Official Transcript of Proceedings

NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Reactor Safeguards
Plant Operations and Fire Protection

Docket Number: (n/a)

Location: Arlington, Texas

Date: Thursday, July 29, 2010

Work Order No.: NRC-342 Pages 1-192

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

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

+ + + + +

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE ON PLANT OPERATIONS

AND FIRE PROTECTION MEETING

+ + + + +

Thursday, July 29, 2010

+ + + + +

NRC Regional V

Suite 400

Texas Health Resources Tower

Arlington, Texas

+ + + + +

8:30 a.m.

+ + + + +

SUBCOMMITTEE MEMBERS:

JOHN D. SIEBER, Chair

DR. DENNIS C. BLEY

HAROLD B. RAY

DR. WILLIAM J. SHACK

NRC STAFF:

ELMO COLLINS, JR., Regional Administrator

CHARLES CASTO, Deputy Regional Administrator

ROY CANIANO, Director, Division of Reactor Safety

TROY PRUETT, Deputy Director, DRS

DALE POWERS

I N D E X

P R O C E E D I N G S

CHAIRMAN SEIBER: The meeting will now come to order. This is a meeting of the Advisory Committee on Reactor Safeguards Plant Operations and Fire Protection Subcommittee.

My name is Jack Sieber; I'm chairman of the subcommittee. ACRS members in attendance are William Shack, Harold Ray and Dennis Bley.

Kathy Weaver of the ACRS staff is the designated federal official for this meeting.

The subcommittee will review information presented by the Region IV staff regarding items of mutual interest and hear a presentation from Nuclear Energy Institute representatives regarding the industry's plant safety-culture assessment process.

We will hear presentations from the NRC Region IV staff and the NEI representatives regarding these and other matters of mutual interest.

We have received no written comments or requests for time to make oral statements from members of the public regarding today's meeting. Notice of this meeting has been published in the *Federal Register*, and the meeting is open to public attendance.

The subcommittee will gather information,

analyze relevant issues and facts, and formulate proposed positions and actions as appropriate for deliberation by the full committee.

The rules for participation in today's meeting have been announced as part of the notice of this meeting previously published in the *Federal Register*. A transcript of the meeting is being kept and will be made available, as stated in the *Federal Register* notice.

Therefore, we request that participants in this meeting use the microphones located throughout the meeting room when addressing the subcommittee.

The participants should first identify themselves and speak with sufficient clarity and volume so that they may be readily heard.

We'll now proceed with the meeting, and first I would like to thank Mr. Collins, the regional administrator for Region IV, and the Region VI staff for your hospitality and efforts to make this meeting a success.

Meetings like this one are important for the ACRS to gain insights and a perspective for the issues facing licensees and the regional staff in its oversight of facility operations. Your hospitality and your insights are much appreciated.

Earlier this week we visited one of our licensees, and met with the staff at Columbia Generating Station to gain insights on the industry efforts and the regulatory interaction from their perspective.

We also met with the resident inspector staff at Columbia, both of whom were competent and well prepared for our meeting, and are doing an excellent job.

We discussed the licensee steps that they are taking to improve their performance and, in particular, elements of their safety culture. And this was very informative and, in my personal opinion, as opposed to a subcommittee opinion, I think they are on the right track.

We also visited DOE waste remediation sites, mainly because of the application that Energy Northwest has filed in conjunction with Columbia Station, because one of those sites sits adjacent to their owner-controlled area fence, and we are interested, first of all, in the amount and extent of environmental impact that these waste sites have created, particularly near the plant, and DOE's steps to remediate those sites, even though they do not fall under -- at this time do not fall under NRC

jurisdiction.

I would now like to call upon Elmo Collins, the Region VI regional administrator, to begin today's meeting.

Mr. Collins.

MR. COLLINS: Chairman Sieber, members of the ACRS Subcommittee on Plant Operations and Fire Protection, good morning.

(Chorus of good morning.)

MR. COLLINS: And welcome to the Nuclear Regulatory Commission's Region IV office, and welcome to Texas.

It certainly is our honor and our privilege to be able to host you here this morning. We look forward to the opportunity to talk to you directly about our experiences in implementing the nuclear power plant reactor oversight process.

I've always marveled at the work of the ACRS, the committee has done for over 50 years and the advice it's given the Nuclear Regulatory Commission and, before that, the Atomic Energy Commission, regarding safety of the commercial nuclear power plants. It's quite a long history of accomplishments by the committee, so I congratulate you on that, and I'm glad that you had a successful visit to Columbia

Generating Station.

It's also my privilege to be able to introduce to you now those of my staff who are going to be talking to you this morning, so I'll just run through -- we have a lot of topics we're going to address, and I'm very proud of my staff, the work that they do. They're very dedicated, and they work hard, and so I'm glad they're going to be able to share some of that with you and the insights that they've gained.

Tony Vegel -- except it's actually -- we made a change. Troy Pruett here is going to give a presentation. he's the deputy director of our Division of Reactor Safety and going to be temporarily the deputy director of Division of Reactor Projects, beginning Monday.

Then Jeff Clark, he's a branch chief in our Reactor Projects Division. Ryan Lantz is a branch chief in our Reactor Projects Division. If you all could just signal who you are here.

David Loveless, one of our senior reactor analysts; he's been performing that work for us for a number of years now in Region IV and does a great job.

Ryan Treadway, senior resident inspector at Palo Verde, so you're going to hear directly from an inspector. Neil O'Keefe, chief of Engineering

Branch in our Division of Reactor Safety. Kelly Clayton, the senior examiner in our Operating and Licensing Branch.

And Earnestine Clay; she's our team leader in our Administrative Management Branch from our Division of Resource Management, and we're really pleased that she's going to be able to speak to you and talk about some of the things we've done internally here in Region IV.

And Chuck Casto, of course, is the deputy regional administrator.

Just a quick introduction to Region IV; if nothing else, the geography, and you've already had the chance to personally experience that if you had to make a trip to Columbia Generating Station, so I know now you have a feel for what our region-based inspectors do when they go to inspections from the region.

We do cover a lot of geography. For the Nuclear Materials Programs, we actually do inspections in Alaska, Hawaii as well, and you can see the nuclear power plants; the photographs are all on the board over here.

We have 14 sites, 21 operating nuclear power plants that we provide oversight for in Region

IV. And we tried to also indicate on this slide, just so you'll get some sense, for some of the prospects for new reactor construction within Region IV jurisdiction.

Of course, the furthest along on that I believe are the South Texas Project, and not too far behind them are Comanche Peak. They have applications under active review by the Nuclear Regulatory Commission right now.

Once again, thank you for taking the time to come listen to us. We're pleased to be able to present to you our work, what we're doing. We take our safety mission very seriously.

With that, our next presenter will be Troy Pruett.

MR. PRUETT: Thank you.

Good morning, Mr. Chairman, and ACRS members. My name's Troy Pruett, and I'm the Division of Reactor Safety deputy director. Tony Vegel had hoped to be here this morning, but in order to keep his contagions to himself, I was moved up from the A league to the major leagues.

Over the course of the morning you'll hear perspectives from a number of our staff directly involved with implementation of the Reactor Oversight

Program for our Column II and Column III sites, as well as those sites that have long-standing substantive cross-cutting issues.

But before they start, we thought it would be helpful if I took a couple of minutes this morning just to refresh everybody on what involves a substantive cross-cutting issue, as well as the action matrix columns, and I think that will help us throughout the course of the morning.

There are three cross-cutting areas that apply to all cornerstones of safety, those being the areas of human performance, problem identification and resolution, and safety-conscious work environment.

Those cross-cutting areas are divided into nine cross-cutting components for the baseline inspection program, and there are four additional cross-cutting components that are associated with the supplemental inspection program.

The cross-cutting components are then further divided into cross-cutting aspects, and the cross-cutting aspects represent the performance characteristic that is the most significant contributor to the performance deficiency.

Typically that's the underlying cause associated with a particular finding that the

inspector has an interest in.

When a collection of findings shares a common cross-cutting aspect, the Region then performs a review to determine if a substantive cross-cutting issue exists. To have a substantive cross-cutting issue, you must have a theme, and we must have some type of concern with the licensee's ability to address that theme.

Now, for human performance and problem identification of resolution themes, that means there's four or more findings that share the same cross-cutting aspect.

For a theme in the safety-conscious work environment area, you only need one finding, and that finding must apply to more than one area at the facility, or the agency's issued a chilling effects letter, or the agency has issued a severity level 1, 2, or 3 violation, or an order that involves discrimination at that facility.

That pretty much sums up the substantive cross-cutting issues and how we get there, at high level.

The next thing I wanted to touch on was the action matrix, and within the action matrix are six columns. The vast majority of licensees fall in

column 1 of the action matrix or the licensee response column.

Those licensees that are in the licensee response column or column 1 receive the lowest level of regulatory oversight, that being the baseline inspection program.

As licensees have significant safety findings or performance indicators, or the numbers of those performance indicators or significant safety findings increase, they move across the action matrix and get progressively more regulatory oversight.

The increased regulatory oversight is referred to as the supplemental inspection program.

That brings us up to Region IV. So as of June 30, Region IV had three sites in Column II, or the regulatory response column of the action matrix: San Onofre, for a light finding involving loose battery terminations; Colombia Generating Station, for a white performance indicator involving scrams; and Calloway, for a white performance indicator involving emergency diesel generators.

One site was in Column III of the action matrix, or the degraded cornerstone column, and that was Wolf Creek. Wolf Creek has three performance indicators that are white. One involved scrams; a

second involves complicated scrams, and a third involves the number of safety system functional failures.

We have two licensees that have had long-standing substantive cross-cutting issues, that being they've been in existence for more than two years. The first one is Wolf Creek. Wolf Creek's substantive cross-cutting issue involves problem evaluation.

And the second is San Onofre. San Onofre currently has seven substantive cross-cutting issues that involve decision making, resources, work practices, problem identification, problem evaluation, and timely corrective action.

Again, this provides a high-level view of the current status of the Region IV sites that are outside of column I of the action matrix or those with long-standing substantive cross-cutting issues.

The following speakers today are going to discuss how Region IV has utilized the Reactor Oversight Program to regulate these licensees.

Do you have any questions for me on the information I've provided?

(No response.)

MR. PRUETT: Thank you. With that, Jeff Clark is up next.

MR. CLARK: Thank you, Troy. We'll do the appropriate height adjustment.

Mr. Chairman, members of the ACRS, good morning and welcome again to Region IV. Ryan Lantz and I have been tasked with presenting a portion entitled ROP Implementation for Declining Plant Performance.

Specifically in my portion this morning I'm presenting a higher-level overview of what we currently see as ROP, or revised oversight process maturity.

The first area I am addressing is, has the baseline inspection program identified the right issues over the years? I believe the answer to that question is yes.

The ROP provides the agency and our individual inspectors with appropriate guidance in the depth and the breadth of the inspection activities, as well as providing a focus on selecting risk-informed samples that represent important aspects of licensee performance.

We currently look at a wide variety of activities, from system walk-throughs in the plants to equipment operability determinations, to detailed engineering and design inspections.

Other presenters today that follow me will give you specific details on some plant-specific examples that we've had in Region IV, but overall Region IV has identified numerous issues with licensee performance in the decade of the ROP.

These included voiding of emergency core cooling systems; multiple problems with emergency diesel generators and with station batteries; the identification of latent issues in plant design and procedures; and inadequate compensatory measures for fire protection or risk-significant evolutions.

We have also been able to effectively link these inspection activities with response and follow-up activities, such as event follow-up and reactive inspections through our management directive 8.3.

Through the identification of these important issues and by our ensuring the licensees follow through on corrective actions for them, we believe we have seen licensees make appropriate improvements in key areas of plant operation.

The second area as regarding maturity of the ROP deals with the application of the ROP and its evolution over the years, whether or not we're at a steady state or not.

I believe we have evolved and I believe

that we continue evolve. Just to give you a personal perspective, I was an NRC resident inspector prior to the Revised Oversight Process. I was then a senior resident inspector during the pilot phase of the ROP and the initial implementation of the ROP.

Since then I've also been a branch chief in the Division of Reactor Safety as an engineering branch and my current role as a branch chief in the Division of Reactor Projects.

As such I've seen numerous changes and enhancements to the ROP that I believe personally have made a solid program for NRC inspectors in their inspection activities.

Again, my fellow presenters will give you some plant-specific examples, but overall I want to highlight several aspects that we see are key to the evolution of the ROP.

First, there have been multiple revisions of ROP guidance documents and criteria. These are primarily based upon lessons learned and an open feedback process that includes licensees, the public, and the ACRS.

Next, the enhancement of cross-cutting aspects for findings and the institution of substantive cross-cutting issues for licensees. This

has provided important insights into specific aspects of licensee performance.

Third, the periodic evaluation we sometimes refer to as ROP realignment of inspection activities and resources. This has led to changes or even a deletion or creation of new inspection procedures for our inspectors.

And finally, the collaborative efforts between the regions and headquarters, to have more reliable implementation of the guidance and consistent assessment of licensee performance at the end and mid-cycle assessment meetings.

In summary, the last decade of the Revised Oversight Process has been effective, and it continues to be effective as it evolves with the issues and we find more issues and we receive more feedback from all of our stakeholders.

I believe that over the last ten years the NRC has continued to evaluate significant findings under the ROP and openly solicit comments and feedback for process improvements.

I believe this had led to the previously mentioned aspects of consistency, follow-up, and response to new aspects and issues.

Mr. Chairman and ACRS members, this was an

overview. As I said, others will provide some specifics. However, are there any questions in my presentation?

Yes, Mr. Chairman?

CHAIRMAN SEIBER: Let's pretend for a minute that you had the unilateral power to change things as far as NRC policy is concerned. What would you strengthen or perhaps what would you diminish in the current ROP program as it stands now?

MR. CLARK: Well, Mr. Chairman, let me first say that's an interesting question from the standpoint I was asked that exact same question when I was a senior resident in the pilot phase process.

CHAIRMAN SEIBER: That's good.

MR. CLARK: And to be asked this again, it shows that the process is repeatable, and it shows that we can come back to that same thing.

CHAIRMAN SEIBER: Yeah, but do you have the same answer?

(General laughter.)

MR. CLARK: And the same answer is I believe we should strive to achieve consistency, and I think we are doing that through the feedback process. I don't think that we should be hesitant to receive feedback. I think we should receive feedback from any

and all sources for enhancement to the process.

And I think, you know, in that light we should have open dialogs with all our stakeholders to get that type of feedback. It makes the process better.

CHAIRMAN SEIBER: Do you think that there may be some either human-related or material or operationally related defect that remains hidden in a plant that has safety significance that the ROP will not eventually identify where action can be taken?

MR. CLARK: Mr. Chairman, I believe that the ROP has demonstrated that it has found latent issues. I believe that there are still latent issues out there to find, but I think that the process provides a framework in which we're doing it.

I think that fellow presenters like Neil O'Keefe are going to describe to you how we have identified some of those latent issues.

CHAIRMAN SEIBER: Yeah, but one of the bases is the performance indicators, which means you have to have events or incidents before the attention comes from the ROP to accelerate the scrutiny of licensee actions, and that I am thinking about. We aren't really hunting for the latent defects; we're reacting to the events, situations as they occur.

Have you given any thought to that at this point in time?

MR. CLARK: Well, Mr. Chairman, I believe that performance indicators are one of the legs of the ROP. I believe that gives us an input, but I think at the same time the inspection findings that we are going after I think provide an appropriate framework for that digging and that going down several layers into things, especially -- I'll give the example of component-design basis inspections.

As my former involvement in the engineering branch, we helped to develop that inspection process to do just that thing: to not wait for precursors, not wait for identifying events to do that, but to dig down into design features at a facility and find things prior to them occurring as an event.

CHAIRMAN SEIBER: The thought that goes through my mind -- I've been a site person for a long time, and a person who really knows perhaps doesn't know the way scientists and engineers know, but as they work with it, they know the defects. For example, an electrician has some idea because he's physically involved; or an operator who watches equipment perform and sees changes in behavior, he

knows there's something wrong.

QC inspector, in-service inspection technician says, I see something I didn't see before. Perhaps it's not reportable, but it's there. And what it takes, in my view, is communication from the very first level of workers in the plant to the management and back and forth and back and forth to make these issues come to the forefront before they come as an incident or an accident.

When I go into the plant -- and I worked on a lot of plants and done inspections on a lot of other levels -- that's one of the characteristics I look for, is how good is the communication. Where does the information actually get out of the description of what the problem is and into some formal form where you can tell what the problem is?

Do you see a way, through the ROP, to encourage licensees to foster that kind of communication and relationships so that this information comes forward? Do you think the ROP does that?

MR. CLARK: I think the ROP does that now. I think the ROP has given credit to licensees to self-identify issues. I think it fosters an environment for them to report issues ahead of time.

I think we've also encouraged our inspectors to go out and dialog with the licensees about issues that are at a very low level prior to them ever becoming a violation or a finding, et cetera, but to discuss issues on a day-to-day basis so that we understand the pulse of the plant, so to speak. I think that's what you're addressing.

CHAIRMAN SEIBER: And what I've found, just as a comment, in my experience is plants that seem to -- a plant is not a good plant or a bad plant; it's the organization that runs the plant that is effective or not so effective.

I've seen plants that have performed well for years and years and years had an evolution in their management and gone downhill, and I've seen other plants who have struggled for years and years and years and modified their management style, and all of a sudden made improvements and became star performers.

And I'm trying to put my arms around a way to measure that and to encourage people to do that. The Navy tried that for a while and was sort of successful at it, but not completely.

And in our industry I see shining stars amongst gems with flaws. So that's my overall

concern, and I'm not sure regulation can do that. That's more of an art than a science.

And somehow or other there ought to be a way to sort of pick up on it, and maybe the ROP does it, and that's the question I'm asking: Does it do it well enough or is it weak?

MR. CLARK: I understand.

MR. CASTO: Mr. Chairman, if I might, Chuck Casto.

CHAIRMAN SEIBER: Yes, sir.

MR. CASTO: You're absolutely right. There's a lot of elements of the Reactor Oversight Process that are reactive --hat findings, performance indicators are reactive, but what we haven't lost in the Reactor Oversight Process is the value of the resident inspectors and their onsite presence. That's still an essential part of the success of this program, and then the dialog that we have at mid-cycle meetings and end-of-cycle meetings, where the resident has input to that and can help steer the Reactor Oversight Process into those areas where they've sensed out talking to people, being in the field, watching work, observing work, dialoging, that -- the value of the resident program is still crucial to the success of this process.

CHAIRMAN SEIBER: And in fact, when we go to a site, that's the first people we ask to meet with, is the resident inspector team.

MR. CASTO: Right.

CHAIRMAN SEIBER: Yes, sir.

MR. COLLINS: Mr. Chairman, I'll just add to what Chuck Casto said. My name's Elmo Collins.

The residents are in a relatively unique position, I think with respect to us in the region, and maybe even with the licensee, to see issues surface, to talk to people, and, as you describe, watch that issue go through the organization, see what's written down, understand the meaning that's attached to it; the licensee decision-making that's done: what they do with it, what they don't do with it, its significance, et cetera.

And they get a feel for how that works, as this information, the raw data then works through the organization; either gets appropriately dealt with or doesn't over time.

And I think as you describe, some do it very well; some struggle more than we want to see them struggle, and that's I think why the Reactor Oversight Process -- we have the resident inspectors and then put such a heavy emphasis on the absolute necessity of

each licensee -- it's a premise to the program, to have a viable, working corrective action program where people are digging -- they're digging and looking.

We don't have enough people to look at everything even if we wanted to, and so that's premise that's working viably and that there's efficacy to that program, is necessary for our oversight process to work.

CHAIRMAN SEIBER: Well, I firmly believe that you -- and this a personal belief and not an official belief. I don't think you can regulate behavior and conduct as far as leadership is concerned.

On the other hand, I think you can gain insights as to how good the performance will be along the basis that you're describing.

And so in my own mind there's a little bit of a dilemma. I know how to do it. I'm not sure that we're communicating how important good leadership in management really is.

And perhaps later on today we'll get more insights when we talk about safety culture, because to me that's key.

Thank you very much for your presentation.

MEMBER SHACK: I just had a question; I

was curious.

MR. CLARK: Yes, sir.

MEMBER SHACK: The significance determination process has always been sort of a contentious point in the ROP, and I just wondered if that's working more officiously and less contentiously.

MR. CLARK: I think it is working effectively. I think it has developed into a more repeatable and scrutable process. David Loveless is actually going to give you some insights into that in a presentation that comes up later.

MEMBER SHACK: And another issue that's sort of been coming up, we had this discussion of risk metrics for new reactors and how the ROP would deal with reactors that, you know, seemingly have much lower risks in the sense you could perhaps tolerate a performance degradation and still -- have you been involved -- is the Region involved in those discussions since you're the people who actually have to implement this sort of thing when it does happen?

Do you feel that you've had enough input into the process?

MR. CLARK: I don't have personal information, but, Elmo?

MR. COLLINS: Elmo Collins. Thank for raising that. At least at my level and division management level we've had -- I know I've personally had numerous discussions with the policy makers in the Office of New Reactor and NRR as well on this topic, and that policy's still under formula, of course, as you know.

MEMBER SHACK: I just wanted to make sure you --

MR. COLLINS: I've appreciated that discussion, though, and I've certainly made the points that I would make on how I think it ought to go; it's got to be collaboratively worked out and, of course, the Commission will ultimately set the policy on that. It's a very, very important topic.

MR. CANIANO: I'm Roy Caniano, director of Division of Reactor Safety here in Region IV. And just a follow-up to what Mr. Collins just indicated: We've been actively involved with the program office; there's been numerous meetings that we've been involved in with the other regions, working with NRR with that.

So, yes, we've been involved in it for the last couple -- in fact, all the way through the SRA level, and Dave will probably add a little bit on to

that.

MR. CASTO: This is Chuck Casto. I'd add, Dr. Shack, that -- and maybe Troy can speak to this better than I can, but I think the -- you talked about the contentiousness in the SDP process early on, and I think we were in the lead of the industry in that process and our skill set, but I think the industry has come along and has improved their risk capabilities within their own staff; the SPAR models have gone a long way, and the work we did to go out and validate SPAR models I think have really driven out much of that contentiousness that you had early on with the SDP process.

I think we're generally aligned in most of these cases and have not had a lot of disagreement in the final outcome of the SDP process for findings.

MR. PRUETT: This is Troy Pruett. With respect to the significance determination process, I think this is something Region IV does well. We can gather the appropriate information for analysis and are able to sit down and understand their views and how their analysis -- where the delta are, and how we differ -- how the methodology is different.

MR. CASTO: And I would also -- this is Chuck Casto again. I would also make a point, Dr.

Shack, on your point, which is a very good point about the fact that some licensees out there have an advantage because of their low baseline CDF, and are you tolerating different levels of performance? That's a very important concern.

