Official Transcript of Proceedings

NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Reactor Safeguards
Human Factors/Reliability & PRA
Joint Subcommittees Meeting

Docket Number: (not applicable)

Location: Rockville, Maryland

Date: Wednesday, January 25, 2006

Work Order No.: NRC-797 Pages 1-177

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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

JOINT HUMAN FACTORS/RELIABILITY & PRA SUBCOMMITTEE

MEETING

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WEDNESDAY, JANUARY 25, 2006

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The meeting cane to order at 8:30 a.m. in room T2B3 of Two White Flint North, Rockville, Maryland. Mario V. Bonaca, Chairman, presiding.

Present:

MARIO V. BONACA	CHAIRMAN
RICHARD DENNING	MEMBER
THOMAS KRESS	MEMBER
DANA A. POWERS	MEMBER
WILLIAM J. SHACK	MEMBER
GRAHAM B. WALLIS	MEMBER
JOHN FLACK	DESIGNATED FEDERAL OFFICIAL

I-N-D-E-X

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

8:32 a.m.

OPENING REMARKS AND OBJECTIVES

CHAIRMAN BONACA: On the record. Good morning. I will go to my reading here now. The meeting will now come to order. This is the meeting of the Advisory Committee on Reactor Safeguards Joint Subcommittees on Human Factors and Reliability and Probability Risk Assessment.

I am Mario Bonaca, Chairman of the Subcommittee on Human Factors. Members in attendance are Richard Denning, Tom Kress, William Shack, Dana Powers and I think Graham Wallis.

The purpose of this meeting is to examine current status of NRC's Safety Management Culture Initiatives and associated approaches to address safety culture in the Regulatory Oversight Process. Subcommittees will gather information, analyze relevant issues and facts and formulate proposed positions and actions as appropriate for deliberation by the full Committee. John Frack is the Designated Federal Official for this meeting.

The rules for participation in today's meetings have been announced as part of the notice of this meeting previously published in the *Federal*

Register on December 23, 2005. A transcript of the meeting is being kept and will be made available as stated in the *Federal Register* notice.

It is requested the speakers first identify themselves and speak with sufficient clarity and volume so that they can be readily heard. We have received no written comments or requests for time to make oral statements from members of the public regarding today's meeting.

It should be noted that the NRC Staff has been meeting with stakeholders. The most recent meeting was held on January 18, 2006. In light of these meetings and staff briefing to the full Committee in December 2005, the specific objective of today's meeting is to be briefed and updated on (1) Description of Safety Culture Components and how they will used in the regulatory process; (2) Status of NRC Safety Culture Initiative and Proposed Approach; and (3) International Experience related to the Safety Culture.

We will now proceed with the meeting and I call upon Mr. Michael Johnson, Office of Nuclear Reactor Regulation to begin the presentations. Mr. Johnson.

INTRODUCTORY REMARKS

MR. JOHNSON: Thank you. Good morning. My name is Michael Johnson and I'm Director of the Office of Enforcement. We are here to talk about safety culture and as I'll explain in a minute, I'm joined at the table presenting by Eugene Cobey who is a Branch Chief from our Region I Office.

CHAIRMAN BONACA: I think we'll have to initiate a condition report for that microphone.

MR. JOHNSON: I'm also joined by Andrea Kock from the Office of Enforcement and Jay Persensky from Office of Research and again joined by a number of the folks in the audience how are either a safety culture working group or I noticed that Bruce Butler has joined us, the Standing Committee, and others. So we have assembled a body of folks who can answer the questions that you may have about either what we plan to talk about today or any other questions that you may have regarding the Safety Culture Initiative.

We did present to the ACRS, of course, on the 9th of December. At that time, we focused on providing the status of the staff's activities in the area of safety culture including some recent meetings and results of the staff's activities in response to direction that we got from the Commission in the area of safety culture.

We discussed an approach that at that time we had developed in just a few days earlier in a meeting and in fact, we also talked about those aspects or attributes or elements and we now call them components that make up safety culture. I think actually it was part of that discussion that generated a desire on the part of the ACRS, the members who were there, to have us come back in January and talk further about the components. So that's really the cornerstone, the centerpiece of what we're going to do in today's presentation.

We have, looking at the agenda, a number of presentations that we intend to make. Andrea is going to discuss the safety culture components including how we arrived at them. you'll find that there's great similarity between the safety culture components as we'll describe them and what the industry does and what the international community believes are Important with respect to safety culture. But there are also some Important differences and Andrea will talk about that.

Jay also will talk about, discuss, the international experience specifically and how we use that international experience in terms of focusing in on the activities that we've undertaken with respect

to moving forward on safety culture. So I think that will be a presentation hopefully that is beneficial to you.

But before we do any of that, we've asked that Gene start off the presentation, make the first presentation, to talk a little bit more about the approach that we began talking about on the 9th of December. We think it's Important to do that just to make sure that we have a firm basis for thinking about how we'll use the components and also comparing what the international folks do with respect to how we're proceeding to move forward. So you'll see again that Gene is going to spend some time talking about the approach.

I would ask you, you'll find that Gene has a number of slides talking about the approach. Gene is prepared to at any time to streamline that if you feel that you've heard enough or that level of detail is beyond where you want to go. Please just let us know and Gene can customize because we do want to spend the amount of time talking about the issues that you want us to talk about.

Lastly, before I hand over to Gene, I will say I believe that you'll find that we've made considerable progress and continue to make

considerable progress with respect to the activities that we've undertaken in response to the Commission's direction on safety culture. Having said that, we recognize that there's more to go. We have a number of challenging activities ahead of us in terms of changing the concept in procedures, getting the staff trained, making sure that the industry is comfortable with and able to understand how those changes are going to implemented going forward. All of those are things that the staff needs to take on going forward. But having said that today, we think we've made considerable progress.

I'll also note that I'll have to step out for a few minutes at 9:15 a.m. to meet with Commissioner McGaffigan but I will be back. These guys can certainly carrying on without with during my absence. Unless there are any questions, I'll turn it over to Gene to begin the presentation.

MEMBER SHACK: Just one. When I looked at the January 18th Public Meeting, there was an interesting example in there where you went through and you used the new components and the old components. What struck me was I didn't see a whole lot of difference when I was done and I didn't see it here. I hope somebody would tell me why we think it's

so Important to make the changes if when you go through the example it just doesn't seem to make much difference.

STATUS OF SAFETY CULTURE INITIATIVE INCLUDING PROPOSED APPROACH

MR. JOHNSON: Thank you. Actually I think Gene -- The best way to do that is to have Gene get into his presentation about the approach and then we'll touch specifically about that issue and what's the rationale for the change that we made specifically as it relates to –- Anything else?

CHAIRMAN BONACA: No.

MR. JOHNSON: Gene, please begin.

MR. COBEY: Thanks Mike. Good morning. The purpose of my portion of the presentation is really to facilitate or establish a common understanding of the approach for the treatment of safety culture within the reactor oversight process.

Before we get started on that, it's Important to go back and briefly cover the direction the Commission provided us and succinctly it's to do four things. The first was to enhance the reactor oversight process treatment of crosscutting issues to more fully address safety culture. The second was to develop a process to determined the need for

conducting a safety culture evaluation for those plants that had a degraded cornerstone and also to develop that evaluation process, (3) to ensure that our inspectors and managers are trained on safety culture and then lastly (4) to involve our stakeholders in this process.

With that being said, the Agency put together a steering committee, a working group, to proceed forward to accomplish this direction. In early November, the Commission provided verbal direction to the staff to take a fresh start and since that time, the staff has conducted four public meetings with external stakeholders, has made considerable progress and is at a point that we have developed an approach.

In the first three meetings in November and December, the staff discussed the definition of safety culture the Agency would use as well as what is Important about safety culture and descriptions of what's Important about safety culture. The staff reached the conclusion that it was appropriate to use the INSAG-4 definition of safety culture which the Commission has previously referenced in their correspondence.

MEMBER POWERS: What alternatives were

considered?

MR. COBEY: I'm sorry.

MEMBER POWERS: What alternatives were considered?

MR. COBEY: Jay, do you want to?

MR. PERSENSKY: Several alternatives were considered. We actually did a fairly lengthy -- I'll talk about this later or I'll just skip it later, from various countries in terms of how they developed what definitions they used. We also looked at the INPO definition and went through a process of comparing the various definitions to determine what seemed to be the best for our use and the fact that we did already have as Gene was saying reference to the INSAG definition and the 1989 Policy Statement on Conduct of Operations. So we decided to stay with that as have other countries.

MEMBER POWERS: Would you not get more acceptance from the industry if you would have adopted the INPO definition?

MR. PERSENSKY: I think we agreed that, with the industry we had this meeting in the end of November, there were enough commonalities that it really didn't have that big of an impact.

MR. COBEY: There was also one aspect of

the INPO definition I think that the majority of stakeholders felt was needed to be in the regulatory definition and that was that nuclear plant safety issues receive the attention warranted by their significance. That was an Important element that I don't recollect is in the INPO definition explicitly. So that was one of the drivers.

That being said, the stakeholders identified potential ROP enhancements and developed a proposed approach. That's the conceptual approach that we discussed with the ACRS on December 9th. By the conclusion of the December 15th meeting, the staff and external stakeholders had agreed on all aspects of the proposed approach except for the adjustment of the crosscutting issues and then second, the final definitions of safety culture components.

As a result, the staff had requested comment from stakeholders to be provided in advance of a January 18th public meeting on the topics and those comments were due on or about January 6th. January 9th we received an email from NEI providing their comments in which they agreed with aspects of the proposed approach but they expressed concern with the two portions that we were going to be discussed in the January 18th meeting.

For refresher purposes, the two aspects were they preferred use of the INPO principles and attributes in lieu of the safety culture components and there was concern with the adjustment of the cross cutting issues. With that in mind, we went into the January 18th public meeting which had as its purpose discussion of those two points in attempt to achieve a common understanding of the staff's proposal and to work through any questions that may arise.

The meeting consisted really of three parts. The first was a discussion of the safety culture components and the definitions. The second was a demonstration of the treatment of inspection findings within the crosscutting areas. And the third was a presentation on the results of the NRC staff's review of inspection findings that had recently occurred.

Let me spend a couple minutes talking about what we did in that meeting to try and put it in context. The demonstration of the treatment of inspection findings, we selected two plants. We selected one plant that had a crosscutting issue in problem identification and resolution. The period of time we looked at was July 1, 2004 through June 30, 2005 which constitutes the last complete assessment

period that the staff has proceeded through.

The second plant that we selected for the same period of time was a plant that met all of the criteria except for one and that one being the staff's concern or lack of concern with the scope of efforts of progress in addressing the underlying performance deficiencies in the area of human performance. So what we were looking for there is did the proposed change result in any unintended consequences, was there any insights that we would gain by comparing real plant data under the existing process with how it would be treated in the proposed process.

What we found was that the plant that had a substantive crosscutting issue in problem identification and resolution continued to have an identified substantive crosscutting issue in problem identification and resolution. The distribution of the findings to their associated causal themes remain fairly similar but not exactly the same.

In the area of problem identification and resolution, the proposed causal themes are very close to what existed under the current process. There is some additional operating experience and self and independent assessment themes in there. So some of the findings which had previously been identified as

identification and evaluation of correct action found themselves in operating experience were self assessments. But the majority stayed in the same place as you recognized when you went through the findings.

The second plant that did not have a substantive crosscutting issue continued to meet the first two criteria and those criteria are greater than three findings with a crosscutting aspect in human performance with a common causal theme but did not meet the third criteria again which is NRC concern with scope of efforts or progress in addressing the performance deficiency. And one would expect that because the proposed change does not affect the two things which drive whether a plant has a substantive crosscutting issue. The two things that drive whether a plant has a substantive crosscutting issue is their performance and the second is the criteria. Neither one of those are changing.

So for a finding to be identified as having a crosscutting aspect in human performance problem identification and resolution or safety conscious work environment, it has to be a more than minor performance deficiency. Those are not expected to change as a result of the change to the description

of the existing crosscutting areas.

What would be anticipated to change is when those performances deficiencies are identified that the reasons that they are tagged as having a crosscutting aspect of human performance problem identification and resolution will now be more predictable and more consistent because there is greater clarity about what constitutes each of those crosscutting areas.

The other thing that we would expect to benefit from this change is that the reasons why those common themes or, excuse me, the characterization of the those common themes should be more closely aligned with what's Important about safety culture and what the fundamental problem is, currently, for example, in the human performance area, the bends of personnel resources and organization. So what tends to happen is personnel findings, if you will, tend to get lumped together and there isn't as good a clarity in the common theme description in the structure as one would like.

For example, there's a difference between failing to follow a procedure as a cause for the performance deficiency and failing to implement human error prevention techniques. Those have different

causal themes. It's the staff's view that has worked on safety culture that those are separate and distinct parts and it's beneficial to separate those and recognize they're different than to lump them together.

So the point of the demonstration was to walk through two actual plants, review the findings that existed under the existing process and them show how they would change. What we found was that findings which have crosscutting aspects continue to have crosscutting aspects. We also found that a few findings which previously did not have crosscutting aspects were identified as having crosscutting aspects because of the improved clarity in the descriptives.

We also found that there was improved predictability and consistency in the identification of the crosscutting aspects as well what the common themes for those findings were. Then lastly, we found that the common themes which were identified were more closely aligned with what was Important to safety culture than previous.

The third part of this was a presentation on results of the staff's review of the proposed change. We looked at one plant in each region from January 1, 2005 to June 30, 2005 and reviewed all

inspection findings for those plants. What we were looking to do there was to look and see what the results were in terms of how findings were characterized and evaluate whether or not we saw any unintended consequences and whether or not the proposed process had the desired effect. So in all we ended up reviewing about 75 inspections findings between these processes and we did not identify any unintended consequences and while the characterization in terms of crosscutting areas were similar and the identification of substantive crosscutting issues remained similar, the causal theme identification was improved.

MR. JOHNSON: Just another second on that if I can just to pause and make sure that we touched on the answer to your question. As Gene indicated, we went into that exercise because we wanted to looked at the premise that some folks had which was if you made changes to the crosscutting areas we're going to dramatically increase the number of plants that get those findings that fall into crosscutting areas and potentially drastically affect the number of plants that end up with substantive crosscutting issues and the exercise proved that that won't or at least went a way towards demonstrating that that won't

necessarily happen or probably won't happen.

But I actually think at the end of the day in addition to the points that Gene made about providing increased predictability with this change and providing a better nexus if you will to what's Important to safety culture you should recognize, I'm sure you've heard, that the industry and the NRC have recognized over the years that we need to continue to work to improve how we treat crosscutting issues and we've made progress in those areas.

We've made changes. Those changes have been towards sharpening the definition and providing greater detail. I actually believe that this change based on the look that we've done will go further towards improving the functioning of the crosscutting issues as they were intended to function. So I think that the added benefit of this is it helps fix the problem that we've been working on fixing all along.

CHAIRMAN BONACA: At some point, would you put up one of those examples that Dr. Shack was referring to and explain to us a little bit why?

MR. COBEY: I can. I don't have them on slides.

CHAIRMAN BONACA: If we could do because in some cases I had the same impression. I just

didn't see those benefits that you are now claiming. Yes, I can see a better understanding. I mean you do have a wrong step if somebody makes a mistake on there and you can categorize that as the person failed to follow the procedure and that's an individual error and could be cultural if you failed or it could be that the procedure is inadequate. So he was following the procedure faithfully but the procedure wasn't adequate and that's a different message.

Now I would expect that your inspectors were picking up these differences before you're implementing this process.

MR. JOHNSON: Let us follow your point and take a couple of examples. I guess what I would do is ask, perhaps the best way to do this, is to have Gene finish the presentation, get into Andrea's presentation. That gives Gene a chance to come back to pull the right examples, the subset of examples. But then if we can show a couple of those I think it would at that point.

CHAIRMAN BONACA: That's fine, whenever you want to do it. But I think we need to come out of this meeting understanding what you seem to see as significant differences and I really don't see. So maybe there is something I don't understand.

MR. COBEY: The results of the January 18th meeting succinctly were improved understanding amongst the stakeholders, the proposed change to the ROP. We made great strides, I think, establishing that understanding which resulted in an agreement amongst the stakeholders and this really includes all the stakeholders that participated that the planned adjustments were desirable or at least acceptable. We received a few comments related to the safety culture component definitions that we're currently in the process of evaluating and incorporating. The result of the January 18th meeting is the staff's decision to implement the proposed approach for the treatment of safety culture within the reactor oversight process.

It's really at this point before I proceed on with next steps and where we're going from here that I wanted to take a few minutes to discuss the actual approach. We covered this at a very high level in the last briefing for your folks in December. I'm prepared to go very briefly through this or in a very detailed methodical manner. If you sense the need for more or less detail, this is really for your benefit so just let me know.

The planned approach, it was previously referred to as Option G. The conceptual aspects of

Option G had not changed. However, the details that support Option G have been refined through subsequent meetings. Basically what the approach involves is that a number of things that currently exist and are Important in our oversight will not change, things like the performance indicator program, things like plant status activities, things like the inspection and investigation of our allegations.

We do intend to enhance one aspect of our baseline inspection procedures and the problem identification and resolution inspection procedure. This enhancement would be to provide additional guidance to inspectors in discrete areas which have previously been determined to be Important to safety culture that that procedure currently covers indirectly. So we want to provide more enhanced direct engagement by the inspectors. Those are things such as self and independent assessments and operating experience and also amplification of what the inspectors do in the area of safety conscious work environment.

We expect to enhance our special inspection procedures. These are event follow-up procedures 71153 and also our special inspection and augment inspection team inspection procedures. Here

we expect that the changes will be relatively minor in nature but provide guidance to the inspectors that are doing these event follow-ups to make them aware that if they see causal factors that are associated with things that are Important to safety culture to take note of them and include them in the characterization and description of the event so that they can be treated consistent with the rest of the reactor oversight process.

In the area of documentation, our existing framework remains unchanged. Our engagement with licensees will remain via docketed correspondence. We do anticipate having to change our manual chapter for how we write inspection reports, the 0612, to conform with the revised process so that we get the information from the inspections to appropriately feed our assessment process.

The proposed assessment process which is described in manual chapter 0305 remains largely unchanged. The framework is the same. But what we do anticipate is to adjust the crosscutting areas to more closely align with what's Important to safety culture as the Commission asked us to do.

