're measuring with respect to the fundamental objectives of the process.

And we base that on some of the data that we've collected with respect to the matrix. We base that on the feedback that we've gotten from internal stakeholders, and the feedback that we've gotten from external stakeholders.

We do continue, again, to collect data on

the ROP. We have a set of matrix, if you will, with criteria associated with those matrix in some cases to enable us to draw some objective conclusions with respect to how well the ROP is meeting its intended goals.

And we'll continue to collect that data and make decisions based on the effectiveness of the ROP and to indicate -- implement changes based on what that tells us as we go forward.

So, those are the overall results of the first year of implementation. And again, we think we've made a fair amount of progress with respect to implementing the ROP.

DR. APOSTOLAKIS: Now, it says there on the fourth bullet, "successful demonstration." I wonder what the measures of success were. I mean, what -- what could have happened that would have you made you declare it unsuccessful?

MR. JOHNSON: We have -- that's a good question. We have -- but it's not one, George, I think you want me to answer today because that would take us -- and I think the question goes to the self-assessment process and the matrix that we've established, and measure the goals of the ROP.

We have established those matrix. For

example, with respect to the process being predictable, we measure things like did we -- did we implement the procedures in accordance with the criteria established for them?

So, there are various criteria we've established, various matrix to identify each of the various goals. And what I would suggest, again, is that in that briefing that we do in the next meeting in July, that we come back and talk to you a little bit about what those self-assessment measures have told us about the various --

DR. APOSTOLAKIS: But the ultimate goal of this is to make decisions. So, without getting into details, have you made any decisions using this process that would have been different if the old one had been followed?

MR. JOHNSON: Have we --

DR. APOSTOLAKIS: I mean, is the new process leading to more rational decisions, or better decisions, or decisions that make the stakeholders better -- I mean, happier?

MR. JOHNSON: Yeah, we --

DR. APOSTOLAKIS: Isn't that the ultimate criteria?

MR. JOHNSON: Yeah. In general, we have

a -- we have a good sense of comfort with respect to the ROP in its overall ability to achieve the objectives that we set out for it.

So now, all I'm suggesting is I can't -- I can't show you the matrix that enabled us to get there. In fact, we're still evaluating those matrix because, again, the year just ended.

But yeah, we believe that the process is -- has been more objective, is more understandable. We've gotten specific feedback that says that the process is more understandable.

The external stakeholders tell us the process is more understandable. The internal stakeholders tell us the process is more understandable.

So, yeah, we believe that the process, again, at a high level, achieves its objectives. Now, I've got to caveat that -- and that's why I want to have this conversation again in July -- with several things.

First of all, it is early. We're still analyzing the data. Secondly, for some of the matrix, because the matrix are new, it's hard to make a call on things like -- one of the things that we're going to measure, for example, with respect to measuring

whether the program meets the NRC's performance objectives, is does the program increase or enhance public confidence?

Well, that's a tough measure. We've gotten some ways that we're going to try to measure that. We've gotten some early bench-marking results, if you will. But it will take a year, or a couple of years maybe, before we can have some strong conclusions with respect to whether it does that.

So, again, what I'd like to do is to come back to you and talk about the self-assessment process a little bit and the results.

CHAIRMAN SIEBER: I think one of the aspects that licensees look at, which I think is important and you ought to evaluated, is whether the licensees perceive the process as being fair.

You know, there were some times, years ago, that perhaps some enforcement action was interpreted as not as fair as it could have been.

And it seems to me, with the structure that you've developed here, that the chances and the opportunities to be fair are much enhanced over what they have been in the past. But I think you ought to look at that process.

And I guess another question that I have,

which is really a follow-on to George's question, is are you making more decisions or less decisions, given the state of the industry, with the new process, as opposed to what you would have done under the old process?

MR. JOHNSON: Okay.

CHAIRMAN SIEBER: Go ahead.

MR. JOHNSON: We might -- we might actually get into -- give you a better sense as to whether we're making more decisions or taking more actions as we go through -- as you see the SDP exercise, for example. We'll tell you how we come out on issues.

And we'll try to -- we'll try to give you a sense for what -- how the -- how the old program might have dealt with those issues, to the extent we're able to.

But in general, we've established, in this ROP, what is a -- what is called a licensee response band. And that means that we've come to the recognition and the realization that there is a level of performance and there is a level of performance degradation at a very, very low level that really falls within the responsibility of the licensee to correct.

So, and that's different from the old process. In the old process, we would have engaged, perhaps, on issues that fell within that level.

CHAIRMAN SIEBER: That's right.

MR. JOHNSON: Under this process, we set aside those that are in the licensee response band. So, intuitively, the answer is that we make -- there are fewer interactions.

DR. FORD: Mike, I have an even more basic question. I'm new to this, and I'm trying to learn. Can you tell me, in two sentences or three sentences, basically what this is all about? Are you trying to be proactive? Are you trying to reduce bureaucracy? What are you trying to do?

MR. JOHNSON: Certainly, I'll try in two sentences, and, Doug, kick me if I get much beyond two minutes. The revised reactor oversight process, the reactive oversight process, grew out of an effort that we took on really early 1998, late 1997, out of some concerns that the Commission had really with respect to how we were assessing the performance of plants and deciding what actions we were going to take.

And at that time, we had a number of processes, a number of different processes, in place. The Commission was concerned about subjective they

were. The Commission had a very strong sense that -- that subjectivity shouldn't be central to our assessment process; that we ought to be objective as possible.

For example, the Commission was concerned about the fact that we had -- we could be -- we could sense conflicting and sometimes overlapping messages through our various assessment processes.

And so, the Commission directed the Staff, or we got permission from the Commission, to do an integrated review of our overall assessment processes and to develop a replacement.

Around the mid-1998 time frame, we were talking to ACRS. We were talking to external stakeholders about that process. And we got feedback on that activity. And the nature of that feedback was still very critical, not just on where we were, but with where we were trying to go with respect that particular initiative.

That caused us to step back, to take a fresh look, and that fresh look became what is the reactor oversight process.

And in essence, what this reactor oversight process is, is it's a -- it's a process that starts with -- it's a hierarchical process that starts

with the notion that there's a mission. It identifies strategic performance areas that have to be satisfied in order for the Agency to achieve its mission.

And then, we went and identified individual cornerstones within those strategic performance areas, the cornerstones being the key, essential information that if we're able to satisfy ourselves with respect to the performance plans, we can have confidence that our overall mission is being achieved.

And so, that's what the reactor -- how the reactor oversight process is structured. Now, within each of the cornerstones, we have performance indicators that -- that is, objective things that we can measure about the performance of the plant, that give us information about the performance of the plant.

We also have inspections because we recognize that performance indicators don't -- cannot possibly tell us everything that we need to know with respect to the individual cornerstones.

And we take those inputs from the performance indicators and from the inspections and we apply for thresholds to decide whether we ought to take, as the regulators, some increased regulatory

action in accordance with an action matrix, a structured matrix that enables us to meter out, if you will, what our response ought to be based on the performance of the plants.

And we take actions based on, again, the performance of the plant. So, that -- that's what we -- that's what we're about with respect to the ROP.

Now, today, we're going to talk about performance indicators, so you'll get a better sense of what that -- how they work. We're also going to talk about the significance determination process.

It turns out, when you do inspections, you've got to have a way, in this objective process, to be able to look at the findings from inspections to decide whether they're significant and warrant us taking some increased action, if you will, or whether they're minor, minor in nature.

And that's what the significance determination process does. So, you'll get a sense for how that works also today.

MR. LEITCH: Mike, I would just say, my perception is, too, that -- and just to amplify what you said, is that this was an effort to make the regulatory process more predictable, and to give licensees an early warning of regulatory issues.

I think, in the -- in the late 90's, my perception was that it seemed to be -- the regulatory process seemed to be very brittle in the sense that a plant would be going along, apparently in good condition from a regulatory viewpoint.

And then, all of a sudden, a situation would occur, either an operating event or some inspection would discover some particular flaw. And then, once that opened up, it seemed like it rapidly spread to the plant being effectively in a regulatory shut-down sometimes initiated by the licensee, but, in effect, a regulatory shut-down.

So, I think the effort here -- correct me if I'm wrong, Mike -- but my perception is the effort here is to try to -- is to temper those actions, make them more predictable, and anticipate declining regulatory performance and take action before it gets all the way to "The sky is falling; we've got to shut this plant down."

DR. FORD: Since the utilities are stakeholders in this, are they part of the team?

MR. JOHNSON: We have had a number of opportunities -- provide routine opportunities, as a matter of fact, for stakeholders, external stakeholders, to interact with us.

And that began back in -- back in 1998, as a matter of fact. It was sort of the watershed workshop that cast the structure for this. The framework of ROP was an external meeting where we had stakeholders; we had industry; we had the Union of Concerned Scientists; we had -- we had everyone that would show up involved in helping us develop and get alignment on how that process out to be laid out. And that continues today.

DR. FORD: But they're not part of this -- these results? They weren't part of the team that came up with these results so far?

MR. JOHNSON: They -- well, we -- how can I explain this? I'm trying to be very brief, and not -- and not take a lot of Doug's time. We have -- we've had a number -- as we implement the process, there are a number of opportunities for external stakeholders to remain involved.

For example, when Don Hickman talks about performance indicators a little bit later on, we're going to talk about, for example, the fact that some of the performance indicators caused -- that is a reporting criteria that caused licensees to raise questions that require some interpretation.

Well, in resolving those questions, those

scruply-asked questions we call them, we have a monthly -- about a monthly meeting with the NRC and the industry, attended by NEI. And it's a public meeting where we take on those individual issues and work to agreement on the decisions with respect to who we should interpret the criteria or whether, in fact, we ought to change those reporting criteria to address a question.

That's an example of sort of the ongoing interchange -- exchange that we have with external stakeholders in implementing the process.

And so, they are -- the industry is. I mean, when we talk about the results of the process, we're going to tell you -- in July, we're going to tell you how we've implemented the process from an internal perspective.

But we're also going to tell you how we think that process has impacted the performance of the industry. So, it's hard to separate the two.

DR. BONACA: Yeah, just one comment I would like to make; it was simply there is an impression almost that there was no significant determination prior to this system.

There was, and the significance was based on the degree of compliance. And today, the

significance is an elimination process based on risk. That's really the big shift there, okay?

So, compliance, alone, is not anymore material. I mean, typically -- I mean, if you had a finding, nobody very much looked at, you know, is it significant from a safety standpoint?

It was, you know, how far are you from compliance within the acceptable regulation? And that really was the basis for determination of significance.

DR. APOSTOLAKIS: This Agency has been accused of, in some past instances -- it's overreactive. Would this process help us not to overreact in the future?

MR. JOHNSON: Doug, do you want to take that? In fact --

DR. APOSTOLAKIS: What did you say, Doug?

MR. COE: Yes, you're exactly right. It helps us not to overreact, and it helps us not to under-react. We want, as Mike indicated earlier, a consistent and more predictable process. And I think that your points were right on.

I think that the prior process, although there was an attempt to be thoughtful and to be consistent, it was more subjective. And over time,

there were differences that arose as to how we reacted to various things, either under-react or overreact.

And so, this was the essence of the concern that ended up where we are today.

DR. APOSTOLAKIS: Okay.

CHAIRMAN SIEBER: And in fact, that gets back to the statement that I made earlier about the perceived fairness of it all and -- which, to me, is a very important aspect of what it is you're doing here.

MR. COE: And people say fairness is predictability and understandability --

CHAIRMAN SIEBER: Predictability and --

MR. COE: -- transparency --

CHAIRMAN SIEBER: -- consistency.

MR. COE: -- and consistency, yes.

CHAIRMAN SIEBER: Right.

MR. JOHNSON: Now, you might -- you might remember Chairman Jackson's -- one of Chairman Jackson's favorite words was "scrutability". And we think this process goes a long ways towards helping us be very clear about what the issues are, what are determination of those -- the significance of those issues is, and how we got to where we end up with respect to what actions we ought to take.

So, we think the process -- and again, that goes back to one of the key things that we're measuring about the process, what we think the process should measure.

Okay, that's what I was going to talk about under "overall results". Now, Doug is going to start the SDP discussion.

MR. COE: Thank you. Just building on what we just have talked about, the SDP is necessary to characterize the significance of inspection findings as one of two inputs to the action matrix; the other being the performance indicators.

And the scale that was -- we tried to achieve with the SDP is intended to be consistent with the scale, the threshold scale, that is used for the performance indicators and when -- and when we take certain responses, based on those performance indicators.

It started with the application of risk insight and risk thinking from a reactor safety standpoint. But as you'll note, we have seven cornerstones, some of which, in the safeguards area or the occupational or public radiation health area, of the emergency preparedness area, may not have a direct link to a core damage frequency risk matrix.

And in those cases, we still have an SDP because we still need an SDP to characterize inspection finding significance so that it can feed the assessment process.

And we try, in those cases, to make a consistent parallel with the risk matrix of the reactor safety SDP in order that the response that the Agency would give to particular inspection findings is consistent across cornerstones.

That's a more subjective judgement, and it's one that we're -- you know, as we get more experience, we continue to refine.

Today, we're going to talk about the reactor safety SDP because we understood that this was your primary interest. And so, what I'm going to show you are -- actually, I've got four examples, two of no-color findings -- and I'll explain what conditions arise, or what circumstances arise, that we would not colorize a finding -- one green finding, and one non-green finding.

These are all real examples. In fact, for three out of the four, I basically cruised our website and plucked those three examples, the first three that you'll see, right out of our website. And I've referenced the inspection report numbers if you care

to look further.

The fourth one, the non-green finding, is also a real example, but it hasn't been published yet. So, I've sanitized in terms of its -- the description of what -- what the plant was and so forth. But it was, in fact, a real example.

So, we'll get on with the first example. The no-color finding category are findings which don't affect the cornerstone, or which have extenuating circumstances. These are the two primary categories of no-color findings.

The decisions on whether to colorize the finding or not is made prior to entry into the SDP. It's -- the guidance that governs that is Manual Chapter 0610*, and there's a series of questions that are asked.

I'm going to try -- I'm going to show you, kind of at a high level, how those questions result in a no-color finding.

The first example that I've got here was an inspection procedure that asked the inspectors to look at licensee LERs. And the finding that was reported in an LER was the missed surveillance test for the control room oxygen detector.