I would say that if you look, generally the ones that are in that situation are the BWRs, the BWR/4s in particular. And Is think if you look at the history of the Reactor Oversight Process, even those sites have had a lot of attention, and right now there are a number of BWRs and BWR/4s that are up on the action matrix.

MEMBER SHACK: I didn't want to say that that was the way it should be; it's just an issue that arises.

MR. CASTO: And it absolutely is an issue, and it's something we worry about. Are we tolerating less than satisfactory performance at those site because their baseline CDF is low, and that's something we have to pay close attention to.

MEMBER SHACK: Thank you.

MR. CLARK: Thank you very much. Our next presenter is Ryan Lantz.

CHAIRMAN SEIBER: I just might add a comment here on the side that resident inspectors and

region-based inspectors should realize that a lot of people read those inspector reports, and I appreciate that work very much.

MR. LANTZ: Good morning, Mr. Chairman and members of the ACRS. My name's Ryan Lantz; I'm the chief of the Reactor Projects Branch with responsibility for San Onofre and Palo Verde.

My presentation this morning is going to focus on how the Reactor Oversight Process, the ROP, has served us with respect to identifying substantive cross-cutting issue at San Onofre and ensuring that the licensee recognizes the substantive cross-cutting issues and takes effective action to address them.

At San Onofre the first substantive cross-cutting issues were identified through our normal inspection processes in late 2007. We identified two substantive cross-cutting issues.

The first was in human performance in the safety-culture component of core procedures and work practices. The second was in the problem identification and resolution component of failure to thoroughly evaluate problems.

Also then in January of 2008 the NRC identified an additional finding with safety-culture aspects associated with willful violations at San

Onofre.

These insights from those inspection activities in late 2007, early 2008 were really the first NRC's early notice to San Onofre that we were seeing performance deficiencies at the site whose underlying cause was related to safety culture.

In December of 2008 another NRC inspection identified a white finding, and this finding Troy discussed earlier in this presentation. It was a white finding involving work done on a safety-related battery with safety-culture aspects, including poor work instructions and work oversight. This finding moved SONGS into Column II of the action matrix, again as Troy explained.

A year later, which would be typical for one of those white findings -- about a year later the NRC performed an inspection of licensee actions to address that finding, and we found those actions to be inadequate.

Specifically the technical issue of a loose battery connection, that was addressed. However, the safety-culture aspects, including management oversight, procedure quality, work practices in error prevention, as well as conservative decision-making, were not adequately addressed.

A revised oversight process -- Reactor Oversight Process directed us then to keep that white finding open and maintain San Onofre in a Column II status because of those safety culture -- the failure to correct those safety-culture aspects.

The revised oversight process in bullet 3 there provides an increase in regulatory engagement based on duration of the substantive cross-cutting issues at a site.

In the case of San Onofre, I'll go through some brief history. The first two substantive cross-cutting issues have remained open since they were first opened back in late 2007 with new substantive cross-cutting issues added in the subsequent third, fourth, and fifth cycles after that first cycle of assessment.

After the second consecutive cycle when substantive cross-cutting issues remained open, the NRC required the licensee to provide a written response, also to meet with senior management, and conduct root cause evaluations concerning those substantive cross-cutting issues.

After the third consecutive assessment cycle, the NRC required the licensee to perform an independent safety-culture analysis and address the

corrective actions that they took in a public meeting, and then also the NRC performed additional safety-culture focused inspections.

After the fourth consecutive cycle -- so this is continuing now -- after the fourth consecutive assessment cycle with open substantive cross-cutting issues, the NRC held additional meetings with the licensee.

We conducted additional focused inspections on the safety-culture survey itself as well as other problem identification and resolution inspections, and we also performed focus group interviews, and these were a significant number of interviews. And we also conducted an additional public meeting to discuss those safety-culture survey results.

Now, as these substantive cross-cutting issues -- the duration of those continue at San Onofre -- and we are going through another assessment cycle right now where those substantive cross-cutting issues are likely to be decided to be kept open, the NRC has continued to increase our regulatory engagement.

Based on continued inspection findings, allegations that we continue receiving at the site,

including anonymous as well as retaliation claims, and the results of those focus group interviews that Is discussed earlier -- and also a substantiated allegation for retaliation at San Onofre, Region IV issued a chilling-effect letter in March of 2010.

Troy mentioned the chilling-effect letter as one of the criteria for another substantive cross-cutting issue in safety-conscious work environment.

This chilling-effect letter required a formal response from the licensee detailing their action plans and additional actions from the licensee. They will also be required in that letter to formally present to us in a public meeting, which will be scheduled in August or September of this year, their actions and their accomplishments in addressing the substantive cross-cutting issues as well as their safety-conscious work environment at San Onofre.

Also due to the large increase in allegation workload and a need to continue to provide heightened oversight at San Onofre, the EDO approved a deviation to the action matrix for Region IV to conduct additional inspection activity beyond a typical Column II plant.

And going forward the NRC is continuing to use the ROP process to ensure that the licensee is

taking adequate actions to address these substantive cross-cutting issues, as well as other findings that have safety-culture aspects.

Now, that's an overview of San Onofre, and I'd like to open it up now for questions if you have any.

MEMBER SHACK: I'm just curious, on the focus group interviews do you feel you have the expertise in human performance kind of things to do this, or is that something you get technical assistance for or --

MR. LANTZ: The individual who led the first group of focus groups was specifically trained in how to conduct focus group interviews, and then in subsequent focus group interviews -- we actually did two sessions specifically at San Onofre -- he trained other members of our staff to lead those discussions.

And the feedback I got was that the focus group interviews went very well, and we got a lot of valuable information from those interviews. We interviewed approximately 400 people at San Onofre in February of this year and about a hundred in November of last year during those interviews.

MEMBER BLEY: Ryan, I'm not sure if you mentioned it, I don't think I heard it. How did the

findings of the independent safety-culture review align with the concerns that you folks have?

MR. LANTZ: Well, we did an inspection, as I mentioned, after the licensee did their safety-culture survey. Our findings -- our inspection was a little more focused. We -- the licensee's safety-culture survey was a general survey of their entire staff.

Our focus was more directed toward groups that we suspected might have had some issues, and so our safety-culture inspection actually looked a little more negative; it indicated more problems than what their survey did.

MR. CASTO: This is Chuck Casto. Ryan, can you talk a little bit about the differences that we saw between their conclusions -- I think it was like 8 percent of the percent of the people -- and our conclusions of 23 percent, which led to us conducting even more focus groups. Talk about that a little.

MR. LANTZ: That sounds like a very good summary right there. The licensee concluded about 8 percent of the personnel, which they feel is -- which by statistics and surveys that are done across the industry, is about norm -- about 8 percent of the people on a site might have some reluctance to raise a

safety concern for fear of retaliation or adverse action taken against them.

Our inspection and those initial focus group interviews indicated about 23 percent of the staff, a significant difference. And because of that the licensee initiated another self-assessment, which they completed in February, and part of the chilling-effect letter which we issued in March was to look at the results -- for them to present those results to us so that we could then assess the difference.

MEMBER BLEY: And that's coming up.

MR. LANTZ: That is coming up. Correct.

MR. CASTO: This is Chuck Casto. I think I would add it took a little prompting, I think, to get them to do another set of focus groups. We -- they identified 8 percent; we identified 23 percent.

We went in and drilled in a little harder than that to make sure -- to understand the differences between the 8 and the 23 percent. And at the time I don't think the licensee was -- they were not -- they did not pick up on the differences.

So when we went in and drilled a little harder, then they went back in and drilled a little harder to understand, you know, what are we seeing differently than they saw.

And there was some structural differences, as Ryan talked about, about who we talked to and who they -- but that doesn't account for the entire difference.

CHAIRMAN SEIBER: What you're identifying, though, is a cultural issue in that organization. The question then becomes how do a prompt a licensee to modify the culture, because it is not -- sometimes not a simple thing to do; sometimes it's personality driven and difficult to do.

Can you sort of tell me what the next steps are after you made that determination? Just keeping the heat on?

MR. CASTO: Mr. Chairman, that's a very good question. If I might, I'll take first try at this.

This is a unique situation. The reason we bring San Onofre up is because it's a very unique situation in the ROP.

As you identify these substantive cross-cutting issues, there's more an more -- by the procedure there's more and more engagement with the licensee to deal with these problems.

Typically what you see in the industry -- the statistics are it takes about a year to resolve

the issues.

CHAIRMAN SEIBER: Okay.

MR. CASTO: Here at San Onofre we're talking about two and a half, three years, so far. And it's actually still on the increase, and it's probably the only site -- I think it's the only site we've every had in the Reactor Oversight Process that it will have three substantive cross-cutting issues, in all three areas. I think that's right: in all three areas.

So -- and what's happened to us here is by the procedure we've expended -- we've pretty much expended all the tools that are in the Reactor Oversight Process, you know, because normally by now the performance would have turned around. That's typical. Right? So we've expended all those tools that are in that process.

Now, the challenge for us now, or the opportunity, is what next? And as Ryan talked about, we just opened the chilling-effect letter, and we've looking to see what kind of impact that will have on the licensee, but at this point the thought question on the table for the program is what do you do with a licensee that's not seeing risk significant problems?

The white finding was quite some time ago,

and we've not seen risk-significant problems since then, so the challenge for the ROP is what do you with a licensee that has long-standing cultural issues, but they're not manifesting themselves into risk-significant issues.

CHAIRMAN SEIBER: Okay. That's a perfect question. Do you have the answers?

(General laughter.)

MR. CASTO: Mr. Chairman and members, there's two schools of thought on this. One is it is what it is, and if a licensee is inefficient or ineffective in their programs, like you talked before, Mr. Chairman, about how some licensees are better at it than others, and as long as it's not manifesting itself into risk-significant problems, if the licensee is ineffective and costly in their programs and all that, then you just let it go. You keep your attention to it, and you keep vigilance.

And we've added -- we have the deviation memo I think we've talked about or we'll talk about, to add some more resources to watch it, or the other school of thought is we need to change program and do more to escalate to more and more engagement.

I would say that this is a perfect example of what you talked about earlier, Mr. Chairman, when

you said -- when you talked about the dialog and the underlying cultural problems and, you know, the dialog back and forth and supervisor.

The ROP allowed us to keep the white finding open and keep that escalated attention because of the underlying cultural issues. So it is the perfect example. And we've done this before; this is not the first case of this.

CHAIRMAN SEIBER: Okay. Now, the way I see it -- let me interpret what you say, and you correct me as I make mistakes.

You have a bunch of tools in your toolbox -- ROP toolbox, and the implication that I heard from what has been said so far is that in the case of this facility, you've used all the tools.

MR. CASTO: That's correct.

CHAIRMAN SEIBER: So the question is, are there more tools that you could use that currently are not in the toolbox, or are there licensees, no matter how many tools, including your sledgehammer, will remain at a performance level that's not satisfactory?

MR. CASTO: I think that frames -- this is Chuck Casto. I think that frames the dilemma and the two points of view that you have perfectly.

CHAIRMAN SEIBER: Okay.

MR. CASTO: Well, your tools are exhausted really only if they have no more white findings. I mean, if you were coming up with white indicators --

CHAIRMAN SEIBER: There are more tools.

MR. CASTO: -- there are certainly more tools, but you seem to have an unsatisfactory culture, but the performance isn't really reflecting that, at least is the way we're measuring it.

CHAIRMAN SEIBER: The way you identify that you don't have enough tools or your tools aren't effective enough is the licensee may be able to float along for a long time -- and I assume this -- where they don't have a major incident, but the plant is going down, communications deteriorating, leadership -- who knows, maybe some union steward someplace is really the plant manager, as opposed to the person that sits in the office with the good desk.

MR. CASTO: Right.

CHAIRMAN SEIBER: And then all of a sudden something happens.

MR. COLLINS: Now, Mr. Chairman, Elmo Collins. Yeah. I -- just to characterize it, we have the tools. We haven't used them up; we're still engaged with this licensee on that.

What we're seeing is the length of time

where we would have normally have expected to have seen a different performance; we have not yet seen it.

The tools are still engaged and, in fact, in the last six months we've put another tool on them with the chilling-effect letter, so we -- as always, it depends on how are the issues resolved and who makes the change and how they make the change in performance.

And this licensee is working hard at it. We haven't seen the results yet, but they understand, and they are taking action; we're just still keeping a close eye on them till we can see that actual change of performance. We haven't seen it yet.

MEMBER SHACK: Are they getting assistance from industry through INPO?

MR. COLLINS: Yes.

MEMBER SHACK: So they're fully engaged, too.

MR. COLLINS: Yes, they are.

CHAIRMAN SEIBER: Just for the sake of the record, I don't want the record to lead people to believe that when performance is not what it should be, that there is no real tool to solve it. The real tool is shut them down. Okay? And that solves the problem.

On the other hand, in a process where the events are of lesser nature, that tool is too strong to use, and what we're talking about is the balance between your use of tools and the behavior that we're trying to achieve.

MR. CASTO: And the good news with the Reactor Oversight Process is that we believe, and the program has concluded that -- this is Chuck Casto; I'm sorry -- that they're safe to operate. You know, we've concluded that. And what we're working at is a level well below what we would be concerned with on safety. We're into the organization and cultural issues, so as a precursor to a more significant -- risk-significant finding, we're working in an area that we feel comfortable is well below that event level.

CHAIRMAN SEIBER: Okay. I think this is a tremendous dialog that we're having and hopefully -- I'm getting a lot out of it; hopefully the other members are, too, so I appreciate that.

Yes, sir?

MR. COLLINS: Mr. Chairman, Elmo Collins. I'd just like to add a comment. Now that I've heard some of your questions and comments moving into this discussion, I'd just like to touch on the white

finding at San Onofre.

You might be interested -- to me, as we saw this and we inspected it, it's one of the most perfect illustrations of what you described earlier about the technicians and the information and where the information went, where it didn't go and what was done with it or not done with it.

This could -- this specific finding, you might take a look at it, if you're interested. It's a perfect illustration of what you described of communication, information, and meaning, and where it did not go well.

CHAIRMAN SEIBER: Right.

MR. COLLINS: It just stands out to me, so I just bring that to your attention.

CHAIRMAN SEIBER: Tell all of your inspectors I will continue to read their reports in great detail.

MR. LANTZ: Okay. Thank you very much. If there are no other questions, our next speaker is Mr. Ryan Treadway. He's the -- I think -- okay.

Dave, come on up.

MR. LOVELESS: Good morning, Mr. Chairman and esteemed committee members. I appreciate the opportunity to talk with you this morning. My name is

David Loveless. As a senior reactor analyst, I'm the keeper of the significance determination process here in Region IV. I'd like to take the opportunity to address the characterization of some of the more significant findings that we've had in the ROP that we've identified and discuss how this vital program helps us and affects safety at our operating reactors in Region IV.

As one of the major components of the ROP, the significance determination process provides a systematic method of focusing our inspection resources and our management attention on higher-risk issues.

As you probably know, it's a multi-step process. The first step is to identify those issues that are minor and turn them over to the licensee so that they can deal with them through their normal corrective action process.

We then have phases 1 and 2, which provide screenings and risk estimations, with the goal of screening out those that are very low risk significance so that we can focus on the higher risk significant issues.

The issues that are not screened out in phases 1 and 2 go on to a phase 3, and that's where the senior reactor analysts get involved and I start

to do my job.

I tell people that I count for a living, because I deal with probabilities. I tell them that I can't quite count to one.

(General laughter.)

CHAIRMAN SEIBER: That's good.

MR. LOVELESS: But once we evaluate these issues, we're looking at the risk, and we're using that to assist management in determining the level of involvement that the agency should apply to better understanding the issues, better understanding the efforts that licensee is placing on those issues.

And using this approach in the ROP, we've saved a lot of resources over time on issues that have lower risk significance, so that we can focus on the higher items.

I'd now like to discuss some of the issues that are higher in significance, those that we characterize as yellow -- white, yellow, and red.

We conducted a review in advance of this meeting. There were 98 higher-risk issues identified in the ROP since day one, all four regions, specific to reactor safety, within the reactor safety arena.

Of these we found 23 that were related to failed or degraded diesel generators, five that were

related to voiding and safety-related systems; nine that were fire protection findings and at least 11 -- because they overlapped with some of those others -- that specifically looked at loose and improperly terminated electrical connections. And I'm going to talk a little bit about those particular areas.

Some of the findings clearly indicated that the agency is incorporating results of the SDP into the planning for inspections. The region has several methods of providing feedback regarding significant findings to our inspectors.

We have here in the region morning meetings almost every morning, ten o'clock; we sit down and talk about plant status. During those meetings we talk about more significant items that have come up at other plants so that those can be passed along to inspectors so they can incorporate them in their daily inspections.

Also during our mid-cycle and end-of-cycle performance reviews of each reactor we will discuss issues both at those reactors and at other reactors that may apply and create focus areas with four of those licensees, and those focus areas help us ensure that we've inspected the more significant items at those sites.

An example of that -- Is told you there were quite a few diesel generators we found. Quite a number of them applied to vibration-induced failures of the emergency power supplies, and the number of those findings has gone up over the years, and we believe that that's essentially because inspectors are now more aware of them; they're out looking at small leaks or vibration issues or cracks in a fitting that in the past they might have ignored or might have discussed with the licensee said, Well, you know, it's only a half a drop a minute.

And now we're focusing more on those. We're looking at what the failure mode is, quite often before it fails catastrophically, and we're finding that some of those are much more significant, and that's what we're seeing in the significance determination process.

MEMBER BLEY: David, can I ask you a question at this point?

MR. LOVELESS: Sure.

MEMBER BLEY: Because you've raised an issue that's kind of interesting to me; I'm not sure how you folks deal with it, and hearing about the cross-cutting issues earlier kind of raised this.

A particular valve doesn't operate because

it has loose connections because the maintenance wasn't done right, but this valve's in a system that's not important to safety, so it wouldn't have a significant finding, but that maintenance issue could be cross-cutting through other places.

Do you have a way to surface that sort of thing that isn't important because it happened here, but the same practice could mean it's happening in other places?

MR. LOVELESS: We have quite a few methods that we do that. We have informal processes when SRA -- specific in my area, when we find things that we believe could be more important in other areas, we'll send out broadcast e-mails to our inspectors and say, This happened at a specific plant; it could happen under other circumstances; it could be more significant, and you should be looking for it.

We have operational experience program here in the region much like operational experience programs that licensees have, where we take items which occur at other plants and ensure that those are placed into our inspection planning program.

MEMBER BLEY: Do you do anything more analytical; for example, maybe change the likelihood of common cause in your PRA models to see if that

surfaces things because of this kind of issue?

MR. LOVELESS: We have done those types of studies also, both in the significance determination process itself, as well as when we find more generic issues. We typically would do that when we've seen similar behavior at multiple sites, where, again, like you said, they've -- none of them came up to be really significant, but we start to get indication that perhaps the industry's not doing well in a particular area, we will go in and take a look at our models and make some adjustments and see how significant those will be.

Every one of the three in here will tell you that I've been in their office with just such insights.

MEMBER BLEY: See if I overstate this. I'm guessing, then, it would be possible, if you see something that you've identified could be a cross-cutting issue, a particular finding that in and of itself wouldn't have gone beyond green might turn into a white finding because of the cross-cutting aspects of it. Has that happened? Does that happen?

MR. LOVELESS: I'm trying to think if there's a specific example of that. I know we've -- the major way that we look at that within the SDP is

quite often in an evaluation of a finding the failure will be such that operators can recover from that, and we look at how likely an organization is to recover from that as part of the significance determination process.

And in that evaluation I will definitely look at the work practices, the -- how well the operators perform as part of that, and we can adjust based on that.

CHAIRMAN SEIBER: That sort of brings up -- yours is a very good question; I've been thinking about that a little bit.

I recall a situation that turns out it wasn't in a nuclear plant; it was one of those other ones with a smokestack on it.

Let's pretend or imagine that we have an electrician who is generally replacing motors, circuit breakers and so forth, and part of the job is to make splices. And this particular person or perhaps that whole crew is not very good at making splices.

And so you have a failure on something that really doesn't matter worth a hill of beans as far as the safety implication is concerned, but the underlying issue there is they don't know how to make electrical very well.

And so the probability of failure of something important probably, in reality, goes up, but your experience base won't share it as far as risk analysis is concerned.

Is there a way you can take into account the fact that a workmanship issue may degrade a lot of similar components in a plant?

MR. COLLINS: Mr. Chairman, Elmo Collins. I'll take a stab at it. Of course, I'm not a --

CHAIRMAN SEIBER: PRA guy.

MR. COLLINS: -- senior reactor analyst practitioner, but a couple of points: One, and I think I'll get to answer your question. Certainly the deterministic aspects of any issue we take a hard look at and make sure the licensee understands the causes. We're looking for extent of condition; we want to make sure those get resolved.

But that's not the probabilistic risk assessment question that Is believe you're asking, so on that front -- and, David, correct me if I'm wrong -- typically we don't do a lot of adjustments with initiating event frequencies and the models up front for a -- what we think is a broad-based maintenance weakness that the licensee has.

Our models tend to hone in on, Is think,

as David mentioned, the recovery action, or the actions that the licensee needs to take, which is kind of the back end of the -- what do we think the likelihood that the licensee will be able to take the reactions in recovery that they say they need to take.

And we do make adjustments there when we go through the human error probability modeling and factors and understand that.

Now, back to your specific question, Is think we almost had that identical case in Region IV in the early days of the ROP when it came to environmentally qualified splices --

CHAIRMAN SEIBER: Right.

MR. COLLINS: -- at Cooper Nuclear Station, where what we found was -- but there were hundreds of them.

CHAIRMAN SEIBER: Yes.

MR. COLLINS: And that was in the early days of the ROP, and the lesson we learned out of that was, you know, that the actual PRA, the models didn't really get us to everything.

We did a good job of quantifying the risk associated with it, but it didn't seem to get at the issue in terms of significance, and so since then we've changed, the significance determination process,

to add a new appendix -- I forget the appendix --

CHAIRMAN SEIBER: M.

MR. COLLINS: -- for qualitative -- thank you -- so we do have the measure now, the feature in the assessment program, the significance determination program, to take those situations and work them through. It's more qualitative now, but it does get us to -- if we think we're there -- to a more significant item, and we can engage them.

CHAIRMAN SEIBER: So really what you're telling me is my question and concern has been recognized and is covered. And I believe, for example, the example of poor workmanship as a cross-cutting issue, the area where there is a little bit of an open question, which probably, from the standpoint of using the ROP effectively to accomplish the goals is not important, is the fact that the cross-cutting issue may not feed back into the PRA, and you may not have a good risk what that plant is with those cross-cutting issues or there is some basic failure rate assumptions that are built into the PRA analysis.

MR. LOVELESS: I would like to provide an example, if I may. Now that our tools are a little better, we -- one example that I think gets at your question, we had a licensee that had not been

replacing their Agastat relays within the life that was expected.