The second thing that we intend to do is include a direct link from the output to the

allegation program and the traditional enforcement programs as inputs to the assessment process specifically in the area of safety conscious work environment.

CHAIRMAN BONACA: Before we move on.

MR. COBEY: Yes sir.

CHAIRMAN BONACA: Let's look at the second bullet. Again, I'm trying to understand. Adjust the crosscutting issues to more closely align with what is Important to safety culture. That's a big statement.

MR. COBEY: Yes. That's the next two slides.

CHAIRMAN BONACA: Could you explain it to me?

MR. COBEY: That's the next two slides.

CHAIRMAN BONACA: All right. Good.

MR. COBEY: Before I talk about the adjustment, let me describe what we currently do. We currently have three crosscutting areas from identification resolution, human performance and safety conscious work environment. Those crosscutting areas are described by row two on that slide. For example on the problem identification and resolution, the description includes identification, evaluation and corrective action; human performance, personnel

organization and resources; and a safety conscious work environment which has a much lesser degree of description. It just has essentially this statement and MC 0305 which is a description of what a safety conscious work environment is.

We've recognized as an agency for some time that this third crosscutting area needs to be enhanced to be more in align with the other two and as part of our process to adjust the crosscutting issues to more closely align with what's Important to safety culture, we've also done that with this third crosscutting area. We increased the level of description. We've developed thresholds so that it's consistent with the other two.

The third row here is the criteria that's used for each of these crosscutting issues to determine whether or not the substantive crosscutting issue exists. For human performance and problem identification and resolution, the current process is more than three findings with a common causal theme where the NRC has a concern with scope of efforts or progress in addressing the underlying performance deficiency. In safety conscious work environment, the only criteria that's specified is that we have previously engaged the licensee on the topic in a

public meeting or docketed correspondence. So as you can see, it doesn't correlate well with the other two.

Before we go to the proposed, I would like to talk briefly about how the process works. We have more than minor performance deficiencies, inspection findings, which the inspector during the evaluation characterization process looks at these descriptors of problem identification and resolution, human performance, safety conscious work environment and says does it have this aspect. If it does, he articulates that in the inspection report that performance deficiency has a crosscutting aspect in human performance because the non-licensed operator failed to follow surveillance test procedure, for example.

The existing descriptors under each of these crosscutting areas, for example personnel, is a very high level statement that, if you will, in one sentence less that describes what human performance personnel errors are and as a result, there has been some consistency challenges for the staff. So, for example, human performance personnel is described in the existing process as attributes required for successful task performance including fitness for duty, knowledge and skills and intention to detail.

So there have been instances where performance deficiencies have not consistently been identified as having a crosscutting aspect.

If you look at that body of work that the working group has put together, the analogous descriptor would be work practices and I'll get to the way these things are distributed in the crosscutting areas in a minute. But for purposes of a comparison, the descriptors for work practices are really four fundamental common themes: human error prevention techniques such as pre-job briefings are communicated, understood and used commensurate with the risk significance of the assigned task which are work activities are performed safely and personnel do not proceed in the face of adversity; the second is procedural compliance as defined, communicated, understood and procedures will follow; the third is supervisory management oversight of work activities such as nuclear safety is supported and human performance including fitness for duty is monitored and opportunities for improvement are addressed; and the last would be work groups maintain interfaces with off-sight organizations, communicate, coordinate and cooperate with each other during activities in which interdepartmental coordination is necessary to assure

plant and human performance.

Andrea will get into the details of how we got to that description. But what that description allows us to do if you will is have some improved predictability and consistency in what is identified as having that crosscutting aspect.

At the assessment cycle, the regional management looks at the collection of performance deficiencies which have been identified during that period of time with a crosscutting aspect in each area and if there's more than three, they look to determine whether or not there's a common causal theme amongst them. If there is, then they answer the question for themselves whether or not they have concern or scope of efforts or progress. If the answer to each of those criterion is yes, you have a substantive crosscutting issue.

Now with basic understanding of the process, the proposed treatment of crosscutting issues, the framework is largely the same. But what we see under problem identification and resolution are three descriptors, now corrective active program, which really embodies identification, evaluation and corrective action in addition to additional elements of the corrective action program. So while it's

titled corrective action program, the actual descriptors are performance-based descriptors and it includes more than identification, evaluation and corrective actions which previously made up the entire problem identification and resolution crosscutting area. It also includes operating experience and self and independent assessments.

In the area of human performance, the descriptors go from being personnel, organization and resources to being decision making, resources, work control and work practices. In the area of safety conscious work environment where it was previously only a description of what constituted safety conscious work environment in terms of a one sentence descriptor, there is now two descriptors, prevention and detecting of retaliation and willingness to raise concerns.

You'll see that the criteria for two of three crosscutting areas remain the same. But in the area of safety conscious work environment we have developed a parallel criteria with, if you will, ideas in mind. The first is that it parallels the logic and structure that's used in the other two, so you'll see it has three aspects to it, and the second is that there's a recognition that the degree of coverage of

inspection program in safety conscious work environment is substantially less than in human performance and problem identification and resolution. So therefore the numeric threshold has to be less.

This is also the place where we link our allegation and traditional enforcement processes so that there's a nexus between those separate programs when they're dealing with the same issue. I'll cover that later.

CHAIRMAN BONACA: Before you move on, let's just take an example here. Problem identification and resolution, I've always thought of that until now as corrective action program. Corrective action program involves the identification of problems, condition report and then the resolution of the problem.

MR. COBEY: That's correct.

CHAIRMAN BONACA: Now when you add operating experience and self independent assessments, it seems to me like you're beginning to expand by looking at some of the causative factors for a deficient corrective action program, for example, the fact that you are not looking at operating experience at sister plants and that's a problem. So you are identifying.

But isn't it a causative factor of corrective action program deficiencies? There are many others. I'm trying to understand why you identify specifically operating experience and self and independent assessments?

MR. COBEY: I'll take one cut at that from my perspective as implementor. I'll let Andrea cover that since I think she's specifically going to talk about in her presentation how we came to the collection of components that we came to. But problem identification and resolution, the title of crosscutting area, 50,000 foot, includes all programs and there are at most stations multiple programs which in effect do problem identification, evaluation and resolution.

It may be an alternative resolution program like ECP, employee concern program. It may be an operating experience program. It may be a formal corrective action program. There are at some sites several and at some sites, only one. They use a corrective action program and these other pieces are just elements of that.

The intent under the large umbrella of problem identification and resolution is that we identify causal factors. We want to provide to the

inspectors and regional managers the appropriate causal factors that they should expect to see and look for in their determination of whether or not substantive crosscutting issues exist. Some of them are within a little problem identification and resolution program, the CAP, at some facilities. Some of them are under operating experience umbrellas. Some of them are under self independent assessment umbrellas.

Collectively, they all fall under the big umbrella a licensee has to be able to identify a problem no matter what the source is, whether it's an operating experience, whether it's self-assessment, whether it's independent assessment, etc. They need to be able to evaluate it and they need to be able to correct it at the high level. But there's a recognition that they're causal factors are different depending on the information and circumstances. It's a different problem, a different cause potentially, if it's associated with an industry event that the licensee didn't appropriately evaluate and implement lessons learned so that it recur there than if it was an engineer that entered a problem into the corrective action program that they didn't evaluate and correct.

CHAIRMAN BONACA: I recognize that. I'm

just saying I could identify additional elements to put in that box there. Why only operating experience, self assessment? For examples, resources often times, the reason why you have an non-effective corrective action program is because you don't have enough resources there to deal. So you have issues that are not being dealt timely, not because people are not coming to work, just simply because you have a piling up. So that issue, for example, of resources goes up to a higher level because it talks about the organization. Why wouldn't I have resources under that problem identification and resolution item just as an example?

MR. COBEY: Yes, I agree with you in fact that resources can affect other things. I want to reverb part of that to Andrea's presentation a little bit later but also to say though that with our process, we had to do our best to structure these elements so that if you had a performance deficiency, it couldn't go multiple places for the same reason. So in some sense, we had to be careful about how we grouped the causal factors so that we could get predictability.

If we had a resources issue, the consequence may be an impact on the corrective action

process. It may be an impact on capital improvement. There may be a number of impacts. But we didn't want a case where you had a fundamental resource cause that ended up going in possibly three different or four different locations and then we would have a lot of inconsistency potentially when we went to implement it.

There was some effort put into trying to make sure that if you had one cause that that one cause went to one area. As a result, we had an original collection of about 16 components to what's Important about safety culture and we've had to take about three of them and divide them up and distribute them so that we could address that problem because those by definition, those components lived in multiple places and that became problematic from an implementation standpoint. It was a process that we went and Andrea can talk a little bit more and hopefully answer more of that question.

CHAIRMAN BONACA: Yes, I would like at some point. I'm not convinced yet. I just am not convinced. You add two items already. I could certainly add there quality of root cause evaluations. That's a fundamental issue we had in the corrective action program. If you do not have an appropriate

root cause evaluation, you will never fix the problems because you're identify always surface problems rather than going to the root cause.

MS. KOCK: And that's a detail that's covered under corrective action program and I think when we look at problem identification and resolution the big picture that we're looking at is are they identifying, evaluating the problems and taking appropriate corrective action. So that's what we're looking at under cross campaign. But within each of those three areas there, there are specific details. For example, the root cause is included there.

CHAIRMAN BONACA: But do you see what I mean? Before I could look at corrective action program and say it's a big thing and equates to problem identification and resolution. Now you opened up that box of problem identification and resolution and you add to corrective action problem operating experience of assessment. What else could it be there? Now you're opening Pandora's box. There are other items that I don't see as specifically true and are there. So maybe you will discuss that later.

MR. JOHNSON: I think the answer that we've given about some of that being in the details of how we actually define some of these elements, if you

will, these subcomponents, if you will, goes to your question. I don't want to go to a point where we're trying to convince you that there's overly rigorous amount of work that we've done with respect to making sure for example that decision making is under human performance as opposed to be under problem identification and resolution. We think we have it in the right place.

But I would submit that at the end of the day it doesn't matter because what we're really doing is we're looking to, for example, where there are, as Gene has indicated, a number of issues that relate to operating experience, for example, that we've clearly communicate those issues because of the Importance of operating experience to licensees so they can take the appropriate action to address.

So this is really more about making sure that we tell inspectors where to group these things, how to identify these things that are potentially crosscutting so that in the assessment process we can look for those things that are common, Important to safety culture, so that we can raise where we apply the test and the test indicates that we should go forward. Again, I think some of it is in the details and Andrea will get into that when she does her

presentation.

CHAIRMAN BONACA: Let's talk about it later.

MEMBER WALLIS: Could I raise a question about the third column here?

MR. JOHNSON: Yes.

MEMBER WALLIS: Maybe somebody's done it when I wasn't here. But I'm surprised you've picked out retaliation in willingness to raise concerns. A retaliation is an extreme case. The common problem is the management that won't listen, doesn't care, says "Don't bother me." It's just kind of a sink of inaction that doesn't respond. That's the worst kind.

That's the common kind of bad management. Management does not encourage people to raise concerns, doesn't do anything when they come along, doesn't retaliate. Retaliate is an extreme case. I think what really is Important is the management attitude and management responsiveness and management encouraging people to raise concerns. That's what should be in there.

MS. KOCK: Actually what you're speaking of, I would agree with and it's covered under willingness to raise the concerns. What you just described if you read our description willingness to

raise concerns, it's very similar to what you just described and I would agree that that's what we more commonly run into.

MEMBER WALLIS: It's not the worker's problem. It's the management's problem.

MS. KOCK: Yes. It's the behaviors.

MEMBER WALLIS: And you're saying the willingness to raise concerns is something the workers should work at. It's not true. The management is responsible for the safety of the plant.

MS. KOCK: That's right. So we do have that and I would agree that it's very Important. The reason we also have preventive and detection of retaliation is retaliation does occur as part of our policy statement when we describe what safety conscious work environment is. Part of that is prevention and detection of retaliation and it's really more than just not retaliating against people. It's preventing the chilling event that might happen if there's a perception that you're retaliating against people. While that is less common, there's a different facet of that than just blatant retaliation. That's why that's also included.

MR. COBEY: The safety conscious work environment criteria for a substantive crosscutting

issue the team put together with one or more findings with a crosscutting aspect in safety conscious work environment is the chilling effect letter which has discrete criteria for its issuance or enforcement action at severity level one, two or three for discrimination. You meet any one of those criteria and then you ask yourself the next question "Was there an associated impact on safety conscious work environment that was non-isolated?" Then the last question is "Was there concern with the licensee's scope of efforts or progress in addressing performance deficiency?" If all of those criteria were met, then you would have a substantive crosscutting issue in safety conscious work environment.

Let's take the example. There has only been one example since the inception of the ROP where we have identified a substantive crosscutting issue in a safety conscious work environment a ***9:23:15. In that particular case, they did in fact meet this criteria as it's currently structured. So even with the more rigorous criteria, it works for the case in which we feel it was appropriate that a crosscutting issue be identified and that's they had a chilling effect letter that was non-isolated impact on the work environment and then lastly the NRC did have concerns

about scope of effort or progress.

So with those criteria which parallel the others, we feel that we've accomplished really two goals. One is addressing a long-standing issue with this crosscutting area that it wasn't fully developed but also that we've put structure to it that's parallel to what the thresholds that we believe are appropriate given our experience. That's all I intended to say about crosscutting areas in terms of the structure. Were there any further questions on the crosscutting areas that you want me to cover now?

In the event that you have a recurring substantive crosscutting issue, our current oversight process would say the second time that you have the identified substantive crosscutting issue it gives the NRC the option to request the licensees provide a response in the next annual public meeting, provide a written response to the Agency or have a separate meeting with the licensee to discuss –

CHAIRMAN BONACA: Before you go further. I'm sorry. In the word up there on the first bullet, substantive crosscutting, that's where you have repeated example above three.

MR. COBEY: Correct.

CHAIRMAN BONACA: Okay. And there are

significant individually.

MR. COBEY: They are more than minor.

CHAIRMAN BONACA: More than minor.

MR. COBEY: Correct.

CHAIRMAN BONACA: The question I have and I've had many times is at times you notice repeat events where you show that this is not a learning organization because there may not be a very significant issue but you have repeat after repeat. Now the ROP doesn't pick up those cases because typically they are looking for significance and how do you deal with those if you're talking about, for example, not some repeat of events of the same type but actually have the same event happening again and again and there is no correction being made, for example, a procedure that is not properly dealt with? It's a minor issue. You evaluate it. You say it's minor. I'm not looking any further and yet it tells you a lot about the organization that doesn't learn and doesn't want to learn and says it's minor. Therefore, the NRC doesn't look at it. I don't care for it and I'm not going to fix it. Is there any place where you're addressing that?

MR. COBEY: I think the short answer is no. The philosophy of the ROP is that if performance

deficiency is not more than minor, then it does not just enter the assessment process. The reason or one of the reasons why you would determine a performance deficiency as minor is that there's a specific criteria that says if it were to be left uncorrected, it wouldn't be more significant. So basically the staff as part of the determination that a finding is minor has to be or have reached the conclusion that even if the utility didn't correct it, it still couldn't become more significant.

CHAIRMAN BONACA: I think by allowing an organization to become complacent and sloppy at some point is going to go above. What you're saying here is you're waiting until you reach the level of significance.

MR. COBEY: We wait until we reach a more than minor.

CHAIRMAN BONACA: I understand that.

MR. COBEY: Which is determined to be very low safety significance.

CHAIRMAN BONACA: But so you go in a control room of a plant and you have annunciators there and you're saying individually these are not Important annunciators, the fact itself that you have linked annunciators that should not be linked. It's

a significant problem of itself it seems to me. Now if you analyze them individually, you may find that each one of them is not very significant because this is a parameter that's not very Important. But the result of confusing the operator with a lot of information there and teaching him to bypass mentally, certainly annunciators is not good practice and what we're saying here is we're waiting until you're going to have some of these issues reaching a level of significance to recognize that you have a crosscutting issue. That's what you're saying.

MR. COBEY: I'm not sure I follow your example because what you described to me is potentially significant and I would need to know more details to know how it would be characterized.

CHAIRMAN BONACA: Okay.

MR. COBEY: But conceptually the process, the way it was developed, the underlying philosophy of the ROP that is being maintained by this change would be that beneath the level of the minor threshold that's minor that the Agency doesn't feel it's appropriate to engage upon those. We would anticipate though that if there were more significant, underlying problems which were resulting in these minor issues that we would see performance deficiencies that rise

to the more than minor description. We would anticipate green findings. That threshold is not so high that we would expect that real significant performance deficiencies would go on for an extended period of time and not be recognized.

CHAIRMAN BONACA: Okay.

MR. COBEY: For recurring substantive crosscutting issues, the proposed approach would add an additional option such that if you get the substantive crosscutting issue the third time that the NRC would then be able to request a licensee have an assessment of safety culture performed. This would be the first time in which the first threshold that could possibly be reached where we actually asked the licensee to look at safety culture and evaluated their safety culture assessment. Up to this point, inspections findings are evaluated against components or elements of safety culture within that context where within the crosscutting areas you're not looking at safety culture. You're looking at those crosscutting areas with a focus on what's Important to safety culture.

MEMBER WALLIS: So you are a bit different in INPO. You only pick up safety culture in an extreme case. But INPO when they have their exit

interviews and so on presumably also talk about good safety culture which I think is a good feature of their problem. You're just in some extreme case picking up something and say you guys have a bad safety culture. But there's nothing which says they have a good one. There's no way in which you indicate to them that things are okay.

MR. COBEY: It's not the staff's intent and this is consistent with the Commission's direction to evaluate safety culture at all plants. We feel it's appropriate for INPO and the industry to do those type of evaluations in their goal of ensuring excellence. Our goal as a regulator is to put in place criteria that if we see potential for problems in this area that we would then engage at the appropriate level integrated manner.

So what you'll see as I go on is that our level engagement is graded as a plant's performance deteriorates and, in fact, there is no element which assesses safety culture for all plants to determine whether or not they have a healthy safety culture or not, for example, if they are in the licensee response column. We're leveraging the industry's efforts in this area for the general populace of plants. We're only taking the regulator perspective of engagement as

we have indication of possible performance declines with facilities.