Now, the guidance in 0610* is that if it

-- if a finding does not affect the cornerstone and, therefore, cannot be process by an SDP, then it is documented as a no-color finding.

In the example that we have here, the cornerstones in the reactor safety area are initiating events, mitigating systems, barriers, and emergency preparedness. And that's under the reactor safety cornerstone.

So, looking at that particular finding, the lack of a -- or the failure to do a surveillance test for a control room oxygen monitor, when looked at from the standpoint of does it -- does it actually affect the cornerstone, and would it -- would it be possible to evaluate that finding through the SDP process using delta-core damage frequency, or delta-large early release frequency as the matrix.

The answer would be no, and that's what came out of the 0610* lodging.

DR. KRESS: Doug, what's the purpose of that oxygen monitor?

MR. COE: The purpose of the oxygen monitor, I would presume -- and I can't say for sure, but based on my general understanding -- is that oxygen monitors are there in case the control room is enclosed, becomes enclosed, sealed, through, you know,

control room isolation functions.

And therefore, then there's a --

DR. KRESS: A chance of depleting --

MR. COE: -- monitoring process -- a monitoring instrument that, then, would tell the operators that they were getting dangerously low oxygen levels.

DR. APOSTOLAKIS: But then, it seems to me that it would be under the broad category of reactor safety, would it not?

DR. KRESS: That's what I was wondering.

MR. COE: You could say it could be under the broad category of reactor safety. The next question you could ask is how would you characterize it was significant?

If you're looking at delta core damage frequency or delta large early release frequency, there's really no -- there's no connection there.

DR. APOSTOLAKIS: Well, I would say that its contribution to the facility is really negligent. I mean, that's probably a more accurate statement.

And one does not need to do an analysis to see that.

MR. COE: I wouldn't necessarily disagree. But what we're trying to do is come up with guidance

that does produce the right results. And in fact, in very early stages of the development of this process, the criteria that we're discussing here on how to color -- how to choose not to color an inspection finding didn't exist.

And there was a -- there was a thought being given at that time that there were -- if you couldn't meet the threshold for greater significance, it would be a green finding. And we would basically have a lot of green findings, okay?

Now, somewhere along the way, in the development of this process, it was decided that having a no-color category would be useful, I think initially because of the extenuating circumstances that we're going to talk about in a minute.

DR. APOSTOLAKIS: But in this particular case, if we would go back to the previous -- slide five -- no, this is six, yeah --

MR. COE: Yes.

DR. APOSTOLAKIS: -- the definition says, "findings which do not affect the cornerstone or which have extenuating circumstances." It seems to me saying that the finding does not affect the cornerstone is too strong.

I mean, has a negligible impact; I think

that's more accurate. Maybe that's what you mean by "does not affect." And when you are elaborating on it, you actually -- that's what you said, that, you know, calculating that was really a waste of resources for this particular case.

MR. COE: Yes.

DR. APOSTOLAKIS: And the end result is known in advance. It's going to be very, very small. But it does fall under the cornerstone of reactor safety.

DR. SHACK: But what is the question the man asked to make that decision? Does he say, "Does this affect -- is this going to affect the initiating events?" What are the actual questions he asks himself so he comes up with that answer?

MR. COE: Well, those are questions that are articulated in 0610*, Appendix B. And for reactor safety cornerstones, not including emergency planning, they include the following questions: Could the issue cause or increase the frequency of an initiating event? That's the first question.

The second question is, could the issue credibly affect the operability, availability, reliability, or function of a system or train in a mitigating function?

There's four questions. The third question is, could the issue affect the integrity of fuel cladding, the reactor coolant system, reactor containment, or control room envelope, the integrity of those things?

And four, does the performance of the issue involve degraded conditions that could concurrently influence any mitigation equipment and an initiating event?

In other words, could you -- could you affect the likelihood of an initiating event at the very same time with the -- with the same issue that you would degrade a mitigating function?

So, those are the questions that are asked. And I don't disagree that --

DR. APOSTOLAKIS: Doug, let me -- I think communication and using the right words are very important whenever you do things like this. I mean, we found that out and PRAs and so on.

Instead of saying that we will not do -- I mean, we screened things out in the PRA repeatedly, and nobody objects, okay? And nobody has come back and said, "Gee, you know, you really missed it, after 25 years of experience."

Instead of saying we're not going to do

it, maybe a better way of saying it is that a crude evaluation shows, or a conservative evaluation shows, that the CDF is negligent.

That sends the message that you have thought about it; you have evaluated it. You have not made the decision in advance not to evaluate it; which I think you are evaluating in some sense, you just don't want to spend too much time on it because, you know, professional judgement evidence shows it's not going to make any difference.

So, I think sending the message in a different way is probably better.

MR. COE: We can take that comment because it gets at a discussion, a dialogue, that has occurred since this guidance was formulated. And there are persons on the staff who feel much the same way you do.

I would say that there are other examples, and perhaps this isn't the best example, but, for instance, a finding which involves a missed surveillance test, which then, the surveillance test is subsequently performed and found to be acceptable.

Now, was there an impact on the cornerstone? Was the cornerstone functioned -- were any of the characteristics or attributes in the

cornerstone for mitigating systems affected?

Well, the answer would be no, not at all in that case. So, maybe that's a better example of a finding which doesn't affect a cornerstone. And to try to define that threshold, does it or doesn't it, is somewhat subjective, I would have to say.

DR. APOSTOLAKIS: I understand. And I think -- you know, I think you understand the spirit of my comment. But I have another question. If the finding does not affect the cornerstone, and you guys have declared that these are the things you care about, why bother?

MR. JOHNSON: I'm sorry, why --

DR. APOSTOLAKIS: Why bother to look at it at all?

MR. COE: Typically --

DR. APOSTOLAKIS: You know that --

MR. COE: Typically they are violations, that -- for example -- oh, I don't know; we've got violations of, like I say, missing surveillance tests or of other administrative regulatory requirements that can't really be processed through the SDP.

And in fact, one of the reasons why the no-color finding category came into being in the first place was to assess whether or not these findings that

could not be processed through the SDP warrants a significant determination process of their own.

And this question has come up in a number of areas, such as -- and most particularly, I think, in the cross-cutting areas, human performance issues, where mistakes are made, or errors are made, in the cross-cutting areas of performance -- problem identification and resolution.

So, you know, it's a broad category of things that we find cannot really -- don't really -- don't really comport with an SDP that's been created. And we really can't make a link to core damage frequency changes or delta alert changes.

So, we're left with this set of findings that may be regulatory issues, may be regulatory violations, that we're not sure what to do with. So, we put them in this category.

DR. APOSTOLAKIS: I thought we were trying to get away from that.

MR. JOHNSON: We are, George. Let me give you an example -- let me give you another example that perhaps adds to the examples that Doug has given that were very good.

One of the things that you'll recognize that we ought to care about, as a regulator, that may

not have a direct impact on the cornerstone, as we've been able to measure in terms in terms of the results of an inspection finding, is something, for example, that would impact the regulatory process or our ability to -- to effectively regulate the performance of the licensee.

For example, let's suppose -- and this is a scenario that we've come -- we've had some concerns with respect to performance indicators. And that would be, for example, a situation where a licensee inaccurately reported a performance indicator, you know, or let's -- the example where there were some willfulness, a violation that was willful in nature.

And maybe that would have a -- maybe there would be an element of that that would have an impact on the plant, that you could run through an SDP that would have an impact on the cornerstone.

But the willful nature, or the inaccurate reporting, or you know, those kinds of issues are also issues that, again, when you look at the questions and the things in 0610*, the excerpt that we just handed you, are not things that you necessarily get through an SDP on, but things that we ought to care about as the regulator. Those are other examples.

DR. APOSTOLAKIS: But you care about them

because they're supporting things that need to be done --

MR. JOHNSON: Absolutely.

DR. APOSTOLAKIS: -- because they affect the cornerstone.

MR. JOHNSON: Or they eventually --

DR. APOSTOLAKIS: Could affect -- could affect.

MR. JOHNSON: Could affect the cornerstone.

DR. APOSTOLAKIS: Good, good.

DR. SHACK: Let me come back -- I didn't like the answer to the surveillance test one because this one -- you know, this one, if I answer these four questions, if the thing failed the surveillance test, I think I would have answered the four questions in the same way.

You know, when it comes to you, a surveillance test, and you say, "Okay, it was an important component; I missed the surveillance test. But when I did test it, it was okay, and it had no impact," that's an answer I don't think I like because that tells me I got lucky.

You know, if I can't -- you know, it seems to me these things should be hypothesized. You know,

if I missed a surveillance and if the surveillance test was negative, then I could still answer these as no significance.

If I missed a surveillance test and it happened -- you know, the thing that has always bothered me about these things is everything is going to be green until something really happens.

You know, yeah, it's no problem if you miss a surveillance test as long the thing is working well. You know, I either find out the thing is not working when I need it or in a surveillance test.

MR. JOHNSON: Well, and I know Doug has got a perfect answer for this, but let me just cut in with my less than perfect answer, and then he can correct me.

You know, when we say -- when things make it through the findings threshold; that is, they are more than minor, we're not -- we're talking about, in every case, something that we want the licensee to do something with.

No-color findings are not -- for example, a missed surveillance test or, you know, anything that we documented in the inspection report as a finding or as a green finding, you know, a finding on very low risk significance, are all issues that the licensee

needs to correct.

It's not that we're setting them aside, that they can -- that they can have the option of doing nothing with. They've got to put them in their corrective action program, and we look at their corrective action program as part of our periodic PI&R -- PI&R, problem identification and resolution inspection procedure, to make sure that they're doing something with those issues.

So, we're not -- we're not setting them aside, but they are clearly less significant than in a situation where you would have had, say, a missed surveillance test found -- that a surveillance test was found that there was a problem with that component.

And that component, when you go back and you look and see, there was a condition that was brought on by some issue that happened a long time ago. And so, you can really look at how long that particular situation existed.

MR. LEITCH: So, why do you take --

DR. APOSTOLAKIS: So, why --

MR. LEITCH: Excuse me. I was just going to say, could you take me through the line of reasoning that would apply? Here's the licensee that

missed one surveillance test, and this is the only one he has missed in a year, versus another licensee that has missed ten surveillance tests in a year.

And every one of those goes through the analysis, and every one is no-color. Is there some kind of a trending? How do you -- how do you deal with that, or would you like to deal with that?

MR. JOHNSON: The way we do that is -- and Steve Stein, is he wondering around the audience? Make sure your ears perk up for this. The way we do that is, if we have a finding, and that finding is more than minor -- I'm sorry, a finding is more than minor, and we're documenting it in the inspection report.

If there is some cross-cutting element of that finding, we document that in the inspection report. And when I say "cross-cutting," I mean things like -- the cross-cutting issues are things that are -- have impact on whether the licensee has a good PI&R system, problem identification and resolution system.

If they're human performance in nature, if they're human performance things that are going on, that are, again, cross-cutting, and if there are safety conscience work environment issues that are going on -- different from safety culture -- safety

conscience work environment -- by that, we mean is there something that is indicative of there being a chilling effect, if you will, a hesitancy on the part of the plant staff to raise issues. Those are cross-cutting issues.

Well, if we have a finding in an inspection report, and there is this cross-cutting nature to it -- performance, problem identification, safety conscience work environment, those get documented in the inspection report.

And as a part of our problems identification and resolution inspection, we -- today, on an annual basis -- and we're changing the period as to that a little bit, and making some other changes that we think improve that inspection.

But we look at those issues, the collection of those kinds of issues, to see if that tells us that the licensee has what we call a substantial -- a trend, an average trend with respect to substantial problems in this cross-cutting area.

And we document those in the assessment letter. We talk about those with licensees to get licensees to get them resolved.

CHAIRMAN SIEBER: Does that mean that you're actually doing a bean count as you go through

the period of missed surveillance and other kinds of things that licensees do that cause a non-cited violation because you can determine whether a cross-cutting issue is there or not?

MR. JOHNSON: I wouldn't say -- I wouldn't use the word "bean count". In fact, the Commission was very careful with us to give us -- the Commission told us to be very careful with respect to how we -- how we treat issues that are green.

The Commission was concerned that we would take a collection of -- we would count greens, things that have a very low risk significance --

CHAIRMAN SIEBER: Right.

MR. JOHNSON: -- and we would somehow amalgamate them, if you will --

CHAIRMAN SIEBER: Right.

MR. JOHNSON: -- and roll them up into something and make a big splash.

CHAIRMAN SIEBER: Now, that's the old system.

MR. JOHNSON: Right, that was the old system. But we think it's very --

CHAIRMAN SIEBER: And you can always write a finding against your QA program.

MR. JOHNSON: Exactly.

DR. BONACA: Let me ask you a question more specific. Go to the next slide, if you could. Look at disposition of finding, "confirmed entry into the licensee corrective action program." I mean, we come back to this, as we came back before.

Here is what -- are you abandoning the issue once it's in a corrective action program, or are you looking for how timely they're going to address the issue, and whether or not this is a repeat issue?

I mean, these are two fundamental elements of the corrective action program. And that answers a lot of questions. If you say, yeah, we're going to count it, and we keep an eye on that, then I am comfortable with this.

MR. JOHNSON: That's exactly what we're saying.

DR. BONACA: Okay.

MR. JOHNSON: We're saying that we --

DR. BONACA: So --

MR. JOHNSON: In this PI&R inspection, that's exactly what we do; we go look at what is in the corrective action system. We ask ourselves, you know, is the licensee dealing with issues? Are there issues there that are significant that the licensee hasn't dealt with; you know, are there -- are there

patterns?

Steve, do you want to -- now is a good time for you to jump in.

MR. STEIN: Steve Stein, Inspection Program Branch; I just wanted to clarify one point on that previous example. What made it a no-color finding was that -- was the equipment, was the control room oxygen monitor, not the fact that it was a missed surveillance.

The missed surveillance on a mitigating system, on an injection valve, or pump, or on the EDG, would fall within a cornerstone and would go through the SDP.

And all the conditions associated with that could make that more than of very low significance. So, that's the point I wanted to make, that what made that no-color was the equipment, not the fact that a surveillance was missed.

MR. JOHNSON: All right --

DR. APOSTOLAKIS: Which seems to me supports what I said earlier, that you really need a conservative analysis as to be in your mind, and dismiss it, which I think is perfectly all right. I mean, that's how we do all these things.