And the licensee had been looking at the overall population of their relays and saying, Well, our overall population doesn't fail any more than the rest of the industry, and so why does it matter if we don't change out our relays as often?

However, the inspectors, when they found this performance deficiency, went out and pulled out some information, worked with me, and we found that, while that was true in general, if we looked at those that were beyond their qualified life, they were failing at a much higher rate.

And so we were able to take that higher failure rate and put it back into the model for those systems that had the older Agastat relays in there, and we were able to model that and show this broader decision-making type issue.

So we do that when we can.

CHAIRMAN SEIBER: Okay. Thank you.

MR. LOVELESS: Not a problem.

One of the areas that we gained insights in from the significance determination process is the identification of plant performance issues that have not been identified through the licensee's operational

experience programs.

We'd like to see licensees do a better job of evaluating the broader causes of SDP findings, specifically those at other sites.

One example was a turbo charger bracket where the fasteners had failed. Other licensees typically went out and looked at their turbo chargers and said, Are our turbo chargers well mounted?

And once they were satisfied that the turbo charger brackets weren't going to break, they ended their operational experience review. Where we haven't seen evidence of broader looks, even though we have a lot of vibration issues in diesels, we're not seeing licensees go out and say, Well, maybe we'll pull a sample of fasteners throughout our machines and look at them and say, Are they cracking; are we showing signs of vibratory wear?

So we're getting some of those insights through this process.

CHAIRMAN SEIBER: Thank you.

MR. LOVELESS: We have, however, seen quite a number of industry issues that have come out of SDP findings. One example was the verification of the tightness of electrical connections.

There was failed Amphenol connections on

diesel generators at Cooper in August of 2008; loose vital battery connections that would have failed the vital batteries at San Onofre in December 2008; and at Waterford in January 2010.

And we have seen concerted industry-wide effort in looking at how can they resolve those types of problems; how can they go back and make sure that their electrical connections are properly torqued.

Another example: back in April of 2005 Palo Verde found a large amount of voiding in the suction lines of their emergency core cooling system that resulted in a yellow finding.

Since that time we've found a number of other voiding issues, and both the licensees and Region IV are now actively looking for voiding and examples of voiding. Inspectors are out watching pump starts much more critically and looking at the indications of those pumps to see if those indications are showing some ingestion of voids that may not have resulted in a failure, may not have had a problem to begin with.

CHAIRMAN SEIBER: That's actually another area where the actual plant geometry and configuration may effect the PRA results, because PRA looks at component performance as opposed to the geometry that

says the suction line might not be filled with a liquid.

MR. LOVELESS: Certainly.

CHAIRMAN SEIBER: And how do you adjust for things like that?

MR. LOVELESS: Well, we've --

CHAIRMAN SEIBER: Or do you take them into account at all?

MR. LOVELESS: -- mostly looked at the specifics, and we attempt to quantify a failure rate.

CHAIRMAN SEIBER: Right.

MR. LOVELESS: What's the probability of failure? And with some of those, particularly voiding issues, that can be quite difficulty.

CHAIRMAN SEIBER: Well, you can assume that it's failed when you start and see how the plant responds to alternative means, and of course you'll get a different --

MR. LOVELESS: And that's true. And we do -- that's how we start our analyses, is do that bounding look, but quite often that bounding look is showing it's very significant, much more significant than the case really is in actuality.

CHAIRMAN SEIBER: Thank you.

MR. LOVELESS: The last example I'd like

to provide is fire protection and safe shutdown findings.

Region IV inspectors for quite a few years have been leading the agency in looking at certain types of fire protection findings, findings that impact the capability to shut down the plant after a fire. Particularly we see a lot in the procedures and equipment for shutting down the plant outside the main control room, if there's a main control room fire. And these have come up into the higher-risk issues.

We've also found a large number of compliance issues where plants have been using manual operator actions that, by the letter of Appendix R, are not permitted without deviations.

And those would actually affect my models, and my models would be saying, Well, we're going to have an automatic actuation here. And you know as well as I do that an automatic actuation is more reliable than an operator action.

CHAIRMAN SEIBER: Yes.

MR. LOVELESS: So we do make adjustments there.

But these findings and similar findings in other regions have led to the industry initiative NFP 805, where a number of plants are going in and

creating a risk-informed fire protection program so that they're finding what is important in their fire protection program; where do they need to modify the plant, and where is it acceptable to wait for an operator to respond.

We had a lot of questions throughout. Are there any other questions? I know you'd had an earlier question. Did I hit on your --

CHAIRMAN SEIBER: I think you hit on --

MR. LOVELESS: I appreciate it.

Well, the next speaker will be Ryan Treadway.

CHAIRMAN SEIBER: Maybe this would be a good time to take a break, and the schedule calls for a 20-minute break, and let's see if I can see the clock from here. What it is, ten to? We'll come back at ten after.

(A short recess ensued.)

CHAIRMAN SEIBER: The meeting will resume. Thank you.

MR. TREADWAY: Mr. Chairman, subcommittee members, good morning.

As the slide says, I'm Ryan Treadway, I'm the senior resident inspector at the Palo Verde nuclear power plant.

To address the questions the subcommittee has regarding the inspector's day-to-day involvement with safety culture, I thought it would be pertinent to start off by stating that the Reactor Oversight Process works.

I think we heard several examples of that from Ryan and Jeff earlier. It works very well in helping the inspectors identify the underlying causes of human-performance errors and provides the tools necessary to evaluate these causes and identify any significant trends or patters that may affect overall performance.

Speaking as a representative of the resident inspector community, what I would tell you is the day-to-day job requires us to look for human-performance errors that affect plant performance and identify cross-cutting aspects or, more simply, the drivers or the causes of these errors.

Some examples of these cross-cutting aspects that we look for are following procedures, correcting adverse equipment issues, and ensuring an environment for raising concerns exists.

This process all starts as we observe the licensee's daily activities and monitor their actions when equipment issues and/or process and program

issues arise. As we inspect these activities, we look to identify any human-performance errors that have affected performance with more than minor safety significance, and then we look to identify the underlying cause that affected that error.

Periodically we assess and evaluate overall performance and look for any patterns or trends in human performance or their corrective action program.

The main vehicle we have as regulators when we assess performance is the development of these patterns or trends -- we discussed that term earlier as the substantive cross-cutting issues -- that we can monitor and observe how the licensee implements their corrective actions to resolve them to ensure safe operation of the plant.

As a resident inspector, the time allotted for these activity is integrated into the baseline inspection program, and there's more than enough time; it's more than adequate, and so what we do every day is what we look into.

However, I would note that the time for regional inspectors to inspect these trends and patterns is a little bit time constrained. We as residents observe these activities daily, but

sometimes the regional inspectors, when they come in to look at these issues, their limited to some times around the week.

One comment to keep in mind with the Reactor Oversight Process is that it does allow for us to allocate more time and resources if needed when performance declines, as Ryan Lantz brought up with San Onofre.

Typically the resident inspectors have daily dialog with their licensing counterparts, and we discuss these performance issues as they come up. Additionally we have weekly interface meetings with plant management, and we discuss these performance issues, and often we discuss the cross-cutting aspects, the drivers or the causes of these errors, and how or why we determined what those errors and those causes were.

Keep in mind the Reactor Oversight Process emphasizes the use of the licensee cause evaluations to assist us in determining what the underlying cross-cutting aspects are, but ultimately the decision lies with the regulator.

What I have noted as a strength -- and I'll emphasize this; we talked about this earlier with the communication piece -- is during these meetings,

communicating effectively and developing a common understanding of why the oversight process looks at these cross-cutting aspects and discussing with the licensee how the inspectors determined what the drivers or causes were of these performance issues.

Again, I'll stress the decision does lie with the regulator, but the better the licensee understands our process, the more effective their corrective actions and the more effective the measures they take to improve performance are.

MEMBER RAY: Let me ask a question at this point. You talk about talking with licensee management. How do you view the management of the quality organization within the licensee overall organization? Do you see it any differently? Is it simply an aid to the licensee management? How do you view it?

MR. TREADWAY: All right. The specific piece you're asking about is the plant management in general?

MEMBER RAY: No. The quality organization.

MR. TREADWAY: The QA organization?

MEMBER RAY: Well, whatever they call it.

MR. TREADWAY: The quality organization

has a very similar job description. However, a lot of times we see a difference in our approach; we see a difference in the response. I think they could be a valuable tool and an asset to the organization, but sometimes I believe they're overlooked.

I don't know why that exists. I don't know what the underlying causes are, but we see their emphasis in their reports and what they're trying to address with plant management sometimes being overlooked.

And obviously with the NRC we come in there with the eagle on our hard hat, so there's a response that they give us that's required.

MEMBER RAY: I think that's exactly what I've experienced, too. And I'm wondering why it is that the oversight process doesn't work to enhance the role and responsibility of that piece of the organization.

It's as if it doesn't even exist when it comes to the oversight process. Your observation is correct, I think.

MR. TREADWAY: We --

MEMBER RAY: But it seems to me that -- maybe one of the other members of the regional team here want to comment, but it is of interest to me why

those in safety culture and reactor oversight process -- the quality organization doesn't ever seem to be address explicitly, only implicitly.

MR. CASTO: Mr. Ray, this is Chuck Casto. I'll try to take it. I agree with you. The Reactor Oversight Process is performance based, so explicitly we don't look at different organizations like health physics or the quality organization, which is, as you know, a very important role.

And also I would say over the years much of the quality organization function has shifted to the line organization in these licensees. Quality organizations are typically doing the required reviews --

MEMBER RAY: They're just auditors.

MR. CASTO: Right.

MEMBER RAY: And I think, Chuck, that that's -- I'm glad you said that, because I wondered whether you guys realized that that in fact was the case.

It has changed in the last 20 years.

MR. CASTO: Right.

MR. TREADWAY: That's -- all over this industry in a lot of these organizations, even in training. You can see the training department staffs

have been, you know, cut, other than operator training. Typically you'll see operator is pretty robust, but the maintenance training -- a lot of that training, as you know, has been shifted to line organization.

Quality assurance has been shifted to line organization, even a lot of health physics; those staffs are much more smaller than they once were. Much of the work has been shifted to line organizations, so in this area we look at -- and we probably don't concentrate on it enough when we have a finding and we look at the human performance cross-cutting aspect of it, or the organizational cross-cutting aspects and not consider the quality organization.

MEMBER RAY: Well, it does seem to be a trend, to me, and so I'll leave it at that, but, Jack, I just think that there's at least a check I'd like you to do note. From my angle I don't think -- I'll say it from a policy perspective -- that we're doing enough to emphasize the -- I'll call it the traditional role, the long-term role of the quality organizations in licensing management.

MEMBER BLEY: Well, it seems within the structure you folks have described to us that this

could actually come up as a cross-cutting issue in and of itself, and I haven't heard anything that says you've looked for it or you've identified it as such, and I don't know if it actually exemplified itself that way.

MEMBER RAY: It's got to be triggered by something in the ROP itself. And I'm just leaving that for you to think about.

CHAIRMAN SEIBER: Let me add a little bit to that. I go back a long ways. When Appendix B came out, utilities before that didn't have a quality organization.

Appendix B comes out, and you read through it, it looks like you're going to keep a lot of paper. Okay? You have to have documentation for this, documentation for that, and so you form an organization to address Appendix B.

And some utilities encapsulate the quality organization to address Appendix B and then rely on traditional management techniques for matters like workmanship and so forth, and there are some pitfalls in there.

One of them is you aren't fully utilizing your quality organization because you limit them to the Appendix B functions.

The broader implication -- and if management, through its own structure can maintain things like workmanship and all the other cross-cutting issues, that may be okay for that organization.

The question that comes to me in my head as I think about a lot of this is, does -- and this is a good time to ask that question: Does a resident inspector team somehow or other become a part of the plant culture or -- and therefore implicitly expect examples of less-than-excellent in workmanship control of things.

For example, I went to one plant that happens to be in a region other than Region IV who had a pretty good rating, and looked a work site, and it was properly taped off as a contaminated area. All the barriers were up, everything was in the right place. One thing I noticed, though, was that there was a leak on a component of radioactive fluid, and it leaked out, ran across the line, across the clean area of floor, and into a trench.

And I thought to myself, You know, if I was just an ordinary guy, I'd walk right through that, because it's not taped off, and I would obey all the rules and end up contaminated in the process. And so

that's a matter of attention to detail.

I in a lot of organizations would not expect a QA guy to find that. The first person that ought to find it is the workman. And secondly there ought to be enough health physics coverage to detect things like passing materials back and forth across the rope, fluids running in and out, bad boundaries where it doesn't fully described the affected area and so forth.

And so there's two questions: Who's supposed to do those kinds of things and, secondly, the second question is, is there a possibility that the resident inspector team can become a part of the plant culture and start to accept stuff like that? And maybe you can address --

MR. TREADWAY: I think I can touch on that topic. I think the way that our relationship with the plants is set up, we don't want to -- there's a fine line there as an inspector to make sure there's separation.

But indirectly, with the relationships that we establish, I think it's very apparent that you're going to see us be a part of that culture: our interface with the craft level, our interface with management.

We have to be very cautious on how we approach that relationship, but we are going to be a part of that culture and behaviors. It's -- we're out in the field, we walk down plant equipment, we talked with operators and technicians. It's going to happen, and I've seen that effect. And you can see from the outside observer looking in how sometimes that culture change, when one resident team leaves and another one comes in.

CHAIRMAN SEIBER: That's right.

MR. TREADWAY: So it would be hard to ignore the fact that that does occur. I think it's just important to note that the inspector team needs to be cautious on how they approach that relationship to ensure that you don't have a trend or an influence where they're starting to rely on you to solve those problems and see that you are identifying these pieces, and really look at the causes on why their technicians and their HP individuals are not finding these particular concerns.

CHAIRMAN SEIBER: Well, the culture problem, and where the inspector becomes part of the culture, one of the ideas in the early days was to rotate inspectors from plant to plant, and that's a hardship for the inspector because he's got to change

his residence and move, and I would imagine if I were one of them, I would not look forward to all these transitions in my career path.

And so there, you know, good things and bad things. And what you want is the inspectors that are satisfied with their job, not being harassed by the circumstances of it, that can still maintain the independence and the standards that are necessary.

One of the features of the inspector program back when I worked in plants, was inspectors were occasionally assigned to inspect other plants. And, to me, that helped raise the standard to make a uniform standard across the inspector cadre to that, you know, the industry would rise to a level that is a satisfactory level.

But I'd be interested to know if you feel that influence, and it's going to be different for different people because part of it is personality driven, you know, how do I feel about the work that I do, do you see that my question is not particularly relevant because inspectors have their own standard, does the region set that standard for you? Would rotation help? Would it be a bad thing? And do inspections at other plants with -- in teams with other inspectors, does that help bolster the level of

excellence that we're trying to achieve across the industry? That's a complex question, but maybe you can hit parts of that.

MR. TREADWAY: Yes, I'll try to attempt, Chairman. What I heard you bring up earlier, I think, is that a very critical aspect of our job, and that's communication.

CHAIRMAN SEIBER: Yes.

MR. TREADWAY: And so when you look at how that relationship works, not only internal to the resident office, our relationship with the licensee, our relationship with regional management, it's critical to understand how all those aspects are developing. So if you look at how we do our job out there in the resident work place day-to-day, I think -- and you brought up another question earlier I'm going to kind of tie this to, the dilemma of ensuring appropriate leadership.

Well, I think it's paramount that we have objectivity visits where we go and see what other residents and senior residents are doing at other plants. So we have working groups that we can be on to have that opportunity. We have counterparts where we get in and we discuss.

And so, to me, it all kind of falls back

on communication. You have to be willing to reach out, and that's up to management to select people who have those personality characteristics and those behaviors to be successful in that position, because otherwise you could end up on an island, and you're not communicating and you're not getting the influence.

So if you really understand the importance and the significance of effectively communicating issues, getting insights from regional management, I think that is what sets us up for success to watch out for that, the critical piece being making sure you select people to go out on that position who understand how difficult that relationship can be sometimes.

CHAIRMAN SEIBER: Okay. I think it's important that the regional headquarters sets the standard for the inspectors so that the inspectors don't get absorbed into the plant culture, and I think that's happening, and I think there are a enough steps that are being taken not only here but in the other regions, to sort for prevent that. Somebody has thought about this before I have obviously.

And the kinds of things like the moving for an occasional inspection in another plant is a

good thing. There is some kind of rotation or promotional capability within the organization that limits the extent to which an inspector can be absorbed into the plant culture as opposed to the opposite, which is to raise the standard to the regional culture.

And so I think it's sort of there, and I really appreciate your comment and your feelings about that, because it's one of the things that keeps rolling over in my mind as to are we being as effective as we can be.

MR. CASTO: Mr. Chairman, this is Chuck Casto. I'll add to that. I think our objectivity program is robust --

CHAIRMAN SEIBER: Okay.

MR. CASTO: -- and it's serving as well, and we definitely benefit from it. Here in the region -- well, first I'll add that at the resident level, we do rotate resident inspectors at different sites. We have them lead problem identification and resolution inspections and others inspections at other sites. When that team comes in to their site, we try to make sure there's independence in there.

At the regional level, we have the branch chiefs do at least quarterly site visits to walk

around and be with the resident inspectors. And we also have inspection debriefs quarterly when the inspectors -- we do these both for residents and region-based inspectors, but when the region-based inspector comes in, they'll do a debrief with the entire management team basically here in the region.

And the resident inspectors do the same, they give a debrief every quarter to the entire management team here in the region, of which the regional administrator and all the management team participate in, so -- or at least have the opportunity to participate in. So I think that objectivity program is very strong, has all those elements.

And the feedback program from the licensee. We have to do -- the senior managers, when we go on site, and the branch chiefs, have to do trip reports, we have to do site visit observations forms that get fed back to NR, which goes to the Commission. There's an annual report on that feedback process to the Commission.

CHAIRMAN SEIBER: Yes. Well, I'm glad to hear that all the things that I'm used to seeing in the past are still there. And I believe that all these steps are -- I think they're effective as far as maintaining the resident force up to the kind of

standard that you want. And I hope that I never see the day where these processes that you're now using fall into some kind of decline or slow down.

Because the parts of the work is increasing as new plants or new plant construction is starting, plants are getting older, organizations are changing and your view of an organization may be a view of the past as opposed to what's there now, and so there's a lot of change going on. And independence, high standards, and objectivity, to me, are one of the cornerstones of having an effective oversight process.

MR. CASTO: And, Mr. Chairman, if I might, I'd like to answer your other question, and then --

CHAIRMAN SEIBER: Okay.

MR. CASTO: -- go back to something Mr. Ray raised. But the issue about the hand and the hose, or handing things across boundaries and who's -- I think where we're at today with the licensees, they would expect self-identification of that first of all, as I think you talked about, and peer identification, and there's less reliance on third party or independent, you know, identification.

Like I thought about earlier, health physics departments, you know, downsize, they expect

the individuals to report those kind of things, violations themselves, and that, you know, it's all part of a healthy culture.

I would say -- Mr. Ray raised the question about the quality organization. For me, what I think I've observed, and, you know, this is just my observation, is much of that quality function has evolved to what a lot of licensees call organizational effectiveness, or performance management programs.

And typically those programs are the programs that run the corrective action program, and they oversee the corrective action. So the quality organization, a part of its function has shifted to be the processors, or the process people for the corrective action program.

So indirectly we get at that through our findings, which have, you know, a lot of attention to the corrective action program. So sort of by extension when you review the corrective action program, have corrective action program findings, that is giving you insights, performance insights back to the quality program. That's just my observation.

MEMBER RAY: Well, I think that what you said earlier though is also true, which is that -- my thought was really triggered by a comment a long time

ago, which I lost track of the details of now, but it had to do with the region meeting with management. It seemed clear to me you're talking about meeting with the line management at the site.

MR. CASTO: Correct.

MEMBER RAY: And in the past the resident inspector would often meet with the quality organization meetings, which was viewed independently, and say, Why aren't you

MR. CASTO: Right.

MEMBER RAY: -- being more effective as an independent check on safety culture we call it now. But the role of the quality organization is so diminished now that that's kind of a useless exercise because they actually just work for the line management as an auditor like Jack said.

And we're taking your time and ours here now to look at this oversight process or things that might be useful to consider, and I'm just focused on that right now in my mind, which is should the process evaluate -- because nothing has changed in the regulations. Why should this change have taken place that we all agree has? And I think I know, but I'd rather leave that for my own reflections.

Anyway, the upshot of it is that it's

something I would just like to have on the table as we're considering here whether or not the oversight process itself would benefit from some specific focus on independence and effectiveness of the QA organization, as opposed to what you said, looking at the results which are the corrective action program as a metric or measure of the quality of performance.

It's just a thought; I don't want to debate it at all, but I appreciate your feedback. Thank you.

MR. PRUETT: This is Troy Pruett. I don't want to debate it too much either, but I do want to highlight there is a oversight program that do specifically feedback.

MEMBER RAY: I think it's -- yes, that's what I'm asking for.

MR. PRUETT: Me too. And I agree, a lot of what QA did many years ago in terms of the cost department itself resides with -- our inspectors, as part of the baseline, do review self-assessment reports and the QA reports which are done by the QA organization within the ops department.

To the extent that there are issues identified within those reports, we'll pull the string and make sure the organization has followed through on

those recommendations, if they haven't yet --

MEMBER RAY: I understand, Troy, but let me interrupt you and just say, nevertheless, what is not there in what you just said, and I know that's the way it works --

MR. PRUETT: But --

MEMBER RAY: -- is a degree of independence. In other words, the organization that's doing its self-assessment may be very effective, or it may not be, but can you discern that as well as you could if you had an independent entity within the licensee organization doing that assessment?

And, you know, I can almost tell you exactly when this change began, and why it began, and I understand. But it has occurred, so we're all on the same page there. But I would just like to think about that as we're doing what we're doing here and say, to myself at least, is there a more specific role for an independent quality organization within the licensee organization.

MR. PRUETT: I believe there is.

MEMBER RAY: And I realize that that's turning the backwards, but nevertheless, that's where I am.

MR. PRUETT: I believe there is.

Frequently when I ask that question, What has your QA organization done for you with respect to your improvement plan? there's silence on that.

MEMBER RAY: Absolute silence.

MR. PRUETT: Because they haven't engaged --

MEMBER RAY: None of their dadgum business is what a lot of people will say.

(General laughter.)

MEMBER RAY: And I just question that.

MR. PRUETT: And then just to -- there is a cross-cutting aspect with our process as to the adequacy of self-assessment of the program.

MEMBER RAY: But again, it's self-assessment by the line organization, and that's the distinction I'm trying to give here.