So it's Important to note that this third time if a facility has a substantive crosscutting issue for a third time they have been repeatedly unable to address and identify problem to them. That would cause us some concern that there wasn't something else associated with the substantive crosscutting issue that heretofore has gone unrecognized and unaddressed. Hence why we would feel it's appropriate to ask the licensee to either perform a self-assessment or have an independent assessment of safety culture performed. It would typically be a self-assessment of safety culture except in the cases where the substantive crosscutting issue was in the area of problem identification and resolution and if they had identified problems with their ability to identify and evaluate the issues, then it wouldn't make sense to ask them to look at safety culture.

With that being said, the other proposed changes are to the licensee action.

MEMBER WALLIS: Excuse me. They would assess their own safety culture.

MR. COBEY: In some cases, yes and in other case, we would ask to be an independent

assessment.

MEMBER WALLIS: So the worse case is the safety culture is bad because management suppresses it. So how is management going to examine itself when its policy itself suppresses safety culture. It seems to me it has to be an independent examination by somebody else.

MR. COBEY: Take, for example, the circumstances you've identified. If it's a human performance substance crosscutting issue, then we ask the utility to perform a self assessment of safety culture and we would then come and look at that under our inspection.

MEMBER WALLIS: You see what I mean. It's a bit like a country that suppresses human rights evaluating its own human rights policy.

MR. COBEY: Exactly and the independent organization, i.e. the agency that comes in and look at it, would identify that it was inappropriate and then that would be addressed as a separate issue in that they did an inadequate safety culture evaluation and we would have to deal with that from a regulatory perspective but the idea is this is a graded approach.

CHAIRMAN BONACA: So you would have independent organization perform in effect. You would

expect to have independence in the evaluation.

MR. COBEY: Yes, that would be the inspection staff.

CHAIRMAN BONACA: Yes.

MR. COBEY: That would be the agency's inspectors. Not always would it be a self assessment as I said before, but the intent is that this is a graded approach that when there are some indications of a performance problem and yet there are no indications of a safety culture problem at this point. We would be requesting them at this opportunity because there's been a repetitive inability to address an underlying performance deficiency in human performance, say.

That would be a trigger for us to say it's appropriate for you to do a self assessment of safety culture and we'll look at that under our problem identification and resolution inspection program when it's completed and evaluate its adequacy in that form. We think it's appropriate at that point to have or allow them to do a self assessment in lieu of having a independent assessment which would be what we would ask them to do for reasons that provide more Important that there's a fundamental problem with safety culture, i.e. their performance has shifted to the

right in the action matrix. I understand your point but our intent has to provide this graded approach and not to just have a bistable approach where they either don't do one or they have to an independent or third party assessment that's comes in.

MEMBER POWERS: Suppose you ask them to do a self assessment for their safety culture and they say, "I don't need to" or "I just did it and I came out this way."

MR. COBEY: We had some discussions with external stakeholders about this and with INPO and the common view is this that INPO wouldn't support that because they don't feel that their process would support our needs and the licensees wouldn't have the information to support their conclusions to provide to us. So we wouldn't anticipate that a licensee would make that argument given INPO's position which is they wouldn't support that.

MEMBER POWERS: What if they presently did it defectively? They say, "Okay, sure. We'll do a safety culture." They just pulled out what INPO did and say, "Yes, this is good" and hand it back to you.

MR. COBEY: We would come in and do our evaluation and provide it was in fact good we would not identify any issues with it and we would have

learned what we wanted to learn and that was safety culture was not a fundamental driver to the recurring substantive crosscutting issue and we would proceed forward.

The staff has looked at the INPO process and the process I think is reasonably sound. We didn't identify any fundamental issues with it. So if they were to use that process to satisfy our request, we think that they would, if they did it well, get to an appropriate determination of whether or not safety culture was or was not the problem in that recurring substantive crosscutting issue. That's what we're attempting to decide.

MEMBER DENNING: And if they don't do it well, you can take regulatory action.

MR. COBEY: We would then have a problem identification and resolution process which would then identify that they didn't do it well. Presumably we would have a performance deficiency for an inadequate self assessment if that's what the case was and that would be factored into the assessment process and we would engage that utility individually on that performance deficiency. We would expect them to address it and correct it just like any other performance issue.

CHAIRMAN BONACA: On some items, does INPO have the same information that you do? For example on the safety culture work environment, do they know the number of allegations that may be against the company? I'm not sure INPO has that. You do.

MR. COBEY: I don't think they have full benefit of the details. They have benefit of what's available numerically on the public website, but that's not that insightful.

CHAIRMAN BONACA: Yes.

MR. COBEY: We've had a couple of folks that have participated in the INPO assessments and we've done a review of their process. While their process is sound, there are challenges with implementation and as a result, why our process has these separate trigger points as regulators is because we didn't feel it was appropriate as regulators to turn everything over to INPO and the industry.

We would expect to review it, their assessment, whether it's done by a self assessment or whether it's an independent assessment or a third party assessment. We would expect to come in and review it in a graded manner based on what the driver was and form our own conclusions about its adequacy. It's our belief that the majority of instances the

licensees are going to recognize the importance of doing a good job.

If they are one of the few plants in the country that the agency has to have a safety culture assessment performed, there's going to be a great deal of focus on that facility. I will anticipate in the majority of cases they will in fact apply sufficient, dedicated resources whether or not that's in their own staff or to bring in external contractors because they don't want to not do well in that case because the consequences ramp up pretty drastically.

I've have members of utilities tell me that even if we ask them to do a self assessment, it would be unlikely for them to do it because of their concern that they not do a good job. They would rather pay the money in that case or bring in the dedicated resource of experts that they can then hold up as being a valid source if you will of whatever conclusion is reached. While it's a possibly that that case exists and I feel we can deal with it, I think it's a more unlikely circumstance than the likely one.

If a plant finds itself in a licensee response column which is the vast majority of plants, we anticipate that this proposed change will have

little effect on them. The only effect would be that our baseline inspection procedure 71152 will be enhanced. We don't anticipate an increase in resources but we do anticipate a slight shift in focus of that inspection.

For those plants that find themselves in the regulatory response column of the action matrix, that's one white performance indicator or inspection finding within a cornerstone or two white inputs in a strategic area, what we would expect is that there's no change to the expected licensee action and what the action is is to do an evaluation of the performance deficiencies and implement appropriate corrective actions. The supplemental inspection procedure would be enhanced to have the inspectors verify that the licensee's root cause extended condition and extent of cause evaluation appropriately considered the safety culture component. That's the entire set, not just the nine that are subsumed under the crosscutting areas.

Our regulatory actions would remain unchanged. We would anticipate essentially no change in the resource estimate from the current 16 to 40 man-hours to complete for each white issue. The reason is is because the inspectors who are performing

are already doing this effort but they're doing it from the technical causes perspective. So this would be doing the same review given all of the causes which would include that set of 13.

In the event, say that the inspectors identify that the licensee didn't appropriately consider one of the safety culture components in the evaluation, say resources, since you brought it up earlier. What would be expected to happen there is during the inspection process there would be a dialogue and if we reached the conclusion that it should have been considered and it wasn't, the process as it currently stands now would say that we identify that inadequacy to the licensees. They would be expected to address the adequacy of the root cause investigation and that finding would be held open until they did that and we completed a second or subsequent supplemental inspection. So the process is already there to allow the case when we identify an inadequacy in their root cause evaluation.

CHAIRMAN BONACA: So your inspection stays. They are enhanced. I have a question about the inspections.

MR. COBEY: Yes sir.

CHAIRMAN BONACA: What you're doing here,

you are enhancing the process and you're enhancing the inspection process too. But typically especially the cultural issues are much more evident when the organization is stressed by certain conditions. For example, outages for refueling are truly a window on the way that the culture operates because that's really when shortcuts are being made if there is an opportunity or a need in the organization.

MR. COBEY: Yes.

CHAIRMAN BONACA: So if you really go during an outage, you begin to see how the organization works. When everything is smooth and there is no problem, then everything else seems to work much better.

MR. COBEY: You are absolutely right.

CHAIRMAN BONACA: But in general, you are staying away from inspections during outages, are you? Or are you performing these kind of inspections also during outages?

MR. COBEY: The inspections that are being performed during outage are refueling and outage activity inspection. I believe the number is Attachment 20 and it's a fairly substantial inspection. Basically for regional staff during that time, I have a branch that has two inspection staffs

and during an outage, I make sure that I have no gaps in coverage. I have full inspection coverage during that time because if I don't, I have significant challenge in just meeting the minimum requirements of those inspection activities.

So we put a focus on outages because of that very reason. We would anticipate that if these cultural issues manifested themselves in more than minor performance deficiencies that they would be captured under our treatment of crosscutting issues that I currently proposed and if there was a collection of them, more than three, then that would trigger an evaluation that would allow us to identify a substantive crosscutting issue. If that type of performance problem went along uncorrected, if it did that for three assessment cycles, is the first trigger for a safety culture assessment.

CHAIRMAN BONACA: So you would be looking at work that should be done but is not being done because they want to contain the outage for a shorter time. For example, let me give an example. We heard about Davis Besse. They had leakage from phalanges. That leakage from the phalanges became a theme that was used repeatedly I think through the outages to claim that we knew where the boric acid was coming

from, the phalanges.

MR. COBEY: Right.

CHAIRMAN BONACA: And the reason is that the guy who was responsible for the process did not have priority on the outage which means once the outage was over whatever phalanges were still leaking they still left them leaking and they said we'll fix them the next outage. Now that is a decision that if you look at the history of where the event has gone is significant.

MR. COBEY: Absolutely.

CHAIRMAN BONACA: It's a significant contributor to the belief in the organization that we know where the leakage is coming from and yet there was no priority given to this activity of repairing the phalanges. Now it seems to me that a successful organization would have said that's a no-no. You don't want to leak on the head and so we fix them if it takes 20 more days to fix it. I'm not saying that you cannot schedule maybe a couple of outages. That's what I'm thinking about. That really wasn't caught by your inspection process.

MR. COBEY: Sure. And that's a great point and that is this proposed change can't be looked at in isolation in reference to Davis Besse. The

staff has implemented a myriad of changes to the inspection process since Davis Besse under the auspices of the lessons learned task force. This is adding on to all of those other actions that have been done. This isn't replacing any.

CHAIRMAN BONACA: I understand.

MR. COBEY: It can only be looked at in conjunction with all the changes to the inspection procedures, the plant status activities, etc. to step back and look at Davis Besse. That becomes a bit problematic from the standpoint of evaluating the effectiveness of this process because the information which this process would have the benefit of today given those changes for Davis Besse didn't exist prior. So they are the building blocks that this process has been built off of.

CHAIRMAN BONACA: I was just asking a question to see if simply your inspection process sits back and waits for problems to arise and then accounts them or if it is intrusive for example in looking at issues that are in the corrective action program backlog and how they relate to the outage.

MR. COBEY: Right. I would not describe the inspection process as sitting back and waiting for performance deficiencies to find them. That doesn't

happen. A self-revealing performance deficiency effect does occur but inspectors are asked or required by our process to review every input into a licensee corrective action program. The reason is so that they can identify instances where problems keep being identified and it doesn't appear that anything's being done. They can then select that as an example.

So this is one input into their inspection program sample selection process to inform them so that they can hopefully be more intrusive and proactive and get at some of these underlying issues before they result in that self-revealing event. That's a Davis Besse lessons learned and this change doesn't affect that though it builds certainly on it.

So for example the case that you made with the decision making, if there was a performance deficiency identified, say for sake of argument that there was, say that performance deficiency was a criterion 16 violation of Appendix B for sake of argument, but at its heart it had a decision making causal factor, that would then be expected to be identified as having a crosscutting aspect in human performance because the plant manager did not use the station's decision making process for evaluating this type of a program and then as a result they made a bad

decision for example or whatever the cases may be because decision making with all of its associated pieces is decided under the human performance crosscutting area now. Andrea will get to that description here in a bit.

But decision making is now as one of the substantial new pieces of the human performance crosscutting area. It's one of the reasons why we think it's appropriate to make the adjustments to the descriptors is because we bring in that whole decision making element.

For plants in the degraded cornerstone calamity action matrix, licensee action, we expect no change. They should perform a root cause investigation of individuals and collective performance deficiencies which resulted in them being in the degraded cornerstone.

We expect to enhance the supplemental inspection procedure 95002. Here we would enhance it to allow the inspectors to independently determine whether the safety culture components were contributors to the performance problem. Currently, the 95002 inspection has the inspectors independently evaluate the extent of condition and extent of cause analysis. So this would be an extension on that to

have them independently determine whether or not the safety culture components were drivers of the performance problem. We do expect that this would result in some increase in an level of effort for this inspection. But we don't expect it to be a dramatic increase.

We are proposing an addition to a regulatory action to allow the NRC to request a independent assessment of safety culture in the event that the NRC inspectors in the supplemental inspection identify that the safety culture components were driver of the performance problems and the licensee didn't recognize it. So, for example, if we go in and during the supplemental inspection identify that the resource cause was the driver of, say, a capital improvement that had been identified not getting implemented and that was underlying the performance deficiency and the licensee hadn't recognized that, we could step back and we would say at that point you had this performance deficiency. You had the opportunity to fully evaluate it. You weren't able to do that. It's appropriate at this point to have an independent assessment of the safety culture.

MEMBER KRESS: What's the status of the word "request" in your bullet? Does that mean they

have to do it or you would like for them to do it?

MR. COBEY: It's consistent with the current language throughout 0305. Our reactor oversight process tasks licensees with doing things that are not requirements. There is a provision in there that if they don't do it that we'll do it for them.

MEMBER KRESS: I see.

MR. COBEY: And licensees don't --

MEMBER KRESS: Don't particularly like that.

MR. COBEY: -- particularly like to invoke that aspect because that tends to result in a different perspective on our part. So I don't believe we've ever had that happen. But buried in our process is we can request the licensee to take actions.

If they choose not to, we expand the scope of the supplemental inspection to do it ourselves. Here in this particular case if a licensee chose and said "We're not going to do an independent assessment of safety culture" as a minimum we would do the evaluation ourselves which I'll get to in a minute would essentially be what's in 95003 supplemental inspection.

For a plant that was even further to the

right, the plant in multiple repetitive degraded cornerstone column, here we would expect that the licensee in addition to doing everything that they currently do would have an independent assessment of the safety culture performed as soon as they found that they were in that column of the action matrix. Consistent with our current process, we come in and do a very extensive, broad look at their performance under our supplemental inspection procedure 95003.

That inspection would be further enhanced to support NRC inspectors independently assessing the licensee's safety culture. So in this particular case after they've done their root cause investigations which are very broad based, after they've done the assessment of safety culture, we would come in and do an independent look.

We currently anticipate this is a fairly significant increase in level of effort. Currently, it's a three week onsite inspection effort at 1,740 hours of direct inspection. We would anticipate that would go up. The initial estimate is 10 to 20 percent but that's a rough estimate and that equates to two to three additional folks dedicated to one aspect of evaluating safety culture and that is the attitudes type elements. The process type elements,

human performance type elements, those elements that are already looked at under 95003 we're taking credit for within the context of the existing level of effort. But we would, in fact, as an objective independently assess that licensee's safety culture.

MEMBER KRESS: Does the plant being inspected pay for that?

MR. COBEY: For the supplemental inspections, yes they do. And I think our agency estimates that there is one inspection 95003 across the country per year. So this is a fairly infrequently performed activity. We would like it to be none of course but that's what we've seen about.

So that's a high level discussion of the approach. Our rationale for this approach in terms of support of our decision why we think it's important to implement this approach is that this approach is within the framework of the reactor oversight process. We did not change the underlying framework of the reactor oversight process. We worked within that framework. The safety culture components as they are describe reflect what's important to safety culture.

Changes to the treatment of crosscutting issues do two things. It proves our predictability and consistency in the identification of common causal

aspects of findings and also the identification of the common themes of those findings and the determination of whether or not a substantive crosscutting issue exists. Also improves our alignment with the identification of a substantive crosscutting issue with what's important about safety and safety culture. So those two reasons are our fundamental drivers of why it's important to make those changes.

Lastly, if we go back to the original objectives that the approach was to satisfy, there are three of them and we think that the approach does in fact address those objectives. The first is to provide better opportunities for the staff to diagnose safety culture weaknesses and to take appropriate actions before they result in a degraded cornerstone. Here this piece or objective is done by our improvements to problem identification and resolution inspection procedure as well as our adjustments of the crosscutting issues.

The second objective is to provide the staff with a structured process to determine the need to evaluate a safety culture, to evaluate the licensee's safety culture if they have a degraded cornerstone. Here that process is in supplemental procedure 95002 in our oversight process, MC0305.

The third is to provide the NRC staff with a systematic evaluation process and that would be found in our supplemental inspection procedure 95003 where we would in fact perform that independent assessment of safety culture.

In summary and our next steps going forward, the staff has completed conceptual development work. The staff has shifted focus to revising the manual chapters and inspection procedures necessary to implement this process and to the development of training for inspectors and managers.

Our current schedule to meet the Commission's direction has us revising manual chapters and inspection procedures necessary to implement this approach by the end of January such that we can share these procedures with our external stakeholders who contributed to the development of this approach in early February allowing them approximately ten days or so to provide us comment so that we can incorporate comments and have final draft procedures by the end of February.

We would anticipate these procedures entering our document revision process in March with an estimated exit from that process in mid April. We anticipate briefing the Commission TAs again in early

March to provide them our status and our final implementation schedule.

Also in parallel with what I just described, we're in the process of developing training for inspectors and managers. We expect this training to be a multi-phase approach to training, read and sign, possibly computer-based training and we anticipate it will involve direct interaction in the inspector counterpart meetings in the spring which are in May.

And lastly, that brings us to the point of initial implementation of the revised oversight reactor process becoming effective July 1st. The one thing that you probably are aware of is these changes while we anticipate having them ready in April and do training in May you can't implement a procedure change of this nature mid-quarter because our inspection assessment process is on a quarterly basis. So it makes sense to implement it effective July 1st.

That's our target. We anticipate having --

MEMBER WALLIS: I have a question here. What's the process for revising the ROP that you're going to implement?

MR. COBEY: I'm not sure I understand your

question. Could you elaborate?

MEMBER WALLIS: If you're going implement your revised ROP, you're going to have a revised ROP. Is that finished now?