MR. JOHNSON: Yes, because --

DR. APOSTOLAKIS: If we have a problem somewhere, and we analyze it, and we find out the delta CDF is delta less -- or smaller than something, then that's a green. So, green is good.

MR. JOHNSON: No, no. Green is not good. Green issues are still issues that we think the licensee needs to do something with.

DR. APOSTOLAKIS: So, if the number of scrams is smaller than the number you specified, which is good, you give the guy a green, don't you?

MR. JOHNSON: With respect to -- okay, we were talking about inspection issues. Now, green with respect to the performance indicators means that that performance is in the expected range, sort of this nominal range, of licensee performance.

DR. APOSTOLAKIS: Right.

MR. JOHNSON: So, in that case with respect to scrams, yes, scrams --

DR. APOSTOLAKIS: But green cannot mean -- I mean, is one of them light green and the other is dark green?

MR. JOHNSON: They're green.

DR. SHACK: Well, but still, no color does, in fact, highlight the fact that it's green. I mean, there's a difference between no color and green.

DR. APOSTOLAKIS: Exactly, that was my question. Why bother? Why not declare this a green?

MR. JOHNSON: We --

DR. SHACK: What's the difference?

MR. COE: That's a dialogue that has occurred on an ongoing basis within the Staff.

MR. JOHNSON: And in fact, this was an issue that we talked about. We recently had an external lessons learned workshop to roll up the results of the first year of implementation and to talk with the industry and other external stakeholders.

And this issue of no-color findings was one that we talked about, and the kinds of concerns when something like -- you know, you've got a system that uses colors. We can understand the significance of colors.

But here are these findings that you don't assign a color to because you say they're outside of the cornerstones. And what's the significance of those?

There seem like there are a lot of those, perhaps. We should really do something with no-color findings. And in fact, we went into that workshop with a proposal that we were going to turn those no-

color findings into greens.

And what do you think the industry's response was? The industry said, "Don't make those things all greens. We care about greens just like we care about everything else."

And so -- and so, the dialogue continues with respect to how to treat these issues.

DR. APOSTOLAKIS: Okay, so let's put in a different way then. Why don't we go to the performance indicator for scrams; and if you are below the appropriate threshold, that is a no-color finding instead of green?

MR. COE: That's not a finding.

DR. APOSTOLAKIS: It's the same rationale.

MR. COE: You see, that's not a finding, George. That's -- you've got performance indicators, which are just data collection, and then you've got findings which are actual -- some kind of deficiency occurred.

The licensee's performance was deficient in some respect, and that was the source of the finding.

DR. APOSTOLAKIS: So, "finding," you're using it in the regulatory sense?

MR. COE: That's right.

DR. APOSTOLAKIS: Again -- I don't know, this no-color business is not very comforting.

MR. JOHNSON: We agree, we agree. But again, having said that, there are issues -- you can get yourself to the point where you can find issues that when you try to treat them through the SDP, you cannot.

But when you ask yourself the group three questions in that excerpt that we handed you, if they still are things that we ought to be concerned about as an Agency, then those are things that are no-color findings.

DR. BONACA: Actually, I think, you know, in part is the issue that -- if you look at the specific of this, you know, for it to be significant, you would have to have a significant event: a release, a problem with the control room, the need for oxygen in it, and then find that you don't have it because you didn't monitor it right.

So, the risk, in itself, is minute. And yet, there are thousands of activities where compliance is important because without compliance, you don't have the assurance that in case yo have that kind of residual event that happens, you can deal with it.

And I think that somehow we have to still deal with this thousands and thousands of compliance issues. And so, I'm trying to understand how -- I'm not disagreeing at all with you, George.

I'm only saying that they still are significant individually because if you don't maintain some level of significance applied to them, well, you would have literally collapse of this commitments; I mean, particularly --

DR. APOSTOLAKIS: Well, I think there are two issues.

DR. BONACA: -- what people are going to say, "Well, likelihood for it to happen is so remote, why should I" -- you know?

DR. APOSTOLAKIS: It seems there are two issues, Mario, that have been raised here. One is the consistency of the approach, the self-consistency.

DR. BONACA: Sure.

DR. APOSTOLAKIS: In other words, when we do something with the PIs or the significance determination process and we declare something to be no-color or color of this, we have to be self-consistent.

The second is I appreciate that, you know, we want to have a higher degree of confidence by doing

-- having these additional requirements. But I thought over the last four or five years, we were trying to move towards a risk-performance based system, which is different in spirit.

So, I don't know how -- I mean, it seems that we are still worried about things that are -- admittedly, the risk is insignificant.

DR. SHACK: But I think their four screening questions are very good. You know, they seem to me to, you know, have answers that are scrutable and, you know, do a first cut at coming up with those questions in a way that an inspector, I think, has a chance of dealing with them.

DR. BONACA: Absolutely, and look at the disposition of this; it goes into the corrective action program. I mean, it simply says "Do it." And the only activity is they want to monitoring if the corrective action program works. So --

DR. APOSTOLAKIS: If I look at the action matrix -- which we're not going to discuss today -- but if I look at it, I think if I have a green finding someplace, do I ask them to do something?

MR. JOHNSON: You're not --

DR. APOSTOLAKIS: No, no, it has to be a licensee corrective action. When do I involve the

corrective action program and ask them to do something? It has to be white?

MR. COE: The action -- well, no.

MR. JOHNSON: The problem identification and resolution inspection that I talked about happens as part of the baseline, happens for every plant, regardless.

When the action matrix gets invoked is when thresholds are crossed. So, if you had a white issue, then you'll see -- you'll see that you change columns.

DR. APOSTOLAKIS: Yes, so, nothing green; you don't do anything when it's green?

MR. JOHNSON: Right, but we'll talk -- we'll go through the action matrix.

MR. COE: Remember, a licensee that has findings and performance indicators in the green range is considered in a licensee response band. That's the characterization we've given it from an assessment point of view.

So, what is it, 80 percent of the plants, or whatever it is, are in the licensee response band, and we expect them to deal with the lower level issues, the ones that we don't feel a need to engage them on.

And so, their corrective action program is expected to correct those lower level issues before they become manifested in larger issues. And their motivation to do that, of course, is to -- is to continue to be treated in the licensee response band; that is, not get extra NRC attention, and inspection effort, and activity.

DR. APOSTOLAKIS: Now --

MR. JOHNSON: Before we leave, can I also just add to you --

DR. APOSTOLAKIS: We're not going to leave.

MR. JOHNSON: -- add that when we talked about this issue, you know, we really thought the stakeholders who would be most concerned with no-color findings would be members of the public.

But in fact, Dave Lochbaum, who was -- who was there, didn't really share our view. He didn't -- he wasn't all that concerned about no-color findings, to be all that honest.

And maybe it's because when we started off the year of initial implementation, we had -- we had a number of no-color findings. But that has gradually decreased as we were able to get out guidance with respect to these screening questions.

And so, the numbers really are -- and I don't want to leave you with the impression that there are a lot of these things going around. There truly are not.

And I think this may be a concern that we were more worried about than either the industry or others, like stakeholders.

DR. APOSTOLAKIS: You see, Mike, one of the -- I am concerned on self-consistency. You have an example later where an inspection finding led to green, correct?

MR. JOHNSON: We have one, yes.

DR. APOSTOLAKIS: Okay. Now, inspection finding, by definition, is -- Doug just told us is some sort of violation somewhere. You forgot something; you did something incorrectly.

MR. COE: It could be a violation or it could also be some kind of deficient performance that was not a violation. That's fundamentally it, but which contributed to an increase in risk, for example.

DR. APOSTOLAKIS: And you declare that as a green. On the other hand, when it comes to performance indicators, green means expected performance, you just told us. Isn't there an inconsistency there?

MR. COE: Yes. Actually, in that respect, there is. Both the -- well, the performance indicators include performance that we expect to occur as well as, in some cases, that which we don't expect. For example, unavailability performance indicators in the reactor safety cornerstone have a component of unavailable that occurs due to normal, routine maintenance, which is acceptable, as long as it's performed under the maintenance rule guidance.

And then, there might be additional time, exposure time, of unavailability of equipment that's due to some kind of deficiency that is, then, added to that performance indicator. So, that's a particular performance indicator where you've got a combination of poor performance contributions to that indicator, as well as acceptable performance.

But fundamentally, you know, you're right. An inspection finding is always associated with some performance issue; a PI may not be.

DR. APOSTOLAKIS: But ultimately, the inspection findings feed into the action matrix too.

MR. COE: Yes.

DR. APOSTOLAKIS: So, now, it seems that the green means something different for those two, and we have different questions for the whites and the

yellows --

MR. COE: Well --

DR. APOSTOLAKIS: -- which presumably will mean something different too.

MR. JOHNSON: But George, with respect to the action that we take as an Agency, there's really no difference. If you have -- if you have a collection of only these kinds of findings that we've been talking about, they end up in the licensee's corrective action system. The licensee takes actions to address them.

We periodically go out and look, and that's it. The licensee -- and the licensee -- the performance is in the licensee response band, and so our actions are to do the baseline inspection.

If a plant has a scram or, let's say, two scrams in 7,000 critical hours, and the threshold is there scrams for 7,000 critical hours, once again, from a regulatory perspective, we're not doing anything. The licensee is in the licensee response band.

Now, if a licensee doesn't get increasingly concerned as they get close to that threshold, we think that's a problem. But again, we're not going to engage because the licensee -- the

plant is in the licensee response band.

It's only when they trip that threshold that that is that deviation from nominal performance to the white for those performance indicators, or we have an SDP result that is white in any of the -- in any of the SDPs.

It's that -- it's that that gets us to increased action, based on the action matrix. So, I -- now, they --

DR. APOSTOLAKIS: I guess --

MR. JOHNSON: -- they come together in a way that is consistent.

DR. APOSTOLAKIS: Well, we're going to have another subcommittee meeting to discuss the action matrix, so maybe a lot of these questions will come back when we do.

DR. SHACK: We're beating this to death. You just cut my --

DR. APOSTOLAKIS: It's already comatose.

DR. SHACK: I would have thought you'd had zillions of no-color findings. But what's really happening is the inspector is not going out and zinging them for things that -- I mean, he's providing another level of screening before he even asks the four questions, rather than playing gotcha.

Because I can't believe an inspector couldn't go through a plant and just keep writing up everything under the sun if he had a quota of citations that he had to fill.

MR. COE: That's right. And the NRC has enforcement guidance on what constitutes minor violations. And we've actually tried to incorporate on that and expand on it a little bit in this process.

So, the type of thinking that you're -- that you're thinking about now, that the inspector does, is actually -- we've tried to formalize this in this guidance. I'm just not discussing it right now. But it's -- it is there.

DR. SHACK: So there really is even another level --

MR. COE: Yes.

MR. JOHNSON: Yeah. In fact, they are -- we haven't talked about them, but they're the group one questions. If you look at the hand-out, there are some group one questions that really help the inspector try to distinguish what is truly minor.

And I guess we don't -- I don't want to take Doug off and have him go through those. But yes, there is screening even before that.

MR. COE: But the overall objective is to

get inspectors to be sensitive to the things that are potentially risk-significant, the things that are potentially significant in the other cornerstones.

And we've given them the -- the yard stick of the SDP is to help to define that in a much better, clearer way than we have in the past and, you know, towards the goals of objectivity and consistency.

So, let me pursue this now because the next example I've got on no-color findings is actually in the other category, which is, perhaps, maybe, a little bit more clear, less subject to, you know, dialogue and debate.

That is that that kind of a finding, which as extenuating circumstances -- and we define "extenuating circumstances," in our guidance. But principally, it's issues that may involve willfulness or issues in which the regulatory process is impeded because certain information which was required to come to us did not.

Okay, and in this particular inspection finding, the licensee submitted an application for operator license -- I believe that -- yes, an operator license application was submitted. And it was -- it incorrectly stated that certain training had been completed.

So, we were about to act on a license application to give an exam to an operator, and the information that we had was incorrect. The operator had not received the training that the license application stated that he had.

Okay, per our guidance, this is a finding that potentially impacts our ability to perform our function, since we have been given information that's incorrect, okay?

And in that case, if the impact of that can -- you know, does not affect the cornerstone; and in this case, it clearly did not because we caught this before the license -- before the operator was examined and put on-shift, then it's a no-color finding.

So, again, it's exactly as before. We confirm that the licensee entered that into their corrective action program, and then we treat it as a non-cited violation.

DR. UHRIG: Was this just an accident, or was it an error, or was this deliberate?

MR. COE: Well, I can tell -- I can certainly say that it -- our assessment was that it was not deliberate, okay? Because if it was, it would have been captured in a different -- in a different

way.

In fact, willfulness, in many cases I think what you would expect to see, not just as a non-cited violation. We would probably examine it for enforcement action above the non-cited level, as a severity four or a three, or higher. So --

DR. UHRIG: Usually, most of these things are errors somewhere along the line.

MR. COE: Yes, yes. But when we -- when they -- when we find them, we have to have a process to deal with them --

DR. UHRIG: Yes.

MR. COE: -- and to deal with them in an appropriate way. And again, I think that if the -- if the process is set up to disposition lower significance items, or findings, it allows the inspectors to do more -- to spend more effort, on areas that are potentially of greater significance. And that's the intent.

MR. LEITCH: Does it enter into your decision at all whether the item has been already entered into the licensee's corrective action program. Like say, for example, this issue here, say in -- before it comes to your attention, say the licensee has reviewed the matter and said, "Oops, we found a

glitch in our training program. This fellow didn't really get this training," and they put it into their corrective action program, would that -- would that, in any way, affect this? Might this then --

MR. COE: Yes, actually --

MR. LEITCH: -- drop off the -- drop off the -- and not even be considered a finding?

MR. COE: Our guidance does not provide for inspectors to, what we call, mind the licensee's corrective action programs, except in one specific case, and that's our periodic problem identification and resolution inspection procedure.

MR. LEITCH: Right, right, yes.

MR. COE: And there, we send in a team of inspectors on a periodic basis to do just that. And we look at the corrective action program, the items that are in there, in a -- you know, we try to look at them in a risk-informed way or, you know, looking for the items of greatest significance and looking for trends and patterns and that sort of thing.

But the findings that come out of that have to be linked to the SDP in terms of their significance. In other words, we -- again like Mike said earlier, we're not allowed to go in there and aggregate things and then make them -- if they're all

green issues, or would be green issues if we put them through our SDP, we could not make a bigger deal out of that than the most significant of those findings individually.