MR. TREADWAY: Before we move on, I'd like emphasize what I heard about the resident inspector, importance and significance. As the voice of resident inspector community here, I will stress and emphasize the importance that we have out there and being the eyes and the ears and being there on a daily basis to, you know, be the -- have our fingers on the pulse of what's going on at the utility and communicating that throughout the organization. I believe a lot of it

starts with having people who are put in that position who understand that relationship significantly.

We heard earlier a picture painted at San Onofre about how the inspection process allows us to look at safety culture. I think it's important to move on and illustrate another example. I'm the senior resident at Palo Verde, and if you review over the last five years how the reactor oversight's process and their treatment of safety culture at Palo Verde affected that facility, I think you'll see a noticeable effect for several consecutive assessment cycles very similar to San Onofre.

We saw substantive cross-cutting issues from 2004 to 2007, and we saw them accumulate very similar to the pattern we see in San Onofre. Many of these themes related to poor behaviors and cultural problems that Palo Verde had developed for many years. Additionally, Palo Verde has several equipment issues. And plant trends that indicated the overall health of the plant was declining.

Palo Verde attempted to resolve these concerns, but when our inspectors reviewed their corrective action plans to close out these issues, they determined that Palo Verde's cause evaluations were not fully effective and narrowly focused so the

substantive cross-cutting issues remained open. Additionally, as the years passed and reviews continued, the inspectors determined that Palo Verde did not fully establish monitoring criteria to ensure that corrective actions were effective in improving performance.

Consequently, the NRC had no assurance that Palo Verde's planned corrective actions were sufficient to address the underlying causes of these performance errors. However, as performance declined and safety findings were identified that moved Palo Verde to Column IV, other inspections were performed and actions were taken, including a confirmatory action letter, that allowed the NRC to hold Palo Verde accountable to address these concerns.

Additionally, Palo Verde was responsible to conduct third-party safety-culture assessments of which they employed two methods, one being a general survey to the mass population, and another being a questionnaire which was one-on-one interviews with different people from different organizations. The safety-culture assessments were performed annually and bi-annually, respectively, to monitor the progress at Palo Verde, and the progress they were making in improving the cultural and behavioral concerns or

problems.

As Palo Verde spent time and resources to correct the causes of these performance errors and address the underlying problems with the culture of the organization, the inspectors noted the performance beginning to slowly improve. As the safety-culture assessments continued, they too indicated improvement in performance in various areas across the organization.

So I bring this up as another example. I think you see what some safety-culture issues that were out there. We look at how Palo Verde addressed them, and now we see the full cycle of how the reactor oversight process addressed those issues. And I think it was a marketable success as we saw key management come in and make critical changes to that culture to improve performance.

In conclusion, again I'll stress the reactor oversight process, it works and works very well to help us identify safety-culture weaknesses. It also allows us to take action if we need, but the reality is if the facility in question does not take action to deal with safety-culture weaknesses and perform adequate cause evaluations and third-party safety-culture assessments, the underlying causes and

drivers of these concerns will never be fully addressed and resolves.

That's a difficult reality sometimes to absorb as we move forward with the reactor oversight process. You cannot make somebody do something that they're not willing to do, so when we point this out within the reactor oversight process, it's really up to them to own up to what those underlying causes are and take actions to correct them.

With that, the speaking part of my presentation is concluded, and I'll open it up for any questions that the subcommittee might have.

MEMBER RAY: Actually, any more questions.

(General laughter.)

MR. TREADWAY: Any additional questions?

(No response.)

CHAIRMAN SEIBER: If not, thank you very much. And that was very informative and our heart is with you.

MR. TREADWAY: Thank you.

The next presenter will be Neil O'Keefe.

MR. O'KEEFE: Good morning, Mr. Chairman, and members of the ACRS. I'm Neil O'Keefe. I'm the Chief of Engineers Branch 2. And I'd like to provide you some information on how our engineering

inspections have been improving nuclear safety at some of our power plants.

Our engineering inspections allow us the ability to identify and address complex technical issues, and in some cases latent equipment issues. Many times the sample selection is coordinated based on concerns that are identified through inspections and performance assessment. Each site receives one component design basis inspection, one 5059 mods inspection, and one tri-annual fire protection inspection in a three-year cycle, usually one per year.

These three different inspections give us a different perspective on engineering performance on an ongoing basis. In addition, incense renewal, when it comes up, even though it's not part of the baseline inspection, allows us some insights into engineering performance.

Today I'd like to highlight a few inspection findings. It was a challenge to keep the list short enough to fit in the time available. While inspection -- engineering inspections involve follow -- occasionally involve follow up from events, most of the time they involve digging out inspection findings -- digging out findings that were not readily

apparent. Each of the examples I will discuss involves a team inspection adding value to the -- because they added to the licensee's understanding of their design and licensing basis, and that's improving safety.

Next slide please. Oh, you're already there.

The first example involves a flood protection finding at Fort Calhoun. This is a preliminary finding at this point, and it's preliminarily greater than green safety significance. We found that Fort Calhoun did not understand their licensing basis, and had not updated their design to be consistent with new information that impacted their ability to withstand a flood.

As you may know, Fort Calhoun is situated on the Missouri River and the resident inspectors there had raised the concerns, and that was incorporated in our component design inspection, design basis inspection, and the team identified that there were missing flood seals in the pump house and the auxiliary building, and located -- which were located to low to maximum probable level for the Missouri River, which could threaten virtually all the safe shut-down equipment.

After reviewing the licensee flood response procedures, the team also identified that proceduralized actions that would have added sand bags and increased protection above and beyond the as-built configuration would not have provided adequate protection. In addition, the team identified the licensee had not make necessary plant changes in response to Army Corps of Engineers reports that had identified that the probable maximum flood level could be even higher than the plant was originally licensed to.

In response to this finding, the licensee has corrected the deficient flood seals and improved their flood protection measures. This included a recent drill that was observed by the NRC that implemented the proceduralized actions and demonstrated their improved capability. While the final safety significance of this is not -- has been determined it does have the potential to be greater than green.

We also looked to see if there was an impact at Cooper Nuclear Station, which is farther down the Missouri River, and identified that they were not aware of the new Army Corps of Engineers -- new, it's not really that new -- Army Corps of Engineers

flood reports. We also looked at Waterford, and Waterford didn't have an impact on this. But we've proposed generic communications probably in the form of an information notice to make other sites aware of this.

What's a little unique about it is the -- when a licensee applies for their license and they describe the historical flood conditions that have been known to occur at a site, they'll record actual values. In this case Fort Calhoun did record actual values, and they didn't seem to think that that was something that could change. Whereas when we licensed the plant, we really thought in terms of you need to protect against the hazard. And so even though they had received the report, it just didn't click through the process that they needed to change their design -- or their licensing basis to match the threat.

Yes, sir.

CHAIRMAN SEIBER: I have a question. The Missouri River actually did have a pretty good flood in the recent past. Was the engineering investigation prior to that flood, or after the flood? And the underlying theme of my question is, did the possibility of a major flood prompt people to start looking for the flood protection that the plant had,

or did routine investigation and assurance that the plant design was adequate cause it, before the threat of a flood appeared on the horizon?

MR. O'KEEFE: In this case, the most recent Army Corps of Engineers update was in 2003, I believe --

CHAIRMAN SEIBER: Yes, that's right.

MR. O'KEEFE: -- the licensee put that into their process and asked for a risk evaluation from their PRA group who identified, yes, there was an increased risk and identified some actions that needed to be taken. Those actions apparently didn't go all the way through the process and the residents became aware of the higher threat level and the fact that the licensee hadn't processed into the appropriate processes. And so the component design basis inspection occurred last summer, and there's been a number of follow up since.

So the flooding you're talking about was this spring, I think, so the licensee was already -- had already made the improvements that I just talked about --

CHAIRMAN SEIBER: Yes, I recall there --

MR. O'KEEFE: -- before the flood in the spring.

CHAIRMAN SEIBER: -- being no impact on the plant at all. And so the trigger in this case was the Corps of Engineers' revision of the maximum probable flood that triggered you, and should have triggered the licensee also. Okay. Thank you.

MR. PRUETT: This is Troy Pruett. That was one of the triggers, the 2004 core study, but there were prior trigger where the licensee had opportunity to deal with that when Agency requested evaluations.

CHAIRMAN SEIBER: Okay.

MR. PRUETT: Flooding was looked at, and it was recognized that higher maximum flood than they're licensed for, but they didn't address it very well then. And then there was a core study that came out between the IEEE days and the 2004 study, but they really didn't integrate it in their corrective action process.

CHAIRMAN SEIBER: Okay. Okay. Thank you.

MEMBER SHACK: Now I couldn't quite follow. Has Cooper also followed up on this?

MR. O'KEEFE: Cooper's in the -- Cooper was made aware of it as a result of our findings and our reaching out to them, so they're in the early stages.

MEMBER SHACK: Okay.

MR. O'KEEFE: The flooding we're talking about this spring actually had a higher effect on Cooper, not enough to --

MEMBER SHACK: We saw some pictures there.

MR. O'KEEFE: Yes. Interesting pictures. Pictures are worth a thousand words. But Cooper is in a little bit different geographical consideration because they've got two rivers that dump together and then dump into the Missouri River south of, or down river from Fort Calhoun, but up river from Cooper.

CHAIRMAN SEIBER: Okay.

MR. O'KEEFE: So there is an impact. It's currently not a sizeable -- but Cooper's going to have to put it into their process and go do the right thing.

CHAIRMAN SEIBER: Okay.

MR. O'KEEFE: Okay. The next issue I'd like to talk about is -- has to do with the technical aspects for the white finding, had to do with battery connections at San Onofre. You've already heard about the organizational cultural aspects of this white finding, but as you know, the tools available to us to be able to react to the cross-cutting aspects hinge on the safety significance or the plant impact.

So I'd like to give you a little bit of information on the technical aspects of this finding. And again, this is a good example there the engineering inspection followed something else that occurred first.

So as you heard, or I think you heard this part, the licensee was conducting a weekly surveillance of their battery, they were taking voltage readings and they discovered abnormal voltage readings, and as they investigated they discovered a loose connection. And when we went back into the records, we found that that condition had existed for four years, based on the last time that connection had been disassembled and reassembled.

The residents became aware of it, and through their routine inspections and communications, and a component design basis inspection, that was on site at the time, became involved in it because it was a technical issue that was appropriate for them to inspect. But very quickly, we found out it was a significant enough event. It required its own resources. And so we followed our management directives and proceeded into a special inspection. So it took on a life of its own.

The licensee initially more or less down

played the issue. They did an apparent cause evaluation, didn't think it was a real significant issue. As we engaged and attempted to discuss how significant we thought it was, the licensee attempted to minimize the exposure time down from four years to something much more recent through some testing.

And they actually bolted up a test connection and would slowly loosen it and measure resistances and current capabilities, and attempted to use that kind of test data to say why they thought it would have been a very recent impact on operability instead of something that was considerable.

This illustrates a relatively, unfortunately, common occurrence we have when we have significant safety concerns about something, a finding, and we're attempting to do a significance determination. It's not always about the probabilities and the frequencies and things like that. It may come down to regulatory judgment, engineering judgment, on something like this.

And we know it was probably relatively good when they started, we know it was bad on the day that they found it. The exposure time is the number that weighs very heavily in the actual significance. And so even though they were attempting to do testing,

it eventually became the regulatory requirement -- or regulatory responsibility for us to make a decision.

And so the licensee -- based on the significance that we arrived at, the licensee actually did several root cause evaluations and got very good insights. Many of them were organizational, but from a technical aspect they -- and we also found that they had a surprising history of loose electrical connections, and they were frequently hidden in maintenance procedures and things like that when somebody went in to do a clean and inspect or something like that, found a loose connection, they just tightened it, made a little note, and it really wasn't going into the process. And so it was, you know, through the rigor and depth of the inspection effort that the size of the problem really came to light.

Many of those problems were really minor, they may have no even evolved safety related equipment, but they involved the same maintenance people, the same planner, the same procedural controls that involved safety related equipment. So it ended up being very appropriate to have all the controls and all the things that went with having a white finding.

And it's also why you heard from Ryan that

we haven't closed this finding out yet. The extent of things that they need to go do to change maintenance practices and attitudes and quality of procedures and things are still in progress, and we weren't satisfied when we checked it. And it's important for us to hold this one open, this is the one and only white finding we have right now.

Any questions on that answer?

CHAIRMAN SEIBER: Do you go so far as to trace back incidents that you find in the plant like the tightening connections incidents to see if in the training program for electricians that that material is covered?

MR. O'KEEFE: I'm not sure exactly on this one, but as you mentioned earlier, one of your mentioned earlier, there's kind of a fine line between the quality of the procedure, the depth of the procedure, and the experience and knowledge level, and skill of the craft is the phrase we use, for maintenance workers. And over time the -- sometimes we think, in my opinion, we see kind of a reduced level of skill of the craft, but the procedures aren't changing to kind of balance out.

And to make sure it's always working, you almost have to assume the lowest skill of the craft --

CHAIRMAN SEIBER: Right.

MR. O'KEEFE: -- to ensure that whatever the level of the procedure quality is, is high enough. Occasionally you can do that, but really, as I mentioned, there were a lot of examples and many of them were not a big concern to us until you've got either a pattern or one that impacts that safety significance. In this case, we had a number of lesser cases where there were loose connections, and the depth that we pursued it to -- had to do with the safety significance.

Even though there was an element of like a cross-cutting aspect --

CHAIRMAN SEIBER: Right.

MR. O'KEEFE: -- that is one way you can carry it, but you need that pattern of four or more cross-cutting aspects to be able to put that into that category --

CHAIRMAN SEIBER: Right.

MR. O'KEEFE: -- if they're all green. And so we've got one white finding that really lets you turn on the light, where before that we were addressing it through cross-cutting aspects to where they were more than minor.

CHAIRMAN SEIBER: Okay.

MR. CASTO: Mr. Chairman, this is Chuck Casto, just for clarity. We did look at that in this case, in the San Onofre case, and it was what's known as a tool pouch task, so it was skill of the craft and we did look at that and continue to look at all those issues as part of their root cause assessment and corrective actions for the white finding itself.

CHAIRMAN SEIBER: Okay. Thank you.

MR. O'KEEFE: Any other questions on this?

(No response.)

MR. O'KEEFE: Okay. The next issue was identified during a license renewal inspection. A license renewal inspection, as you know, is kind of an on demand inspection as part of the initial license reviews for license renewal. In Region IV, we're fortunate I guess to have newer plants and so we haven't even got half of our plants into the license renewal -- the first round of license renewal yet, we're still relatively new. But, on the other hand, we're learning a lot from the previous inspections at other regions; we coordinate a lot of with them.

And operating experience is very important. And I'd like to touch operating experience briefly. As you probably know -- I've even heard you talk a lot about operating experience -- there's more

information available in the context of operating experience as ever been available before. The challenge is understanding and using that operating experience. It's easiest to go use it in retrospect after you've had a problem, then you go see if anybody else had that problem first. It's very hard to drink from the fire hose and do something meaningful with the large supply of operating experience that's available.

But you need to -- well, license renewal is flagging some of that operating experience as being age related. Plants that have not yet been involved in license renewal, and even, I'm afraid, some plants that are involved in license renewal, haven't really made that mind set adjustment that says some of these things are really going to be age related, and we need to include that kind of flag so other people can recognize it was age related.

And as you also probably know, the license renewal process requires you to go -- not only learn from your own age related experiences, but others, and so with that challenge that's not always -- currently it's a requirement that's not fully understood and fully implemented I think.

So when we were doing our license renewal

inspection at Cooper, during operating experience type reviews, I go out, what kind of age related issues have you had. We identified the licensee had conducted three rounds of ASME code required inspections of the containment liner and within the torus, it's a BWR, boiling water reactor, Mark 1 containment with a metal lined torus, which is about half full of water. The water chemistry was not great, and they had identified several thousand pits.

They had about 2100 that the code required them to continue to monitor to make sure they weren't getting worse. But the licensee was treating it as if it was an expected condition. The licensee decided that, Hey, the only requirement here was the ASME code and as long as we monitored it, it shouldn't be a problem.

Within the context of license renewal, we were fortunate to be able to look at that issue with that set of glasses and say, You're not managing agent. That is -- erosion is an aging effect, pitting is not a real predictable effect, it makes regulators nervous, you're not sure how fast the pit's going to go through, and you're talking about one of the primary fission product barriers. The licensee, partially because of the fact that they had a 20-year

license riding on it, concluded it was appropriate to go recoat the torus.

CHAIRMAN SEIBER: Great.

MR. O'KEEFE: That decision was really only arrived because on we had to prove to them that their licensing basis had a coating on that torus. You know, it was acceptable corrosion, they had used a coating that was an appropriate corrosion protection, it was a coating that's like zinc impregnated paint.

But, when you looked it up, it was intended for about an 18-year service life. The plant's at about 36 years. And so when you use up the -- and the zinc is something that's going to get used up; when you use up the zinc, you'd expect this type of response.

The licensee wasn't really aware of their licensing basis, they believe that they were doing what the code required, and we were fortunate to be looking at -- with the view of aging management, which is unique. ROP is not normally thinking specifically in aging terms.

So we also -- the timing was also very good because Cooper and a similar vintage plant, Duane Arnold, were in the process one after the other. Duane Arnold had almost convinced the NRC, No, no, no,

we don't have to do that based on how fast the measure of pit growth was and stuff like that. And when we kind of turned it around and said, No, no, no, this is the way it was designed, you're not maintaining the design, Duane Arnold relented and so we had the consequence of also getting Duane Arnold to commit to the same torus recoat.

CHAIRMAN SEIBER: Yes, in case you're interested, you saved us a lot of work --

(General laughter.)

CHAIRMAN SEIBER: -- because when that issue came before us, it was already resolved satisfactorily. So thank you very much.

MR. O'KEEFE: While we're at it, I'd like to thank you because since I said we're relatively new to this, having to stand up to the ACRS subcommittee and then come back and stand up to the ACRS committee provides a little bit of leverage when you're saying, Okay, let's let it ride a little while, you keep thinking about, and they start worrying about the vice president having to stand up in front of the ACRS and answer questions, and $20 million starts to seem kind of a cheap for a 20-year license extension, so.

CHAIRMAN SEIBER: We're a pretty good team, wouldn't you say?

(General laughter.)

MEMBER SHACK: They told us 30 million.

(General laughter.)

CHAIRMAN SEIBER: Yes, well, if they want to spend it, that's okay.

MR. O'KEEFE: Any questions about that?

(No response.)

MR. O'KEEFE: Okay. If not, that concludes my remarks.

MEMBER BLEY: I've got a general question that --

MR. O'KEEFE: Yes, sir.

MEMBER BLEY: -- all we've been hearing about inspections and like, and operating experience, is it typical, or do many of your inspectors have previous operating experience in power plants? Is it half, 10 percent, or do you even know?

MR. CASTO: This is Chuck Casto. Actually, I think it's increased. My intuition is, you know, a lot of our -- heretofore a lot of our inspectors came from the Navy. I mean we all know that. Right. And the Navy program has shrunk, we all know that.

So I would say over the last 10 years we've probably brought in a lot more -- I mean I

started out in construction in a nuclear plant, and was in operations, I've been a licensed operator in three sites. So even that experience has, you know, gone up through the organization.

And so I would say that there's probably more industry experience just anecdotally in the resident staff and in the NRC than there probably has ever been.

MR. CANIANO: Yes, this is Roy Caniano. And, again, I reflected when you asked that question. In the Division of Reactor Safety organization where we have the operating licensing program, I was reflecting, I'm going to guess about 50 percent of our recent hires in that area actually were former operators or chief operators at facilities.

CHAIRMAN SEIBER: I'm finding that the fire hose isn't quite as big if you've been out there a long time, a lot of it's embedded, so it's a good thing to have. Thanks.

MR. O'KEEFE: This is Neil O'Keefe again. And one thing I'd like to add though is, I'm an ex-Navy operator and, you know, it's much easier for me to hire in and train somebody that has experience. But while we've had some training challenges, a decent sized part of my group are straight-out-of-college

kind of guys.

And we've gotten some very interesting insights and question from people that didn't know -- didn't have preconceptions about why they thought that was that way, or something like that. And so we've got great findings that started from somebody who didn't have that kind of experience. So we've got a good mix. I think it works out pretty well.

CHAIRMAN SEIBER: Yes.

MR. O'KEEFE: Okay. If there aren't any other questions, Kelley Clayton is up next, and he'll be talking about how we've incorporated reviews of operator manual actions into engineering inspections.

CHAIRMAN SEIBER: Okay. Thank you very much.

I've never seen trousers like that.

(General laughter.)

CHAIRMAN SEIBER: I think I'll try that.

MR. KELLEY: These are actually fishing pants.

(General laughter.)

MR. KELLEY: Good morning, Mr. Chairman, and fellow ACRS members. I would like to thank you for this opportunity to speak. On behalf of my boss, Mark Haire, he's the Branch Chief for Operations here

in Region IV, he's at an NEI meeting in Region III in Chicago. We're trying to improve -- make some improvements in the operator licensing program and the inspection aspect.

My talk today is about the component design basis inspection and the operations engineering aspects. We go -- as an operations engineer, you go on a CDBI inspection with the team, and in the last three or four years, we've been allowed to enhance that role and provide deeper insights. So I wanted to discuss that.

The component design basis inspection, as Neil O'Keefe had mentioned earlier, is when we verify the initial design basis, and that includes modifications and where they're temporary or permanent to the particular system or component at the plant. It allows us to have a monitoring --

MEMBER SHACK: Is this a 5059 thing, is that what this is?

MR. KELLEY: No, this is the -- this is where you pick high risk, low margin components. It's three-week inspection, it's one of the tri-annuals that's often referred to as part of the three-legged stool: fire protection, CDBI, and PINR. So it's a four-person NRC team, two contractors. We go out for

three weeks on site.

So it's one of the most intensive engineering looks that you'll see at a nuclear power plant. In that inspection we get the ability to monitor the capability of these selected components and operator actions. They're ties to meet the design function or the safety function of that equipment.

So what I've done is I've got three items of improvement that we've done in the operations branch to add more insights on this inspection. One of those is a synergistic selection of the components.

When inspectors that are on the road and they're making their picks for which components to look at, if you make your picks based on not only the risk achievement worth and the Fussell-Vesely numbers, but also the operator actions that are ties to those, so not just initial operator actions, but also recovery actions, if they don't initial work,

What we found is you get a greater insight into the ability of the licensee to ensure those safety functions can be accomplished. This approach has helped Region IV in establishing the risk significance of findings and also has led to improved safety through improvement of procedures and time aspects on time critical operator actions.

One tool that the OPS branch uses, operations engineers, is to identify these risk significant operator actions. Of course there's some in the FSAR, there's usually some in the EOP bases, but when we went to a risk informed agent, a risk informed process, the risk staff at the plants were required to come up with human reliability analysis worksheets.

Now these worksheets provide insights for what the PRA staff is going to take credit for in terms of initial and recovery credit, as I mentioned before, and also how much time they're going to give an operator to complete that particular task, and then when in the sequence it has to be accomplished for the task to be successful.