MR. COBEY: There is a formal changed process. What it involves is the Office of NRR which owns the process, when they have reviewed and approved the document and I guess distribute it to the regions, the regions have an opportunity to provide comment. Those comments are incorporated. It comes back through the Office of NRR who would then authorize that to be implemented. It's coordinated with the training and the documents are ready to be implemented and the training is ready –

MEMBER WALLIS: It seems to me –- Why does it come last? Doesn't it come first? I would think you'd have to have agreement on a revised ROP before you did all this training and so on.

MR. COBEY: That's true but you can't wait to start developing the training until after the procedure is developed. The training is a fairly –-

MEMBER WALLIS: But then you might train them on something which turns out to be incompatible with what you actually end up writing in the ROP.

MR. PERSENSKY: Gene, just to make it

clear I think. The revisions to the ROPs are the things that we've just talked about.

MEMBER WALLIS: Yes.

MR. PERSENSKY: Revisions to the various inspection manuals, the manual chapters, all the things are the revisions and they will be in place by mid April.

MEMBER WALLIS: They follow. So the revised ROP is what you briefed the Commission on.

MR. PERSENSKY: We are revising the --

MEMBER WALLIS: That's what you briefed the Commission on.

MR. PERSENSKY: Right.

MR. COBEY: Yes.

MEMBER WALLIS: Okay.

MR. COBEY: And we are at that point now where that's been determined.

MEMBER WALLIS: So you have agreement on this revised ROP.

MR. COBEY: Yes, as of Friday of last week when we briefed the EDO. He gave us the authorization to proceed forward to implementation in accordance with the schedule. So we're on a path to implementing this approach that I just described. So the approach has in fact been well vetted and we are in the process

of going through the change process to change those manual chapters and those inspection procedures which I described. In parallel with that, we developed the training to support those changes.

I think we're at a point that we're not proceeding at risk in terms of development of the training that when we got to the end that there would be a substantial disconnect between the training and the procedures. Now we have to be mindful that if we get comments and we decide to make changes to the proposals, we in fact have basically the same people working on both of these efforts. So they would incorporate those changes into the training process.

MEMBER KRESS: This doesn't involve any formal rulemaking.

MR. COBEY: No, it does not. We also don't believe that it involves a policy change. We believe that we're operating consistent with the Commission's direction as articulated in SRM 2004-111 and 2005-0187. We have a tasking to keep the Commission informed and brief them prior to making final decisions on the approach and our briefings to them are intended to satisfy that.\

MEMBER KRESS: So you don't have to do a back-fit analysis.

MR. COBEY: Don't intend to, no.

CHAIRMAN BONACA: Now you started several months ago with a much more ambitious part. You had defined attributes of safety culture at a much higher level and then elements below that. And now you step back and you go on a much lower level. All you're doing is you're taking the existing crosscutting issues and redefining them in a broader way mostly for understanding and training and focusing the inspectors.

MR. COBEY: Correct.

CHAIRMAN BONACA: How do you feel about the change in path? Tell me what you think.

MR. COBEY: Yeah, I'll tell you what I think. You asked me for my opinion. I'm always free with that. Originally the staff's vision was a bit grander as you mentioned. We stepped back as we were asked to do and engaged or actually not engaged but reengaged our stakeholders and we looked at the objectives and took the input that we received from this wide body of stakeholders with various views and incorporated those views with the goal of satisfying the objectives, not necessarily satisfying our original grand vision.

So we got to a point where we identified

enhancements and a proposed approach which satisfied the objectives but wasn't necessarily the same as our original grand vision; hence why it's important today at this point and juncture we go back to the original objectives and say "Does this different approach that we worked with the external stakeholders to develop satisfy those objectives. If the answer to that is yes, then we're in a better place because we have alignment amongst the stakeholders as opposed to maybe trying to continue to proceed down a path of grand vision that arguably satisfies those objectives but having discord amongst all the involved folks.

So I think we're in a better place today because we actually have a success path that we can proceed down. It may not be the perfect process but it accomplishes the objectives and it's certainly 80 percent. It's certainly a step forward in the right direction. So I'm much happier today in terms of I have a success path than I was in October when I had observed a meeting where we were pursuing a grander vision but we had substantial discord and we weren't on a success path.

MEMBER WALLIS: Yes. You have a grand vision. Now you, I think, established something which is feasible. It seems feasibility is your main

criteria here. I'm just not quite sure why it solves the problem of inadequate safety culture. Does it really address the Davis Bessie type situation the way we're just going to make things far better in the future or is it just this little step forward that is in the right direction?

MR. COBEY: I think it's an incremental improvement and I wouldn't want to go beyond that in terms of trying to predict how well this is going to work out. We're going to watch this, these changes, as you may have discussed for a cycle and a half and then we'll come back and learn lessons and make changes based on that. But I think it is an incremental improvement and some of it is directed towards what we do with a plant that we know has problems.

But some of it also for the first time is more directed towards providing that earlier opportunity to diagnose in terms of the crosscutting issues. I think intuitively at least that's an improvement. It's an incremental one but it's an improvement. We'll have to see how it plays out.

CHAIRMAN BONACA: It is an improvement. Clearly, the value of dealing explicitly also with decision making, resources, work control, we're happy

it's in the context of human performance. You were able to pull out some of these attributes and stick them in a lower level and I appreciate that they are going to help you.

But in the beginning I thought that the objective was the one of being able to detect degradation of safety culture before an event will occur. Now if you really thought that you had to have this grand scheme, that's why I asked the question, do you still feel that these will accomplish the same thing. Now the answer I got is it's an incremental step and time will tell us.

MR. COBEY: And just to add to that. Remember that the landscape we were dealing even in the October time frame when we had this scheme, that wasn't all that grand actually. It was grander than the one we're putting in place.

But remember the landscape was there were folks who said you don't need to do anything with safety culture. We're already okay with respect to everything the agency does on safety culture and then you have folks from the other end of the spectrum said you need to do surveys. You need to establish performance indicators, things that you can count.

So what we've been able to do, I think, is

to narrow in on an approach that doesn't satisfy the folks who would want a survey, doesn't satisfy the folks who would say do nothing, but I think is an acceptable approach where those folks can at least watch this incremental change play out, support the incremental change as it plays out and we can learn a lesson. I think from that perspective where we've gone is a success.

CHAIRMAN BONACA: All right. And we'll hear more about it when we talk about components.

MR. COBEY: Yes.

MR. THADANI: Mario, may I?

CHAIRMAN BONACA: Yes.

MR. THADANI: Mike, I think as you noted this is clearly a positive incremental step. I have a somewhat general question and I wonder if you've done some assessment. You talked about Davis Besse but really there have been three or more significant events that there's consensus that safety culture was probably the significant contributor or the Paks fuel event, fuel failure event, that occurred in Hungary. The Columbia failure, NASA did an evaluation, came up with some recommendations.

Have you taken a look at those findings and stepped back and with the approach that you are

proposing with, to what extent you would capture potential problems of that nature? Those are three big events, very significant events obviously. I wonder if you've done some assessment to say how incremental is it really, the move that you're proposing.

MR. JOHNSON: Thanks, Ashok. I understand the question. I don't know, Jay or Isabella, if you all want to weigh in with respect to an answer. What we've tried to do in terms of approaching this is to be informed by the best information today of safety culture. So as Jay will tell you, we looked certainly at what the international folks do. We look at what the industry, our industry, is doing today with respect to safety culture and I would say those activities have been informed by insights such as the insights from the Paks event.

We haven't, this group hasn't, specifically I don't think, gone and looked at those and that might be something worthwhile. One of the things that we're going to do with respect to going forward and I don't know whether Gene talked about this or not is we're going to look within the nuclear industry, the commercial power plant industry and how we apply safety culture, to see for some experiences

that we've had more recent than Davis Besse where did the current process take you, where would this revised process take you, with respect to being able to find safety culture issues and we think that will tell us something. But I think those are the right kinds of questions to be asking to make sure that we end up in the right spot with respect to safety culture.

MR. PERSENSKY: If I may. Ashok, we have not done a formal evaluation and say let's take this and put it against these various ideas. But back when we had the grand plan as we've been referring to it, what we were looking at at that point was what were the important elements. What were the things that came out of those types of incidents as far as what are the elements of safety culture? And that was in fact incorporated into what at the time we were calling attributes and elements which have migrated to some extent into the components. So we are using that information. We have used that information.

In addition, one of the other things that Gene had indicated was even before we got involved other things have been happening within the ROP. With regard to the Colombia accident, in fact we had one of our staff members from the ROP group did develop a training program, an hour or so description of what

went into that and in fact has provided that information to all of the inspectors. So it was part of a familiarization. We have used that information.

With regard to going back to Davis Besse, we keep throwing that around and one of the problems is we don't have the information as a post hoc kind of thing because the information that we'd be looking for now is not in those old reports because we didn't collect that point. So we can't really do it except retrospectively and say if we would have had this, it might have helped. We can't really go back and look at specific report and say did they miss something here.

MR. COBEY: Yes. Let's briefly if you don't mind talk about one plant that we did look at that's more timely, Salem and Hope Creek. We did look at Salem and Hope Creek's record, their experiences, and looked at this proposal and said, "How would it have treated Salem and Hope Creek?" What this proposed change would have done is it would have gotten us in early 2004 to requesting that licensee have an independent assessment of safety culture performed. So it got us to the point that would have asked the right questions.

Now we can only postulate what the answer

would have been. I know based on the independent assessments that the licensee had performed in response to our request in the area of safety conscious work environment that those assessors identified safety culture issues. The licensee didn't transmit those safety culture issues to us in that way because that's not what we requested them to do and they were mindful, in my opinion, of Davis Besse and wanted to keep the issue on safety conscious work environment.

So I believe that had we requested then to have an independent assessment of safety culture which this process would have had them do, they would have come back with a description of their problem in safety culture terms and would have identified actions to address those problems which I think puts us at the place we would want this process to put us at. So for a real case closer in time that has better data to use, this process put us, I believe, at the right point.

Now we intend to look at one or two other plants that had different perspectives as we go on through the development process but that's one that we have in fact completed that I can talk about. So does that give you a little bit better of a perspective?

MS. GHOSH: Gene, can I add something? This is Tina Ghosh on the Safety Culture Working Group. I've actually looked explicitly at the Paks incident both international reports and the Hungarian regulatory reports that came out after the incident and I just coincidentally happened to be visiting the plant just a couple of months after the incident. So I had the chance to talk to a lot of the people who worked at the plant.

What I can say is that the safety culture components that we've developed definitely captures the issues that were present at the Paks plant. For example, a lot of the issues were explicitly covered by the INPO attributes which we very rigorously looked at and incorporated a lot of the ideas into our safety culture component. So I can pretty confidently say that we have captured all of the issues from the incident in our safety culture components as they exist today. If anybody wants further details, I can talk to you offline about that.

MR. JOHNSON: Any further questions?

MEMBER DENNING: Let me ask some questions. You talked about that you only consider those events that have safety significance and your model that you're thinking of as far as safety culture

in the plant. Are there plants that have good safety culture but don't have good overall management practice? I'm just wondering. There are so few data that are available to you to give you indications of where safety culture might arise. Are we throwing away data that correlates with poor safety culture by throwing away those aspects of bad management practices but which are not interpreted as having led to a safety problem?

MR. COBEY: Possibly. I guess our view is that it's a matter of engagement. It's our view that as a regulator we should be engaged at a threshold as opposed to amongst everything. So there is nonsignificant issues which may be indicative or a result of a problem with an aspect of safety culture that won't get incorporated. I'll acknowledge that.

But it's our belief that when a licensee is in that column, if you will, of the action matrix when they are in that area of performance that it's appropriate for the industry's processes and those of INPO which are engaged at those times to let them run their course and they're not successful in identifying those aspects and addressing them internal to the industry processes, then we would expect to see performance have data points that enter our process

more than minor performance deficiencies at which they would then have NRC engagements.

So the process is structured consistent with the rest of our processes which is to allow licensees to self correct, have industries to self assessment their own performance until their performance gets to a certain point at which point then we become involved in an increasingly intrusive manner as performance declines with the idea that hopefully the process, our engagement at the initial level, would result in some corrective feature if they had been unsuccessful as an industry on their own. If performance continues to decline, we would become more intrusive until the point at which their performance deficiencies were corrected. So while I acknowledge that, yes, there are some potential data points that are missed, it's our belief that they are appropriately covered by the industry in the realm of performance and INPO.

MR. JOHNSON: Just let me add to that answer. I think it's right on. Again, we may not capture all the data points but we can potentially capture if we lowered the threshold for example. Licensees today certainly should capture those points. We may have, for example, ten findings at a plant.

If we lower the threshold, we may capture another small subset of performance issues but licensees, for example, may have 5,000, 10,000 items in their corrective action program and licensees deal with those items. They assign priority. They take corrective action. They should be looking to see if there are common threads that ought to be pulled with respect to safety culture.

So we're not giving up on whether or not someone ought to be worried about safety culture, setting the regulatory threshold for our engagement with respect to safety culture. I think that's important because one of the things we want to avoid is creating false positives. False positives can be as potentially challenging as false negatives particularly in the context of we can identify false positives, take aggressive actions, defer licensee's attention from things that they really ought to be worried. So we think we have the right mix in getting engaged with the right level of the process.

MR. PERSENSKY: In addition, we have been focusing primarily on the nine components that are part of the baseline inspection. But Gene mentioned that when we do the supplemental inspection and when we ask them to do a self assessment or an independent

assessment, there are actually four other components that address some of those more management concepts that you're talking about.

MR. COBEY: That's true.

MR. PERSENSKY: Andrea will be mentioning them in her presentation.

MR. FLACK: Mario, I have one question. This is John Flack from the ACRS staff. Going back to the full committee we had last month, December, Tony Harris from NEI was present and I think he got up. I don't see him here today.

CHAIRMAN BONACA: Yes.

MR. FLACK: Oh, he is here. He made a statement I know following up on a question that said that again getting back to Davis Besse and it's really hard to let go of Davis Besse because we're here today because of that. So somehow we need to close on that and Tony made a statement which was very interesting. He said he thought that we could tell that things were starting to go bad at Davis Besse because they were pushing things out.

Now having said that looking at all the green findings and stuff, they wouldn't tell you that necessarily. But that link to pushing things out, what we're doing in the changes today to the reactor

oversight process, we need to be able to make a determination on that and say that, yes, you are pushing things out or putting production over safety and therefore enough is enough already. We need to do something now. I think that's really at the heart of the matter, isn't it? I don't know, Mike.

MR. COBEY: Yeah. The answer is, I think, yes. It is our belief that this proposed change that we're going to go implement coupled with the changes that have already been implemented would put the NRC staff in a position to have –- We have a much higher degree of belief that we would have identified that issue before Davis Besse. We're not. Given the record that existed or lack thereof leading up to the days, it's hard to provide an objective trail. If I looked at these findings, I would have treated them this way because those weren't written down.

So because of that, there's a challenge there. But if we look at this and reflect on it, I think consistently the staff used that this approach coupled with the other changes put us in good place to identify and deal with that very problem that you're suggesting.

Unfortunately, given the circumstances, it's hard to demonstrate it in the same way that I

could do with Salem and Hope Creek for example. I could walk you through finding by finding if you wanted to spend enough time and show you, yes, I get to the point of asking for a safety culture assessment before there was an significant event. That was a success or would be a success.

Now if you had the same level of information that preceded Davis Besse we could do the same exercise. Unfortunately, we don't have the benefit of that. We would have to go and create it. So in some sense it would always be suspect because it was created after the fact when you knew what the answer is.

So we had to look more at this in sort of an evaluative kind of way and say, would this combined with these other changes accomplish the goal and I think the answer is we feel confident that it would. We just can't say it in quite the same manner we can with other more recent facilities.

MR. BOGER: Gene, this is Chris Boger from NRR. One of those changes that we made that we keep referring to, these other things in the ROP that have changed is I believe the resident staff looks at deferred modifications as part of the normal baseline inspection program. Is that one of those changes?

MR. COBEY: Yes, I think so.

MR. BOGER: That gets to the pushing things off into the future. It's supposed to be looking at things that are deferred and our understanding of why those things happen.

CHAIRMAN BONACA: That was the question I had before about looking at --

MR. COBEY: I didn't go into the exact details at the time I made the statement. That's one of the other things that the inspectors look at. For example, one of the last outages we had at Salem and Hope Creek the inspectors specifically look at all of the work that was deferred out of the outage, all the maintenance, whether it was a modification or just maintenance. That's part of routine inspection now. This process builds off of that.

MS. KOCK: That's a good lead into the next presentation and my comments. In addition to the change I first mentioned, if you read through our components, for example, we talk a lot about decision making. That type of thing you're talking about, pushing things out, is specifically covered when we talk about conservative decision making.

We also address resolution of long-standing issues in another component. That also

addresses your original question of where's the real benefit in this and the benefit is that if you have a finding with that sort of tie to equipment issues, it allows you to ferret that out and there's a place for us to now put it in and call it the name it is which is not addressing long-standing equipment issues or not have concerned decision making.

CHAIRMAN BONACA: Yes. I think we should take a break now and then get back and talk about this safety culture component. It's interesting how you're getting there to INPO and IAEA attributes and then you come back with this list and we'll have additional questions on how we came up with this. Okay. So let's take a break until 10:45 a.m. Off the record.

(Whereupon, the foregoing matter went off the record at 10:30 a.m. and went back on the record at 10:45 a.m.)

CHAIRMAN BONACA: Back on the record. Okay. We are going to resume the meeting. All set? Before we get started, I would like to introduce Dr. Sam Armijo. He's sitting at the table here. He's going to be a new member of ACRS. The paperwork is on the way. So he's not a full member yet. So with that, we welcome you and it's important to sit with us here.

MR. ARMIJO: Thank for letting me sit in and listen.

CHAIRMAN BONACA: So we come now to the second of this morning and that's from Ms. Andrea Kock and that's on the NRC Staff Development of Safety Culture Components.

MS. KOCK: Thank you. My name is Andrea Kock. I work in the Office of Enforcement. I'm an Allegation Specialist and I'm also a member of the Safety Culture Working Group, just a little background on who I am. I did bring copies of the most recent safety culture components that I can pass out if you all need a copy to refer to.

CHAIRMAN BONACA: Yes.