DR. UHRIG: Suppose that this had happened before, had been put in the corrective action program, and it failed, and now it's showing up again. How do you -- what is the impact of this having happened before?

MR. COE: Well, if this is a repeat --

DR. UHRIG: Yes

MR. COE: -- that you're talking about, a repeat kind of condition, the philosophy that we're operating under is that licensees should be correcting these things at a lower level; and that if they don't, if this continues to repeat, and if the source of the continuation of this repeating problem is a more fundamental issue associated with their management controls or what-not, that we would expect ultimately that we would have inspection findings and/or performance indicators that would cross the threshold from green -- from the licensee response band -- into white in which we would engage.

DR. UHRIG: But it would be in the corrective action program, not here?

MR. COE: Yes, it would -- if their corrective action program was not functioning, we would expect, over time, to see these kinds of issues manifested as higher significance issues.

If the licensee was doing a good job, and maybe, you know -- they're managing at a lower level, clearly. They're trying to keep the -- you know, the problems at a low level.

And the real question is, for us as an Agency is, has the threshold -- I mean, we're going to allow -- and I think somebody said earlier, we're just waiting for things to happen.

Well, we're not really because what we're doing is we're trying to define a threshold so that when things happen of a certain significance, we engage the licensee. And the intent is, is that we engage the licensee at a level before a significant impact to public health and safety occurs.

So, when a licensee issue comes up that's greater than green, it goes into the white region for instance, then we engage at a certain level. We expect that that was -- is still not a significant impact on public health and safety.

And we are going to engage at that level. We consider that an early engagement as the problems

have now departed from the licensee response band, and now they're in the regulatory response band. So, we're going to get involved.

MR. JOHNSON: Good, good. I just wanted to add one thing to make suer that we leave you with the right impression. If, for example, an inspector comes across an issue, they do not not make an issue an issue because the licensee already found it.

If it's an issue, we set aside whether the licensee found. We look at that issue and treat that issue in our process.

Now, when we go out and we do our supplemental inspection, in the case where issues have crossed thresholds, then is when we would recognize what the licensee has done with respect to finding the issue, and correcting the issue, and so on, and so forth.

But there's no -- there's no provision -- well, inspectors do not -- you won't see one of the questions in the screening questions that is, has the licensee already found it, or is it already in the corrective action program? That's not the -- we don't want licensees -- we don't want inspectors thinking about those kinds of things.

But again, what Doug has said is true; we

don't want inspectors also -- we also don't want inspectors living in the licensee's corrective action program where they're simply, Doug's words, minding the corrective action program, looking through them for issues that we can bring up and document as our own inspection reports.

MR. LEITCH: But the fact that you have few and declining numbers of non-white inspection findings would seem to indicate that that's happening anyway, right? The licensee must have 10 or 15 of these a day, issues entering the corrective action program.

CHAIRMAN SIEBER: That's about right.

MR. LEITCH: And many of those could be -- could somehow be a non-white inspection finding. So, there must be a de facto going on, a kind of -- these many low level issues are just not even surfacing as non-white -- non-color issues.

MR. JOHNSON: Right, right. Yes, and that's what we mean when we say we don't want inspectors to mind the corrective action program. We think it's healthy for licensees to find their own issues, to put them in their corrective action programs.

And we don't -- we don't want a program

that discourages that by raising those -- pulling those issues out, raising them, documenting them, you know, just for the sake of getting greens on the docket.

CHAIRMAN SIEBER: On the other hand, even though an issue may be licensee-identified, if it is truly risk-important, you would still have enforcement action regarding that. For example, the failure of all emergency diesel generators to start or load, even though the licensee may have discovered that and corrected it, it still is a matter for enforcement --

MR. JOHNSON: It still matters --

CHAIRMAN SIEBER: -- is that not correct?

MR. JOHNSON: Exactly, it still matters in the reactor oversight process. It's still something that we would take action on if they cross thresholds, including -- including, perhaps, enforcement.

CHAIRMAN SIEBER: Right, okay, thank you.

MR. COE: Right. At the moment, there's -- it doesn't matter who finds it or whether it's self-revealed. We'll assess its significance, and we'll utilize the action matrix accordingly.

CHAIRMAN SIEBER: Right.

MR. COE: Okay, that's the last example on no-color. The next example is a green inspection

finding. Again, this is under the reactor safety or the mitigation cornerstone -- mitigation systems cornerstone.

In this case, during the conduct of an inspection procedure that was looking at surveillance testing, inspectors identified that an RHR system bypass valve had been temporarily modified to be in its full-open position.

However, the licensee hadn't done any evaluation following that modification as to assure that the technical specification flow requirements were being satisfied.

However, the subsequent evaluations that the licensee performed showed that the system flow did meet its surveillance test requirements.

Okay, now, this differs somewhat because -- from the previous examples because there was a definite impact, is considered to be a definite impact, on the cornerstone; in other words, a safety function or a function of a component was affected.

The flow was reduced. There was an impact, a physical change, a difference. And it was an adverse difference. It was the flow is less, okay?

When screened through 0610* questions that we discussed briefly before, this conclusion is drawn:

that it did affect the mitigating systems cornerstone and, therefore, its disposition would be, again, just as before, to confirm that the issue had been entered in the licensee's corrective action program.

In addition, since it did affect the cornerstone, we would proceed to do a phase one SDP analysis. And the question that the phase one SDP asks in this particular instance is whether or not the system function had been affected, but whether -- not only had -- did the system function -- was the system function affected, but was operability and design function maintained?

That's one of the questions. In fact, that's the first question that is asked of an issue in the mitigating systems cornerstone and when it enters the -- this SDP.

And in fact, if that answer is yes, that operability and function were maintained, the issue screens, at that point, as green. And the licensee is expected to correct that, or the conditions, the underlying conditions, which caused that.

But we would not engage further with any further inspection of its root causes or, you know, we would leave that up to the licensee.

MR. LEITCH: Would a notice of violation

have been issued in this case?

MR. COE: That's a good question. I don't know the answer to that. I'd have to go back to the inspection report. I didn't -- that didn't jump out at me.

MR. LEITCH: Just another similar question: is a non-color synonymous with a non-cited violation?

CHAIRMAN SIEBER: No.

MR. LEITCH: Are those two categories --

MR. COE: No. A green -- a violation which is given green significance is going to normally, in almost all cases, be given a non-cited violation.

MR. JOHNSON: Yes, that's true.

MR. LEITCH: Yes, okay. But a no-color is always a non-cited?

MR. COE: Well, if a no-color finding arises because of willfulness or an issue which significantly impedes regulatory process such that we would consider it -- you know, we may consider for a severity level enforcement action up to, and including, civil penalties.

MR. LEITCH: But it would still be a no-color?

MR. COE: But it would still be a no-color.

MR. LEITCH: I see, okay.

MR. JOHNSON: Yes, we're sort of a little squeamish on answering the questions, your specific questions, only because -- and I'm looking at Steve. Steve is not even looking at me now because he knows that we're having an ongoing dialogue with the Office of Enforcement on this issue.

And in fact, one of the things I intend to do when we come in July is bring the Office of Enforcement along with us because I think we ought to be able to talk about -- to address your questions about what enforcement also comes out.

But to be quite honest, with respect to what is a no-color finding, Doug is exactly right. There are issues -- there are issues that receive traditional enforcement.

And the Office of Enforcement doesn't consider those to be no-color findings. And I don't want to make this -- I don't want to make this overly convoluted, but let me just say that we have to -- we're still working with how we -- with this whole topic of no-color findings and how we eventually end up with respect to what is a no-color finding.

When we set up the action matrix early on, we intended that there would be two kinds of things. There would be things that you could run through the SDP that would receive a color, and that color was synonymous with where they would fit, that we could run through the action matrix and come up with a result.

It was also the recognition that severity levels would still apply for things that received traditional enforcement that were -- that is, things that were outside of -- things that could impede the regulatory process.

For example, those would receive -- willful violations, those would receive traditional enforcement. So, you could have a situation where you have a finding that -- you'd have a collection of things: things that receive colors, things that received a severity level, right?

And so, it's not as -- and so, when you ask a question, do all no-color findings -- are all no-color findings NCVs, well, that really depends on how you define a no-color finding with respect to how you treat these traditional enforcement items under that definition of no-color findings.

In July, we'll have our act together

because we will have -- we will have closed the loop on the dialogue with respect to no-color findings, and we'll be able to answer that.

So, if you can hold whatever questions you have for that --

MR. COE: All right, the next example is the white inspection finding. In this case, an oil leak was identified by an inspector on an emergency feedwater pump. This is in a pressurized water reactor which had, over a period of time, forced the operators to make daily oil additions in order to even maintain visibility in the oiler.

And when the residents had questioned this, the ultimate answer, the licensee determined that there were some bolts on the bearing housing that had been loose. The oil had been leaking into a drain sump, so it hadn't been puddling on the floor.

So, it was basically, you know, not gathering the kind of attention perhaps that it should, other than the fact that the operators were adding oil every day.

Ultimately, it was found that if the pump had been called upon to operate, it would have only run for a few hours. And then, the bearing oil would have gone away, and the pump bearing would have --

would have become irreparably damaged, and that that condition occurred for 39 days.

Once again, the 0610* documentation threshold was met because it did affect a mitigating system cornerstone. The pump was actually inoperable, unavailable, for that 39-day period of time.

Now, again, it would have operated for a few hours, but from a -- from the standpoint of a significance determination, the going in assumption was that it would not meet its mission time. It would not have satisfied its safety function in the long-term.

Phase one SDP, another one of the questions that the phase one SDP asks is whether or not an actual loss of function of a single train has occurred. And the threshold that's put on that is if it's greater than its tech spec allowed outage time.

And that's not necessary a risk-informed threshold, but it is a threshold that has -- we have historically used, even in the Accident Sequence Precursor Program.

And we have borrowed it and continued its use in this program.

DR. APOSTOLAKIS: Are these questions in this Appendix B?

MR. COE: No, these particular questions -- in phase one, now we have left 0610*, which is essentially the documentation threshold and the discussion of no-color findings. And now, we've entered 0610, Appendix A, which addresses the significance determination for reactor safety findings, okay?

And in that document, you would find a -- in fact, you're going to see it in just a moment -- a worksheet that lists these questions for phase one -- for the phase one SDP process.

And this question -- my only point here is that's the question which kicks this issue into a phase two. In other words, if there was an actual loss of safety function and it was greater than tech spec allowed outage time, and therefore, it is deserving of further attention, further analysis; not that it wouldn't come out potentially green upon further analysis, but we can't say that for sure right now. And it needs to be looked at further.

Again, in an overall sense, we have a graduated approach here. Phase one is a relatively broad screening process that allows an inspector to assess that something is not -- does not need further analysis or review from a risk standpoint, that they

can call it green.

They don't have to accept that, by the way. The guidance that we have put out is that if an inspector wants to exercise a phase two process, they're more than welcome to do that. And in fact, we encourage it, even if they think it's a green, because that starts them and continues them into the process of gaining risk insights into that particular issue and, in fact, into that plant in general.

But in this particular example, that's the screening question that's relevant, and it forces the next phase of SDP analysis.

Now, the next phase of SDP analysis is phase two. And I've got a more detailed set of documents here that we can look at. But the high-level picture of the phase two analysis is the following. The worksheets are utilized that are plant-specific.

We've created inspection notebooks, risk-informed inspection notebooks, which contain a series of worksheets. And the purpose is to identify what this impact has had on the dominant accident sequences.

DR. APOSTOLAKIS: Now, why dominant?

MR. COE: Because that's what drives the

risk. That's what drives the significance. In other words, the question that we're asking is which -- for this particular degradation, this particular deficiency, what effect has that had on the sequences, the accident sequences?

Which sequences were affected by that particular degradation, and how much remaining mitigation capability was left to mitigate those accident sequences?

DR. APOSTOLAKIS: But if you have a problem somewhere that affects a system that does not appear, say, in the top five sequences, but affects, you know, the following seven, what happens then? I mean --

MR. COE: Okay, it's a good question. Your question sort of infers that we're only listing the dominant accident sequences for review. In fact, the sequences are written at a very high level. Any one sequence is essentially a functional sequence.

The sequence that's represented here, which was the one that came up the highest, when you look at it as far as what's changed, is a transient with a loss of power conversion system, essentially loss of the main condenser and the turbine, followed by a loss of all the other emergency feedwater

components.

And therefore, you have a loss of function of emergency feedwater, followed by a loss of primary feed and bleed. Now, that's the sequence --

DR. APOSTOLAKIS: How can you lose feed and bleed?

MR. COE: Well, you didn't in this case. In this case, the only thing that was affecting that sequence was EFW, the EFW pump.

DR. APOSTOLAKIS: You mean you lose the capability to feed and bleed?

MR. COE: This is simply a functional accident sequence. The end result of this sequence occurring is core damage, okay?

DR. APOSTOLAKIS: Right.

MR. COE: So, what we're doing is we've got a whole bunch of sequences listed in the worksheets. And the idea is which of those sequences was affected by a -- in other words, what changed? Which sequence baseline value for that core damage frequency risk contribution has changed?

Well, this one changed because this one used to have two motor-driven pumps and a turbine-driven pump. It now, for a period of 39 days --

DR. APOSTOLAKIS: Has one.

MR. COE: -- there is only one motor-driven pump and one turbine-driven pump. So, that's the change that has occurred, okay?

DR. APOSTOLAKIS: Right.

MR. COE: So, this element has changed; the other two have not. And they retain their original baseline assumptions on frequency of this event occurring and likelihood or probability of this loss of function occurring as well.

This essentially is providing defense in-depth. And the remaining mitigation capability that remains here is providing us a defense in-depth to sustain reactor safety --

DR. APOSTOLAKIS: So, do you have --

MR. COE: -- even when you had this problem.

DR. APOSTOLAKIS: Do you have those sheets here and --

MR. COE: Yes.

DR. APOSTOLAKIS: -- the information that the inspector has?

MR. COE: Yes.

MR. JOHNSON: Yeah, I was going to tell you that Doug has -- you are actually going to go through those sheets, aren't you?

MR. COE: We'll go through them in as much detail as you wish.

CHAIRMAN SIEBER: That's going to take a long time.

MR. COE: This is just the high level treatment. I'm giving you the answer. And then, as you have interest --

DR. APOSTOLAKIS: Wait a minute --

MR. COE: -- we'll go through the details of how we get there.