We use these worksheets when we're out on the road and meeting our inspection requirements to help pick the sample that we're going to look at, and that's led to some knowledge and valuable insight where we've improved safety through various methodologies. One example I'll give of that was several years ago we were at Palo Verde, and the engineering team, it picked station black out generators.

The operation action for station black out

at Palo Verde, because of their complexity, they're a 16-hour company plant, is one operator was assigned to do three tasks that were very lengthy. One of those was getting in a truck and driving three-quarters of a mile to the black out generators, getting them started and running. Another was stripping all the loads off of the emergency busses. A third action was going out to the nitrogen tank farms and getting nitrogen up to a safety related balance like atmospheric balance.

What we found was they could not meet that -- all those three tasks had to be done in one hour, by one individual. It could not be done. And just sitting here discussing it, I'm sure you're thinking, Well, of course it couldn't be done. So after the violation was -- after we had the finding there, they split it out into separate procedures, separate tasks, and by separate non-licensed operators outside the control room so that they could meet that task.

Another area where we have improved is the improving team capabilities. Operations engineers provide a valuable insight to the team because we, in the process of writing exams and watching crews in the simulator exams for bi-annual requal, we get to see more of integrated plant operations that an individual

engineer might not get to see. So we get an insight into that.

That also helps us in terms of providing advice to the engineers on the team. If they're looking at service water, for example, they might not understand, you know, the hierarchy of the procedures and how you start from a system operating procedure all the way to an emergency operating procedure, or an alarm response procedure. So we help with that.

We also use the system training manuals because if you're an engineer and you're trying to do a first cut on a pick for a component, instead of looking at PNID drawing, it's easier to use the one-line drawing that they used in the system description manual which is used in training for operators for their first lectures. So those are very valuable and the operations engineers provide that insight.

One recent example, however, on this that illustrates this point is on a Comanche Peak CDBI. The engineer that was inspecting the ventilation in the battery rooms was having trouble ascertaining how the ventilation actually worked in the battery room. And he was looking at the design basis documents, the calculations, the engineers from Comanche Peak were coming and trying to explain things, and they just

could not figure out exactly how things were supposed to work.

So I was on this team as the operations engineer, and so I lent my help and used the other manuals that we have available, which turned out those are the actual ways that they had trained on them, and for several years the ops people came in and helped provide that insight to actually how they worked. And we ended up having a finding because of that, not only because of the lack of understanding in the engineering department, but because their documents did not support the way the equipment actually functioned.

Well, the last item that I was going to talk about today for improvement is plant procedure use and quality. Of course, on any inspection, if you happen to land on a particular task and you're reviewing a procedure, if it doesn't look like it will actually, then you would have a criteria in five type issue.

This is a little bit different than that though, because when you're on a CDBI inspection as an ops engineer, a lot of times you're looking at the multiple procedures and whether or not the procedure itself in question might work, but if you get kicked

out to a different procedure, the engineer may not be able to take you to that point. Where the ops engineer comes into play is when you're asked about, Okay, what are the other procedures that tie to that. So the ops engineer reviews the quality of these procedures during the course of the inspection and then can help assess if there is a finding there.

An example of that is a recent Diablo Canyon CDBI and the event was alternate water sources to the steam generators. And we ended up having a procedure finding on that, a violation, because -- and this is a non-licensed operator action outside the control room that involves lining up things, you know, that are three or four levels down, you know, so a lot of things have happened, or failed to happen, that require them to be put to task. And so that led to that insight that the procedure in question didn't even cover these actions that were being taken, and so that was the finding.

So anyway, those were the three aspects for operations engineers that we have made improvements on for the component design basis inspection. If you guys have any questions, I'd love to entertain them.

MEMBER BLEY: I have one that's just an

area I' not familiar enough with. There must be some gray area, and I'm wondering if there is or if it's always real clear when you find something that's not right, whether it's a finding or a violation. How does that get decided?

MR. KELLEY: Whether -- well, for issue there is -- the process itself will lend itself to if you have a finding that it does not apply to, for example, Appendix B, that would be something you'd classify merely as a finding. But generally we refer to -- a lot of these issues that I'm saying here I refer to as findings, but many of these were violations.

MEMBER BLEY: If it's a problem in meeting the exact regulation, it's a violation?

MR. KELLEY: Correct.

MEMBER BLEY: And if it's something that's just not quite right?

MR. CASTO: This is Chuck Casto. If it doesn't meet a regulation, then it's a violation.

MR. BLEY: Of the regulation.

MR. CASTO: Of the regulation. If it's -- for sufficiency, if it's an accepted industry standard, and they don't comply with an accepted industry standard, then that would be a finding, for

which there is no violation.

CHAIRMAN SEIBER: I guess I could comment a little bit on your discussion. First of all, I'm pleased with your discussion because it tells me that you have a pretty good idea of what the real scope.

And I also note that when people do a formal analysis of human performance modeling, that sometimes, as a former operator, I can tell you that when things go bad a lot of things go bad all at the same time. And when you model a specific train of operator actions to say, Can you do it in the time allowed or can you not.

Sometimes you forget that you've got 50 annunciators going on trying to decide what do I have to do first, will it require extended attention, for example something that has to be modulated and so forth, and I'm not sure that when we model, for example to model an accident situation where operator action is required to achieve a good outcome, that we take into account all these other things that are happening in the background that perhaps distract the operator, take more time than is expected, and so forth.

And I get particularly concerned, for example, when we discuss things like containment --

the use of containment over pressure to provide suction to a pump string in accident conditions. There's more -- if you're in that situation, there's a lot of things going on, and the operator's got more to do than that. On the other hand, if he has to spend a lot of time to make sure that he's modulating correctly to protect the containment and to continue to provide the suction, the pressure that's required for -- to meet MPSH requirements, it's not all clear to me that an analysis can really pick that up.

And I'd sort of like to hear a comment on those kinds of complex human performance situations, and whether you take that kind of thing into account when you evaluate things.

MR. KELLEY: Well, I can answer for one of those. In the ops branch, when we do the initial exams and requal, we do evaluate a lot of those aspects. Recently we gave an exam at Comanche Peak where they had lost the ability to have some suction for recirc. We killed their ability to use their recirc capability.

It puts you deep into the functional recoveries in a Westinghouse design where you're having to make a pick as the senior reactor operator in the control in charge of whether you're going to

protect containment by keeping your containment spray pumps going and depleting your RWST water source, or are you going to secure those pumps so that you have the water to cool the core. And of course in the Westinghouse design the choice is you cool the core.

CHAIRMAN SEIBER: Right.

MR. KELLEY: So we do evaluate very complex procedures where they have to make some of those choices, and those are pretty taxing scenarios, very stressful. They do have, you know, hundreds of alarms going off during the scenario, and we even give them a reduced crew. During license exams there's three positions, whereas there might be six, seven, eight operators in the control room during the actual operation of the unit. So we do tax those types of things in exams and in these CDBI modules. We pick items that are deep in the EOPs to see if they can accomplish them.

MR. LOVELESS: Thank you. Mr. Chairman, David Loveless again. One of the things Troy mentioned earlier was that we do send risk analysts out to the site when we're doing more complex analyses, and this is exactly the kind of thing that we look at. We had an example, we were looking at a finding where they fail an air line during a loss of

off site power with diesels running, and would end up, if it wasn't corrected, would fail the diesel generators.

The licensee initially came in and said, Well, you know, we've got an annunciated response procedure says send an operator out there, he's going to go out there, he's going to see this failure, he's going to isolate it, and we're going to have plenty air and everything's going to be fine.

But when we actually go out there and start at the very beginning, look at the scenario in detail with the twists and turns that would get you to where the problem is, we find that operator they're sending out is out aligning electrical supplies that the operators in the control room think are higher priority than this little nuisance alarm that they've seen a hundred times before, but this time happens to be telling them that there really is a problem. So we do look at those kind of interactions and how much effort it's going to take in analyzing those type of situations.

MR. CASTO: Mr. Chairman and committee, this is Chuck Casto. I would just add to that that I think the industry's done a lot of work in this area. They've done human factors assessments and they, you

know, they have -- for instance, if you're doing a reactivity change of any type in the industry now, you'll have a dedicated licensed operator through the activity. So I think they've done -- they recognize this and have done a lot to make sure that the burden on the operators is not too severe.

That being said, I think we've had one recent incident where during an event the operators were spread too thin, and it complicated the event. And I think there's a dialogue in the industry right now about the shift technical advisor function, and, you know, we know why that -- we know the history of that. But there's still a dialogue out there of whether that function is needed in today's environment, and I don't -- so, you know, I guess there's different opinions on that, but that's -- I think that dialogue is on the table.

CHAIRMAN SEIBER: Yes, well, good luck on that one.

MR. CASTO: Right.

CHAIRMAN SEIBER: I think that there is a take away for ACRS from this conversation, because let's say a utility does make an application to use containment over pressure as an MPSH source for recirculation pumps, and here comes a human factor --

the stylistic human factor analysis that says operators have to perform some actions, and it's pretty easy and we can show that they can easily accomplish the action in a given amount of time.

I think that, for us, and for NRR, you have to sort of take that with a grain of salt, because that's not the only thing the operator is doing at the time. His emotional level is different in the control room and in actual accident situation than it is in the simulator when nothing really happens if you don't accomplish the task, other than you end up with remedial training, or perhaps a different job. And so I continue to struggle with that, and that's something that I will certainly pay attention to as these issues come before the licensing end of the business, and so I appreciate your insights.

And I feel more comfortable by virtue of what you folks have told me, that in practicality, you are looking at operator response to multiple indications where he actually has to figure things out and decide what to do first, and how much time for this, and how many resources do I need to accomplish all the tasks that I have to do in a given amount of time. So I think that those aspects really reach to

the realism of what it is to run -- to operate a plant. So I appreciate that insight. Thank you.

MR. KELLEY: Thank you. The next speaker is Earnestine Clay.

MS. CLAY: Good morning. Mr. Chairman and fellow ACRS committee members; it's my pleasure to have the opportunity to speak with you today. I'm Earnestine Clay, the Administrative Team Leader in the Division of Resource Management. Today I'm going to speak to you about the Region's safety culture, specifically I want to focus on the Open Collaborative Work Environment and some initiatives that we've done in this area as a result of the Office of Inspector General climate survey.

To highlight a little bit on what the open collaborative work environment involves, it's a environment that encompasses the entire NRC, it involves employees working together, corporate, administrative, legal, technical, all working toward a common goal and mutual benefit. It's an environment that also encourages cooperation, problem solving, and decision making. It is an environment that values diverse views, alternate approaches, and critical thinking, unbiased evaluations, and honesty back on

how decisions are made.

The Agency has named the Open Collaborative Work Environment as the theme for 2010. You will hear me refer to it in my presentation as OCWE, and again, it's the Agency's top theme for this year.

In 2009, the Office of Inspector General conducted a climate survey, and I might say that Region IV did very well on the survey. However, we're very committed to being the best that we can be, so we wanted to take a look at the Open Collaborative Work Environment aspect of the survey. So what we did, we established some focus groups and we conducted them in June 2010, and from the survey, there was some recommendations that came back to management.

And during the survey, the specific areas that we looked at was the -- again, it was the open door policy that all falls under OCWE, and includes the non-concurrence process, the different professional opinions, and also we have something that's called Ask Management, and what Ask Management is, it's just another avenue for our employees to talk to management and ask different questions. It's done electronically. You can find it on our Region IV web page. It's located between our Regional

Administrator, Mr. Collins, and Deputy Regional Administrator, Mr. Casto. So if you're interested in seeing that, that's where you can find it.

We had approximately 55 people participate in our focus group, and we have a various diverse group of people and employees that participated in it. And some of the end results of the survey and recommendations that were made to management, was to increase awareness of the open door policy, DPO and non-concurrence process for administrative staff. We found in the survey that that's an area where some of the staff needed a little bit more information in that area.

We also recommended that we publicize results of a DPO, and that can be accomplished through the website, and also through e-mails, when you have a DPO or non-concurrence. Another area of recommendation was to define the use of Ask Management, and again, specifically what kind of questions would you submit to Ask Management.

The final recommendation was to enhance the implementation of the Open Collaborative Work Environment. And that will be accomplished by having meetings with the staff and making sure they understand, and then also communication between the

manager and the employee, and vice versa, because all that ties in together. That sums my topic on the Open Collaborative Work Environment.

I'd like to emphasize, as a region, that we're also -- we're always interested in hearing what our staff has to say. It's very important to us, and I truly hope that I've enlightened you on our focus on the OCWE for the Agency.

I'll take any questions that you might have. Well, thank you very much.

MEMBER SHACK: Well, no, just don't do that.

(General laughter.)

MEMBER SHACK: Can you give me some of the guidelines you came up with for usage of Ask Management for example?

MS. CLAY: As far as the questions or --

MEMBER SHACK: Yes, what would be the usage of it. You say you need to better define it, well, what definition did you come up with?

MS. CLAY: Well, in some of the -- to better define specifically what types of questions do you channel through that avenue, you know, to further speak on that --

MEMBER SHACK: I mean was it being under-

used, was that the concern, or you --

MS. CLAY: Well, some people wasn't fairly aware of what it was there for, and what type of questions would you channel through that avenue. So we just specifically wanted to enhance it a little bit more so people know what type of questions to funnel through that means, because it is going to management, and it's another way to communicate.

MEMBER SHACK: And the publicized results of the DPO, I mean so this would be you'd essentially post on the website the resolution of the DPO, is that --

MS. CLAY: Absolutely. When there's one, employees would like to see when we have one and what the results are, you know, so just an avenue so they can see them when they occur. You know, we haven't had any recently, but if there is one, you know, they like to know what the results were and, you know, kind of what happened with that.

MR. COLLINS: Mr. Chairman --

MS. CLAY: And that will be through e-mail.

MR. COLLINS: And, Dr. Shack, just to elaborate a little further, on usage of Ask Management, the other half of usage is what we --

MEMBER SHACK: What you do with it.

MR. COLLINS: -- what we do with it --

MEMBER SHACK: Right.

MR. COLLINS: -- and what we come out to the website with. So it's evident that how we're framing our answers and are we being responsive, we've got to do some double checking for ourselves to make sure that the answers are framed -- articulated in a positive, effective manner to be responsive to what's coming in to us. So we're taking a look at that as well.

One of our challenges with publicizing results, DPOs and non-concurrence, we have very few. Yes, we actually -- our real goal is to drive down to solicit, understand the different views way before that to help us, and make it an active part of our decision making process. These avenues are always available in the event -- you know, and we're not saying we're going to agree with people, but we make it a point to understand them.

And my practical definition of objectivity is I'm objective when I understand the other view. I might not agree with it, but I have to understand it, and I need it to help me know that we're making our best decisions that we can make as an Agency. So we

solicit that, those different views, way, way before that to try to bring it up. And then these are always there, these formal processes, if the people want to use it. We encourage it. But somehow when we do the work on the front end, they're not necessarily -- they're not really needed.

MR. CANIANO: Yes, if I could add -- this is Roy Caniano again -- one thing that the region does a fairly good job in, and that is recognizing staff that actually provides their different view. The Agency, of course, has the team player award, and here in Region IV, I believe three or four groups of individuals actually have been recognized over the past year or so with the team player award.

And, again, those are individuals that have come forward, either on a technical issue or what have you, to present their views to us. And like Mr. Collins was just saying, the advantage of that is having all the available information in front of you, and all that data in front of you, so you can make that informed decision.

MS. CLAY: Any further questions?

CHAIRMAN SEIBER: I think it's important that you have a differing professional opinion or differing view program, because what it does is expand

your inspection of the whole problem so that you consider all aspects, which, without a program like that, you may not do. And sometimes the DPO is correct, sometimes it's not, but after you're done, you know you've covered a wide possible breadth of the question and resolved all the issues.

And we occasionally participate in those by making final determinations through our own investigation as to which way it should go, and I've been pleased with the process, and I think the DPO folks, the ones who file them, are satisfied that it's getting a review. If it doesn't get a good review, the program is worse than not having a program at all. And so these are aspects of our culture that I think need reinforcement and building. And I'm glad that it's working here.

MS. CLAY: Now Mr. Chuck Casto is going to come forward and talk about Region IV challenges. Thank you very much.

MR. CASTO: Thanks, Earnestine.

Good morning. I'm Chuck Casto. I work for everyone here in Region IV.

(General laughter.)

MR. CASTO: And I want to discuss some of the region's challenges.

Next slide, Mike.

Some people in the region would probably argue my name should be up there as the first bullet, as the biggest challenge in th region.

(General laughter.)

MR. CASTO: But I wanted to discuss a little bit about the office move, development of staff, outreach initiatives, and our continued focus on oversight of some of our licensees. If you walk around our facilities here, you'll see that we are strapped for space. We've split up conference rooms, we're using space heretofore not used for staff members. As many of the offices in the Agency, space remains at a premium.

So we have -- we've identified a new facility, and it, right now, is under I guess you'd call reconstruction, reconstruction for our move in potentially late in 2010. And that facility is just down Lamar here about a half a mile, so we're to moving far away. You may have seen it on your way in, or someone pointed it out to you, or we can show you where it is.

So we look forward and there's been a lot of work accomplished on that move. It takes a -- it's a huge effort to move an office, any office, and I

believe -- I think after we move we'll be the only regional office in a sole tenant building, which brings new challenges to us we've not seen before, security parking lot, building codes, things that we've not been faced with as a multi-tenant partner.

The next area is staff development. Region IV has a strong commitment to training and developmental programs. For instance, we support Manual Chapter 1245 and 1246 Cross-certifications such as inspectors becoming examiners or reviewers, we encourage internal and external rotational assignments through the Nuclear Safety Professional Development Program, and others in developmental programs.

We provide limited assistance with college tuition and book costs. Overall, this commitment has given us fungible staff embodied with a healthy work attitude and consequently ideal succession planning. And you can see some of that succession planning here in the room today. And we're grateful that we have that -- those processes and those developmental programs, which you all are familiar with and know to be very useful.

The Chairman asked a question of us, if the Region IV staffing experience is appropriate for its mission. This is an area of a challenge for us,

but not unique to Region IV. To accommodate reduced staffing in certain program areas because of diminished oversight requirements, changes in the NRC inspection and licensing program, uncertain projections of new reactor construction and start dates, and changing licensee performance, we have employed matrix management of our resources, conducted targeted approaches to recruitment, and utilized Agency retirement and relocations incentives, and maintained -- to maintain a fungible staff.

So we trade people, we make sure that we use the right people in the right places. We are staffed with the necessary talent and depth to fulfill our mission requirements. We have no reason to expect that our attrition rate of about 3 percent to dramatically change in the foreseeable future. So our challenge in this area is to be vigilant --

Mr. Chairman?

CHAIRMAN SEIBER: No, go ahead --

MR. CASTO: To be vigilant --

CHAIRMAN SEIBER: All I've got is --

MR. CASTO: -- and identify --

CHAIRMAN SEIBER: -- a question.

MR. CASTO: -- upcoming impacts as soon as possible. So that's our job as a management team is

to be prepared. You know, I sort of call it the lottery plan, you know, if somebody wins the lottery and walks out, what do we have in place to replace that skill set and that resource.

CHAIRMAN SEIBER: At headquarters we have an initiative which is basically called knowledge base preservation. And, you know, a lot of the knowledge that's institutionalized, which is in documents, training programs and so forth, helps preserve the culture and continue with the mission of each organization. I'm sure you rely on that to a great extent.

But with the NRC, it was formed at one time, you hired a bunch of people, and we all get older, I'm told, and we tend to retire as a set. And the human resources part of headquarter did plot as to when all these retiree eligibilities will come up, and it turns out it's like waves. You need to hire people, bring them in, but how do you get the old folks to tell the young folks everything they need to know to be able to continue at the highest quality level that we have.

And there are a number of departments in headquarters that are doing that actively, and there are some others who don't seem to be. And all of us,

every organization, particularly technical organizations like this one, rely not only on your policies, procedures, and your math skills and your engineering skills, but on that depth and breadth of knowledge that people accumulate as they progress through your jobs and age, and they preserve it in their minds. How do you get that kind of transfer into the younger work force as they come in?

MR. CANIANO: Mr. Chairman, Roy Caniano again. And I serve as the Region IV knowledge management champion here.

CHAIRMAN SEIBER: Okay.

MR. CANIANO: I think we've got a very extensive program, and I'll use an example that's probably happening about right now. Today our Division Director of Reactor Projects, Dwight Chamberlain, is retiring.

CHAIRMAN SEIBER: Okay.

MR. CANIANO: This is his last day. Actually, one of the tasks he's undergoing right now is he's being interviewed by our Public Affairs officer to talk about his career, some of the experiences that he has had throughout that career so we can share that with others. And we actually have a KM web page that people can go to.

We have a very active program over here. Earlier today you probably heard a couple of times reference to a morning meeting. It's a ten o'clock meeting that we have, it's invited -- it's open to all staff, but one of the things we try to capture on that meeting, in particular, on Monday is an opportunity for the lower staff to sit back afterwards and to be able to ask questions about those events that occurred during the day.

What does it mean when we're in -- and when serious weather conditions say, for example, what actions does a licensee take? We talk about things like that, events that have occurred during the evening. And we capture all that. We actually have seminars which happen about once a month, which we're capturing those on a video and they're placed on our KM web page. And we talk about events, actual experiences that individuals have had in the past, so we can capture that knowledge.

CHAIRMAN SEIBER: Well, I think that's one of the important aspects of missions of all of us. And, strangely enough, even at my age, I learn from the younger folks things that I should have learned before and perhaps forgotten. And so it works both ways.

MR. CASTO: The next area is outreach. We continue to excel in outreach initiatives with external stakeholders, particularly -- I'll just say particularly California. California is a challenge. There's a lot of interested engaged stakeholders in California. So that's -- Mr. Ray may be familiar with that.

(General laughter.)

MR. CASTO: That's continued to be a challenge for us, but we've done well in that area. We also provide support to universities. For instance, Elmo is on the University of Texas, Arlington Engineering Board -- Oversight Board. So outreach is important to us, and we spend a lot of effort and focus on outreach.

Also, and the last item is continue to focus on the oversight of San Onofre and Wolf Creek. What I'd say there is we are focused on those two facilities because those are the two facilities that, you know, are of concern with us with substantive cross-cutting issues and where they're at in the action matrix.

Nevertheless, you know, at one time those facilities were good performers. They were among the best of their peers. So cyclical performance in

industry still happens. So while we're focused on those two facilities, we don't take our eye off of the other facilities as well, and that's the beauty of the reactor oversight program. It forces us not to run with to ball, you know, so that we're not spending all of our resources in one or two facilities, and that we make sure that we keep a balance. It's a relentless process with continuous assessment of these licensees.