DESCRIPTION OF SAFETY CULTURE COMPONENTS

MS. KOCK: And what I wanted to discuss a little bit was how the working group developed the NRC safety culture components, how they were originally developed and how they've been revised since in response to internal and external comments. That way you can get a bit of flavor about why they were written the way they were written and why they are titled the way they are. That's what I hope to accomplish.

What I would like us all to come out of

this discussion with is a little bit of background on how the working group originally developed the components or the concepts that went into the components and how those components were revised during an iterative process basically based on comments from internal and external stakeholders and also based on a comparison that we did where we compared our components to INPO components and IAEA components and revised ours as a result of that comparison. I would also like to talk about how we have resolved comments on the components that we have gotten.

CHAIRMAN BONACA: So you did go through an analysis and you're going to explain to us why you selected some of the components.

MS. KOCK: Yes, hopefully. Please feel free to ask any question that you have as I go through.

CHAIRMAN BONACA: Yes.

MS. KOCK: When the working group was first tasked with the Commission's direction to enhance the ROP to more fully address safety culture, the first thing that we did was basically just compile information that we had from industry and international sources on safety culture and we

ferreted out concepts from the documentation that currently exists on safety culture to gather the concepts that we have.

Just some brief examples of that are we have a component called work control which is very similar to in IAEA safety culture documentation they discussed the quality of processes and controlled working practices. Similarly, INPO covers work control under what they call “work management, human performance and operational safety.” So we cover the same components but we revised maybe some of the language that’s used in those documents for NRC purposes and I’ll go into a little bit more detail about how that was done later.

And we talked a lot about this next one too already today. In the area of decision making, we found that in the literature both in industry and in international literature decision making is seen as an important concept of safety culture. Another way that we inform the concepts that we took was based on the experience of the working group members and we saw issues that were in documentation and safety culture literature. One was decision making and so we were sure to include conservative decision making as part of our components.

Just as one last example, in the area of safety conscious work environment, both the industry and IAEA recognized what's phrased as "open communications on safety issues" in support of this by management. Again, we recognized that this was an important aspect of safety culture. So we included it in our components and we've also recognized that safety conscious work environment can be one of those things that affects plant performance. We've seen it based on our experience.

CHAIRMAN BONACA: But now, let me take the example of decision making which is a very important component. You identified that now under human performance and most of all would be work observations. I think you had it before when you had the big scheme at the higher level. At that time in the big scheme, of course, when you think about decision making, you're thinking about not only the guy in the field that does some work and that may make a mistake because he's using non-conservative decision making. But then you are thinking more about organizational decision making too.

MS. KOCK: Right.

CHAIRMAN BONACA: Are you capturing that now?

MS. KOCK: I think we're capturing that, although it is under human performance. So you may get the perspective based on where it's placed that it's only really related to work decision. If you read the entire component, it doesn't talk about work or practices. It talks about just conservative decision making by the organization. It also talks about communication of decision. So that goes beyond individual workers.

CHAIRMAN BONACA: So you really sneaked in a number of those high level down.

MR. JOHNSON: It's all in there.

MS. KOCK: I don't know if I would use the work "sneaked."

CHAIRMAN BONACA: Of the three. Okay. Go ahead.

MS. KOCK: Those are just some examples of the kind of concepts that we saw when we researched what's currently out there and how we incorporated them in our current components. What we were left with is just this compilation of information and basically what we did was we just sorted it into common themes and titles and that's how we ended up coming up with the components.

However, one important distinction is that

we didn't include every single concept on safety policy that we found there. We had to make some judgments. For example, there are safety culture components that IAEA or INPO might call trust or leadership. We didn't include those concepts because we felt like they were outside of our purview.

Also to be consistent with the Commission's direction not to obtain information that we could only get through surveying individuals, we were careful not to include information such as individual beliefs or attitudes. We focused more on outcomes of what those beliefs and attitudes might result in.

We also didn't include specific practices that might not be applicable to every licensee. For example, one good safety culture practice is that several plants have identified committees that review disciplinary actions before they are taken against individuals to make sure that those actions don't result in a chilling effect. While that's a good practice, it's not generally applicable. So if we came across that kind of information, we didn't include it.

We also screened the information that we got to make sure that we addressed ambiguous language

that couldn't really be translated under the ROP. What I mean by that is concepts such as work groups being aligned or policies put a high value on nuclear safety. Those are good concepts and we certainly took those concepts but we took them and revised the language to put them in usable language because it's hard for an inspector to determine whether a policy puts a high value on safety or not. We focused again more on outcomes.

One thing I just wanted to emphasize was that developing these components has been an iterative process and we started back in, we actually started about a year ago and really starting this after October they have been revised several times. So this is an iterative process and we continue to resolve comments that we get on them.

MEMBER DENNING: From a purely technical perspective when the Commission doesn't want you to use surveys, does that really hand-string the evaluation? Would one be much better able to assess safety culture if you had the capability to use surveys?

MS. KOCK: I think you would get to more of these individual, these underlying beliefs and attitudes if you used a survey. We had a discussion

once upon a time about what we thought the Commission meant by no surveys and we decided what that meant was surveying groups of people using the same set of questions in a very systematic process. But that doesn't hinder us from doing what we do now which is if we have a finding asking the questions to determine why that occurred and we're just focusing more on the outcomes rather than individual beliefs or attitudes. I think we get there by looking at findings and looking at the safety issues that arise.

MR. JOHNSON: Let me start, Jay, and then you can pick up also. One way to look at this is if we were starting with a clean sheet of paper and deciding that we were going to go survey everyone, all licensees, to decide whether they had safety culture issues. It would probably not be all that fruitful for us to do that and so to rely on that as a tool. So we've really chosen this performance-based perspective to go after safety culture. That's the way we do oversight.

Having said that, that doesn't mean that the industry doesn't use surveys. The industry certainly does make good use of surveys in terms of the activities and they should do that. So it's just as a regulator is that where we want to be in general

or how do we come at this problem from a regulatory perspective and our perspective has always been looking for things that evidence themselves into actual performance and then if you will pull the string to get the safety culture as opposed to us starting with a clean slate and doing sort of a blanket survey and trying to find safety culture that way because that's not our expertise.

CHAIRMAN BONACA: One of the difficulties of survey is that most of them are really windows into management. Some of them are very specifically directed at management. So it would be like the regulator getting in and evaluating individual because that's what happens. At the end of it, you have really feedback on individual supervisors and managers and how they perform and so on. That would be very difficult to do. But you can ask them to do it and want to get a result.

MR. COBEY: Let me talk to what Mike said. In the supplemental inspection procedure 95003 that we're currently crafting which is going to be our process for going out and independently assessing the licensee's safety culture if the performance dictates it, there we would fully anticipate having all of the information that was available as a result of the

licensee's efforts, all of their surveys, all of their survey results, their independent assessment, etc. Those would be input sources that we would use to shape our assessment and work off of to verify whether or not their assessment results were meaningful and valid. So we would fully anticipate to have the benefit of that information but we wouldn't be doing that solely and at every facility on some periodic basis. That's the difference.

MS. KOCK: Just to give you an idea of what Jay's going to talk later about what's going on internationally in safety culture, but for the purposes of how we developed the components, I thought I would show you what IAEA and INPO use or define as safety culture. What's on the slide now is the IAEA safety culture characteristics. There are five of them and the IAEA has published the SCART guidelines that further define what they mean by these five high level characteristics.

Similarly, INPO has identified eight safety culture principles and they too have documents out that further describe what is meant by each of these high level eight principles. We looked at both the SCART guidelines and the INPO documentation on safety culture in developing the components.

And just for comparison sake, this is very similar to what Gene already showed you. What's up on the slide now are the NRC's safety culture components organized by the current three crosscutting issues. All of the components that are listed are covered either in INPO or IAEA and the concepts that we have under the components are very similar to INPO's principles and IAEA characteristics. Later, I'm going to go into some examples of that.

CHAIRMAN BONACA: It's interesting how IAEA and INPO are really high level clearly in expectation of very high performance, etc. and you properly are looking more at performance at the acceptable level. You're looking for performance and identification and human performance. So I see the difference there and it has to be there because you're not striving to have organizations working at the highest possible level. You are making a statement about acceptable performance.

MR. JOHNSON: That's right.

MR. PERSENSKY: And just to go back to what I had said earlier, the footnote there are the other components as opposed to just the nine that we used to baseline.

CHAIRMAN BONACA: I'm going to go later on

to the elements you had regionally and see if you fit them all on there. I think you're coming close.

MS. KOCK: Yes.

MR. COBEY: Actually if you do that, the short answer is you will find all of the attributes that were in the original elements, they've all been incorporated. They are all here as Mike says. They are packaged slightly different to support what we've learned and the process we went through. But all of the information is still there.

CHAIRMAN BONACA: The only question again remains by saying human performance and then you're looking at decision making. The decision making definition is broader enough for the inspector that he will take it above the individual performance of the worker and question processes for example and question decisions which may be executive decision literally at some point. I don't know. By having really gotten at these components now below human performance, below PI&R, I have to think about that.

MR. JOHNSON: And we'll get, of course, more information as we go forward in implementation. But I think that's really an issue about training and having folks be clear about these components and how we capture and how we ought to be grouping findings

that point to these aspects in the crosscutting areas or beyond in supplemental procedures. I think it's an implementation issue that we'll watch.

MEMBER SHACK: This three-page discussion you have of the components I assume will end up in the training somewhere.

MS. KOCK: It's going to be actually in the 0305 procedures.

MR. COBEY: The current vision is that all of the component descriptions would be in manual chapter 0305. But, yes, you're absolutely correct. It's imperative that it be included in the training for inspectors and managers if we have hope to be successful in implementing this in a consistent manner.

MEMBER SHACK: But it will be in the manual chapter too then.

MR. COBEY: Yes. Absolutely.

MEMBER SHACK: It's not going to disappear. It's not a working document.

MR. COBEY: And we also I think anticipate that as we implement this process we'll gain further insights and have learnings that will ultimately result in us continuing to improve this. I wouldn't look at this as an endpoint. But it's a beginning if

you will, a well-informed beginning, but in fact, a beginning.

MS. KOCK: So as Gene mentioned, the concepts that we have under the components are similar to our old definitions in manual chapter 0305. But the one big difference is they give a lot more specificity on what we mean by those. Gene also touched on this that this just improves the consistency with which we can tag findings with crosscutting issues and also allows us if a finding has a safety culture insight to it to call that out correctly and be able to track those issues.

As Jay mentioned, the four components listed on the bottom of that are the components that we plan on looking at only under the supplemental inspection procedures and that would be when a plant's in column three or four of the action matrix. Those are things that point more to --

CHAIRMAN BONACA: I'm sorry. Could you repeat that? So that would be if they were?

MR. COBEY: Columns two, three or four, 95001.

MS. KOCK: Two, three or four.

CHAIRMAN BONACA: Two, three or four. So they were already in a degraded condition and then you

would have questioned regarding these four additional components.

MS. KOCK: Yes.

MR. COBEY: Well, we would look at all 13 and in supplemental inspections when we looked at what's important to safety culture, we would look at the entire set of 13, not just the nine which are in the crosscutting.

CHAIRMAN BONACA: How would you do that because this you do in the context of events that take place that have significant issues and this is broader. Right? It's more general and generic. How would you do that? What would trigger that you are in an matrix column two? What would trigger an organizational change, management?

MR. COBEY: The way in which we envisioned looking at this in supplemental inspection procedure 95001 which would be the case if they were in a regulatory response column, if they have a one white inspection finding or performance indicator, they do a root cause evaluation, send a condition review for that performance deficiency.

When we come in to review that, we would be looking to assess whether that evaluation included all of these 13 aspects in its evaluation. If it

didn't, then we would engage to understand what the basis for that was and make a determination of whether or not that basis was adequate.

Now take the next case, 95002 space, say they've had two white findings and so they are doing a root cause investigation of the individual as well as the collective performance deficiencies. In there, we would go beyond what I just described and we would as part of that procedure we independently evaluate extent of condition and extent of causes.

We would also independently evaluate whether these 13 components were drivers to the performance problems and make a decision about did the licensee appropriately identify these things. If the answer to that is yes, then no further action. If the answer is no --

CHAIRMAN BONACA: What you're telling me is that you have left the three crosscutting areas but really you are evaluating anything that happens out there based on these 13 different attributes. For example, the resources issue, you probably may raise it irrespective of just human performance.

MR. COBEY: In the event that there's a whiter greater performance deficiency we would be looking at resources to see whether or not, in a

graded manner in how we approached it, it was the driver of the performance problems and if they were in the far right column of the action matrix, multiple repetitive degraded cornerstones, then we would be looking at the entire suite of components and independently assessing the safety culture as an entity. Beyond just looking at each aspects and independently checking it, we would be looking at the collective as well. Hopefully that answered your question about how we –-

CHAIRMAN BONACA: It does. I'm not criticizing it. I'm only saying that you really took some of those attributes and brought them from above below but you are still using them in comprehensive ways particularly when you're talking about 13 attributes and evaluation, for example, of certain conditions for all 13.

MR. COBEY: That's the current approach.

CHAIRMAN BONACA: What's the feedback from the industry?

MR. COBEY: On that particular aspect –-

CHAIRMAN BONACA: Do they agree with this?

MR. COBEY: They have been fairly receptive. There hasn't been disagreement about the approach for the plants that have moved to the right

of the action matrix. There were two principal areas of discussion and ultimately they've agreed with those and that's the use of these components as they have been articulated. There's been some comments provided to improve the language, etc., that we're currently evaluating.

The second is how we adjusted the crosscutting areas and based on last week's meeting, we've gotten past those. But the original approach for how we treated plants that moved to the right of the action matrix was accepted by the utilities fairly early on in this discussion process and I think that they agree that for plants that have exhibited poor performance and moved to the right of the action matrix that more interest of engagement is appropriate.

CHAIRMAN BONACA: Even for white.

MR. COBEY: Yes, because the recognition is that that level of engagement is graded. So, yes, there is some engagement but it would be considerably less than what it would be if it was multiple whites or a red for example.

MS. KOCK: The only other point I wanted to make on this particular slide was that we, when I say we, Gene is leading a regional team that came in

and looked at how these components are currently looked under our baseline inspection procedures and what they found was that all of these are covered either directly or in some cases less directly but they are covered under our existing process.

CHAIRMAN BONACA: So just one last question. I had a question at the beginning of the meeting. For example, why was resources not under PI&R? What you're telling me now is that you can ask that question about resources too. If you have a failure PI&R program, you're not limited to only looking at the corrective action program, operating experience and self independent assessment. You would be looking at resources, too, possibly.

MS. KOCK: I think when we developed these under PI&R what we're looking at more is big picture of whether they're identifying, evaluating and taking action. So the things that went under there are those aspects of the program where they would either be identifying something through operating experience or something entered into their CAT and how they resolved that. That's why resources didn't really fit there. Does that answer your question?

CHAIRMAN BONACA: Yes, I guess so.

MS. KOCK: And if we had a finding and we

found that a causal factor was resources, then we would tag it resources. If we found that the primary causal factor was that they didn't identify it, we would tag it problem identification and corrective action. So it really would depend on the primary causal factor of that performance deficiency.

MR. COBEY: One additional thing, that's exactly right, but we do recognize that some performance deficiencies are significant and are multifaceted and there are multiple aspects of it. In those cases, we would identify both aspects. So if we had a problem identification and resolution type of an aspect to that performance deficiency, it could get tagged. If there was a separate distinct aspect of that performance deficiency that was associated with resources, then it would also get tagged. So you would end up potentially with findings with multiple aspects, although we expect that to be fairly infrequent and we can anticipate that.

CHAIRMAN BONACA: But it seems to me that, for example, on the issue of issues not being closed timely or significant delays, you could simply say that issues are not being closed timely. So that's a statement regarding the corrective action program without going further into an evaluation of why it's

happening. That's probably what you would be doing then. You would ask for the company to evaluate itself and determine what is the root cause although you may believe that the reason is that you didn't have enough resources.

MR. COBEY: That's right. We really want the licensee to do the work, to figure out what the actual root cause is and what corrective action is needed to correct it.

CHAIRMAN BONACA: I understand. That makes sense. All right.

MS. KOCK: Next slide. So on the next slide here what I want to do was to compare our components to IAEA and INPO attributes. As I mentioned before, all of our components are covered by either INPO or IAEA but we didn't take every single concept that ferreted out by INPO or IAEA. But all of ours are covered under their concepts.

I gave just one example under each of the crosscutting area. The first example is in the area of human performance, what we call resources and the way that we couch resources in general. Just a general roll-up of our component is that they have personnel, equipment, processes and programs that assure nuclear safety. We talk about that in terms of

training, adequate procedures and addressing long-standing equipment issues.

This is similar to what INPO discusses. They say that staffing levels are consistent with maintaining nuclear safety under their principle that they is called “Everyone is personally responsible for nuclear safety.” They also talk about equipment being meticulously maintained and high quality processes.

The other comparison is IAEA. IAEA covers this under safety as a recognized value. They discuss that safety is a primary consideration in the allocation of resources including time, equipment, personnel and money. So you can see that a lot of the concepts that we adopted are similar.

In the area of safety conscious work environment, our component is called “willingness to raise concerns.” Under that component, we talk about behaviors and interaction that encourage raising nuclear safety issues. This is covered by INPO under their principle of what they call “trust.” Specifically, they say that “employees are encouraged to offer innovative ideas to solve problems.”

In IAEA, similarly it covers this under their “characteristic of safety is learning driven” and specifically when they describe what that is.

They say "an open reporting system is encouraged." So again, a lot of the concepts are very similar.

The last example I have was under problem identification and resolution. One of our components under that crosscutting area is self and independent assessments. This matches up very well with INPO's attribute of "nuclear safety undergoes constant examination." But if you look at what that means to them, they say "a mix of self and independent oversight reflects an integrated and balanced approach."

IAEA covers this also very well under "safety is learning driven." They just simply say "internal and external self assessments are used." So their concept is a little more general but you can see that there's overlap in the concept that's definitive.

While we recognize that the concepts are very similar, we took those concepts and we tried to describe them in a language that was usable to the NRC which can be used under the ROP process and it's easily interpreted by inspectors and we tried to focus those concepts on outcomes and performance and only took those pieces that are within our jurisdiction which leads me to the last bullet, one inconsistency.

One area where we don't overlap is INPO

has an attribute under one of their principles called "selection and evaluation of managers, consider their abilities to contribute to a strong safety culture" and we felt like that was going outside of our regulatory purview.