DR. APOSTOLAKIS: So, all these, pages 16, 17, 18 --

MR. COE: Yes.

DR. APOSTOLAKIS: -- 19 -- do you want to get to that right now or --

CHAIRMAN SIEBER: No, I think that what we -- what our best bet is to continue and finish with the overall explanation as to what went on. And then, we can take a break and come back and --

DR. APOSTOLAKIS: Okay, good, good.

CHAIRMAN SIEBER: -- dive into the details.

MR. COE: Okay, the -- what comes out of the analysis essentially, for this particular sequence, is that you have to define what the

likelihood of the initiating event is.

And actually, it's -- we have a table, and I'll show it to you. And we've characterized bands of likelihood, which are essentially probabilities, with the letter characters that represent those bands.

In this case, this is the highest frequency. In other words, this -- what this represents is, is that the initiating event frequency is greater than one in ten years, and the exposure time is greater than 30 days.

So, the likelihood of this event occurring within the 39-day period of time is characterized as "A". We'll get into what that -- a little more detail of what that means later.

In addition, the mitigating system credit that I was talking about earlier, there were two remaining motor-driven -- I'm sorry, there was one remaining motor-driven emergency feedwater pump left.

So, the mitigation credit for that function here is two, which is a representation of 10^{-2} likelihood that that remaining motor-driven pump would not be available, plus one, which is representing the turbine-driven emergency feedwater pump availability of -- in this case "1" represents 10^{-1} likelihood that it would not be available.

So, those are added, two plus one here. And then loss of feed and bleed, normally we give feed and bleed about a 10^{-2} credit for unavailability. And in this case, that's represented by this "2".

So, you add these up and you get "5". You don't assume that you can recover that damaged pump should it have been called upon to function. And so, you are left with a credit -- a mitigation system credit of five.

When combined with the likelihood rating of "A," you enter another table and you end up with a significance result of white, which is a representation of a change in core damage frequency because that pump, that one pump, is degraded for those 39 days. The change is between E^{-6} and E^{-5} per year, okay?

DR. APOSTOLAKIS: So, the credits are really the exponents?

MR. COE: Yes, that's essentially the negative log rhythm of the unavailability figure --

DR. APOSTOLAKIS: Good.

MR. COE: -- the baseline unavailability figure.

CHAIRMAN SIEBER: And I guess that's on page 23, right, how you get -- you know, the --

MR. COE: Page 23?

MR. JOHNSON: Yeah, we'll get -- we'll get there.

MR. COE: Yes, page 23 is the table which actually produces the final result --

CHAIRMAN SIEBER: Right.

MR. COE: -- for that sequence, okay? Now, phase three -- you know, it's acknowledged, and it was acknowledged right at the very start, that phase two is a crude process.

Its value is that it's in the hands of the inspector, who is the closest person to the actual plant design, plant operation, and can be the best person suited to identify if any of the assumptions that are being used in this level of analysis are incorrect. And that's --

DR. APOSTOLAKIS: What is -- I'm sorry. What is the CDF of this particular plant? Do you know the baseline CDF?

MR. COE: I think it's about $3E^{-5}$ or $4E^{-5}$ per year based on their IPE. And I don't know if that's been updated.

DR. APOSTOLAKIS: So, this is one-tenth of a --

MR. COE: Pardon?

DR. APOSTOLAKIS: The change was one-tenth of that, right?

MR. COE: It's in that range, yes. It's in that range of 10^{-6} to 10^{-5} per year.

DR. APOSTOLAKIS: Right.

MR. COE: Right. The phase three process was an acknowledgement -- the need for it was an acknowledgement that there would be occasions -- yes?

DR. APOSTOLAKIS: Is yellow or white worse? Which one is worse?

MR. COE: Yellow is worse.

DR. APOSTOLAKIS: Yellow is worse?

MR. COE: Yes, by an order of magnitude.

MR. JOHNSON: And red is worse even.

DR. APOSTOLAKIS: Yeah, I knew that.

(Laughter.)

MR. COE: So, phase three was essentially an acknowledgement that risk analysts would have to probably get involved at some point to either confirm that a phase two analysis was correct, that the assumptions were appropriate, and that the analysis was producing an answer that was defensible, or it may be that the SDP, itself, the phase two worksheets -- there are certain cases where the SDP worksheets will not work.

For example, if a component is not considered totally unavailable, but a deficiency has reduced its reliability, the phase two worksheets won't work.

The only way to assess that is through the use of adjusting the -- you know, making some judgement about the change in reliability, and then processing that through a computer-based model. That's the only way to do it.

So, there are occasions when phase three, we anticipate, would be needed and, for the most part, because the worksheets have been so delayed in coming out. For the first year of operation -- of implementation for ROP, we've done a lot of phase three analyses.

And we're hoping to relieve the burden somewhat on the risk analysts that have been doing these analyses by the implementation of these worksheets.

CHAIRMAN SIEBER: I presume the region analyst is doing the phase three evaluation and the licensee is doing it with their own PRA at the same time. And the chance of the answers being exactly the same are probably nothing.

MR. COE: There's always differences.

CHAIRMAN SIEBER: So, how do you resolve that?

MR. COE: Well, we talk about them and understand what the differences are. In many cases, the licensee is making assumptions that, you know, at least initially, we are not necessarily willing to accept.

So, the process allows for us to come forward with a preliminary analysis and put it on the table and then, in fact, offer the licensee the opportunity to come back in a formal way, through a formal, docketed process, a public meeting, to come back and give us further information, upon which then we can make a final decision.

We don't have to come to consensus with a licensee in order to produce an SDP result. But we do offer the licensee the opportunity to provide us with as much information as they feel is pertinent so that we can make a well-informed decision.

CHAIRMAN SIEBER: So, this would be a matter for an enforcement conference if one were to occur?

MR. COE: We call it a regulatory conference, yes.

CHAIRMAN SIEBER: Right, okay.

MR. COE: And the purpose is primarily to gather the information that we need to make our final assessment.

CHAIRMAN SIEBER: Okay, thank you.

MR. COE: Right. I would point out that, in many cases -- and this is an ongoing issue for us. And how we do this better is to account for the external initiating event contributions.

As you're aware, the level of detail and sophistication and, in fact, the complexity -- because of the complexity of external initiating events is -- we don't have as much information as we have for the internal events.

And so, we do the best we can with the information we have. But in some cases, it has to be a fairly qualitative judgement as to whether or not there's a contribution that would affect the analysis results.

In this particular case, an enforcement action was issued as a notice of violation, or will be. Again, this hasn't come to completion yet. But the expectation that this kind of a violation would be a cited violation, okay?

Earlier, we were talking about the non-cited violations at the lower-significance levels.

When an issue of -- when a finding reaches the white or above significance level, then NCVs are not an option under our program.

We cite the violation. We require the licensee to respond in writing on the docket.

CHAIRMAN SIEBER: Now, when you issue a cited violation -- and let's not use this as the example, but just in general -- you still have the levels under -- like you had under the old enforcement policy? How do you determine what level you're in?

MR. JOHNSON: Actually, when -- for an issue like this that you've been able to run through the SDP, we've set aside those levels.

CHAIRMAN SIEBER: Okay.

MR. JOHNSON: The significance is given by the color of the finding. And because it is an issue that's associated with a violation, it is a cited violation.

So, with respect to the ROP and things you can run through the SDP, in general, we don't have severity levels. In general, you don't have civil penalties.

And I'm saying "in general," because if you had a situation where there was some actual consequence, it is possible to have a color, to also

-- but then again, run it through and assign a severity level and, in fact, issue a civil penalty.

But in general, for most violations, we're talking about a color and a citation if it's a violation.

CHAIRMAN SIEBER: That's enough, right?

MR. JOHNSON: Yes.

CHAIRMAN SIEBER: Okay, thank you.

MR. JOHNSON: Okay, that's actually -- that's the high level treatment of SDP for the reactor safety. I would also point out that you're going to hear a little more detailed treatment of a fire protection example a little bit later.

The fire protection example has an entire, separate appendix that they work through. But then, the outcome of that is an input to these kinds of worksheets, these SDP worksheets that we've been seeing here.

So that there's some initial work that has to be done in order to process a degraded fire barrier issue, that type of issue. And we'll get to that a little bit later.

Now, I don't know if you wanted to take a break now, because what I would be prepared to do is to go into some more detail on this particular white

finding issue -- example.

CHAIRMAN SIEBER: I think right now would be an appropriate time to take a break, at least for me. And let's reconvene at 10:30.

(Whereupon, the proceedings went off the record at 10:10 a.m. and resumed at 10:30 a.m.)

CHAIRMAN SIEBER: I think we can resume at this time. Mike?

MR. COE: Okay, I'd just like to walk through some of the details of the white inspection finding example that I showed you a moment ago. We'll go into whatever amount of detail that you care to.

The first part of an SDP in the reactor safety arena is a clear documentation of the condition. Factually and for the purposes of establishing exactly what the impact was on plant risk, we have to not include hypothetical situations, such as single-failure criteria.

So, we basically ask the inspectors to document factually what the condition is. We also ask them to think about the systems that were affected, the trains that were affected, the licensing basis or the design basis of the system.

That's sometimes not necessarily the whole story because it might have risk-significant functions

that go beyond the design basis of the system. But at least as a matter of completeness, we wanted to ensure that that function was articulated. And that's done here on this sheet.

Maintenance rule category is important when we ask some of the questions in the next -- in the next part of the phase one process. In the time that the identified existed, or is assumed to have existed, is important, again, from the standpoint of the final risk determinations because it's one of the influential inputs.

So, this is just a more complete description of the identified finding that I illustrated earlier at a high level.

So upon documentation that you saw there, the inspector is given a worksheet that looks like this to help them identify if, in fact -- or which cornerstone was affected.

At this point, the decision had been made already that a cornerstone was affected. And based on the earlier questions, it's anticipated that it would be the mitigation systems cornerstone.

But this worksheet lays out all three cornerstones in the -- or three of the cornerstones in the reactor safety strategic area, and asks the

inspector to clearly identify what, exactly, is the cornerstone of concern.

In some cases, it might be a combination of cornerstones. It might be -- a single issue might affect both an initiating event frequency, as well as a mitigation system cornerstone. But this is just to lay out the assumptions.

And I would point out that the documentation expectations for the SDPs in this area, and in other areas across the board, across all cornerstones, are expected to be clear and reproducible, such that an individual member, a knowledgeable member, of the public could take the inspection report and the description of the significance basis and take our guidance documents, such as Manual Chapter 0609, the SDP process, and arrive at the same conclusion, so that it's reconstructible -- the basis is reconstructible.

Okay, so that's -- here again, the mitigation cornerstone is the one that we're -- it should be this -- this next sheet here should be the next one in your package. I hope it is.

CHAIRMAN SIEBER: No.

MR. COE: It's not? Well, go to the next page, then. We might have reversed these two.

CHAIRMAN SIEBER: Page 18.

MR. COE: Okay, yes, page 18 is this sheet here. And it's actually the next one after the one I just showed. Here, the inspector is given a series of questions to determine whether or not the issue can be screened as green at this point and processed accordingly, or whether it needs a further treatment which may, or may not, result in a higher level of significance, but at least warrants the further treatment in phase two.

In the case of mitigating systems -- mitigation systems, the inspector asks these series of questions. If the issue had impacted the initiating event cornerstone or the containment barrier, part of the barrier cornerstone, then you would ask -- he would ask these questions.

In this particular example, the feedwater -- the emergency feedwater pump example, the first question was, is the finding a design qualification deficiency that does not affect operability? The answer is no, it did affect operability.

And so, you go to the next question: is the finding an actual loss of safety function for a system? Well, that was defined in the first page, what the system was.

The system, in this case that was affected, was the emergency feedwater, and the whole system had not been lost. So, the answer to that question is no.

The third question is, does the finding represent actual loss of the safety function of a single train of a system for greater than a no-tech spec AOT?

And this gets to the criteria that I indicated earlier, causes this to be answered yes. And therefore, we go to a phase two analysis. In other words, there is a need to look at this issue in further detail to assess its significance.

The other page that's labeled 17 is not -- is not used at this point in the process because it deals with external initiating events. And it's a set of screening questions that would be used at the end of this process.

If this process established a level of significance above green, then we would come back and we would look at these questions, and determine whether or not, either qualitatively or quantitatively, depending on the information we had available, whether or not external initiating events were a contributor to this significance.

But we'll -- we can come back to that after we finish the internal event treatment.

Now, each plant -- basically, now we have established the assumptions that we're going to be using in utilizing the various worksheets in the risk-informed, plant-specific inspection notebooks, which include these phase two worksheets.

This table here represents, for this particular plant, the initiating event frequencies for all of the initiating events that would be subject to consideration by this SDP.

And this table basically requires the inspector to -- and there's another table that will help in just a moment. But this table allows the inspector to determine what the initiating event likelihood is for the period of time, the exposure time, for the degraded condition.

So, in this case, 39 days is this column here, this first column. And as we will find out -- I have already -- like I said, I've already given you the answer.

But as we will find out, the initiating event that prompts the sequence of greatest interest here is one that has a -- starts with a reactor trip with a loss of power conversion. So, that's this

initiating event here.

The assumption -- the going-in assumption of its frequency is in this range. And since it's a 30 -- greater than 30-day period, that's why it resulted in this estimated likelihood rating of "A," which represents, once again the likelihood that that event will occur within that period of time. Okay, and we can come back to that as need be.

Now, how does the inspector know which sequences he needs to examine in order to assess which have been affected by this particular problem?

Well, the affected system; that is, the system that has the problem, is emergency feedwater. And this table, which again is specific to each plant, each plant's design, and is incorporated into that plant-specific notebook -- this would indicate that the EFW system, which is composed of two motor-driven pumps and one turbine-driven pump, appears as a mitigation function in all its initiating event sequences, with the exception of medium LOCA, large LOCA and loss of instrument air.

So, in other words, the inspector's next task is to pull all of the worksheets out -- and we'll be going through a couple of those in a moment -- that -- except for these, okay? Because in all of those

other worksheets, EFW appears as a mitigation function.

And so, it has now been affected. So, therefore, the likelihood of those sequences occurring has been affected. And then, ultimately, we're going to seek to answer the question, how much have they been affected, okay?

The next -- the next two pages are just a continuation of that table.