And I think we're comfortable where we're at. We have some improvements that need to be made in th reactor oversight process and we continue to do that. We have a reliability initiative right now that the regions are running to make sure -- you know, we talk about consistency, but really what the regions are running now is a reliability program to make sure we're reliable in our outcomes.

You know, you can be consistent and you can be consistently wrong, so the Agency's value is reliability. And we have quite a -- we've embarked on a reliability initiative for the program this year, and I think that's going to be a permanent feature within the reactor oversight process.

In closing, I'd like to thank you for your visit. What you probably don't know is we learned a lot about ourselves in preparation for this visit.

When we were going through the preparations for the visit, it was helpful for us, I think, as a management team to go through that process and talk with the staff and dialogue about these topics. And we learned a great deal about ourselves in preparation for this meeting, and through your questions.

So you've really helped to make us a better organization, and we're fortunate that you came here, and we look forward to future visits. And I'll answer any questions that you.

CHAIRMAN SEIBER: Okay. And I just might comment on that. As I was thinking about your organization, trying to come up with an agenda and questions to ask, and I would provide that information to Kathy, I could see the interaction going back and forth between her, the senior staff engineer, and the region-based people to try to clarify what's going on, and, yes, we can probably answer this and so forth. So to me the benefit of us learning from a meeting like this extends to both sides.

MR. CASTO: Yes.

CHAIRMAN SEIBER: And I certainly appreciate all the effort and all the work that you've gone through, and I feel pretty comfortable with the responses that you've given us, and with your

performance as a region, and particularly the work that resident inspectors and region-based inspectors are doing. So I congratulate all of you for that. And I'm sure I will go back to wherever it is I go next, with a feeling of comfort about Region IV and the job that you're doing.

MR. CASTO: Thank you. It's been a beneficial experience for us. And I'll turn it to Mr. Collins to close.

CHAIRMAN SEIBER: Well --

MR. CASTO: Oh, I'm sorry.

MEMBER RAY: Before -- I don't want to --

MR. CASTO: Are you done?

CHAIRMAN SEIBER: Yes.

(General laughter.)

CHAIRMAN SEIBER: This is a differing point of view.

MEMBER RAY: Well, I hope it's not differing, Jack.

CHAIRMAN SEIBER: Okay.

MEMBER RAY: I just thought I'd give it to Chuck instead of -- I guess I would just, in the spirit of interchange, say that independence of function is, in my opinion, important to look after. And to the extent that you guys wind up effectively

creating the solution to the problems that exist whenever they exist, then you become the owner of the solution, and you become invested in it.

And so I hope that's not a different opinion.

CHAIRMAN SEIBER: No, I agree with that.

MEMBER RAY: And so although it may be frustrating to wait for others to solve their problems, I think it's essential, because believe me, if you wind up solving the problem wherever it is, then you became manager of the solution. And you've lost your independence. And so that's the -- for whatever it's worth, that's the feedback I would give you.

And the other thing, as I said, is I'm concerned by the lack of emphasis I see anywhere in this business anymore on independence of assessment. We mentioned it in the part of the resident inspectors, Jack had earlier, but within the licensee organization as well. I think that's a trend that's been going on for a long time and I find it very disturbing.

MR. CASTO: Thank you.

CHAIRMAN SEIBER: I agree with that 100 percent.

MR. COLLINS: Chairman Sieber, and members of the subcommittee, I guess I'm the only thing between us and lunch, so --

(General laughter.)

MR. COLLINS: -- but I do want to, once again, thank you for making the effort, taking the time to come and hear from the reactor oversight process implementers. It has been our privilege to present to you our work and our experiences here from Region IV. I've appreciated your questions, and the exchange of information we've had this morning has given me insights as well on what we're doing here in Region IV with the reactor oversight process.

As with the entire Agency, we at Region IV take our safety mission very seriously. I'd like to say the NRC is not just another agency, and we in Region IV understand that what we do is not just another job. While today we have focused on the performance difficulties of some Region IV nuclear power plants, it's worth stating, and once again, that the reactor oversight process results show that all 21 nuclear power plants in Region IV are operating safely.

For those examples where there are performance difficulties, the reactor oversight

process inspection and assessment results and performance indicators have engaged on safety relevant performance problems to make sure they're documented and understood. Ultimately it's the correction, the resolution of these items by the licensee that contributes to ensuring safe nuclear power plant operation.

So I appreciate your comments on the solutions and the fixes, but the responsibility for that, to identify it, and the ownership belongs with the operator for safe plant operation.

For Palo Verde there were many performance problems, and we exercised there in recent years the highest level of engagement for an operating nuclear power plant. For those performance problems we've looked hard, we've concluded that they've been addressed very well, and while there's still much room for improvement at Palo Verde, we reduced our engagement, our level of inspection to that essentially of a Column I nuclear power plant in the reactor oversight process.

For San Onofre and Wolf Creek, Callaway and Columbia, the reactor oversight process has us engaged on safety relevant issues. We are continuing that level of engagement as called by the reactor

oversight process. These licensees either understand their performance issues, or they're at least actively engaged in the process of developing their understanding and corrective actions. So we're going to continue our engagement as called for by the reactor oversight process until we see that the performance problems have been corrected.

So it always comes back ultimately to the safe performance -- to the safety performance of the nuclear power plant licensee. And our goal in Region IV is to ensure their inspection and assessment results are an accurate representation of a licensee's safety performance, and that the performance issues are effectively resolved.

So thank you again for your time and for your attention.

CHAIRMAN SEIBER: Thank you very much, sir. And I can say from our visit to Columbia that my impression of the licensee's action and their response to what has been going on there has been very good, and I think that you're achieving your goals at that station also.

So I'm very pleased with the work that the region is doing. I think you're doing a good job, and I pray that you will always do a good job.

What I'd like to do now is ask each of the members if they have any additional comments to make, or questions to ask at this time.

MEMBER BLEY: Well, I'd just like to echo Jack's thanks. It's been a very informative day, and I've learned a lot, and I'm pleased with what I've seen on our whole trip. But no new questions, no. Thanks.

CHAIRMAN SEIBER: Okay. Harold?

MEMBER RAY: Nothing more.

MR. COLLINS: I believe we have some logistics information about lunch.

CHAIRMAN SEIBER: Okay.

MR. COLLINS: We want to share it with the group.

MR. CASTO: Lunch has arrived. For most of the people in this room have ordered from Jason's Deli, and lunches are in a small conference room on this floor, right next to the receptionist station. If you walk out that door and turn right, you walk into that room and there should be a lunch there for you.

For the committee members and the senior executive staff of Region IV, we have reserved a conference room also right next to the receptionist

station for lunch. And for the ACRS staff and Region IV staff, we have reserved the DNMS conference room upstairs on the fifth floor. It's also our back up instant response center, so if something really goes wrong, you want to take your lunch there.

(General laughter.)

MR. CASTO: Thank you

CHAIRMAN SEIBER: And I might mention, we have an hour allocated for lunch today. And so with that I think I will call a recess for lunch time, and, again, thank you very much. This has been an excellent meeting.

(Whereupon, at 12:00 p.m., the meeting was adjourned, to reconvene later this same day, Thursday, July 29, 2010.)

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

(Time Noted: 1:00 p.m.)

MR. HOUGHTON: I very much appreciate your giving us the opportunity to come and speak with you today. We did do a presentation before the PRA subcommittee back in, I believe it was November, where we talked about this process, and we had not yet started our pilot programs. We're now at the other end and we've got of pilots -- four pilots going, and I'll talk a little bit about that.

What I want to talk about is what we see as challenges, three areas that we're focusing on as an industry, we'll talk a little bit about each of those, and then Tim Bowman, who was one of the pilots, will talk about the details of the process at the South Texas plant.

So moving -- let's see; I've got it here -- so, you know, with the BP example of safety culture and, more close to home for me in Washington, DC, is the recent report that came out on the metro system, there's a lot of interest in safety culture and a lot of interest in what are the industries doing about safety culture?

So there are some challenges that we see that are out there. First of all, sort of mea culpa,

our industry has -- we got principles and attributes of safety culture, but we really haven't hit it as hard as we should have. And we're trying to recompense for that now with what we're doing.

Our feeling is that the session findings as the metric for safety-culture issues is a limited data set. It's a good input; we feel it's a limited data set, and I'll explain that.

Our feeling is there is that substantive cross-cutting issues as an approach can add value; however, we feel that it's not as effective as an approach might be. That's not a criticism of it, other than to say I think we do -- we, as an industry, can do better.

We haven't taken advantage of all the data we have out there. We've got a lot of data on the site, which I'll explain in a little bit in a minute. But we've got a lot of things we can look at, at the site, to determine whether we think we have a safety-culture issue.

Next point is that there's no industry-wide guidance on how to approach a safety-culture assessment, or how to do this integrated approach, and that's something that's lacking that we need so that we have an industry-wide consistent way of looking at

safety culture, both in a snapshot, like a one-week self-assessment and survey, and secondly, on an ongoing basis with the site management team.

And finally we have different languages, we're speaking in two different tongues. We've got the INPO principles and attributes, and we've got the NCR's components and aspects, and we really think that we should have one language. It's sort of the historical thing that happened, but there's really no reason, we don't think, why we can't have one set of definitions and language to use.

So these are the three areas -- given the challenges, these are the three areas that we're going after. The first one is to have a consistent approach, and that is in NEI 09-07 fostering a strong nuclear safety culture. I'll describe that. But we want to integrate all the data available, and we want to let -- have NRC have a transparent, independent look at what we're doing.

Secondly, we want a common methodology for conducting surveys and conducting onsite assessments. Right now it's really all over the map. There are all kinds of different approaches to doing this, and we think that, A, that's inefficient, and, B, you really can't compare very well yourselves with your

peers.

And thirdly, we're working with NRC and other stakeholders on the common language. So going to the 09-07 approach -- and I believe all the committee members were provided a copy of the document -- this slide right here really captures what's in that document. And I'll spend just a couple of minutes on that.

Along the bottom, and it may be hard to see, but what you've got here is daily input, and starting on the left-hand side we have the NRC aspects, that's going to be -- continue to be a really valuable part of this program, but it's one part of it.

We're also going to have nuclear safety-culture assessments. These are required by INPO after the Davis-Besse event that each plant conduct a self-assessment every other year. The problem has been that they didn't give any guidance on how to conduct that survey or assessment, and so we're going to provide that to the industry.

Another input are industry evaluations, and that's kind of slang for INPO evaluations, but it could also include American Nuclear Insurers or other industry looks at stations and to look into those

reports and in their findings and conclusions look for safety-culture clues within all of these aspects.

Another is operating experience. And operating experience mostly has to do with hardware, but there are things you can look at and see, in operating experience, to see what might have been the safety-culture causes for that OE.

Also, the QA/QC self-assessment and benchmarking work; also the observation program where managers go out -- the supervisors and managers go out in the field and look at work being done, look at cleanliness and housekeeping, look at doors open, look at flammables. That also plays a role in going into the program.

An employee concerns program. Now I had some challenge about, well, gee, that's really personal information and why have you got that there? Well, the point is that it would not include individual cases by name, but it would include themes that the employee-concerns manager brings forward and looks at what is going on by the employee-concerns manager.

Then we've got performance trends there. All of these are -- can be termed artifacts. They're hardware or they're actual behavioral actions that

take place that you then can try to triangulate into looking at cultural aspects from.

And the way we do that, in addition to the CAP program that problems in all these areas feed to is what we call the nuclear safety-culture monitoring panel. And this is a panel made up of primarily the owners of these inputs, plus some other supervisors and managers, and Tim will give you the specifics of the team membership at the South Texas Project.

So the panel meets approximately quarterly. I think during the pilot program they'd been meeting more often. We're figuring out how to do this. It's not intuitive; you've got to be able to both trend data within a program and put it together across programs.

I think probably the NRC does the same thing in mid-year assessments and annual assessments. You try to put together the whole picture, and that's exactly what this panel is working on doing.

Then you have a site leadership team, or some places call it a senior management team. But it's the site VP, his direct reports, and some other folks that get together quarterly or semi-annually. It depends really on how they feel they're doing.

And this group is the one that is going to

take the -- is going to really take the action. And those actions really include communications efforts to the site and to other organizations. They also are going to have particular responses.

They may change policies, they may change organizational structure, they may provide training. The whole range of things that could be done is the responsibility of the site leadership team to decide on, based on the data they get and based on their integrated view of what's going on at the station.

In terms of outside looks, you know, who's watching the watchman here and this kind of thing, we've got the oversight board, whatever it's called, Nuclear Safety Oversight Board, or -- everybody has one of those. In the pilots they've had an individual responsible for looking at what's going on here. We perceive that this group would be able to -- we know this group would be able to go to the CEO and say, I'm not happy with what the site VP is doing with this date. We need a better look.

The NRC plays a role, obviously a very important role, and frankly, we've got the PINR inspection 71152 up here. And I reread it just recently, and in February a very good revision came out, which I think added some focus on safety culture

which was not there before. And we envision that as an avenue that the NRC can use to look at this process, see if it's working or not working, comment on it, and get that information so we're more transparent with the public about what we're doing here.

MEMBER RAY: Tom?

MR. HOUGHTON: Yes.

MEMBER RAY: On your site leadership team there's a member called the department head responsible for regulatory assurance. I take it that's not the quality program.

MR. HOUGHTON: That is not the quality program.

MEMBER RAY: Why is the quality program guy not a member of the team?

MR. BOWMAN: He is on my team.

MEMBER RAY: I know he is, and I took that for granted, but I'm asking why it's not in the guidance.

MR. HOUGHTON: Because it's missing. I'll put it in there.

MEMBER RAY: Thank you. Make some impact once in a while.

CHAIRMAN SEIBER: But it's really odd to

me that there's such a complete absence of anybody with independent quality program responsibility in any of this stuff.

MR. HOUGHTON: I wouldn't bet my paycheck, but I believe that all four of the pilots have their manager of oversight on the team.

CHAIRMAN SEIBER: That's why you're going to tell us they were so successful, too.

You're going to tell us, when you find out, what the answer to that question is somehow?

MR. HOUGHTON: We will get back to you.

MEMBER RAY: The question being why there's no explicit requirement to the leadership team to include a quality person.

MR. HOUGHTON: The advantage of doing these pilots -- and we did these in the ROP, as Elmo and many others remember, is that we're really looking, experimenting, and we're gathering data and we're making a stronger program as a result of it.

Let's see, I think -- any other questions about this framework here, the -- let me go on to the next -- if not, let me go on to the next slide.

Okay. Where are we with this? We submitted our Rev 0 version to NRR back last year. We went out, looked for a pilot in each of the four

regions. The pilot programs started in November. The plants, for your information, are Hope Creek in Region I, North Anna in Region II, Braidwood in Region III, and STP in Region IV.

In terms of where they stood, Braidwood had a white, so they were in Column II, and they also had a substantive cross-cutting issue in decision making. Hope Creek has been on the verge of substantive cross-cutting issue and procedure adherence, so they weren't lily-white, either, we started. North Anna had had an SCCI that they've just some out of I believe in December.

So I asked STP if they would please get white or get an SCCI so we could show that everybody wasn't lily-white, but they didn't --

MR. BOWMAN: And unfortunately we turned NEI's request down.

MR. HOUGHTON: So what else has happened? We had a meeting yesterday as a matter of fact at NRR where we received comments back from each of the regions who've been observing these panels and leadership team meetings; got a lot of feedback and then we presented from each of the pilots their lessons learned and what they've been getting out of it.

One of the interesting things has been that by having a procedure that wasn't too prescriptive, we let each of the pilots to try to figure out how they would bin issues, their artifacts, and what they would do. And so we are now going to go back, take the four different pilots, and take the best practices and put it into the 09-07 document. So we'll revise the document based on comments and lessons learned.

And then this last item on the page, the Nuclear Strategic Issues Advisory Committee, NSIAC. That is the -- one of the Nuclear Energy Institute's governing groups; it's all the chief nuclear officers, and they're going to be meeting in the latter half of August, and they're going to review what we've done, and they're going to decide what steps going forward we're going to take as an industry on this pilot.

Now, Tim will be giving you a lot more detail on how this worked at a station. Let me shift gears here, if there are no more questions right now, and talk about the second of our three areas that we're working on. And this area is a common methodology for surveys and for onsite assessments.

My first one point is that there was a lot of confusion initially at Palo Verde -- and, Elmo, I

think -- nod your head or disagree with me, but I think there was lot of confusion about what constituted a good survey, what constituted --

MR. COLLINS: There was no template.

MR. HOUGHTON: There was no template, and NRC in fact asked us, NEI, to develop a template that could be used so that the NRC could move from not having to study the methodology to actually looking at the results and how the methodology was applied.

So we picked up that assignment, and we looked at it and we said, You know, it makes no sense to do it just for a third party. Let's do it for any assessment that's required. I mentioned to you that after the Davis-Besse event, INPO required a self-assessment every other year, and then NRC can request an independent safety-culture assessment, or it can call for a third-party safety assessment.

So what we said was, Let's have a common methodology; we can scale this methodology up depending on whether it's self-, independent, or third party, and we can also increase the independence of the membership in that assessment such that in a self-assessment, although it's called self, we have a team of half outside and half inside people, with the team leader and the team executive coming from outside.

At an independent we would have nobody from site on the team, and for a third party we'd have nobody in the company on the team. And, again, we would have a bigger team, and we'd increase the sample size of what we're looking at.

On a self-assessment, we have about a 12-person team, half outside people. We interview about 70, 75 people, that gives us a error margin, if you look at statistics, of about 10 percent with a 90 confidence factor.

So as we were we're looking around for what to do, and we said, Well, what's out there? And we looked and we saw different surveys that people did, we saw different methodologies; we even looked internationally at what the IAEA does. They have an approach called SCART, Safety Culture Assessment Review Team.

And we looked at all of those, and we looked around and we found that the USA Organization, which is headquartered in Kansas City, had a product which we felt could be augmented and strengthened to serve industry's purpose, and we've been working over the last year on doing that.

It consists of a survey which looks at all of the INPO principles and attributes, and then

there's an onsite visit where the interview questions are based on the INPO principles and attributes. And the report comes together with recommendations, conclusions, strengths, weaknesses, et cetera.

The NRC observed three of these -- at South Texas, at North Anna, and at Braidwood -- and gave us a lot of good comments. We're implementing those. The biggest issues that were raised were, you haven't validated your survey in a psychometric way with statistics. Your training is weak, and your scoring of the interviews is inconsistent.

And we've taken those on board, and we're developing some specific planning on how to do these and improving the rigor of the scoring and the questions.

So what's going to happen is we're going to go back in February, and we're going to do one more at Hope Creek to test out whether we've incorporated the enhancements that NRC saw that we needed to do. The validation -- the academic validation is underway right now. What we're doing is we're asking 50 people at each of the 66 sites nationwide to complete a survey, and then that will be looked at in terms of content validity, factor analysis, and some other approaches, such that the survey has the pedigree that

was of concern, as I understand it, initially at Palo Verde.

We also will be looking at being able to collect data nationwide so that this comparisons can be made between plants. USA didn't have that at the time.

A final point on this page is that there's a lot of international interest in this approach. The Chinese are translating into Chinese and are going to start implementing it. The Spanish are translating it, and they're going to use it. There've been Belgians over looking some of these. I think there was one at Palo Verde when they did it a couple of weeks ago.

There's a team going over to Slovakia to do this assessment. Clay Warren has asked that a team come over. The Ukrainians have been visited, and the Russians are interested. So we're on a roll here I think in terms of having a product that really can be used with a lot of rigor.

Any questions about the survey or the assessment?

(No response.)

MR. HOUGHTON: Okay. So we move into the third item, which is the common language, and there's

a good story to tell here, too. The NRC has underway in an effort to have a policy statement on nuclear safety culture, safety culture insecurity, which there's a little bit of a contentious issue, but they're working on that.

They had an industry panel, and by industry, I mean they had everybody -- every industry which has NRC oversight. They had doctors, they had lawyers, they even had an Indian chief from Prairie Island; they had health physics people, they' had union, they had new construction and they had fuel facilities.

So this panel works together to work on a definition and on some traits, some common traits that would apply across all licensees. For instance, a safety-conscious work environment is something that everybody should have whether you're a well logger or whether you're a hospital or whether you're a university. There are universal constants here, and what we need is to speak the same language.

The Commission is going to review this effort in January, and the next step after that is that the individual industries, the power reactors, the hospitals, the universities will go off with their NRC oversight organization -- in our case, of course

NRR -- and with regional support and develop some specific language that we can use so that we're speaking together, so we know what we're talking about.

And we know some things were missing from the INPO principles that didn't call -- for instance it didn't call out procedure adherence and work processes the way it should have. That's a weakness there, but we're convinced that we can come up with a common language so we can all say the same thing when we're talking to each other.

Any questions about the common language?

(No response.)

MR. HOUGHTON: Okay. I think -- let me just conclude -- Tim, come on up -- let me just conclude by saying we take this very seriously. We want to have consistent approaches in the industry; we want strong NRC oversight, and I think we can get there.

And let me let Tim come up and speak to you about how did it work at South Texas plant.

MR. BOWMAN: Thank you.

MR. HOUGHTON: Thank you very much.

MR. BOWMAN: Thank you, Chairman and members. Appreciate you having me here to speak on

this very -- what we consider a very serious subject. I was noticing that during this morning's dialogue the number of times safety culture was mentioned in the dialogue, and then the references to Davis-Besse on the walls in here.

And I think of all the things that we -- that I work with, I think this is one of the more important items that we are working on.

At South Texas we take our safety culture and our culture very seriously. My name is Tim Bowman. I am the General Manager of Oversight. I have responsibilities for quality, regulatory affairs, security, emergency preparedness access and PRA. And I have senior management responsibility for this pilot project, which we volunteered to do when we heard that NEI 09-07 -- that that was going to be piloted; we volunteered for that because we felt like this was value added for us.

I'm going to talk a little bit, just an overview of how we implemented the 09-07 process. I'm going to talk about the assessment that we've done, the nuclear safety culture assessment that was done and some of the information that was gleaned from that. We'll talked about our panels; we've talked about a nuclear safety-culture monitoring panel, the

panel -- the senior leadership team at our station -- it's a the senior management team.

I'll also talk about the involvement of Region IV throughout this that's been provided, and the feedback they've provided us, which has been very, very helpful and which led to some process improvements and things we did along the way; and then talk about -- just give you a glimpse of some of the results of our process to give you idea of some of the items that have come up through this process to kind of lend some weight and validity to how well this process can -- works and can be improved upon.

So let me go ahead. At South Texas, we took the 09-07 process and we wrote a site-specific procedure. So we implemented into the South Texas language, created our own forms, but used the basic process.

We did find out that we had to bin -- and we had to use both quantitative and qualitative information. When you deal with safety culture, you can't just look at a group of trends on graphs from condition reports and things. You have to actually go out and ask people what's going on in the culture, and sometimes you'll get those what we call faint signals out there that need to be addressed.