CHAIRMAN BONACA: Yes. I don't think there's any consistency. It's simply that you don't cover that because that's not your business.

MS. KOCK: Right. And similarly, IAEA says "leadership skills are systematically developed" and we don't touch on leadership. So that was one area where there is an overlap. The next slide.

That basically covers where the overlaps are between how we define our components, INPO defines their principles and IAEA describes their characteristics. But in the vein of trying to make our components as similar as we could to what's used in industry, there was a concern that we're using different terms and different language. People aren't going to be able to understand what we're talking about because there's INPO language and there's NRC language.

What we did was we compared our titles and the definitions that we used as components to INPO's safety culture attributes and their performance

objectives and criteria. The bottom line of what we found is that there's considerable overlap in the concepts that we use and the concepts that INPO uses. So we revised a lot of our titles and a lot of our language that we use to be consistent with INPO. But there were some areas where we didn't feel like it was appropriate. So we either changed that language to put it in NRC terms and I have some examples of that or if it was something that was outside of our purview we didn't use it.

As a result of this review, we did retitle several components. One example is decision making. We used to call that decision making. INPO just calls it decision making. So we've revised our there. We retitled what we used to call self assessments to internal and independent assessments. That's more similar to what INPO uses.

But again, there are some differences that still exists and we feel like it's appropriate for those differences to exist. For example, what we call safety conscious work environment, INPO calls trust and we didn't feel that trust was good regulatory language although the concepts are very similar.

During this review, we did as I said adopt some of their language and there were some concepts

that we had not completely fleshed out that we actually adopted from INPO. One example is interdisciplinary input into decision making and the concept of institutionalizing operating experience. Those were concepts that we had either just touched on briefly or we hadn't completely covered in our components and we did adopt those concepts.

But there was some language that we didn't adopt and I will characterize those in a couple different areas. One is non-regulatory language such as in an area where INPO might talk about high levels of performance or complying with industry standards. Obviously, that's not appropriate language for the NRC to use. Teamwork and trust, those concepts, we didn't adopt.

And we didn't adopt language that talked about specific management actions or management involvement in certain programs. We talked about how those programs might perform and again focused on the outcomes. But we didn't focus on management actions or inactions.

We also didn't adopt language which we felt could not be easily interpreted by NRC inspectors such as "features designed to maintain safety or recognize as important." That's hard to interpret in

the field. Or "the licensee is committed to not repeating mistakes that are identified through OE." We didn't use that language. We certainly took the concept that OE should be completely evaluated, communicated and that appropriate actions should be taken in response to OE but we didn't put in those terms.

There were also some concepts which we felt were just too specific for us and these are pretty self-explanatory such as "temporary modifications being removed within on refueling outage." We don't want to be that specific.

We also go a comment that we should try and streamline some of the components. So we did that. For example, we had a component called "questioning attitude" that talked about people not moving forward in the face of uncertainty. While we kept those concepts, we just put them into other components and we tried to streamline them. Questioning attitude, pieces of that ended up in work practices, work control and willingness to raise concerns.

We also incorporated the idea of having an alternate process for resolving concerns into the corrective action program and willingness to raise

concerns. So we did streamline the components.

Finally, after we had done all that, we took one more look at the components to try and put the language of the components into the context in which they would used and that's as Gene described in the context of if we have a finding how would these be applied. Based on that review, we did make some changes. For example, we had something in there about, under resources, implementing physical improvements to the plant. We put it in terms of physical improvements that are necessary to maintain safety which the only way we would get to using that component if you have a safety problem that results from that implementing of physical improvement.

And we had under work control that work is conducted safely and without unintended consequences. For example, we removed the piece that talked about unintended consequences because again you might have unintended consequences of work but unless we have a performance deficiency that results, we wouldn't be applying that component.

CHAIRMAN BONACA: Let me ask a question now. When you did this work, you started with the three crosscutting areas and then identified sub-items or did you go and identify the 13 attributes that were

really interesting to you and then fit it under the crosscutting. That's what you did.

MS. KOCK: We started by just compiling what is safety culture, what's important to safety culture and what the NRC can use.

CHAIRMAN BONACA: Okay.

MS. KOCK: So we just had this massive list.

CHAIRMAN BONACA: That's why that's important to me because it explains why you have those three under PI&R and not others. But that's because you had 13 and you had to fit them under and that's what you did. Okay. I understand that. So since you could not put the umbrella above, you put the umbrella below.

MS. KOCK: Yes. One other example of how we put these into the context of how they would be used, we had a concept under corrective actions that individuals who initiate corrective actions are involved in the resolution of the corrective action. While that's a safety culture concept, it would be hard to envision how we might have a finding that resulted from the individual who initiated the corrective action being involved. So those kind of concepts were either revised to put them within a

context or they were just completely removed because we're not going to get there based on the approach that we're using.

We also went through, I think Gene mentioned this, to make sure that we didn't have different concepts covered in different attributes. so that if you have a finding you're not having the problem of tying it to more than one component. This is to reduce the likelihood that the same causal factor for findings could be associated with more than one component.

So the bottom line is that we determined that there was very close overlap between NRC, INPO and IAEA attributes, but we didn't feel it was appropriate for us to just adopt certainly not IAEA and INPO principles or attributes because they just don't use regulatory language. So we put them in the context of how we would use them and we developed our own.

We have gotten several comments on the components. After the December 15th meeting that we had, we got a series of comments on the components that we addressed. I will characterize the comments that we got as amplifying the language that we already had in the components. Most of the comments just

changed the language that we used. They didn't really new concepts.

But we adopt a lot of those comments. For example, we talked about workers stopping activities when they are faced with uncertainty. But it was pointed out that you could have not just uncertainty but also something unexpected that comes up and you should stop then too. So that's something that amplified the concept we had there. We included that.

We talked about alternative processes being effective and accessible to personnel but we didn't talk specifically about them being communicated to personnel. So we incorporated that concept.

As a result of these comments, we also ended up doing a little bit more streamlining. We combined two components that we had. We had safety policies and safety conscious work environment policies. It made sense to us, they cover the same general concepts, to combine those. So we did streamline those two components.

However, we didn't include all of the comments that we received. Again we got some comments that we should include management involvement or management actions in certain programs and processes and we didn't include those concepts.

There were some suggestions to use non-regulatory language such as "questions and concerns are addressed." "We will focus more on safety issues being addressed" or "a commitment to free flow of information." While we did end up using the terms "free flow of information" we related it only to safety issues.

We also didn't include some suggestions we got to include information that's already looked at under different parts of our inspection program such as the number of tech spec entries. We already look at that. Or compliance with the maintenance, we already look at that under our inspection program. So we didn't add that type of information.

We also tried to be careful not to include information that may not necessarily be related to safety culture or crosscutting areas, for example, unanticipated equipment failures. You can have unanticipated equipment failures because you have an old plant or you could have unanticipated equipment failures because you're not devoting the correct focus to your equipment and that's more of a cultural issue. So those types of concepts we either put a safety culture slant on them or we didn't include them.

And if we had a comment to include

information that was already in one attribute, we didn't put it in multiple attributes, again to address implementation problems that that might create for us. And we didn't include information that we couldn't envision could be used in the context of a finding such as use of industry peers on assessments. That's a good safety culture concept but again, it would be hard to envision a finding that we might have a safety issue that resulted from not using industry peers.

And we had another public meeting just last week. We got some additional comments on the components since then and we are resolving them. Again, I would characterize most of the comments as not comments like delete an entire attribute or you missed an entire attribute of safety culture. More they are refining the language to put them in a better context and we are resolving those.

MR. JOHNSON: And I'll just add to what Andrea said. In fact, we are meeting with Tony this afternoon to get final comments from NEI. So as we've indicated earlier, we're essentially there with respect to how these components are defined. We incorporated a bunch of comments. We think we made the right changes. We're going to get whatever final comments we get from the industry. We think we're

good to go. They're not etched in stone. We'll learn. We'll adjust them. But essentially we think we're there.

MS. KOCK: So just to summarize what I hope I communicated, but if I didn't please let me, was just background on how these components were originally developed, how they were refined based on a comparison to what we proposed to use to industry and international groups that look at safety culture, how we resolved comments and further developed them to put them in the context with the approach that we're going with. If there is any particular component that you wanted to ask questions on, you have copies or we have some slides and we could throw them up or any other question that you might have, I would be happy to answer them.

MEMBER POWERS: Professor Wallis -- any question about your willingness to raise safety issues which I think if were he here he would say better to have said fosters, people raising safety questions. How do you respond that?

MS. KOCK: I couldn't hear part of what you said. Can you please repeat the question?

MEMBER POWERS: I think Professor Wallis would like to see a rewording and a redirection of the

emphasis in willingness to raise safety questions or safety concerns, whatever the language you used. And I would think that he would like to see it management fosters its employees raising safety questions and what not. I'm asking you how you respond to that.

MS. KOCK: I think that we captured having an environment where people are encouraged to raise safety concerns but we did not focus it again on management actions. I think that we would take a stance that focusing on particularly management might not be appropriate especially since a lot of the times where you might have an environment problem could be peer to peer.

It's not necessarily all management. So we took a step back and just said behaviors and interactions encourage raising safety concerns whether it's management, whether it's peers, whether it's something else. We're focused on whether there is or is not that environment there.

CHAIRMAN BONACA: The words remain however. The words are significant in what message they send, whatever the intent may be. I think that's a good point that an organization should foster.

MS. KOCK: Yes, the organization. So what we have there is "behaviors and interactions encourage

free-flow of information related to raising safety issues."

CHAIRMAN BONACA: Where do you have that?

MS. KOCK: That's in the first sentence.

MR. JOHNSON: If you turn to the details of willingness to raise concerns, I think we're in essence –

CHAIRMAN BONACA: We're talking about your proposed aspect for crosscutting areas, page 35, Willingness to Raise Concern. It implies that employees are not willing to raise concern. That's the wrong message. Typically that's not the concern that you have. The concern is that you have an environment where people are discouraged from raising concerns and this bullet, as Dr. Powers says, doesn't convey the message.

MR. JOHNSON: Some of it is in –- I think in essence we're at the same place with respect to what we think licensees ought to reflect in terms of their behaviors with respect to willingness to raise concern and that is that they ought to encourage their folks to raise safety concerns. The way these would show up in a regulatory context though is not that we would have a finding that would –- The way that they would show up in a regulatory context is that we would

have an issue that leads us to believe that that environment does not exist. So that's maybe some of what the issue is.

MEMBER POWERS: Tell me about the finding. Would it be Joe doesn't want to raise a safety concern, Joe didn't raise a safety concern?

MS. KOCK: The starting part will be that we have a finding with some safety significance. So it wouldn't be I go out as an inspector and I talk to Joe and Joe either says I'm not willing or I didn't. So you couldn't get there from just his statement.

So the entry point is I have a performance deficiency. Something happened and in following up why did that happened, I find that there was an unwillingness to raise the issue. That's how you would get there.

MEMBER DENNING: I think that the issue is one of you have the bullets which are at a high level and I don't think people like some of the tone of those. When you go down below those to the more detailed areas that say what are the things to look at under those, I don't think we have any concerns with that.

MEMBER POWERS: I do.

MEMBER DENNING: They resolve it.

MEMBER POWERS: I'm very hung up on this. To get into this thing, I have to have a safety concern. Something happened before I get into this. What do I need this for? If I have a safety concern, an incident has happened that violates the hard work and consideration. I don't need any stinking safety culture. I have a problem right here.

MS. KOCK: The difference is --

MR. JOHNSON: Go ahead. I'll follow you.

MS. KOCK: I think the difference is that now we're putting a name with what may have caused that safety concern more as a framework.

MEMBER POWERS: Then you're doing the root cause analysis for them. Why are you doing the root cause analysis for them?

CHAIRMAN BONACA: We're trying to make a distinction between the event and the root cause. But in this case, that's the point. Once you identify that the issue hasn't been raised and you find that it hasn't been raised because the guy really tried to but he couldn't, you really have to form the root cause. You have to know what's happening there.

MS. KOCK: I wouldn't characterize it as a complete root cause. But it at least allows us when we see that causal factor as a contributor to what

happened, it allows us to correctly characterize it. It's not some procedural deficiency or the guy failed to follow the procedures. Now we can tag it willingness to raise concerns so that we can properly assess that area of safety culture.

MEMBER POWERS: Do you honestly believe that if you had an incident at a plant and send in an augmented inspection team that they wouldn't find that verily this maintenance guy knew there was a problem here and he did not raise it up to management?

MS. KOCK: During an augmented inspection?

MEMBER POWERS: Sure.

MS. KOCK: Yes.

MEMBER POWERS: They would find that. The guy would tell, "Yes, I knew it was there all along."

MS. KOCK: Right.

MEMBER POWERS: And he would probably go on and tell them "The boss didn't want to get bad news. So I didn't tell him about it" and it would be written up. I'd see that in a preliminary report that comes to me. Why do I need this?

MR. COBEY: The difficulty with that is this in that the process as it's currently structured doesn't have an effective objective scrutable way of dealing with that. The proposed change would. While

what you said earlier was true, if you have a safety issue or more than minor performance deficiency, you have that issue and you can go after that. That's all true. You can and we would expect licensees to go after it.

But what this process is allowing is it's providing the staff tools such that they cannot only looking at that safety issue in the context of that safety issue and that safety issue alone but now there are tools to look at that safety issue amongst other safety issues that are ongoing at the site at a very low threshold and identify common causes which are aligned with safety culture and have thresholds for engagement to allow the regulator to request licensees to have performed safety culture assessments with the idea that there's a recognition that there may be safety culture weaknesses that underlie these individual discrete performance problems that up to this point we've only been dealing with as individuals discrete performance problems and we didn't have a process that enabled us to take these individual discrete performance problems and make a potential nexus with safety culture until after and only after a very significant event occurred. Even then we didn't have a process for evaluating it and

dispositioning it. So that's the reason why.

CHAIRMAN BONACA: Look at the table. If you put it back up.

MR. COBEY: Which table?

CHAIRMAN BONACA: It's still focused on management. It says the safety culture is work environment and below the first bullet, it says "preventing and detecting retaliation." That's really what you expect an organization to do. The second bullet says "willingness to raise concern" which is something to do with a worker that doesn't want to. No, it should say that in concert to preventing and detecting retaliation there should be a statement that refers to management that says "encouraging employees to raise concerns." I think it would even from a perspective of formatting the information it would be better.

MR. JOHNSON: Can I? I accept your comment and we can look to make sure that that language is parallel. Let me just if I can say a couple things from the 50,000 foot level to make sure that we're all aligned and then if we are, I think I understand the comment.

I think we talked about this in the December meeting but the task for the staff has not

been to go out and measure the health of the forest, for example. How healthy is the safety culture? How willing are individuals to raise issues? That's not been our task because that's what licensees ought to do, that's what the industry ought to be doing, that's what INPO ought to do in their evaluations. They ought to be measuring the health of the forest with respect to safety culture. For example, licensees ought to be attuned to that. A licensee manager ought to be able to tell you how willing their staff is to raise safety issues.

From a regulatory perspective, our bent on it is is the health of the forest degrading such that that ultimately is going to cause a problem from a safety perspective. So we come at it from the things that evidence themselves in terms of problems at a low level and I would say they really are at a low level. We're talking about things that aren't going to get to an AIT necessarily. We're talking about performance deficiencies where they've cross through over the minor threshold and we ought to be documenting them.

MEMBER POWERS: I come back to the question then. What does the finding look like?

MR. JOHNSON: I'm sorry.

MEMBER POWERS: What is the finding? Now

you told me I have a problem. If I have a problem, I don't need all this stuff. Now how do you get into a finding?

MR. JOHNSON: I have a finding as Andrea said. But don't think in terms of that finding in terms of an AIT, a white issue or an asked finding for example. Think in terms of a finding that is one that crosses our thresholds. Does it have potentially an impact on the –-

MEMBER POWERS: Give me a finding. Don't ask me questions. Give me a finding. Now this gentleman says no, I don't have a finding. I have six findings and they all have a common thread through them and so now I can have a seventh. Okay. I can accept that. That seems logical to me.

MS. KOCK: What I can envision is a finding and Gene can fill you in. He's more of the ROP expert. But for example you have a piece of equipment that the maintenance was not done correctly. There is an O-ring or a piece that was supposed to be put in when they did the maintenance that wasn't or the incorrect O-ring was put on. So it's a finding. The thing starts leaking after they start back up. So that's a finding. It's a safety issue.

When we go out and we look at why that

happened, let's say we find that somebody tried to raise the fact that it was the incorrect O-ring or had been raising that for years and was pushed back and said we don't think that's appropriate. The person this time just said, "Fine. I'll just put it on. That's what they told me to do." That is how that will be captured.

The difference is under the current process there is no way for the inspector to characterize that willingness to raise concerns issue. There was nowhere for them to put that under safety conscious work environment.

MEMBER POWERS: He doesn't need to. If he goes in and finds out that they put the wrong O-ring, he has a finding. If he finds out that they supplied the wrong O-ring, he has a finding. If he finds out that they've been putting the wrong O-ring in for the last 25 years, he has a finding. He doesn't need anything else.

MS. KOCK: The question is why.

MR. JOHNSON: But if he finds out, if we find out that the reason that individual didn't raise those issues is because the culture, the environment, discourages that willingness to raise issues, now I have a concern from a safety conscious work

environment perspective. That's what I'm trying to put my hands on.

CHAIRMAN BONACA: That's why you use the word "discourages." In here, that's what we're saying put in encourage environment and encourage the raising concern. In fact, you're going to have a parallel, a much better --

MR. JARRIEL: Can I say something? My name is Lisa Jarriel. I'm the Agency Allegations Advisor and I consider myself the owner of the safety conscious work environment policy that we have at the Agency. Our policy statement uses that term. The industry right now uses that term. However, I think your point is well taken and we'll take that back and consider it.

But I want to leave this point. It's both. It's the employee and it's the management. Both have a responsibility to create and maintain this environment to raise concerns. So I don't want to lean one way or the other. This does appear to lean one way and you're right. Let's take it back and see if we can massage the language so that we're not leaning toward management or toward the employee.