CHAIRMAN SIEBER: Now, these are plant-specific; is that not correct?

MR. COE: What I've gone through so far is all in the plant-specific, risk inform notebook.

CHAIRMAN SIEBER: Okay.

MR. COE: One is generated. There's about 70 or so such notebooks that are either developed or in the final, the very final, stages of development. And they cover all 103 operating reactors.

CHAIRMAN SIEBER: All right. This table here is a generic table. It appears in our overall guidance document for the reactor safety SDP in Manual Chapter 0609, Appendix A.

And what will happen here is that for those sequences that the inspector has identified as having been impacted, each sequence will be given an

initiating event likelihood based on the particular initiating event for that sequence.

And then, each sequence will be judged in terms of the remaining mitigation capability that remains given that this one aspect of its mitigation -- of the mitigation function is unavailable.

And depending on how much mitigation function capability remains -- again, this is remaining mitigation capability -- and these are just examples. They're not a complete set of examples; they're just examples -- then, for that sequence, we'll generate a color.

And the color will reflect the delta core damage frequency change associated with that sequence on an order of magnitude basis. Okay, so we'll come back to this table as well.

In fact, I would suggest you maybe put a marker in that because we'll want to refer to that as we go through the analysis.

This is the first worksheet that -- and, in fact, is the one that had the white sequence in it that I identified as dominating this particular analysis.

The worksheet is -- the way it's laid out is the first row up here, the first line, carries

forward information that has already been determined from the previous tables.

This comes from that first table, and it indicates that this particular initiating event frequency is found in row one of that table, and that the exposure time assumption was that it was -- that -- from that table was greater than 30 days, and that that result was "A," as we saw, okay?

Now, this next section of the table defines what these mitigation functions are that appear in these accident sequences. Again, these are high-level functional accident sequences.

So, for each function, such as EFW, EFW will be described in terms of the plant components that are available to mitigate that -- to provide that function in order to mitigate that initiating event.

And this is describing the full, creditable mitigation capability for each of these safety functions. So, this is as much credit as you can take for that safety function for that particular plant.

In the case, in the specific case, of emergency feedwater, again emergency feedwater, in this plant, can be achieved -- the safety function can be achieved -- with any one of two motor-driven EFW

trains and that the two of them together, therefore, comprise a one, multi-train system amount of credit.

And there's a numerical value associated with that credit, and we'll talk about that in just a second -- in a minute.

In addition, the turbine-driven EFW train, there's one. And it is a full, 100 percent capable train. So, one of one of that train is also capable of providing the full function.

Now, in addition, there's -- there needs to be steam relief on the secondary side through either one out of two ADVs -- that's atmospheric dump valves -- or one out of 20 safety valves, okay?

And that's -- that's a necessary -- that's there basically to -- for completeness. It doesn't really factor into the credit because you have so many options there.

What you're really limited by is the ways of putting feedwater into those steam generators.

Okay, now, looking down here at these three sequences that are listed, we see that EFW appears in all three sequences. Therefore, all three sequences have be affected by this degradation, by this problem.

So, treated individually, we say how much

mitigation capability remains for each affected sequence? In the case of EFW, we have one motor-driven EFW pump remains, and one train, one electro-mechanical train, is given a credit of two, that it represents 10^{-2} unavailability.

Okay, a turbine-driven emergency feed pump, because it's a -- what we call an automatic, steam-driven train, we have only given it a credit of one, 10^{-1}, unavailability.

So, there's one in ten chances that that turbine-driven EFW pump would not function upon demand. But there's one in 100 chances that the motor-driven EFW pump would not function upon demand.

And that's based on our generic insights in terms of the differences between electro-mechanical train reliability and steam-driven train reliability. So, that's the amount of credit we're willing to give in this particular, rough analysis.

The other function that's associated that, if it were to fail along with these other failures or events, would lead to core damage is high pressure recirculation.

The high pressure recirculation function is achieved through -- you know, for -- and I said "high pressure," so it's the high pressure function --

is achieved through one out of two high-pressure injection trains, which, in this case, there's a note here indicating that there are actually three pumps for two trains -- taking suction from one out of two low pressure injection trains. And all of this requires operator action.

Now, in order to assess the value or the credit that's given to that function -- and remember, that function has not been impacted by this deficiency. So, we're going to give full credit.

You'll notice that, for the EFW, we only gave the credit that was remaining. The fact that the other motor-driven pump was degraded or unavailable is reflected by the fact that it does not appear as credit for mitigation capability.

In the case of high pressure recirc, there has been no impact on that function. And therefore, full capability is creditable. How much credit is that?

In this case, operator action essentially is the most restrictive feature because if operator action doesn't occur, the function will not be met.

And there is guidance in our 0609 document that describes how that should be treated. In this case, we give credit of three, which represents 10^{-3}

likelihood that operators will not successfully implement high pressure recirculation.

If you sum those numbers up -- oh, and this column right here, failure -- recovery of the failed train, in each of these cases of an identified, actual impact, the question often arises, can the issue or can the degradation be recovered by an operator action?

For example, if this had not been a bearing oil problem; if it had been a switch left in the wrong position and an operator in the control room, based on indications, could identify that and recover from that deficiency, then credit for that recovery might be warranted.

We give credit under -- only under certain meeting -- if the action would meet certain specific criteria, which are actually listed on this worksheet in the next -- in the next slide.

But in this particular case, we are not giving any operator recovery credit because our going-in assumption is that the bearing will fail, and it will fail catastrophically.

And therefore, there's not time available to recover from that. So, the function is completely lost.

Now, the sum of these, if our math is correct, should be six. And that value of six is the mitigation credit for that sequence. And if you go back to the table, page 23, that we had up there just a moment ago, that sequence had an initiating event likelihood and a remaining mitigation capability of six, which is this column.

So, that puts it in green. But notice that green is right next to a white, so we're high green, okay? I'm not going to use dark green or light green.

(Laughter.)

But clearly, we're up there -- we're less -- we're about an order of magnitude away from a white. And that may be significant later, so -- and we'll talk about that in a minute.

The second sequence is treated the same way. In this case, early inventory high-pressure injection is satisfied by a multi-train system up here indicating one out of two high-pressure injection trains -- again, there's three pumps, but there's two trains. And that injects from a borated water storage tank.

One multi-train system is given a credit of three, and that represents the combination of the

individual components, the individual train reliabilities, plus the added factor of a possible common-cause problem mode.

So, at a high level -- in other words, if it was -- if it was two independent trains, totally independent, each train would have a credit of two. And you could add those together if they were two independent and diverse trains to get four for our total mitigation credit.

But if the two trains are identical and they're part of a multi-train system, then you can't -- you can't just add those up without accounting for the potential for common-cause failures.

And when you add that in, that drops you back to about a 10^{-3} in a rough sense. So, that's the basis for that. So, that also, then, is given a credit of three, which differs in basis from what we gave up here, because up here, it was based on operator action. Down here, it was just simply based on the electro-mechanical train unavailabilities.

Again, it produces a remaining mitigation capability rating of three -- of six, excuse me. And we're still dealing with the same initiating events, so we're still dealing with "A".

And if you go back to the table, it's

identical to what we had there before; again, green, and I've added here next to white. "NTW" stands for next to white.

Now, the third sequence is the one of interest, and this is the one that I represented earlier on the high-level slide.

The EFW credit is the same as before. In this case, the feed and bleed credit -- if we look at the feed and bleed function up here -- or in this case, it's defined as primary bleed because it really is based upon the availability -- not only operator action, but the availability of bleed sources.

Similar to what I described up here for high-pressure recirc, the things that drives this credit here is operator action.

And for feed and bleed, primary feed and bleed, we allow a credit of about 10^{-2} likelihood of not succeeding. And so, that credit of two is what is represented here; and when summed, gives five total, which, again, if you go back to the table that I showed earlier, would get you into a white range.

DR. APOSTOLAKIS: So, if the operator credit is one, what would happen to this finding? It would be what color?

MR. COE: Well, if you -- if you assume

that for feed and bleed, that operators were only -- you were only comfortable, for whatever reason, giving operators credit of 10^{-1} likelihood of --

CHAIRMAN SIEBER: It would be red.

MR. COE: -- of failure, you would be in the next -- you would go to the next color up, right? Because this would be one; this total would be four.

DR. APOSTOLAKIS: So, it would be yellow.

MR. COE: White would go to yellow.

DR. APOSTOLAKIS: Now, that -- you know, the operator actions of this kind, you know, it is very difficult to quantify the probability because it's not the probability of failure. It's the probability of failure to decide to do it, hesitation, all that.

So, I mean, what would that mean now? This is independent of the -- of the violation or the finding, right?

MR. COE: This is independent of the violation, but it's assumption that is used as part of the significance determination.

DR. APOSTOLAKIS: But your action, though, from the enforcement matrix, would be different; I mean, white versus yellow, right? And the full plant will be penalized depending on assumptions that have

been somewhere else.

MR. COE: That's right.

DR. BONACA: For example, in this case, you do have -- in the simulator training, they are begin trained to enter into the --

DR. APOSTOLAKIS: It's not a matter of doing it correctly. It's a matter of deciding to --

DR. BONACA: Absolutely, and that is always absurd -- that is always absurd how fast they get into it. I mean, that sequence -- so, there is information available on-site.

DR. APOSTOLAKIS: No, but you remember the Davis Bessie thing where --

DR. BONACA: I understand that, but --

DR. APOSTOLAKIS: -- economic consequences were huge.

DR. BONACA: Oh, yeah.

DR. APOSTOLAKIS: So, I don't know that the 10^{-2} is on solid ground. I mean --

DR. BONACA: No, I'm with you. I mean, there is information -- at least in later years, I know that there is a of emphasis on are they doing it or not.

MR. COE: And I would point out that, on the next page, which is a continuation of this table,

there's a note that we've added that indicates that based on the license -- this particular licensee's IPE, the human error probability for this function that they used, in their own analysis, was 3.4 E^{-2}, all right?

So, we're not far off. But the main point that I want to make here, I think, is that all of -- you know, your point is exactly right. The objective here is to come up with what was the impact on risk?

And we use a core damage frequency risk matrix as the means of getting to that answer. And it's all based on a lot of assumptions. And what we're trying to do here is to bring these assumptions out into the open so that they can be examined.

And again, the inspectors, very often, are the persons who are in the best position to point to an assumption and say, "I know that's not true. I know that's not right."

We want the analysis to represent the truth, as best we know it. And in order to get those assumptions out on the table, we're using this kind of process. And we're asking the inspectors to go through the same kind of thinking process that would prompt them to think well, have I seen any problems in the simulator with feed and bleed?

Is there any evidence that there's a problem in this area that I can't -- that this assumption should really be one instead of two, and that maybe the color should be yellow instead of white.

DR. FORD: I'm a material scientist, and therefore, used to making a hypothesis and examining it with fact. This is a very logical approach, but is there any way of going aback and double-checking it against experience, actual, factual experience?

MR. COE: In terms of do we have a database --

DR. FORD: Yes.

MR. COE: -- of operator performance?

DR. FORD: Yes. I mean --

DR. APOSTOLAKIS: I think you are talking about the whole approach, and not just operations, are you?

DR. FORD: Exactly. I mean --

DR. APOSTOLAKIS: The whole SDP?

DR. FORD: For instance, your whole -- this whole table is based on input in item one. You're putting a "1" in that top, left estimated frequency.

MR. COE: Yes.

DR. FORD: What happens if it was a different frequency basically you've got a time-dependent degradation or whatever it might be?

MR. COE: Sure.

DR. FORD: How would that -- is there anything that you can double-check these estimates, reasonable although they may be, against observations?

MR. COE: Well, actually, yes. The basis for the -- for instance, the initiating event frequencies that we're using comes from a study that was completed a couple of years ago by -- it started out by AEOD, and then became research.

But these assumptions -- you know, the order of magnitude that we chose to use for these various initiating events actually came out of an initiating event study, which is published in a new reg.

It represents the best insight that this Agency has, based on operating experience that has been gathered over the years as to what we expect the generic frequency of those events to occur at.

Now, it's important that the inspector understands that these are assumptions. And when they're applied to their specific plant, that specific plant's experience may differ. But the assumption of

where -- where we're starting out assuming that that initiating -- that frequency is, or what the mitigating system reliability is, is starting out with a generic value.

And those assumptions are exposed through this process and thereby, allow the inspector to challenge them if, based on their own knowledge and understanding of that plant, they feel that they aren't true.

DR. FORD: So, when you say you have 70 of these documents going out, which cover all 103 operating stations, they may well change, depending on the history of that particular plant?

MR. COE: Well, we --

DR. FORD: Bad water chemistry control or whatever it might be?

MR. COE: Well, I think that -- yes, well, what you're saying is that the plants will change over time. They may modify the plant. The reliability of certain equipment may change over time based on issues or problems.

What we've tried to do here is establish these starting values at a more or less conservative level.

DR. FORD: Okay.

MR. COE: We think we've got a more or less conservative set of assumptions here for most things. And we're continuing to monitor the process to identify, you know, areas where something might come up and we might identify that our assumptions may not be as conservative as we expected.

And so -- but in general, we think that if this process renders -- and I don't mean that -- whenever you do risk analysis, you really shouldn't be using conservative assumptions, right?

You should be trying for the best, most reasonable assumptions possible because conservative assumptions can often, you know, cause the results to skew and may obscure other things that you're interested in.

And so, we're not trying to be over-conservative in our assumptions, but the numbers we're using are based on systems studies, for example, such as that are generated by research now: ox-feed water, diesel generator systems.

They've gathered information from LERs and other databases, and they've done statistical analyses. And the numbers that we're using, such as a credit of 10^{-2} for a single, electro-mechanical train, a credit of 10^{-1} for a automatic steam-driven

train, come from -- or at least are checked against -- the results of those studies.

DR. FORD: Okay.

MR. LEITCH: Now, could you go back to slide 24 for just a second?

MR. COE: Sure.

MR. LEITCH: I have a question about how you get the "2" in the column there that's labeled "remaining mitigation capability" --

MR. COE: Yes.

MR. LEITCH: -- "2 motor-driven emergency feed pump". Where does that "2" come from? I guess my question is, is this all pre-printed on this sheet, or is this the result of this specific --

MR. COE: No. Actually, it's a good question. There is a -- and I apologize; there is a separate table that's in 0609 that defines the credit given to a multi-train system. In fact, it defines a multi-train system.