And so we had to bin those against the INPO principles and attributes that you gentlemen and folks have been handed, the book that's got the eight principles and about 70-something attributes.

As we said, when used all the findings with cross-cutting aspects that we had for the last couple of years was put into this and binned appropriately. And all the actions that came out of this process were tracked in our corrective action program. We either wrote a specific condition report with a problem statement, or we had ones that were lower level; we said, We need to track -- and take care of this one and track the actions we're taking.

I will just say that we had great feedback. I know Troy was there for one of our senior management team meetings, Chuck Casto was there for the first panel meeting, which was quite arduous, and we learned quite a bit from it.

I know we bored him to tears while we were talking about a lot of these subjects, but we were kind of making sausage and doing things as we were going along, and we're a lot better today. And I've actually invited him to come back and see the better process today than it was when we started.

And so -- and also John Dixon, our senior

resident inspector, has been -- sat through several, and he's even sat through the last senior management team meeting we had.

We have continued -- we didn't just stop the pilot after we did our original scope; we continued, and we're going to continue this process till we've finished our three assessments, three quarterly assessments, and we're going to continue on.

We have our -- next quarter will end at the end this month, and we will have our next round of meetings at the end of August and September, because we believe -- we've got so much value out of this we are going to continue with this. This provides us a very good method for assessing ourselves and where we're at on safety culture.

Now, Tom showed you this. This is the STP version of it, and I'll just real quickly talk about some of the differences. Most of it is governance structure, what we call our governance. You notice that his has senior leadership team; mine says senior management team.

Our executive -- we have an executive offsite board; Ellis Merschoff is one of the members. They also provide oversight for this and they provide feedback to our president and CEO, Ed Halpin, who is

one of the members of the executive team.

And I am the leader of the panel -- monitoring panel, but I'm also a member on the senior management team, so I provide the tie between the two panels. And when they ask questions, Well, how did you come to this, I can answer those questions myself and the safety-culture specialist that works with us.

As you can see -- and I'll talk about this -- communications became very vital, both from a strength and from a weakness area that we found. And so we very much worked on how we communicate the results of what we're doing.

The other thing is, is you have a senior leadership team that's a group of managers, and they're the actionable part; they're the ones that take the results of this and they may take action.

So that's kind of how South Texas has kind of taken the NEI 09-07 process and turned it into our own process.

MEMBER BLEY: When you say you have a safety-culture expert, is that a consultant, or is that somebody on your staff?

MR. BOWMAN: Well, there's two. We have now gone to having a full-time equivalent person that is our safety-culture person that oversees the

process. He has some extensive training in organizational development. I wouldn't -- he doesn't have pedigree -- i.e., Ph.D. or anything -- but he has extensive background in human performance and that.

And I'm going to get into it in a minute -- we also -- part of our process, we wrote in an independent organizational development person that does have the pedigree that looks at our information and gives us feedback, because a lot of the comments we had was, How do you that -- you know, if you're in the hen house, how do you know -- you know, what's the difference.

And so we've contracted with an organizational development person that's part of our process who gives us feedback and challenges us on things to make sure that we don't get off track or we're too easy on ourselves.

Which is my second bullet: The monitoring panel consisted of about 11 managers and supervisors from line organizations -- all the major organizations on site are covered by a person involved.

Specifically we asked the -- we have a leadership development person. We saw that this was probably going to -- the outputs of this will probably have a lot of impact on our leadership development

area, and so this leadership development person sits on this, and human resources, because we saw those were other fruitful areas.

As I've talked about, we have an independent consultant, and he's doing a lot of work in Spain and so sometimes he was on telecom, but he had the information, and sometimes he fed the information back after reviewing it. But he is intimately involved with giving us feedback.

We've met arduously once each quarter; sometimes it's three to four hours -- I know Chuck sat through the one that went three hours and we had to come back and meet again the very first meeting. So we spend quite a bit of time looking at this information.

And how this information comes up is all the trends, the indicators, the information comes up from the organizations and the line, from improvement from our quality organization, and they get it prior to the meeting.

And we sit down and mostly we talk about analysis: Are they binned in the right area and what's the clumping, or what are things that look like we need to take action on? Sometimes it's we see three or four or five clumps in an area and say, Hey,

that's looks right; what's the problem statement? Sometimes it's a single item. We say, You know, that really speaks to us; we need to go take some action on that singular event, which is I call the faint signal.

We write a report that makes recommendations to our senior management team about the health of each of those eight principles. We also develop proposed actions, and we also review -- once we got started, we started reviewing the progress on other actions for timeliness and effectiveness.

And I see this group -- as I talk about evolution, this group will probably spend a lot -- start splitting their time more on, Are we being effective and are we being timely with the actions that we say we're going to go our culture.

So that's what the panel does. It meets once a quarter, and I've invited to come back -- we're going to meet again in late August for our next quarterly, and we'll continue that.

The senior management team is led by our site Vice President, David Rencurrel --

Yes, sir. Is there a question? I'm sorry.

-- made up of the general manager levels at our site. We have also added -- I mentioned this

before, we have new build going on. We recognized after the first couple of quarters that we needed to have new-build people represented, because we wanted our safety culture to be consistent across one, two and three, four organizations and so we've now added new-build representation into this -- both of these panels and the senior management team.

I will say that -- this group looks at the recommendations, and I will say that the senior management team is a lot tougher or a lot more concerned about taking action than the panel.

It's interesting that the dialogue -- they read something, they say, Well, maybe this action is not strong enough, or We see something that's interesting that's how it's working; we fed that back to the panel, and the panel is taking that feedback.

The senior management team either agrees or modifies the panel recommendations. In most cases they've agreed. There's been some modifications. There has not be any deletions of actions, and they have actually added additional actions as necessary that they feel like need to be taken to strengthen the items that were noted. And then they agree to who's going to own the action to take care of this.

MEMBER RAY: Tim?

MR. BOWMAN: Yes, sir.

MEMBER RAY: You're on a roll here; I hate to interrupt you but --

MR. BOWMAN: That's all right.

MEMBER RAY: -- I'm going to do it anyway.

During the break you were very helpful in pointing out that in the principles here there appears something that I have yet to get the NRC to put in their system, which is a statement that the system of rewards and sanctions is aligned with strong nuclear safety policies and reinforces desired behaviors and outcomes. I think that's a very good acknowledgment of incentives.

But before you leave this team, have you guys ever discussed the role of incentives in safety culture?

MR. BOWMAN: You're a great straight man for me. Can you -- I think I --

MEMBER RAY: You can't tell me you put this in the presentation.

MR. BOWMAN: It's here.

MEMBER RAY: All right.

MR. BOWMAN: No, let me talk real quick about -- one of the things out of the nuclear safety-culture assessment that was done as part of this back

in January -- one of the negative comments that was cited to us was that our people did not -- we did not communicate well enough for our people to understand the tie between incentives and nuclear safety.

MEMBER RAY: That's very hard.

MR. BOWMAN: And that we -- even though we looked back and we have our incentives -- 60 percent are safety and 40 percent are production reliability, and we actually a gate that if you -- in safety, if you don't make it, you don't get anything, we had not communicated that well enough to people for them to really absorb and internalize that. So that was identified, and we're taking action on that.

MEMBER RAY: That's super. But also I want to say I think your gate and the way you designed it is also -- sounds like you gave a lot more thought to it than a lot of people did.

MR. BOWMAN: Yeah, our gate's a PRA risk-index gate that we monitor, and if we don't do well on the PRA, how we do our core damage frequents of the year --

MEMBER RAY: No production incentive?

MR. BOWMAN: No production incentive.

MEMBER RAY: All right. That's great, but I think the NRC ought to do -- some recognition that

that's necessary, because it is such a huge --

MR. BOWMAN: It's quite an incentive.

MEMBER RAY: -- impact. You better believe it.

MR. HOUGHTON: This is Tom Houghton. I just wanted to add that when this program is up and running, we will have a lessons learned go out to the whole industry of what are learned at these individual items. We probably won't -- we won't attach the label which plan it was, but we'll be able to share this safety culture OE across the industry.

CHAIRMAN SEIBER: Does the industry have any kind of a study that shows the extent to which incentive practices are employed in the nuclear industry?

MR. HOUGHTON: I'm not aware of one.

MR. BOWMAN: I'm not aware of anything either.

CHAIRMAN SEIBER: Yeah, because I'm not -- you know, we did not have things like that, except for executive level, and I hadn't realized until Harold keeps talking about it that it's out there and it's available to employees, and it can defeat safety culture if the incentives are geared to the wrong things.

And I'd be curious to know the extent to which the incentives are used in general as a form of payment to nuclear power plant staff workers below the executive level, just for my personal own information but not necessarily as part of the --

MEMBER RAY: Well, I'm going to keep harping on it, but I do want to acknowledge that NEI put it in here, and I think that's --

CHAIRMAN SEIBER: Well, that tells me that it's out there.

MEMBER RAY: Yes. Oh, yes. Everybody at my plant for 20 years had production incentives, because it went throughout the company and applied to all employees; it wasn't unique to -- it had to do with your business unit's performance, and you couldn't exempt your employees from it; you know, the union would go berserk.

CHAIRMAN SEIBER: Yeah, but a good safety culture demands that you take the safe action as opposed to trying to produce more.

MEMBER RAY: Well, yes. But it has a more subtle effect than just that kind of --

CHAIRMAN SEIBER: It changes the culture.

MEMBER RAY: -- plus and minus decision. Anyway, that was a great answer, Tim.

MR. BOWMAN: Okay. Thank you.

Let me talk about some process improvements that we learned and we implemented along the way. Many of these we got from the Region IV staff and the senior resident. We learned early that we had to bin our information based on attributes and not principles, because where there's eight principles and about 70-something attributes, and throwing all your thing in one principle, you got a big clumping and then you had no way of developing a problem statement.

So that made our meetings go a lot quicker and we got to our analysis a lot better. We improved the definition of our observation types and, you know, how we bucketized things, and we realized our definitions didn't help our team put them in the right buckets, so we worked on that.

We got some real clear feedback the first time that we didn't have enough representation from line management, and we fed that back and we added some additional line management personnel to the monitoring panel.

And that specific feedback I believe that was either from Troy or Chuck or one of you -- both of you all. And then as I said, as we moved along, we

actually added new-build people to this process.

The other thing that -- one of the things Troy gave us back was, Hey, you guys do a lot of -- the tendency is to focus on the negative when you're doing this. Okay.

And so what happened is the first quarter everything was negative. Okay. And then we got -- you know, I think Troy gave us some feedback, say, Hey, there's some good things you're doing that you don't want to miss and you don't want to forget and you don't want to let go away. So make sure that you stay -- keep the positive items in there. So we spent some more time talking about positive, because there were good things that we were doing that we didn't want to lose.

And then one of the key things is we needed to develop a clear communication plan -- strategic plan on what we were doing and what we found and what we were going to do about it. So we have -- we're working with our communications people, and we're going to roll out a very specific strategic communication plan in this coming month, in August, to talk about what our process is, what we're finding, what we're doing, have a website on site where people can go look at the principles, they can look at our

procedures and documents.

Because one of the things our safety-culture assessment also told us was you do all these safety-culture assessments but people didn't know what you learned from it and what was actually took from it. And we weren't doing a really good job with that either. So clearly communication of this is a key role in this process.

MEMBER RAY: Tim, you used the word bucketize, but I think the message I took from that was accumulating these attributes under the principles wasn't as useful to you as accumulating them under some other hierarchical scheme that you found helpful in --

MR. BOWMAN: No, no, what -- there's eight principles, and each principle has a group of attributes, and we tried to do it under principles and ended up with 50 items in a principle, and you go, What do these all mean? And if you tag it to an attribute, then you say, Well, I got five or six in this area. What does this mean?

So it just helps you -- and then you had a problem statement, and you had an attribute that said, Hey, this is what it is; this is the problem statement; this is the behavior I need to go after.

So it really helps --

MEMBER RAY: It wasn't combining attributes across principles.

MR. BOWMAN: No, sir. No, sir.

MEMBER RAY: Okay. Thank you.

MR. BOWMAN: Well, let me give you an example of one that we identified in our first quarterly, and the principle three says, Trust permeates the organization. And what we found was there were some organizations where the people lacked confidence that their concerns would be fully addressed by supervisors.

Now, we first say, well, that sounds a SCCI issue, and then we go out, and we find out, well, no. All these people say they'll bring up safety issues and they'll go to the right people, but what they're saying is, I've had situations in the past where I've brought up pay issues or policy issues or something like that with my supervisor, and I didn't get good satisfaction; I don't think my supervisor knows real well how to deal with these things.

And so we went and we said, Hey, you know, this is an issue we need to go address, because if we don't, this may degrade to the point where a safety concern isn't brought up to a supervisor.

And so what we did was, we took some actions in place to improve supervisory behaviors. Very specifically we had a couple of contract organizations that their leadership wasn't getting the same level of training that ours were, and we went and did that training and raised their training level and did some additional observations and oversight in those areas.

And the reason that we focused on this was because it did have a potential to impact if we didn't take care of it at this low threshold.

And so I think this is one of the things of this process we really want to find those faint signals, those things out there that haven't gotten to the point where, you know, there's really a big safety culture; you really have lots and lots of allegations and things going on and we can address it at this level.

Here's some other results that we've found -- we talked about that -- clearly communicating the relationship between our incentive pay and nuclear safety. At our site --

CHAIRMAN SEIBER: That's great. Thank you. I didn't know it was there.

MR. BOWMAN: At our site everybody at

STPNOC has the opportunity for incentive compensation based on performance. And so we've got to make sure that the incentives are clearly communicated how safety overrides production in what we're doing.

We got some feedback that we needed to get more people visible in the field, and so our senior leadership team -- our station leadership team is working on that particular one.

We found our from principle eight that we needed to improve our strategic benchmarking. We had some gaps in excellence in some of our processes that we were doing and that it would have helped if we'd have been out in the industry looking, and then we would have been able to make some gap changes or close some gaps.

And then I think one of the better things that we learned was there were some relationship issues between some organizations that needed to be dealt with. We had some specific people that weren't working together well, and we got them together and we used our crucial conversations and our facilitative leadership skills, and we kind of got those on the table and improved those relationships. And I think that's one of the other strengths of this.

Let me talk about some conclusions, and

I'll give you an example. You know, this process provides us a way to get the issues identified and action taken.

I've tried, as the oversight manager, for the last three or four years to have an oversight process that did this, and it's been lukewarm successful at best. I do have an independent oversight group that does independent quality oversight, but I wanted something that was more holistic. This provides a way for the station to do this, and I get more involved in it.

This also provides a forum for perception issues, those faint signals, because we've had some really good comments from organizations about issues that they had and we were able to take action.

As far as we're concerned, this is transparent. One, it's auditable. All our actions are in our corrective action program. We've invited -- it's open to our resident, anybody can come sit down through it. We have had one of our -- our former CEO, Joe Sheppard, was asked Ed to sit in the last one. He gave us some candid feedback; he's been working with San Onofre to make -- and it's well defined and repeatable; we've used it at three other stations.

And this process is repeatable across the industry. And I will say the most important thing that I think this has done at South Texas, even though we had -- we felt like we had a good safety culture -- this drives management accountability.

We talk about it, we look at it, we see the data. We're accountable for putting the reports out and taking the action. And I see that's the strength here.

So hopefully I've given you good insights today on where we're at on the safety-culture pilot.

So questions, sir?

CHAIRMAN SEIBER: Well, I think you've said some important things here, and these are things that I need to follow up, because like so many people, my view is very narrow to my own personal experiences, and Harold teaches me that there's more to the world than what I've seen.

And I'm very interested. Are you folks putting together some kind of a report that describes what has happened during this pilot plant process?

MR. BOWMAN: I believe the pilot stations are going to get together, but -- I guess Tom and I, we can talk about how we collect the learnings.

MR. HOUGHTON: That's a good suggestion.

CHAIRMAN SEIBER: Yes, well, I have a two suggestions. One of them is I think it would be a good idea to put that together. And another suggestion is that I think it would be a good idea if I were able to read it.

MR. BOWMAN: Okay.

CHAIRMAN SEIBER: I know that I will keep a copy of this transcript and read through it so that I understand every word that's been said. But obviously this is an outline presentation, does not have all the detail, and there's obviously been a lot of person-hours put into developing the concepts that you have here, which I think are important.

And actually you sort of changed my view a little bit, and I want to learn more about that so that I can say that maybe I ought to really make permanent my change of view.

And so the more I can get learn about what it is you're doing and understand it and appreciate it, the better off I'm going to be.

MR. BOWMAN: All right. Tom, I think we can do that for him.

CHAIRMAN SEIBER: It sounds like you folks are really headed down the right path.

MR. BOWMAN: We believe so.

CHAIRMAN SEIBER: Well, you still have to convince me, but, on the other hand, from what you've said so far and the way that I understand it, it really looks that way to me. Perhaps some of the other members would --

MEMBER SHACK: Well, I just had a question. I noticed that Tim was careful to include his contract organizations here in the safety culture.

Is that true for all the pilots?

MR. HOUGHTON: That's true. The survey instrument goes out by e-mail to every company and every long-term contractor, including the security organizations.

We found that every site we know has an e-mail for all employee and long-term contractors, because they use it for pay and communications and emergency things and so forth. So everyone participates in that. The data looks at that.

And also, when we did the onsite, we pick a sample from each of the organizations on site, including security. The NRC made a good suggestion to us to make sure if there are people that are just back-shift that we have a way of approaching them also. So, yes, we cover everybody who's -- the whole group.

And we've got about a 70 percent -- 65, 70 percent return on the survey instrument, which is pretty darn good, although NRC beat it, I know, in their survey. I think you were up around 90 percent or something in the one NRC did.

CHAIRMAN SEIBER: Now, the mission between security and operations is different. Do you change any elements of your program to recognize the differences in mission between the two organizations?

MR. BOWMAN: No, sir, because I view that the same principle apply to operations equally to security. I know their missions are different, but the principles of --

CHAIRMAN SEIBER: In the conceptual variety, I agree with that. But -- well, I have to think about it a little. Okay.

MR. BOWMAN: But since I have security work as one of my organizations -- and it is a contract organization -- all of those people had the opportunity, were asked to fill out the survey; they were interviewed as part of the 77 interviews on site.

Roy knows well that this is a very touchy subject having to deal with culture and security at South Texas, and when we had this discussion with the other three pilots, it was very -- some had contract,

some had in-house, but security was very clearly -- I'll just say my opinion is safety culture applies to everybody on site equally.

Their missions may be different, but those principles and those attributes apply equally across all the organizations. That's why my incentives for my security contract match the STPNOC people.

CHAIRMAN SEIBER: Well, I think the same management principles apply to security as to the rest of the plant. And basically any organization that exists that has missions, goals, standards and principles -- you know, it's not even just a nuclear thing. It could be government; it could be military, could be a steel mill someplace, chemical plant, food plant; makes no difference.

MR. BOWMAN: Any more questions?

(No response.)

MR. BOWMAN: Thank you very much.

CHAIRMAN SEIBER: I think that was very, very interesting.

MR. HOUGHTON: Thank you for the opportunity to present it.

CHAIRMAN SEIBER: Well, I think that we have reached the end of our agenda. But what I'd like to ask before we start wrapping up is, for the

members, if they have additional questions or information they feel that they would like to have or need to have, now would be a good time --

Dennis?

MEMBER BLEY: Nothing more for me. Thanks. I appreciate the day very much.

CHAIRMAN SEIBER: Okay. Harold?

MEMBER RAY: No, I've weighed in at different points in time, and I have nothing to add.

CHAIRMAN SEIBER: Okay. Bill?

MEMBER SHACK: Is the actual form that you use for the safety culture survey available? I have the 09-07, but I don't have the questionnaire, and I was wondering, is that something that's publicly available or --

MR. HOUGHTON: We can share that with you, be happy to. I might suggest that we send you the survey that's being validated right now. It's got a few more questions than the USA original one, but I'd be happy to send that to you to look at.

MEMBER SHACK: I'd be interested.

CHAIRMAN SEIBER: Any additional questions?

(No response.)

CHAIRMAN SEIBER: Okay. With that, well,

I'd like to say I already knew before I got here that this would be a big effort for the regional staff, and what you've given us is an outstanding product and an outstanding meeting.

I take away from this meeting more than I expected to take away, with better insights and a good level of feeling of comfort that the job's being done properly and effectively.

So I appreciate all the effort that you all have gone to in hosting us and preparing for the meeting and making your presentations, plus our ability to communicate with one another, and certainly this is a major factor in I think our ability to advise the Commission with regard to new regulations, new policies that they might adapt, and in particular the safety culture issue is -- it should have been around for a long time, and in some plants it has been, but that's a key issue, particularly as plants age.

And so I think the effort to pursue it is important, and I think the effort to find a single focus, a single set of definitions, a single methodology, it's not crucial, but it certainly will help us get to the goals faster and to do it with less confusion and less misunderstanding, and if it's done

properly, then the safety culture will go all the way down through the organization, and everyone will be a participant, and that's the goal that we need to achieve.

And so in closing what I'd like to do is thank everyone who has participated in this, and I'm very proud of the work that you do. It makes me proud to be an employee of the NRC.

And of all the different employers that I've had for the last 50-some years, this is the best one. Thank you.

Mr. Collins, would you like to say anything?

MR. COLLINS: Just I appreciate your kind remarks. It's been our privilege to be able to talk to you about what we do here in Region IV. I think we're the true beneficiary, and as I said earlier, we gain from the insights to dialogue to the questions that you asked.

They've been very thought provoking and challenge us to continue to do a better job. We do maintain a strong commitment to safety and hold that up to ourselves as what we're trying to achieve. So thank you very much.

CHAIRMAN SEIBER: And that commitment is

obvious.

So with that, I would like to adjourn the meeting. And, again, thank you very much.