CHAIRMAN BONACA: I agree that I can see some situations where an employee may be sloppy enough

that he doesn't want to raise it because he doesn't care. So there is that. But in the context of safety conscious work environment what a company can do to help that, I still believe that you have to identify the responsibility of the organization to foster and to encourage that. In fact, if they do foster and encourage and maybe even tie the reward system to responsibility, then maybe everybody would be willing to raise concerns when there are issues.

MR. COBEY: Mario, I think it's important to note that willingness to raise concerns what we're talking about has a fairly detailed description but it mentions the exact words you're talking about. It actually says that and I'll just read a piece of it, but "employees feel free to raise concerns both to their management and/or NRC without fear of retaliation. Employees are encouraged to raise such concerns" and it goes on.

Maybe we can improve on it and we'll go back and look at it as Mike indicated. But I think we are agreeing with you. It is both. They need to be encouraged by management. But also there's a behavioral responsibility on the individual's standpoint as well. So we're agreeing with you. I think some of it's covered and we'll go back and see

if we can't improve that.

MR. RICHARDS: I'm Stu Richards. I'm with NRR and I'm responsible for the inspection program to try and answer Dana Power's question why do you need all this. You can have all these findings and if they're of a low safety significance, the program says the licensee enters into the corrective action program and we don't engage anymore.

This aspect, what they're talking about here today, is even if you have these findings of low significance if you can identify them as having a common root cause, a thread and what we call a crosscutting issue, then even though none of the findings raise to any safety significance, it provides a vehicle for the NRC to engage the licensee and start asking questions about it. That's the importance of what they're describing here today.

By and large, the ROP is a reactor process that waits for safety significant issues to come up and then we react. Crosscutting issue is our proactive element. It allows us to engage licensees before something significant has to happen. That's why this is important.

MEMBER POWERS: Do you have a historical example of where this would get excited?

MR. COBEY: I'm sorry. Where? With what?

MS. KOCK: Do you mean willingness?

MEMBER POWERS: Yes, the willingness.

MS. KOCK: That's funny that we're talking about safety conscious work environment because there has been as Gene mentioned only one finding under safety conscious work environment and I personally feel that the reason is like I said under the current system there is no way to really capture those issues.

MEMBER POWERS: But have you gone back and looked and said, "Now that I've this new tool in my hand I would have raised this issue based on this subset of green findings"?

MR. COBEY: If it wouldn't be captured in the documentation we wouldn't have a way to do that.

MEMBER POWERS: Yes.

MR. COBEY: Intuitively I think Andrea is right. the reason why it wasn't captured is because we didn't have a way to deal with it.

MR. PERSENSKY: One of the things that Andrea mentioned, there's only been one and that one was Salem/Hope Creek. In order to even address that, we had to use a deviation memo from the ROP before we could do anything about it. Now we would have a different vehicle for dealing with it. The other is

to answer the broader question is we've been asked many times or we be it the staff, what do you do. The plant is all green and you have an all green plant but still have a substantive crosscutting issue if we can follow this thread and that way we would have a basis to go back to the utility to at least ask them to look further into the issue.

MEMBER POWERS: But I'm struggling, Jay, to find out how you do it. What set of conditions would lead you to do it?

MR. COBEY: One or more findings.

MEMBER POWERS: Yes, I need a case study here to help me.

MS. KOCK: Do you mean how would you get there through a finding?

MEMBER POWERS: What set of findings would lead you to create a new finding under this willingness to raise concerns?

MR. PERSENSKY: You would not be coming up with a new finding. You would be coming up with a substantive crosscutting issue. If at a particular facility as you see here on the right-hand side of the column here, there have been a number of findings. These would be hardware related findings, valves, pumps, whatever, some sort of related findings and in

each one of those findings this process would allow the inspector to record as part of the inspection report on that finding that there was an issue with willingness to raise concerns.

Right now, they can't do that. There's no place for them even to record that information. As we had this information build up over the time during the assessment process, if we saw the common themes or met these criteria that Gene has listed here, then we would be able to say you have a substantive crosscutting issue in safety conscious work environment.

MEMBER POWERS: Now let me ask you this question. I've just maintained a pump. I put the wrong O-ring on, your example. I did it and it leaked like a sieve and you came back and asked me. Why wouldn't I say "I told them about this but they wouldn't do anything about it" or "I was going to tell them about it but I knew that they didn't want to hear about it. So I put the wrong O-ring in."

MR. COBEY: You have to step back and look in terms of context of what we're talking about because the way in which this is perceived is based on a number of things. If the consequence of what you described is safety and risk significant, then it's

going to embark.

MEMBER POWERS: Excuse me. It's green.

MR. COBEY: Okay. That may or may not change this. But depending on the significance of it whether it's a condition adverse to quality or significant condition adverse to quality we would expect the licensee to take some action in terms of to determine what the cause was and take corrective action. If it's a significant condition adverse to quality, we would expect them to determine a root cause and take action to preclude recurrence.

Now for some cases where the licensee does root causes, we would fully expect them to get to that issue. If the performance deficiency is not that risk significant and they take apparent causal approach and implement corrective action, you're going to have a different degree of information available to the inspector.

We would expect our inspection staff to engage the utility at a level commensurate with the risk significance of the performance deficiency. So if a performance deficiency is risk significant and the licensee has done a root cause, there would be much more intrusive engagement than if a finding was of lesser significance where it was only apparent

causal information available. Depending on the significance, we'll determine and guide the inspectors intrusiveness in the determination.

Let's say for sake of argument that it was a risk significant issue. The licensee did a root cause investigation. In the process of reviewing that root cause investigation, the inspectors would ask fairly probing questions to try and get an understanding about the adequacy of the root cause that was done.

If information became available to the inspector that there was some reason to believe that the licensee was aware or should have been aware of this aspect of the performance deficiency, he would engage the utility in a probative manner to try and ascertain the circumstances. If it came to light that there is sufficient reason to believe that either management created an environment that caused that individual to be reluctant to raise that issue or that individual was reluctant to raise that issue because he feared that he would be somehow disciplined or something, I think that with that information under the proposed process you would have that original performance deficiency which would be presumably some sort of not implementing a procedure, a maintenance

procedure or what not, but that performance deficiency that the licensee would be expected to correct would be identified as having a crosscutting aspect in a safety conscious work environment because the management created this environment where the individuals were reluctant to raise these types of issues.

Then that licensee would also be expected to address that aspect of the performance problem. Now if that aspect met those criteria which I described earlier when we did the assessment at the mid-cycle or end of cycle period, then we would evaluate to determine whether that finding in the context of everything else that occurred at the plant constituted a substantive crosscutting issue and if it did, it would embark us upon a further path of engagement.

That's the benefit of this; whereas under our existing process, it stops at the identification of the performance problem of not following the procedure. It brings into the ROP these things that we have identified as being important and we get concerned about if they exist but we really don't have a good mechanism for dealing with it.

The one place where we have dealt with it,

Salem and Hope Creek, we had to do so under the auspices of a deviation from the reactor oversight process. Now we've looking fairly extensively at Salem and Hope Creek to ascertain whether this would work under those set of circumstances and we believe given our understanding of the details that we would have identified the substantive crosscutting issue in safety conscious work environment. We would have had a recurring substantive crosscutting issue and requested the licensee's performance and assessment of safety culture.

I think also we would have had several more findings than the one that we did have and had identified crosscutting aspects in the area of safety conscious work environment specifically the willingness to raise concerns. Now I can't point to that because the inspection record doesn't directly support it because it didn't have a place in its time. But given my understanding of what has occurred, my discussion that I've had with licensee managers and employees over the past two, two and a half, years, given my experience, I think it's likely that several of the findings that we have had there for performance deficiencies could have retrospectively been identified as having a cross cutting aspect in this

area. Hopefully that got a little bit to your point and your question.

MEMBER POWERS: You addressed the previous area. My second point I worry about is you seem to have created an automatic excuse for any maintenance failure because it gets me all kinds of protection.

MS. KOCK: One thing we revised since the last public meeting, if you look at the criteria under safety conscious work environment as far as you would get a substantive crosscutting issue, this issue and correct me if it's not the one that you're talking about is you have a finding and you talk to the maintenance and they're just lazy and they're just not willing to raise the concern. Is that a safety conscious work environment issue? Maybe not.

So what we did was we changed the criteria. You'll see the second line in there. It says, "The associated impact on the safety conscious work environment was not isolated." So if we have a finding like that and we find that it's just one guy, that person's individual attitude and not really the environment that was created, we're not going to call that a substantive crosscutting issue.

MEMBER POWERS: Yes, but I just have to have one sacrificial lamb hereafter. I have built-in

excuse for everything that I do that screws up.

MS. KOCK: Do you mean if there's two events?

MEMBER POWERS: Sure.

MS. KOCK: Again you still have to meet that criteria of not being isolated. So if it's two isolated, if it's not an environment problem, it's not going to cause substantive crosscutting issue.

MEMBER POWERS: What I'm asking is how do you know. The truth of the matter is I screwed up. I picked up the wrong O-ring and put it on the thing and I said, "They provided me the wrong O-ring. I knew it, but I was afraid to raise the issue because the boss wouldn't like to hear about this thing. He gets really angry when you question him and so I just don't do it because I have a kid in college and I can't afford to lose this job."

MS. KOCK: That's a valid point and we need to address that in training of inspectors. But I would expect that that would come out. If you get that, "I wasn't willing to raise the concern" you start asking "Why? What happened to make you feel that way? Was there some interaction with your boss or are you just making an excuse?" Because if there's not enough evidence to support what you're saying, I

would expect an inspector to make an informed judgment that that really wasn't the cause and that needs to be addressed in training. That's a valid point.

MR. JOHNSON: That's true. That's a great point. Also, Dana, let's not forget. We expect that licensees will struggle to ferret these things out.

CHAIRMAN BONACA: It's a very complex area.

MR. JOHNSON: And that's why I say struggle. If they have a situation where procedures aren't being followed, they need to understand why they aren't being followed. If they have a situation where issues aren't being identified, they need to struggle with why they aren't being identified. We're trying to at a very low level where we become aware of those potential issues as a crosscutting issue being able to raise.

So it is a difficult issue. I don't think that we're going to have the flood gates open in findings in this area to be quite honest. Again, the way you get here is a performance deficiency that occurred that had as a primary cause the fact that someone could have identified or should have identified but did not identify it because for some reason, they weren't willing to.

CHAIRMAN BONACA: In any event, at least the warning there you already stated that you would consider and try to reflect some of the comments. We will have an opportunity to review it when we come back to the full committee. Then we will have to discuss when that happens but this is an important issue, this one here.

MR. JOHNSON: Can I just ask a question to help us with time? We have Jay who is going to talk international.

CHAIRMAN BONACA: Yes.

MR. JOHNSON: And then Gene actually had a couple of examples that we could share and we could do either, one or the other or we could do both abbreviated or what.

CHAIRMAN BONACA: We want to hear about the international experience. I would suggest that we focus on the examples from country to country because those are interesting and then if time allows, we can look at some examples here.

MR. JOHNSON: Okay.

CHAIRMAN BONACA: But it's just an example.

INTERNATIONAL EXPERIENCE

MR. PERSENSKY: Okay. I'm just skip

through some of these and move quickly because we'd actually talked about some of this stuff. The purpose of this presentation was to let you know how we were using this information, what our thought process was to adapt good practices, to learn from others and make sure we're not completely out of line with the international community.

The information that I've gathered here comes from various formal and informal surveys that have been done by others like the special experts group on human organizational factors, CSNI, other groups and I've just pulled out some samples as well as some direct contact with my colleagues out in the field. So don't consider this completely comprehensive in any way. It's an example of what's going on to overview, definitions, look at different international organizations.

Basically, from the overview standpoint what we have is that over the years especially since safety culture was first defined or identified after Chernobyl there has been an increasing recognition, use of the term, trying to figure out how to evaluate, how to assess it, how to incorporate it. Different governments have approached it in different ways. Probably the most visible forum out there has been the

IAEA. The IAEA has been involved with many aspects of safety culture.

But there have been attempts at definitions, different attempts trying come up with the better definition. Actually not only internationally but now in other organizations, we came across a FAA report recently where they did a listing of different definitions of safety culture and there was 18 or so in its table. But again, they all had similar components. So IAEA, they have come up with many different kinds of guidance documents, how to do your own self assessment, how to evaluate a self assessment, how to go and out do a safety culture assessment.

ILK which is an advisory committee to a couple of the German states that have reactors, they've come out with guidance recently. I put that one in specifically for George but he's not here today. Tell him I brought it up.

MEMBER POWERS: We know that Professor Apostolakis pores over this transcripts of these.

MR. PERSENSKY: I'm sure. I wanted to make it clear to him. But many countries are addressing these in some ways. The UK has License Condition 36. They've addressed it in different

terminologies sometimes, safety management, safety culture, management of safety, safety climate. Various different terms are being thrown around. The Fins have regulations and I found out just recently the Hungarians now have a regulation as well that covers safety culture.

MEMBER POWERS: The Eastern Europeans especially those with Russian vintage reactors are aggressive in this area.

MR. PERSENSKY: I've been getting some feedback recently from some of my colleagues that those that are furthest along right now are those Eastern European countries, that they've put more resources and have taken a stronger role.

MEMBER POWERS: Because it's something you can do without a lot of investment of capital.

MR. PERSENSKY: And they started a lot later and had the benefit of what has been done. Speaking of the benefit of what has been done, I just want you to know that a lot of what's out there right now, I have to take some credit here at the NRC, is based on research that was done in the late '80s and early '90s here in the U.S. by our Office of Research before we stopped doing that research and has been converted into various different forms. In fact, the

primary researcher who has finished up is now one of the primary contractors out there doing a lot of these assessments.

But just as we talked about the definition earlier, what we did is we took a number of different definitions, broke them up into these three categories: what does it cover, who is covered and why is there. You can see from this slide that we talked about characteristics, values, behaviors, various high level kinds of concepts.

Who is covered? Just about everybody in the plant. I mean that's what almost everyone would have including people outside of the plant at a higher organizational level. Why are they doing it and the whole point is the priority of safety, putting safety first.

Given that and looking at all those, we went back to the INSAG definition which the first one was done. In 1991 actually is when this one was published. There was an earlier version of it in INSAG-3 but this is now probably the most commonly used definition and it has all the right characteristics and we've been using it. So we decided as a staff to keep using it.

MEMBER POWERS: The language certainly

appeared in 1986 right after the Chernobyl accident.

MR. PERSENSKY: Yes.

MEMBER POWERS: It was used both by INSAG and by the Russians or at least the translator of the Russians.

MR. PERSENSKY: And they are also all pretty much based on Edgar Shine's culture model. Edgar Shine is a cultural anthropologist that's done work at MIT and he talks about the various levels, the artifacts, the espoused values and the basic assumptions. That basic assumptions level is the hardest one to get to because the others are more visible. But in any event, we selected this just so we would have a standard definition.

As far as what some of the organizations, two primary organizations which is IAEA and NEA because it covers both CNRA and CSNI and if I'm talking too many letters, let me know, I'll try to come up with the real titles, the approach that the IAEA uses really is self determination in many ways. Their preferred method is to go in and train the facility, whatever it is, in how to do it themselves. They teach them how to write surveys.

They give them some examples. They teach them how to do the interviews, what things to look

for. They use the basic characteristics and all the things that go underneath it that Andrea taught about earlier. But their preferred way is to give seminars to help them do their own self assessments, review them, check on them

But they are also available if necessary to do what they're calling the "OSCART." They've always had an OSRT which is Operational Safety Review Team but this is the Operational Safety Culture Review Team. This is a new group that they're establishing, a new process they are establishing and they will be using guidelines called the Safety Culture Assessment Review --

MS. JARRIEL: Team Guidelines.

MR. PERSENSKY: Team Guidelines. In any event, using that guidance and as Andrea had said when we were developing our components, before that elements and attributes, one of the main documents we looked at was that OSRT guideline which has a very intensive, very long list of things that would be called attributes. So that was part of our basic learning for this activity.

I have also included as one of the attachments at the back, I'm not going to go over it, a list of some of the relevant publications from INSAG

and IAEA and they are all available on their websites for those that aren't familiar with that. The other major organization is the OECD Nuclear Energy Agency and that has two different groups, the CNRA which is the regulatory group which focuses more on how to do inspections and how to do various aspects and the CSNI which is more the research organization.

Probably the most relevant document here is this "Role of Nuclear Regulator in Promoting and Evaluating Safety Culture" from 1999. It's often referred to as the "Murley Report." Tom Murley was the contractor in the sense that helped put this together. But it provides the regulator a number of areas of how they should be encouraging and fostering a good safety culture within the utilities, within their industry.

But one of the things they say is there should be periodic assessments and those periodic assessments should be done by the regulator. This is something as we talked about at our last meeting here that the Commission said don't include. So the basis for this and a lot of the other countries have followed this is that they do periodic assessments of not only safety culture but organizational factors. So safety culture is a part of those types of

assessments and there are some guidelines with regard to the things to look for and how to look for them within that document.

With the CSNI, most of the work that's being done in this area now is done by the Special Expert Group on Human and Organizational Factors (SEGHOF) which I am a member. So I get to interact with my colleagues in this field and where I learned a lot about what's going on.

But we've held several workshops or state-of-the-art meetings or various kinds of organizational ways of gathering information on who is doing what, what are good practices. There is one that's going to be coming out. It was supposed to be coming out at the end of the year but it didn't. Ashok just told me that he's still reviewing it which is the state-of-the-art on safety management, various practices in the area of safety management. Again, I have a list of reports as one of the attachments at the end that I'm not going to go over. It's a sharing of information. But this information, information from these various reports, again were put into our basis document.

Now what you really want to get into is some of the specific countries. The first one I have here is listed as Finland and this was made up

unfortunately before I recognized that Hungary also has a regulation in this area. But the regulation in Finland is very brief. It's only maybe 100 words or so that essentially says that the utility is responsible for safety culture and that they have to do that from the design process all the way through.

Their definition, I didn't write it out, but it is on their website in their regulations. It says there are two key components that management of the organization creates the framework for safety and that all the entire personnel including upper level management implements safe working methods and attitudes. That's the intent of what they're saying in their regulation.

They do an inspection every two years. So they have a tool to do these inspections. It's part of their safety management inspection. They cover many of the same elements or components that we're talking about. But again, they're doing it as the regulator going out and doing it at each of the licensees.