MR. LEITCH: Okay.

MR. COE: And the credit that's given to a single train -- or in cases where operator action comes into play, the credit is actually given right here because operator action credit will change from sequence to sequence, you know?

So, we don't -- we don't try to define that in a table. We put it right up here.

MR. LEITCH: Okay.

DR. APOSTOLAKIS: So, Doug, you said earlier -- but let's confirm it once again -- all of these tables are plant-specific?

MR. COE: Yes, the tables that I'm representing here are plant-specific.

DR. APOSTOLAKIS: And the numbers?

MR. COE: Yes.

DR. APOSTOLAKIS: The credits?

MR. COE: Well, the numbers are -- start out to be generic, such as a credit of two for a single train, and one for an automatic steam-driven train. And the frequency of initiating events started out to be what was represented in the new reg study that research provided.

As we've gone through the process of asking licensees for comment, they may have provided us with some additional information upon which we can make a decision that we should alter that initiating event frequency, or that we should alter that mitigating system function, or that we should alter that operator reliability, HEP value.

DR. APOSTOLAKIS: Have many licensees

actually asked you to make these more plant-specific by submitting such requests?

MR. COE: Licensees typically gave us a lot of information that they felt was more accurate for their plant. You know, I think in almost every case, every licensee gave us feedback that they felt was better reflective of their plant.

Now, we didn't accept that carte-blanche, obviously. And in fact, there is some advantage to sort of staying with some more generic assumptions as a start.

Now remember, I said there was a phase three process too. If our phase two tool is a little bit over-conservative, we're willing to accept that because it's expected that if the phase two results are challenged by the licensee because they have a better analysis, and typically they will, then we'll get into a more detailed level of analysis that would -- would, then, have to account for some of the more specific differences that the licensee was using relative to our assumptions.

DR. APOSTOLAKIS: But the determination of the color is not on a generic basis, correct?

MR. COE: The determination of the color comes directly from this analysis and these

worksheets, based on the plant-specific assumptions.

DR. APOSTOLAKIS: No, but I mean you have a matrix somewhere that tells you that a five, right, is a white? That was --

CHAIRMAN SIEBER: Page 23.

DR. APOSTOLAKIS: Yeah, yeah.

MR. COE: Well, relative to that particular initiating event likelihood.

DR. APOSTOLAKIS: Right, but it's -- this is not plant specific.

MR. COE: This table right here is not plant-specific, that's correct.

DR. APOSTOLAKIS: It is not plant-specific?

MR. COE: Yes, that's correct.

DR. APOSTOLAKIS: It appears to me it should be; I mean, because a plant-specific nature is already in the -- is it possible that the same number at one plant should be a green and another should be yellow? Does that make sense?

MR. COE: It could make sense if the plants' designs for the green plant had more mitigation capability than the one that had the yellow plant -- or, I mean, the yellow finding.

DR. APOSTOLAKIS: No, but I said the same

number. If you had more mitigation ability, the number would not be the same.

MR. COE: Well, if the number.

DR. APOSTOLAKIS: You wouldn't get the same number.

MR. COE: If the number was the same, the color would be the same. The color is representing the band, an order of magnitude wide, and that doesn't change. That is a -- that is a threshold, a set of thresholds, that is consistent with the PIs, and is essentially fixed.

DR. APOSTOLAKIS: But --

DR. SHACK: But this is really sort of giving you an exponent on CDF. So, I mean, it really goes back to 1174. And so, it is the same for all plants.

DR. APOSTOLAKIS: No, but 1174 uses a fundamental input, the baseline -- so, no, I'm not saying that it should be. It just occurred to me that the decision on the color is generic, but the input into the matrix is plant-specific.

And I'm wondering whether this is consistent -- self-consistent. I mean, but I hadn't thought about it.

MR. COE: Well, you raised the point about

baseline CDF. And our metric here, remember, is the change in CDF. We're not referencing these colors to any baseline, any particular baseline CDF. They are referenced only to the change --

DR. APOSTOLAKIS: Right.

MR. COE: -- delta core damage frequency and delta LERF.

DR. APOSTOLAKIS: But even in 1174, when the baseline CDF is greater than 10^{-4}, we drop the delta --

MR. COE: Yes.

DR. APOSTOLAKIS: -- by another magnitude.

MR. COE: Right. For permanent changes to the plant --

DR. APOSTOLAKIS: Permanent changes.

MR. COE: -- that may be appropriate.

DR. APOSTOLAKIS: Yes.

MR. COE: These are performance deficiencies that have resulted in temporary degradations.

DR. APOSTOLAKIS: Now, do you see a time in the future where all this will be computerized?

MR. COE: Good question. Maybe. Initially --

DR. APOSTOLAKIS: Maybe you see a time, or

maybe there will be?

(Laughter.)

MR. COE: It is possible. My thoughts are, it is possible that this is an intermediate step along the way to the use of -- the employment of more sophisticated risk tools by field inspectors.

The challenge that we face today, and we have faced over the past few years when we've tried to risk-inform our processes, even before ROP, is that inspectors -- we were not able to give inspectors sufficient training to allow them to utilize the computer-based tools effectively that had been developed, all right?

We established the SRA Program, the Senior Reactor Analyst Program, in 1995 in order to begin to get at that need. And it took almost two years of training before the SRAs were really, fully qualified.

This is a way of accommodating the needs of ROP while, at the same time, in a very complimentary way, giving inspectors a better risk-informed perspective of their particular plant, and of the risk -- of the probabalistic framework that is, in many cases, not something that they had to deal with day-to-day in the past.

They deal with a very deterministic

framework of compliance-oriented and the -- the decisions as to what was important and what was not were based on their own experience and the various pressures that were brought to bear by their own management, but the licensee, and by the public or outside stakeholders.

So, what we've tried to do here, and as we've said repeatedly, is to come up with a more predictable and objective tool. And this is -- the risk metric is the way we've chosen to do that.

But the inspectors have a challenge of understanding better the assumptions and the limitations of the risk tools that we employ. And so, this is -- this is the way of accomplishing that.

MR. JOHNSON: And I would only add that my -- the way I respond to your question, George, is to say that we think -- we think there is something that is valuable with having inspectors, at this stage, work through these sheets.

And in the future, for efficiency purposes or for accuracy purposes, it might make sense to computerize it. But today, we think this -- we get -- we get maximum benefit in terms of enabling inspectors to understand not just what the significance is, but working through why it's significant.

DR. APOSTOLAKIS: I fully agree with you that we can view this as a training period where people really understand what PRA is all about. But at the same time, as you know, the Office of Research is putting all the IPEs into a -- so far, they're calling is SPAR?

MR. COE: Yes.

DR. APOSTOLAKIS: So, after we have a SPAR model for each unit, maybe that would -- and that will not happen tomorrow, so --

MR. JOHNSON: Right.

MR. COE: No. In fact, you know, we're struggling -- I know Research is struggling with the level of effort and the amount of resources that they can devote to completing the work on the more sophisticated -- the next revision to those computer-based models.

But even once they're completed -- you know, even once they're written, an important aspect of that is to go out and check them against licensee analysis results --

DR. APOSTOLAKIS: Sure.

MR. COE: -- and to make visits to the site to ensure that the assumptions that those models have in them are accurate.

And then, there's the question of ongoing maintenance of those models, and how much effort we're willing to put into that.

And then, there's a whole argument that says, well, maybe the licensees ought to just provide their own models for our use. And there's ongoing discussions at high levels regarding that.

So, how it all plays out in the end, I don't know. I hold out that there's a possibility that inspectors will become risk-informed enough to be able to use the tools if they exist, the computer-based tools.

But right now, I think the agents -- not only the inspectors, but the management, the decision-makers in the Agency, need to have a process that forces the revelation of these assumptions as they make these decisions so that we can legitimately claim that we have a risk-informed process.

Because if all the assumptions are buried into computer models somewhere, and we're making the decisions based on the results coming out of a computer relative to some standard or some threshold, I'm not sure that I can call that risk-informed, okay?

MR. LEITCH: I think I may be getting mixed up a little bit between core damage frequency

and change in core damage frequency. I guess my question basically on the next slide, 24 I guess it is. On that last example, could there be a scenario where normal operations gets a green?

DR. APOSTOLAKIS: Gets what?

MR. LEITCH: Gives a green. In other words, you're running along normally with three -- with two -- you just had it there a minute ago.

MR. COE: Yes, slide 24, right?

MR. LEITCH: Slide 24, yeah. It's unnumbered.

DR. APOSTOLAKIS: Slide 24 is up there.

MR. COE: Oh, thank you.

(Laughter.)

MR. LEITCH: Say you had both motor-driven pumps and a turbine-driven pump, and you assume, say, one for feed and bleed. Does that give you a green indicator in normal operations?

MR. COE: Well, first of all, you only look at these if they've been changed. So, if a baseline contribution of a particular sequence -- the baseline contribution of all full mitigation capability is potentially white, okay?

I don't think that happens very often, but it's possible, right?

MR. LEITCH: Yes.

MR. COE: Because white represents a single, functional sequence that contributes anywhere from 10^{-6} to 10^{-5}. You know, and most core -- most plant baseline CDFs are between 10^{-5} to 10^{-4}.

But the point is, is that you only look at this if there has been a change.

MR. LEITCH: Okay.

MR. COE: Now, the theory --

MR. LEITCH: But if you just --

MR. COE: Philosophically, what happens is, if you're only looking at the sequences that have changed, if we were to look at the core damage frequency with the change, we would add all the baseline sequences, the ones that didn't -- weren't affected.

MR. LEITCH: Okay.

MR. COE: And then, when we subtract off the baseline, all of those go away. All those sequences go -- the contribution to all those sequences goes away. So, all we're left with is the one that changed.

MR. LEITCH: That changed, yes, yes. Okay.

MR. COE: So, that's -- theoretically,

that's how we can call this delta CDF.

DR. APOSTOLAKIS: So, this is really CDF-oriented not LEFT?

MR. COE: Well, we haven't talked about LERF yet. But the LERF -- the significance standard for LEFT is essentially one order of magnitude more sensitive than for delta CDF.

DR. APOSTOLAKIS: But you do have the tables and everything?

MR. COE: Right. We just -- this issue didn't impact that, so we're not talking about that today.

DR. APOSTOLAKIS: Yes.

MR. COE: Okay, so this is only one of several worksheets. Now, I mentioned that, essentially, the guidance for this example was that all the worksheets had to be looked at, with the exception of a few LOCA worksheets.

DR. APOSTOLAKIS: I wonder if you have -- I mean, one of your cornerstones is emergency planning --

MR. COE: Yes.

DR. APOSTOLAKIS: -- which is beyond LERF?

MR. COE: Yes.

DR. APOSTOLAKIS: So, how would you go

back?

MR. COE: We have a separate significance determination process specifically designed to address findings coming out of emergency preparedness inspections.

DR. APOSTOLAKIS: So, you're using level there results?

MR. COE: No, it's more -- the logic of that SDP is more related to the nature of the deficiency that caused the problem.

DR. APOSTOLAKIS: It's not risk --

CHAIRMAN SIEBER: It's determined risk.

MR. COE: Correct. It's really -- you can't really claim it to be risk-informed, although what we've tried to achieve with all of these other cornerstones that you can't link directly to core damage frequency or delta LERF metrics, is a consistent response.

The Agency's response is commensurate with the type of deficiency that has occurred. And it is, I think in the formulation of those SDPs, somewhat more subjective.

But what we're trying to achieve is the same goal, the same level of consistency.

CHAIRMAN SIEBER: Okay.

MR. COE: Okay?

CHAIRMAN SIEBER: And you have the same situation in physical security, right?

MR. COE: Yes, right. In fact, you know, as you're probably aware, we made an attempt early-on to incorporate risk-informed processes -- a risk-informed SDP process into the physical security SDP, particularly -- specifically for assessing the significance of force-on-force exercises.

And that proved to be unworkable. And I -- you know, I was involved in trying to make it work, and I, and others, were just simply not successful. You know, there's too many differences from a -- you know, when you're talking about risk in terms of sabotage events and the level of intent that -- you know, and all of the variations that can occur in terms of recoverability of things under fairly stressful conditions.

It just wasn't workable, so we're redefining that now.

CHAIRMAN SIEBER: Okay.

MR. COE: Okay. The other sequences that I thought I would show you -- I haven't gone through all of them here. But the other ones that came out, not white, but rather there was another sequence that

came out green, you know, right next to white, was a loss of off-site power sequence.

In this case, I just wanted to point out that the loss of off-site power initiating that frequency is in a different row in table one. It's in row two.

Exposure time, of course, is the same. It's greater than 30 days. But the result now, if you look on that table, is "B," which represents a less frequent initiating event.

Now, that means that you don't have to have quite as many mitigating -- quite as much mitigation capability on the average for that initiating event as you would for the one in the higher frequency category.

And that -- that affects, you know, in a probabalistic way, what the outcome of the significance is.

So, in this case, we look at EFW again. These have been affected, and the choices that are made here, in terms of remaining mitigation capability, are exactly what we've described before.

In fact, even for this particular sequence, the feed and bleed is also the same. And in fact, that sequence, other than the initiating event,

is exactly the same as the one that got us the white.

Okay, in this case, because the LOOP frequency is less than that transient without loss of PCS frequency, this -- this value of five, instead of getting us a white because we drop down one on the -- on this table here -- we're in the -- the LOOP is a "B" likelihood here. And we come over here to five, and we're green next to white, okay?

Now, you probably realize already that a real PRA sums all of these contributions up. And what we're dealing with here is sequence-by-sequence. And we're saying the most dominant sequence, you know, is the one that drives the color.

But in fact, we acknowledge and recognize that an accumulation of sequences at lower levels may sum up to something greater than the threshold that we have set for green and white.

And the way we accommodate that in a phase two level in the courser treatment that we give a phase two, is to establish a summing rule. And the summing rule says that if you have more than two of these sequences that are green next to white, then you should call that a white, okay?

Now, that is a somewhat arbitrary choice, but we thought it was a reasonable one, at least to

start with. And that's not to say that if you even had two greens next to white that that wouldn't, or shouldn't, prompt maybe a more thorough analysis, which is, you know, often easy to do with either our own tools or utilizing the licensee's analysis, okay?