Spain is another one of the countries that's very active in this area. They are also a country that is trying to implement the ROP and one of the directions they got from their management though

was that the crosscutting issues have to have inspection. They have to have some tools there that at the time we didn't have. So they've been in the process of trying to define this.

MEMBER POWERS: Is it not true also that in Spain they have found plants that they feel have safety culture issues?

MR. PERSENSKY: They have found that in a couple places. In fact, the last bullet you'll see here that in fact the Spanish Parliament has gotten into the picture and has required all power plants to have a safety culture program plan that includes self assessment and independent assessment.

MEMBER POWERS: Independent assessment, yes.

MR. PERSENSKY: So it goes beyond the regulatory. It is now in law. Again, I'm trying to show the diversity of what's out there. But they have been talking about self assessment since 2000.

MEMBER POWERS: Have you looked at how they concluded that they had a safety culture problem at a plant?

MR. PERSENSKY: Basically they found it because of some failure at the plant, some problem, and they went in, the regulator. Part of it was they

have self assessments done. I mentioned earlier the contractor that had done the work for us was contracted to go and do some of those assessments. They have had various other people looking at it.

MEMBER POWERS: Have we ever done the double –- I don't know how you do the double blind experiment. But have we done something equivalent to a blind experiment where you have from these people the reports to be able to assess safety culture? It seems to me they always go and look at the plants where there's been a problem and they come back and say, "Yeah, there's a safety culture problem" none of which surprised me. Have they ever looked at a plant that has no manifest finding and come back and said, "There's a good safety culture there" or say, "There's not finding, but they have a bad safety culture"?

MR. PERSENSKY: We have not done that experiment. It's very difficult to do an experimentation of this.

MEMBER POWERS: I don't know how you do it.

MR. PERSENSKY: The closest you might find in this area was the work that was done in Canada. The Canadian regulator brought in a contractor and they did evaluations at nine plants and they were not

identified as a problem plant. And they found some problems in some areas and others they didn't. I don't have all the details because a lot just like our work is not necessarily all publicly available. But they did find a number of issues that had not been found under other methods that they were doing.

Their current direction now is that they've done those nine. They've learned from it. They came up with various processes that they would use and that they would encourage the industry to use. I believe their current direction, I don't know that it's been formalized but again based on these informal interactions I have, is that all plants will have to do a periodic assessment similar to the one that was done by the regulator and the regulator will go in on a periodic basis and review those assessments. So they are taking again this approach of this should be done on a regular basis and it should be tracked on a regular basis.

MEMBER POWERS: I have to admit that I'm always very suspicious of these independent assessments because at least the methods that they use look to me like they are very interpretative. They come in and they do an assessment. They get these results and they come and they give you an answer.

I look at the raw data and I said it's not obvious how I get from the raw data to the answer. In one of those, I mean the one I've looked at most closely of course is Davis Besse and I look at the raw data there, not all of which is given to you, and I said this is very interpretative here whether there is an endemic problem or not. I'm always very suspicious without impugning people's motives at all. It seems to me they give you the answer that you're buying.

MR. PERSENSKY: I think there's a couple of follow-ups to that in the sense that one of the things that most everyone else is recognizing is it's not a one shot. You take a picture of what a plant looks like today and that will give you some interpretation based on perhaps comparisons to other similar plants or whatever.

But generally, the approach that's taken is this is today's and what we required after Davis Besse, and I'm quite familiar with what's going on at Davis Besse because I'm part of that inspection team, is we required them to do these assessment five times, five years running. So we can see a trend.

The real message in safety culture, especially when we want to get into these basic assumptions, the lower level kinds of things and how

it's demonstrated in other ways is to take it over time and see a trend. I just in fact was in Davis Besse in December when the independent assessment, this would be the third one, was reported out and they had started here. They went down and they went up.

MEMBER POWERS: It's true on all of these things.

MR. PERSENSKY: So you see the trend. The other in a situation that they had in Canada was that they did use the same technique over a number of plants, not unlike what we might be able to see with INPO. INPO was doing the same technique. They are doing it over a number of plants but their information is proprietary and they share it in the way they need to with the plant. I think the fact that they use the same technology, they use the same techniques, the same questionnaires, they could look across plants and see how this worked out and the regulator has taken that information and used it in a way that has the plants now doing it so that they have a consistent way of looking at it as opposed to an ad hoc.

MEMBER POWERS: It strikes me that you're absolutely correct that you need a baseline data. One of the things that you find on any kind of assessment of culture or environment or what not is the second

year the scores all go down and no one exactly knows why but they suspect that people participating in the assessment get trained. The first time they're stunned at what the questions are and they are suspicious of how they are going to be used. So they tend to give answers right in the middle, non-committal. Nothing happens from that. So the next year they're trained and so they start answering more harshly because they say maybe something will come out of it this time.

MR. PERSENSKY: I think based on our experiences at that particular plant I think we've seen real changes though in both negative and positive directions. Anyway, I'm sorry. I've been having a dialogue with Dana here.

As I said, Spain, they are using a system very similar to our ROP. They are trying to build this into their system and they do have strong support from their regulator and from their parliament to work in this area.

Canada, I mentioned they use both a quality management approach and an organization management review. Really we talk about safety culture but they do a broad organizational management review of which safety culture is one element. Then

the regulator does a verification audit.

So these kinds of things are different approaches and we've considered these various types of approaches in the way we're going to be doing our work. I have to make sure I get the ILK in here.

MEMBER POWERS: May I ask you a question, Jay? Do the European countries tend to be culturally homogeneous relative to the United States?

MR. PERSENSKY: Generally, the case yes.

MEMBER POWERS: Is there a problem with methodology? If we tried to adopt European methodology, do we get into a problem?

MR. PERSENSKY: I think in this situation they've adopted –-

MEMBER POWERS: Ours.

MR. PERSENSKY: –- the methodology that was developed originally here and they are using it and they have adapted it rather than adopted.

MEMBER POWERS: Adapted. Okay.

MR. PERSENSKY: So I think there may be some cultural things. In one of the IAEA workshops I was involved with had to with safety culture of regulator and one of the big elements there was the cultural environment overall in the country. There are these different cultures.

For instance, you might probably picture a few countries out there if they drove like they do in that country here in the United States. They have a different national viewpoint on the safety of the way they drive. Is that also translated then into the way they operate in a power plant or do they have a bigger hurdle to overcome in order to make sure that that kind of culture doesn't transfer to their work in a power plant? That was a big part of the discussion from a couple of the countries there.

So, yes, there are these international kinds of environments. But as far as the specific methods, I don't think that they would be that different. Some of the questions may be different. Again, it's an adaptation to our situation similar to the way Andrea described our adaptation of some of the words that came from INPO because it was a different viewpoint and we're looking at it from a regulatory standpoint as opposed to an excellence standpoint.

CHAIRMAN BONACA: Speaking of these overheads here, certainly it would be of interest to us to know more about what are the safety culture indicators they use. I was looking for a list of those but I can't find it. Are they similar to what we're trying to do here?

MR. PERSENSKY: Accountability for safety is clear. Safety is learning driven.

CHAIRMAN BONACA: These are not measurable.

MR. PERSENSKY: Again, actually I think on my back-up slides I have some information on that and the ILK document is available if you want to share it.

CHAIRMAN BONACA: Yes, I would like to.

MR. PERSENSKY: But they are basically the same kinds.

CHAIRMAN BONACA: If we could have a copy of that, that would be great.

MR. PERSENSKY: Okay. We can make that available.

MEMBER POWERS: Especially in the original German.

MR. PERSENSKY: Would you like it in German?

MEMBER POWERS: Yeah.

MR. PERSENSKY: I'm sure George would be glad to provide you a copy as well, but we do have it. Anyway, I know I went through very rapidly because of time, but some of the general activities and I mention these specific countries but the Chinese are doing assessment that we're learning about. We don't have

a lot of information on. The Japanese are very concerned about safety culture because of the Tokamora incident, the incident with the cover-up by the utility. So there's going to be a workshop, I believe, in March in Japan on safety culture abroad.

We're seeing more and more in other industries, the medical field, the aviation.

MEMBER POWERS: A question that comes up. You've mentioned a lot of other fields and I give you all the credit in the world for looking at these other disciplines. But you fail to mention that I'm most familiar with that has the most outstanding safety culture I've ever seen and that's DuPont.

MR. PERSENSKY: The what?

MEMBER POWERS: DuPont.

MR. PERSENSKY: Oh, DuPont. The chemical industry, yes.

MEMBER POWERS: Absolutely stunning safety culture. Is there nothing to be learned there? I mean I can understand why.

MR. PERSENSKY: I haven't necessarily looked directly at that. I've read stories and anecdotes about living above the factory where they make the explosives. But when we were doing the research back in the mid '80s and early '90s, that was

the basis of a lot of what we were doing. We went back and looked at those. We used Mintzberg's model for the machine bureaucracy.

There are a lot of things that we were looking at at that point that we tried to pull together into the work we were doing at that point into the basis documents. Again that information was translated primarily into what is now the components. The methodologies, again we were living within the ROP methodology because that is the agency position.

MEMBER POWERS: Yeah, and that may be the problem of going to DuPont. It may be more useful for the licensee than it is for the regulator.

MEMBER DENNING: I don't know, Dana. I think that if you want to look at data and how a safety culture is able to affect safety then the operation of Savannah River, it's distinctly better than other DOE facilities and if you just get exposed to what they do, it's just incredible.

MEMBER POWERS: It's just incredible and Savannah River is a poor reflection of what happens at actual DuPont sites. Actual DuPont sites, it just takes your breath away. It's intrusive.

MR. PERSENSKY: I had another thought and it just flew away. I'm sorry. It's 12:30 p.m. Time

for me to stop thinking.

CHAIRMAN BONACA: We are not going to go through the presentation. We just simply have time for the examples and if I understand, these examples are those that were provided during the workshop.

MR. JOHNSON: Provided during the workshop.

CHAIRMAN BONACA: We've received them.

MR. JOHNSON: Available on the webpage. You can certainly have access to this and we'll answer any questions you have.

COMMITTEE DISCUSSION

CHAIRMAN BONACA: We need to go around the table here to talk about two issues. One is how do we bring this back to the full Committee and what is the timing for that and second, some views from the members here if they want to contribute regarding today's presentation. I would like to do the first first which is you are due to deliver in May and so we need to bring this to the full committee in March or April.

MR. PERSENSKY: It would be April.

CHAIRMAN BONACA: April. We would do that and by the time, you should have pretty much of a finished product or close to it.

MR. JOHNSON: Yes, I would say the April timing. The timing of an April perspective letter would be perfect with respect to our plans to move forward.

CHAIRMAN BONACA: Yes. I'm sure we want to comment on this because this is significant. So we can do that and we can schedule that.

MR. FLACK: Mike, excuse me. What kind of product would you give the Committee to review? Would that be done to the sufficient level that it could be handed out to the members?

MR. JOHNSON: Absolutely. We will be able to and we'll work with you, John. We can give you everything and we'll have developed procedures at that point that translate the concepts into implementation. So you'll have that.

MR. FRACK: Okay. Down to the procedure level.

CHAIRMAN BONACA: Very good. So that's pretty much our goal there. I would like to go around the table and see the views of the members here, starting with you, Bill.

MEMBER SHACK: I'm fairly impressed today. Safety culture is something I have a hard time getting a hold of in a concrete way. I think that comparing

the industry's version and your version, you do have I think it seems to me concrete things that I think an inspector can look for. I think they will illustrate things that are interesting.

One of the things we've always had was concern with the ROPs is that nothing happened until you had a significant finding and I think this gets you to that point where you begin to get engaged a little sooner before things get to that point. I think it's an incremental step but I'm an experimentalist. You know we'll try this and you may be back here in a year and a half and we'll work on something else. But I think it's to me something I can see training an inspector to do and will produce useful information. So I'm fairly –- And I don't even mind the willingness to raise concerns.

MR. JOHNSON: Great. Thank you.

CHAIRMAN BONACA: Dana.

MEMBER POWERS: Well, I'm not persuaded that there's anything here that's needed. It looks to me like this is just a mechanism for piling on when you've had a hardware failure. It looks to me like it's something that's subject to abuse. I worry about that.

I'm not so enthusiastic about

experimenting with licensees as a vehicle for training my inspectors. I think there is some room for helping inspectors understand when there's a safety culture issue so that they can be aware of it and have supported those concepts in the past. I'm not persuaded this is the vehicle for doing it and really question whether we want to go into this in this way or not.

Maybe this would be alleviated if I could see some more case studies of where it were to be happening. But when I probe for those I just get the feeling there's more speculation here than there is some sound thinking about how this would actually get used. That's mine.

MR. JOHNSON: Okay.

CHAIRMAN BONACA: Rich.

MEMBER DENNING: I'm more in the Shack camp than the Powers camp on this one at this point. I came into this expecting to be very skeptical and I thought the presentations were really excellent and I thought you did a very good job of responding to difficult questions with showing that there's a lot of thought.

I think that you do need a little bit more of a proactive capability with regards to dealing with

utilities in this particular area and I think this gives you this tool without being overly intrusive. I certainly think that it's ready to go forward to the Committee. That's it.

CHAIRMAN BONACA: Sam.

DR. ARMIJO: As a new member, I'll be brief. But I believe there is such a thing as safety culture. I've seen it. I've seen organizations with very weak safety cultures and sometimes it's difficult to spot. But your inspectors probably know the plants that have that already. I think this is an excellent approach.

I share Dana's concern that somebody could abuse it and distort what you're trying to do. Safety cultures are very vulnerable to individual. Unless they are strongly institutionalized that could change. Management changes, come in and all of a sudden things that used to be reliable change. So I think this is a very good approach. Later I may offer some wordsmithing about some of your characteristics, but I think it's a good piece of work.

CHAIRMAN BONACA: Thank you. Tom.

MEMBER KRESS: I think I'm closer to Shack's view also. I generally like this. I like particularly the focus on performance of measurable

items. I think it was very responsive to the Commissioners' SRM. I think they couldn't have done a better job of trying to fit what they're doing into that SRM.

I think it starts out, I like the idea that it's minimally intrusive and then as things become obvious, it gets more and more intrusive. I think that is the right approach and I really like the fact that the Commissioners told them to stay away from surveys until you have to have it and I think they've done that. I think what they're looking at does address the safety culture attributes. So I have a positive view of it right now.

One thing I wonder about is how to evaluate whether or not it meets the objective of detecting safety culture degradation before a significant event. I don't know how you do that. I understand Jay's comment that they worked that into developing the attributes but I liked Ashok's recommendation that maybe they should take a retroactive look at the key of the incident that had been identified as being associated with safety culture problems. So I think that would be a recommendation.

With respect to the willingness to raise

concerns, I think there ought to be a way for the licensee to have employees raise concerns unanimously. I think that gets around the question of retaliation and I think somehow that ought to be encouraged and I don't know how to do that. But I think it ought to be.

One other question I have is under one of the attributes which was organizational change to management. The comment was made that licensee should evaluate the safety impact of organizational changes. I don't know how to do that and I don't know if you have ways to do that or not and surely it doesn't show up in the PRA. So I have problems with how you implement that particular requirement.

Other than that, I think you're on the right track and we're ready to go to the full Committee.

CHAIRMAN BONACA: I, for one, first of all, would like to thank you for a great presentation. Really you took your time to come here and this is very useful. In fact, it was very useful also because I really had problems with it when I read the material from the previous meeting and now I understand where we are going particularly your identification of these 13 attributes and how you fit them under the existing

framework

I think you are going in the right direction when it comes down to what you're focusing which is really enabling the inspectors to evaluate, better to enable them to understand the environment they are working with, focusing their questions and so on and so forth. That's the only way to go. I think that this helps in the direction.

I'm not as concerned about the opportunity for abuse. I think that right now you're being concerned enough about feedback from the industry. You have adapted to the that. So I think this is a process that will be really molded by the industry too. But I like the way it's going. I think it's again going to help the inspectors.

I'm not sure how you evaluate effectiveness. That's the point that Tom was making here. How do we know that this is going to work and the only thing we can do is to make steps. To improve a step at a time, I think it goes in that direction. It's a big thing that comes and revolutionizes the whole thing. It's really an enhancement of the inspectors are willing to detect and time will tell if in fact they are able to do that.

That's pretty much that. So the feedback

was generally positive and I think that we are ready for a full Committee meeting and we'll give you our feedback at that time.

MR. JOHNSON: Thank you. Is the full Committee meeting going to be in February or will it be in April?

CHAIRMAN BONACA: I think it will be in April.

MR. JOHNSON: April. Okay.

CHAIRMAN BONACA: The choice will be either March or April and I think that April is probably a better time.

MR. FLACK: Right. You'll give a report at this full Committee about what transpired here.

CHAIRMAN BONACA: Yes.

MR. FLACK: Then at that point, I think the final letter will come around April if we would decide that we might want it at that time.

MEMBER SHACK: And if we had a February meeting, we would have to have an April meeting anyway.

CHAIRMAN BONACA: I think it's good to bring it because by that time, you'll have a product I'm sure.

MR. JOHNSON: Yes.

CHAIRMAN BONACA: We would like to see some material and the inspection procedures, I think we would like to see those.

MEMBER DENNING: We certainly want to see NEI's response too because they were critical earlier and we'd be interested in seeing those.

CHAIRMAN BONACA: They have been critical, but lately they have agreed pretty much to your approach now. They don't have major issues or do they?

MR. JOHNSON: I think your characterization is true and I would offer -- Tony Harris is in the back. I don't want to speak for NEI but I think our perspective is we're more comfortable than I would have been, for example, a week ago.

MEMBER DENNING: Well, he shook his head in an affirmative.

MR. HARRIS: Tony Harris with NEI. I appreciate the opportunity. We went through a lot of work with Mike and his folks just like today too. When you first read and look at this information especially if you look at the component characteristics, our biggest concern came in about how they would really be used. If you're going to do this as an assessment tool after licensees, they have

problems or some point in time, that's different than if you're going to do it in more of an intrusive inspection tool.

There were our concerns there and then you would have to look at language. So we worked hard to try to come grips with how it would be used and the last presentation did go a long way to eliminating or alleviating a lot of our concerns. So we continue to work with the staff.

CHAIRMAN BONACA: Okay. Any other comments from members or public? If not, I think we will adjourn the meeting and thank you again for a presentation that was excellent. Off the record.

(Whereupon, at 12:42 p.m., the above-entitled matter was concluded.)