So, all I'm saying is that we recognize that that's a limitation of this particular phase two level of detail, and we've tried to account for that. And that, if nothing else, gives inspectors -- you know, reminds inspectors that that's really what's going on here, that there's a potential for aggregating, or summing I should -- you know, summing these lower level issues to something that was of greater significance.

Okay, that actually completes the documentation that I had to show you and the example, unless there's any other questions about what we've done.

MR. JOHNSON: Now, we're at a point in the presentation where we'd like to get into the fire protection SDP if that's possible. Does that fit?

CHAIRMAN SIEBER: That fits with me.

MR. JOHNSON: Okay. J.S., Mark, guys, would you come up and join us?

MR. HYSLOP: Hey, Doug, I think you've got

my transparencies.

MR. COE: They're up here, yes.

MR. JOHNSON: Would you like me to flip for you or --

MR. HYSLOP: Hi, my name J.S. Hyslop, and I was the co-developer of the fire protection SDP, which was developed over a year ago. And Pat Madden and I -- I'm in PRA -- Pat Madden, a fire protection engineer, also developed this. We did it together.

And Pat has since moved on. And now, Mark Salley, beside me, is now responsible for the fire portion of the fire SDP.

This first slide indicates that I'm going to give an overview in the presentation. Basically, it's just the general remarks that are going to be overview.

From that point on, we're going to get into an example with a specific application of the fire SDP on a set of fire protection findings we had.

And so, in that -- don't move on yet, Mark, I'm going to talk about the identification of the findings and -- clear identification of the findings.

We're going to talk about the fire scenario, and there -- a realistic fire scenario where

we, of course, have to take into consideration the figuration of the room as well as the findings themselves.

And then, we're going to apply the SDP to estimate a color and talk about the basis for the degradation, as well as the failure probabilities used. Go ahead.

I want to make some general remarks to just give you some insight into what we're doing with the process, as well as some information about it.

We're using techniques and data generally accepted by the fire risk community. What do I mean by the "techniques"? Well, the technique involved consideration of a fire ignition frequency, the defense in-depth elements, barrier suppression, etcetera, and mitigating systems.

We put all those together, using the appropriate probabilities, to get a change in core damage frequency. The date --

DR. APOSTOLAKIS: J.S., most utilities, the way I understand it, use the screening bounding methods like five in their IPEEEs. Would that -- wouldn't that make it very difficult to calculate delta CDF in this context?

MR. HYSLOP: Well, what we're doing is

we're trying to look at realistic scenarios. So, we're actually using the emission frequency associated with the scenarios. And we have tools to evaluate the damage done by the fire, quantitative tools that we're developing now.

And you know, we're trying to estimate the damage -- as a result, we try to estimate the damage as reasonable as possible.

DR. APOSTOLAKIS: So, what you're saying is that you are going to be use the IPEEE to some extent?

MR. HYSLOP: We're using a lot of information out of the IPEEE, but we reserve the right to develop scenarios ourselves to disagree with those in the IPEEE because, you know, that's what our inspectors do.

They go out in the field. They look at the fire sources, and they make independent judgements themselves about the damage done. And I'm going to be talking -- my next point is that it's an evolving process.

And I'm going to give you some information that -- about some of the things we're working on to improve that right now.

So, it's an evolving process. We just

released the second version of the SDP. It's my understanding that that was distributed to you by IPB.

And there, we've got some clarifications and just -- on identifying and evaluating realistic fire scenarios, as well as guidance to assist the inspectors to determine the degradation level associated with the weakness of our inspection finding.

We also have -- it's an evolving process, so we have future plans. First of all, we have a tool development to assist the fire protection inspectors to evaluate the effectiveness of manual actions specific to fire.

You know, you may have manual actions specific to fire because of evacuation of the control room, or you may have manual actions specific to fire because of heavy smoke being in the vicinity.

This project was -- we got a lot of help from Research on this. Nathan Siu was using the data available to him through the Fire Research Plan.

So, they provided the foundation. NOR has since looked at that and made some modifications to it. You know, the next step, of course, is to document this, and to go around with industry, get their feedback, as well as the other stakeholders,

because that's the way the reactor oversight process works.

Another tool that we have under development, really by Mark Salley, is the development of a quantitative tool to estimate the fire damage as the result of a fire ignition source.

And Plant Systems is working on that now, and developing templates and a guide to use for the inspectors.

And so, the next step is, what are we doing with our stakeholders? Are we telling them about this? And yes, we are. There was a fire protection information forum held, I don't know, a while ago I attended. And I talked to them about these -- about these plans that we have for the fire protection SDP.

And then, there was the reactor oversight workshop, which was held a month or two ago, or so. And there, we had a fire protection break-out session where Mark and I attended, as well as some other fire protection people. Some SRAs came and, you know, industry came.

And we talked about, again, what we're doing. And we've been talking to industry the whole time, in response to your comment earlier. Throughout

this development process, early on, before we even used it, we had many meeting with industry: with NEI, small meetings with industry where we had a couple hundred people there -- here. And we ran --

DR. APOSTOLAKIS: What do you call a large meeting then?

MR. HYSLOP: Well, I guess I would say --

DR. APOSTOLAKIS: More than a thousand?

MR. HYSLOP: No, no, no. There were a hundred people there. There were a hundred people. That's a large meeting for me. I come from a small town. So,

CHAIRMAN SIEBER: A thousand would be medium.

DR. APOSTOLAKIS: It's a medium.

MR. HYSLOP: Anyhow, the last point is, we have a state-of-the-art research plan going on ten floors -- being managed ten floors up, and Nathan Siu. And he's doing work on suppression. He's doing work on fire barriers.

And I've told him that I'm interested in the insights that he gains from his program because this is an evolving process. And likewise, I'm interested in your comments. Again, it's an evolving process.

Next. So, we're going to get into the example right off the bat. You know, as I said, this is based on fact.

We had an inspection, and the inspection identified several findings. The first finding is the suppression system, was a CO_2 system. I'm just going to tell you about these briefly.

Mark Salley, later in the presentation, is going to get into these in more detail and tell you his basis for our choosing a level of degradation associated with these findings, okay?

So, just briefly, the fixed suppression system wouldn't maintain the minimum concentration for the fire hazard. There's a minimum concentration required, and it was lower than that.

Also, there was a barrier problem. The electrical raceway fire barrier system protecting redundant trains didn't meet the one-hour rating. It was substantially less.

DR. APOSTOLAKIS: So, this was the same plant?

MR. HYSLOP: This is the same plant. This is the same room.

DR. APOSTOLAKIS: Oh, okay.

MR. HYSLOP: Okay? This is one hour. So,

you've got -- and I'm going to talk about the configuration, but you've got one room; you've got fire barriers in that room that are degraded.

And of course, you know the regulations: when you've got a one-hour barrier, you've got a fixed suppression system also in tandem. And that fixed suppression system responsible for protecting that barrier was also degraded, okay? Now --

CHAIRMAN SIEBER: Let me ask a question.

MR. HYSLOP: Yes.

CHAIRMAN SIEBER: Could you imagine a case where the lack of functionality of the suppression system would cause the degradation of the fire barrier, and therefore, you get basically two issues out of one defect?

MR. HYSLOP: Well, we look at these -- I'll let Mark Salley answer that more fully. But we look at these synergistically in the analysis. We say that these two compound the problem in the analysis. And you'll see later in the slide how we do that. Do you want to respond, Mark?

MR. SALLEY: Yes, if I understand your question properly, are you saying the suppression system would degrade the barrier?

CHAIRMAN SIEBER: Right, or the lack of

functionality of the suppression system. For example, here, was the fact that the fire barrier did not meet the one-hour rating independent of the fact that the suppression didn't maintain the concentration?

MR. SALLEY: That's an interesting question, and you take it all the way back to the barrier qualification, in and of itself. If you remember the whole thermal lag and the fire barrier issues, another one that came down the road was kao wool --

CHAIRMAN SIEBER: Right.

MR. SALLEY: -- which was a ceramic, fiber-type material.

CHAIRMAN SIEBER: Right.

MR. SALLEY: And there, the hose drain at the end of the fire exposure would be very important to have got its qualification that the hose stream wouldn't remove it. So, that should have been looked at, at a lower level in designing the system.

CHAIRMAN SIEBER: Okay. So, what you're saying is you do look at things in a synergistic basis?

MR. HYSLOP: Yes, that's one of the strengths of this method.

CHAIRMAN SIEBER: All right.

MR. HYSLOP: And then, the last -- the last thing we have to consider is the time of this degradation. If you remember in Doug's presentation, the time affects the change in CDF.

A lesser time -- since it's an annualized change in CDF, a lesser time has a less effect than a long time, okay? And we find that these findings existed greater than 30 days, and that's the largest range.

There, you have no reduction in CDF for the time, and they existed simultaneously. And that was determined during the inspection. Go ahead.

CHAIRMAN SIEBER: Another question: when you talk about the fire barrier, it could they used deficient material, or it could be the fire barrier is defective, like there's a hole in it.

In this case, which was it? And in general, do you treat them the same way, either deficient material versus a breach in the system?

MR. SALLEY: When you get into the actual evaluation, they would start falling in the same matrix of the degradation --

CHAIRMAN SIEBER: Okay.

MR. SALLEY: -- as to how degraded they are.

CHAIRMAN SIEBER: All right.

DR. APOSTOLAKIS: J.S., I didn't understand this argument about the 30 days. You say that was greater than the maximum, therefore --

MR. HYSLOP: Yes, there are three time ranges in the SDP: zero to three days, three to 30, and greater than 30. And the greater than 30, essentially, you assume you've got 300 or some days' degradation. It's a factor of one that's used in there.

So, you don't get a reduction in your core damage frequency if you're greater than 30 days, where you would get a reduction of ten if you're three to 30, and a reduction of 100 if you're zero to three.

DR. APOSTOLAKIS: Okay.

MR. HYSLOP: Next slide. Now, I was planning to jump right into the phase two, but I'll talk about the phase one a little bit, although I really don't want to spend much time on it because it's not as important for this application.

Essentially, we recognize we have significant degradations in defense in-depth. We haven't talked about them, but you'll see that.

And this fire barrier and automatic suppression protect essential equipment, equipment

that's on those sequences, and loss of would have a big effect. That, alone, will put you into the phase two process, so now I'm going to talk about the phase two.

The phase two, one of the earliest things we have to do is ask the following question: can we have a realistic fire scenario? You know, we've got a -- we've got a degradation defense in depth. Do we have a fire scenario that's going to challenge that?

And so, when you do that, you know, you have a knowledge of the degradations, and you, of course, need to have an idea of the configuration of the room. And I'm going to talk a little bit about that now.

This room was a 4160-vote essential switch gear room, so you had your safety-related switch gear. It was divided into three sections by partial-height marinite walls. These walls went nearly to the ceiling, but not all the way.

And so, you've got three sections, okay? So, in each one of those sections, you had an electrical train -- electrical bus of switch gear where you needed two buses to support one mechanical train. That's the way the plant was set up.

Now, if you had a fire in one of the far

regions, then we still had too much of a train. So, you had a mechanical train of equipment. You really got into trouble if you had a fire in the center one because in the center, you had cables crossing over from each of those electrical trains, over the end of the center switch gear, okay?

CHAIRMAN SIEBER: And they went over the wall?

MR. HYSLOP: And they went -- yeah --

CHAIRMAN SIEBER: Okay.

MR. HYSLOP: -- over the wall; over the end, right.

CHAIRMAN SIEBER: Where the plume would be?

MR. HYSLOP: Right, right. So, you know, you've got a -- you've got an ignition source over the end. A fire starts there, develops a plume, potentially does damage. Mark is going to talk more about this. So, do you want to go ahead, Mark?

MR. SALLEY: Sure, this is a good time to pick it up. I'm Mark Salley from the Plant Systems Branch. Pat Madden originally had started this. I helped him a little bit. And Pat moved on, so I've been picking up a lot of the fire protection with J.S. from here on out.

George made an important comment earlier about how this comes together. If you look back, the IPEEEs, Generic Letter 8820, Supplement 4, there is a starting point, especially for the people who used the five method.

And they said, "Hey, look, we've done a lot of work with Appendix R. So, from that Appendix R starting point, we'll take this snapshot in time, and we'll do this IPEEE."

From that IPEEE, the next progression is where J.S. and I are pretty much going. So, I think you can see, as we're moving along, that one bit of information is building on the previous one.

To just giver a little summary here of what J.S. is talking about, we have our three vital switch gear, 4160, the vital buses, the three fire barriers --

DR. APOSTOLAKIS: Is there a reason why we don't have this?

MR. SALLEY: Oh, I'm sorry. This was just an extra. I thought I'd give you --

MR. HYSLOP: We just made this one.

MR. SALLEY: -- a real quick -- a little more clarity.

DR. APOSTOLAKIS: How about a picture

being worth a thousand words and all that?

CHAIRMAN SIEBER: We'll pick up a copy. We'll get you a copy. He can make it available to all of you.

MR. SALLEY: The fire barrier separator of the marinite walls that J.S. spoke about, the area of concern is where the cables from the three merged over the center unit here, okay?

Now, in the Appendix R-type strategy for compliance, the requirement would say, okay, there's a number of ways to do this. This licensee chose to put one-hour fire-wrap, fire barriers, on those cables.

And the room is -- has a full, automatic suppression system; in this case, a manual CO_2 system. So, that was his method of compliance. As the inspectors looked at it --

CHAIRMAN SIEBER: I'm not sure how an automatic suppression system is a manual CO_2 system.

MR. HYSLOP: We're getting --

CHAIRMAN SIEBER: It sounds like it's manual.

MR. HYSLOP: We're going to get into that on the next slide.

MR. SALLEY: Yes, this licensee did have

a manual here --

MR. HYSLOP: Sorry about that.

MR. SALLEY: -- yeah, with this; you're correct.

CHAIRMAN SIEBER: But these are original design problems with the construction of this room, right?

MR. SALLEY: Right. This is unique to this licensee and --

CHAIRMAN SIEBER: So, this has existed forever?

MR. SALLEY: Yes.

CHAIRMAN SIEBER: Okay.

MR. SALLEY: When the inspectors were looking during their inspection, they found -- they inspected the hardware in the plant. They, first off, review the fire barriers.

In reviewing the fire barriers, what they determined was that they really weren't one-hour rated barriers as they --

CHAIRMAN SIEBER: Well, the walls weren't because they weren't full height.

MR. SALLEY: Well, the --

CHAIRMAN SIEBER: And the wrap probably had some other defect.