(Whereupon, at 2:00 p.m., the meeting was concluded.)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

REGION IV

Advisory Committee on Reactor Safeguards
Subcommittee on Plant Operations and Fire Protection Meeting

Arlington, Texas

July 29, 2010

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

ELMO COLLINS

Regional Administrator

Region IV Introduction

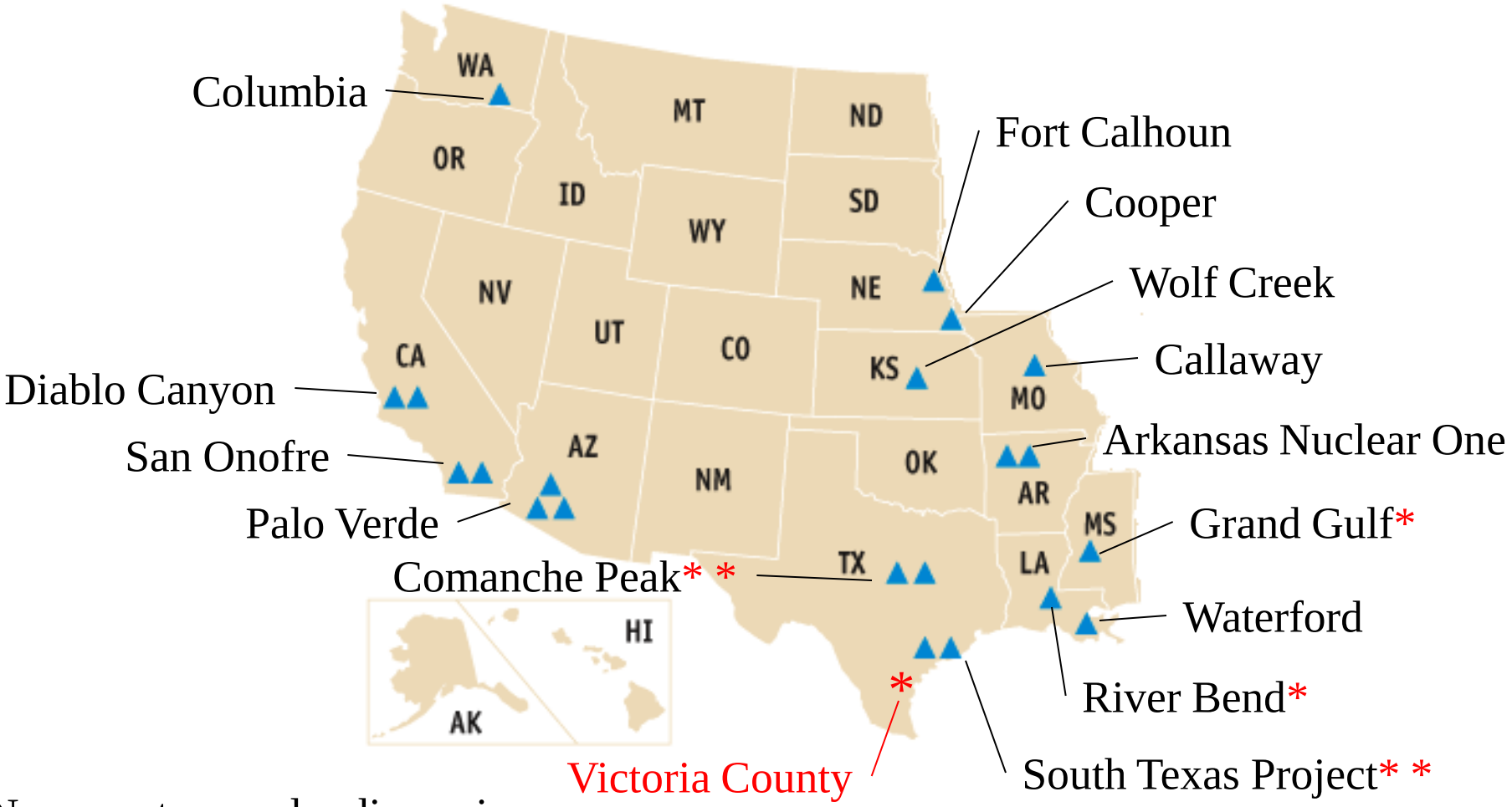
U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Today's Presenters

Tony Vegel	Region IV Plant Performance Overview
Jeff Clark	Reactor Oversight Process Implementation
Ryan Lantz	Reactor Oversight Process Implementation
David Loveless	Assessment of Significant Findings
Ryan Treadway	Plant Safety Culture Assessment Process
Neil O'Keefe	Experiences from Engineering and Operations Inspections
Kelly Clayton	Improving Component Design Bases Inspection Results
Earnestine Clay	Open Collaborative Work Environment
Chuck Casto	Region IV Challenges
Elmo Collins	Region IV Closing Remarks

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Operating and New Reactor Site Map



*New reactors under discussion

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

TONY VEGEL

Deputy Director, Division of Reactor Projects

Region IV Plant Performance Overview

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Region IV Plant Performance Overview

- **Reactor Oversight Process Action Matrix**
  - Column II: San Onofre, Columbia, Callaway
  - Column III: Wolf Creek
- **Crosscutting Issues Greater than 4 Assessment Periods**
  - Problem Identification & Resolution: Wolf Creek
  - Problem Identification & Resolution and Human Performance: San Onofre

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

JEFF CLARK

Chief, Projects Branch E

Reactor Oversight Process Implementation for Declining Plant Performance

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Reactor Oversight Process Maturity

- The Reactor Oversight Process baseline inspection program has been effective in identifying and processing a broad variety of issues, including significant issues.
- The Reactor Oversight Process has evolved over the years, and to maintain reliability, should continue to evolve.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

RYAN LANTZ

Chief, Projects Branch D

Safety Culture Affects on Plant Performance in Region IV

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Safety Culture Impact on Performance

- First safety culture insights in late 2007
- WHITE finding with safety culture roots in December 2008 – Column 2 status
- Reactor Oversight Process provides graduated response

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

DAVID LOVELESS

Senior Reactor Analyst

Assessment of Significant Findings

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Affect of Significance Determination Process on Safety

- Emphasize Systematic Focus on Issues of Significance
- Incorporate Risk in Planning Inspections
- Respond to Findings of Significance (Examples)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

RYAN TREADWAY

Senior Resident Inspector, Palo Verde

Plant Safety Culture Assessment Process

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

NRC's Safety Culture Assessment Process

- Inspection Manual Chapter and Inspection Procedure Guidance including Substantive Cross-cutting Issues
- Reactor Oversight Process Recommended Safety Culture Assessments
- Overview of Safety Culture Assessments within the Reactor Oversight Process

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

NEIL O'KEEFE

Chief, Engineering Branch 2

How Insights from Engineering Inspections are Improving Safety

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Licensee Responses to Engineering Inspection Findings Are Improving Safety

- Flood Protection
- Electrical Issue
- License Renewal Issue

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

KELLY CLAYTON

Senior Examiner, Operations Branch

Improving Component Design Bases Inspection Results

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Operations Engineers Support of Component Design Bases Inspections

- Synergistic Selection of Components/Actions
- Improved Team Capabilities
- Plant Procedure Usage and Quality

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

EARNESTINE CLAY

Administrative Management Team Leader

Regional Safety Culture
(Open Collaborative Work Environment)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Region IV Safety Culture Insights

- Office of Inspector General Climate Survey May 2009
- Region IV Focus Group June 2010

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Focus Group Recommendations

- Increase awareness of Open Door Policy, Differing Professional Opinion, and Non-Concurrence Process for Administrative Staff
- Publicize results of Differing Professional Opinion and Non-Concurrence Processes
- Better define usage of “Ask Management”
- Enhance implementation of the Open, Collaborative Work Environment

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

CHUCK CASTO

Deputy Regional Administrator

Region IV Challenges

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Challenges

- Prepare for office move in late 2010
- Continue to develop staff and managers in support of succession planning while managing full time equivalents
- Continue to conduct outreach initiatives with external stakeholders
- Continue to focus on the oversight of San Onofre and Wolf Creek

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

ELMO COLLINS

Regional Administrator

Region IV Closing Remarks

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Conclusion

- Appreciate the opportunity to host the subcommittee, and welcome meeting with other subcommittees or the full committee
- Reactor successes

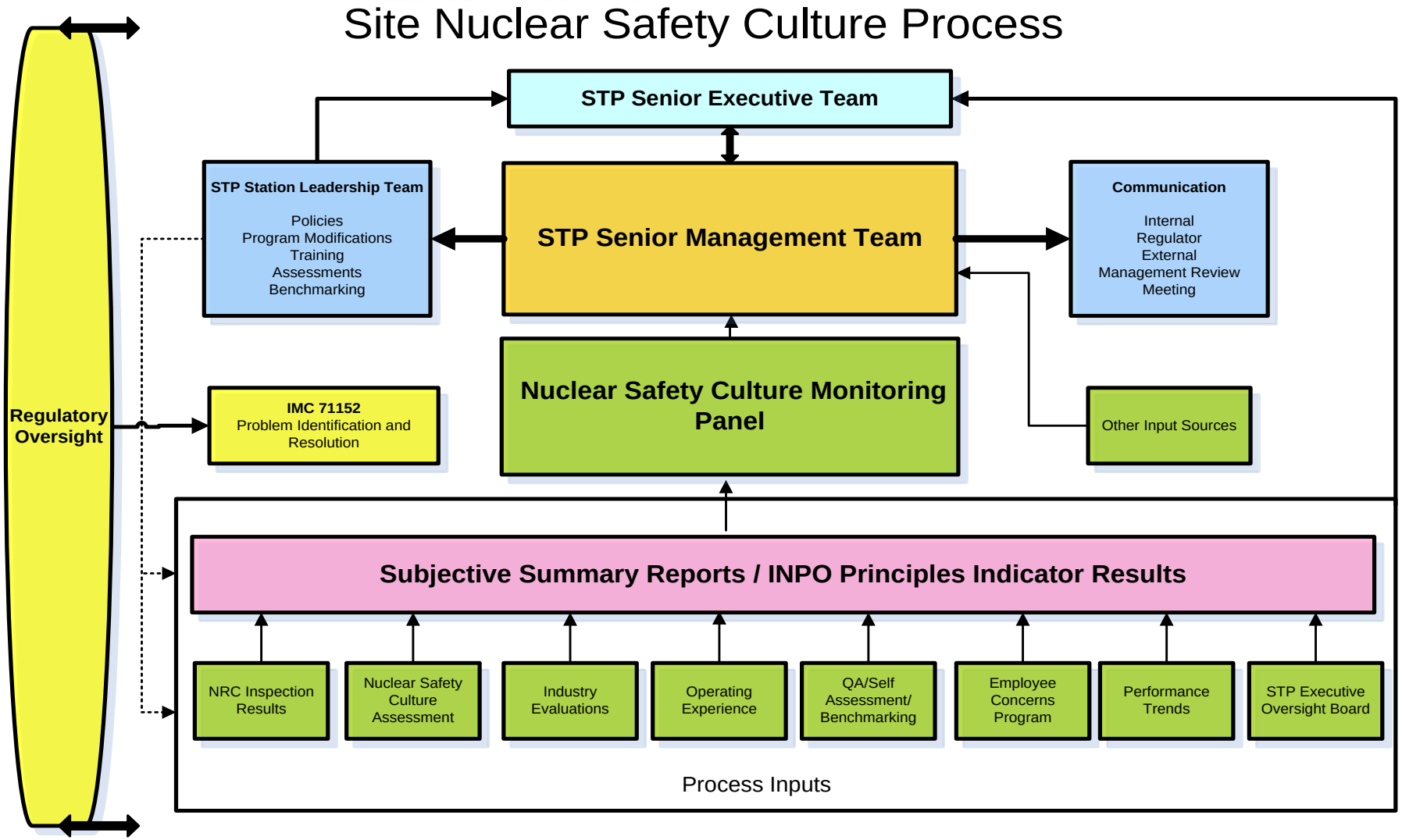
STP Nuclear Operating Company
Nuclear Safety Culture Pilot

Tim Bowman,
General Manager, Oversight
July 28, 2010

Overview

- Incorporated NEI 09-07 process into a station specific procedure
- Binned quantitative and qualitative data against the INPO Nuclear Safety Culture Principles and Attributes
- NRC cross-cutting aspect findings are one of the data inputs
- Actions are tracked in the Corrective Action Program
- Independent oversight built into the process
- NRC observed meetings from first two assessments
- Completed three (3) quarterly assessments

The Process


Site Nuclear Safety Culture Process
Regulatory Oversight
STP Senior Executive Team
STP Station Leadership Team
Policies
Program Modifications
Training
Assessments
Benchmarking
STP Senior Management Team
Communication
Internal
Regulator
External
Management Review
Meeting
IMC 71152
Problem Identification and Resolution
Nuclear Safety Culture Monitoring Panel
Other Input Sources
Subjective Summary Reports / INPO Principles Indicator Results
NRC Inspection Results
Nuclear Safety Culture Assessment
Industry Evaluations
Operating Experience
QA/Self Assessment/ Benchmarking
Employee Concerns Program
Performance Trends
STP Executive Oversight Board
Process Inputs

Nuclear Safety Culture Monitoring Panel (NSCMP)

- Consists of department-level managers plus leaders in leadership development and human resources
- An independent organizational development consultant either participated or provided feedback
- Met for three to four hours each quarter to review data
- Made recommendations to the Senior Management Team (SMT) regarding the health of each Principle
- Developed proposed actions to address areas of concern
- Reviewed progress of previously identified actions

Senior Management Team

- Led by the Site Vice President
- Reviewed and dialogued on the NSCMP recommendations
- Provided additional insight and clarification
- Agreed to or modified NSCMP recommended actions
- Created additional actions as necessary
- Assigned ownership of actions

Process Improvements

- Binned process inputs directly to an INPO Nuclear Safety Culture Principle and Attribute.
- Improved the definitions of observation types.
- Added members to Nuclear Safety Culture Monitoring Panel including member from new build organization.
- Ensured “positive” process inputs were included and communicated to learn from successes.
- Development of a communications plan for the process and results.

Results

Improvement Opportunity identified against Principle 3, *Trust Permeates the Organization.*

- Personnel in some organizations lacked confidence that some concerns would be fully addressed by their supervisors.
- This issue did not deter individuals from expressing nuclear safety concerns in each organization.
- Actions were put in place to improve supervisory behaviors that build trust.
- This issue had the potential to impact the safety culture if not addressed at a low threshold.

Results

- Communicate more clearly to station personnel the relationship between the STP Incentive Compensation Plan and nuclear safety
- Improve manager and supervisor visibility in the field
- Improve strategic benchmarking
- Resolve relationship issues between organizations that are hindering station performance

Conclusions

- **The Nuclear Safety Culture process:**
  - Provides a method to identify nuclear safety culture issues and take action
  - Provides a forum for perception issues (i.e., faint signals) to be addressed
  - Is transparent
  - Is well-defined and repeatable
  - Promotes management accountability for nuclear safety culture

Fostering a Strong Nuclear Safety Culture

NUCLEAR ENERGY INSTITUTE

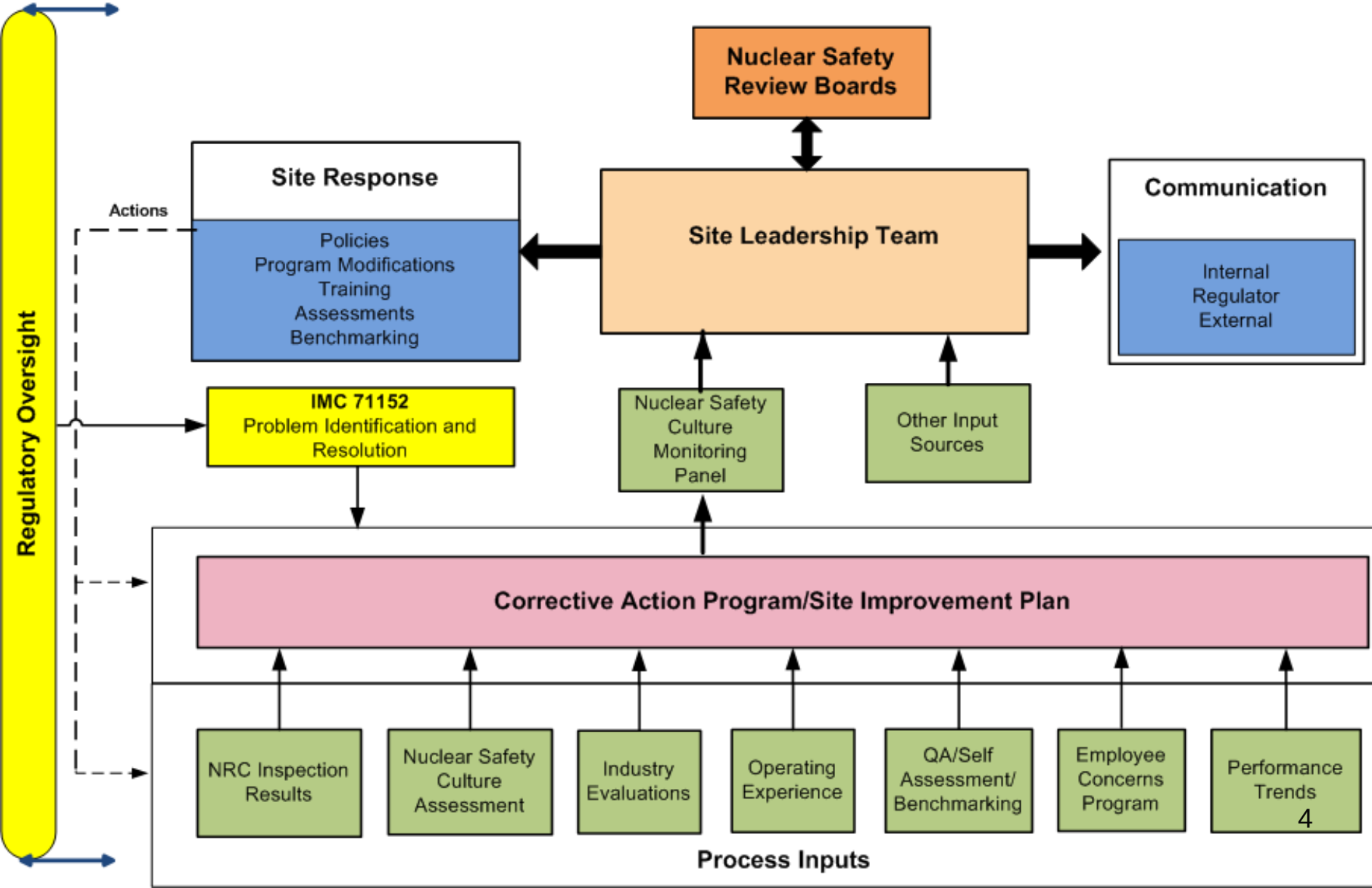
Challenges with the Existing Situation

- Industry is responsible but has not taken the lead
- Inspection findings, with cross-cutting aspects, are a very limited set of data
- Substantive Cross Cutting Issues are not effective
- Industry has not taken full advantage of all the possible indications of safety culture weakness
- There is no industry-wide guidance for conducting safety culture assessments
- Different NRC/INPO terminology creates confusion

Industry's Objective: Achieve A Strong Nuclear Safety Culture

1. Establish a consistent, holistic approach (NEI 09-07) for sites to use in assessing safety culture on a continuing basis
   - Integrate all data available
   - NRC provide appropriate and transparent oversight
2. Establish a common methodology for conducting surveys and snapshot assessments
3. Work with NRC and other stakeholders to develop a common language of nuclear safety culture

Site Nuclear Safety Culture Process



Status of Industry Initiative

- NEI 09-07 submitted for NRC endorsement
- Pilot program at four stations with NRC observation
- July 28 meeting discussed NRC observation and pilot lessons learned
- NEI 09-07 will be revised based on NRC comments and lessons learned
- NSIAC to consider initiative in August

2. Establish a common methodology for conducting surveys and snapshot assessments

- NRC and industry dissatisfied with 95003 safety culture assessment at Palo Verde
- NEI agreed to develop industry guideline applicable to self, independent and third party assessments
- Utilities Service Alliance methodology chosen and upgraded as the Nuclear Safety Culture Assessment
- Piloted at three sites with NRC observation
- Conducting validation study of survey instrument and will conduct an additional NSCA at Hope Creek
- Considerable international interest in USA approach

3. Common Language

- Office of Enforcement has been working with stakeholders to develop a policy statement and traits of nuclear safety culture
- Commission review expected in January
- When approved, individual nuclear industry sectors will develop more detailed language to describe the attributes or aspects of culture applicable to their sector
- Power reactors are the lead sector

U.S.NRC

United States Nuclear Regulatory Commission

Protecting People and the Environment

Presentation to the ACRS

Draft Final Interim Staff Guidance (ISG) DC/COL–ISG–016, Compliance with 10 CFR 50.54(hh)(2) and 10 CFR 52.80(d)

April 8, 2010

Earl Libby
Mark Caruso

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Purpose

- Describe Interim Staff Guidance for compliance with 10 CFR 50.54(hh)(2) and 10 CFR 52.80 (d) – DC/COL-ISG-016

- Discuss the resolution of public comments on the draft ISG.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Regulatory Requirements for New Reactors

- Section 50.54(hh)(2) requires licensees to develop and implement guidance and strategies intended to maintain or restore core cooling, containment and spent fuel pool cooling capabilities under the circumstances associated with loss of large areas of the plant due to explosions or fire, to include strategies in the following areas: Fire fighting; Operations to mitigate fuel damage; and Actions to minimize radiological release.

- Section 52.80(d) requires a COL applicant to submit a description and plans for implementation of the guidance and strategies to maintain/restore core cooling, containment, and spent fuel pool cooling capabilities following the loss of large areas of the plant due to explosions or fires as required by 50.54(hh)(2).

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Commission Guidance in the Statement of Considerations

- Protection at a level consistent with operating reactors is adequate.
- Strategies and guidance implemented by operating reactors may be acceptable.
- Strategies and guidance for new reactors should account for specific design features, including those made in compliance with the aircraft impact assessment rule (10 CFR 50.150).
- NRC will inspect implementation 10 CFR 50.54(hh)(2) at new reactors.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Guidance for Operating Reactors

- NRC developed Phase-1 guidance document for operating reactors in February 2005.
  - Phase 1 includes strategies for fire fighting, operations to mitigate fuel damage and minimize radiological release.

- NEI developed a guidance document for operating reactors in December 2006 in support of implementing Section B.5.b of the ICM Order.
  - NEI 06-12, “B.5.b Phase 2 & 3 Submittal Guideline,” Rev 2, December 2006.
  - Phase 2 includes specific measures to restore/maintain cooling of fuel in the spent fuel pool.
  - Phase 3 includes specific measures to restore/maintain cooling of fuel in the reactor vessel and to minimize radiological release.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Guidance for New Reactors

- NEI developed a new Chapter (Chapter 4) to address application of NEI 06-12 to new reactors.
  - NEI also developed a new template (Appendix D) to address requirements of 10 CFR 52.80(d) for COL applicants.
- NEI submitted NEI 06-12, Revision 3 to NRC for endorsement on July 17, 2009.
- Interim Staff Guidance (ISG) issued for comment in October 2009.
  - It endorses the use of NEI 06-12, Revision 3 for new reactor applications.
  - It also includes additional guidance/clarifications.
- NEI submitted comments on ISG-016 to NRC on November 20, 2009.
- Comments on the draft ISG have been addressed by staff in the final ISG.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Summary of ISG Content

- Applies to new reactor applicants and licensees only.
- Endorses use of NEI guidance for new reactor applicants and licensees.
- Articulates staff positions on issues not addressed in NEI guidance.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

NEI Guidance (NEI 06-12 Rev. 3)

- Fire Fighting and Emergency Response (Phase 1)
  - Use NRC guidance issued February 25, 2005
- Spent Fuel Pool (SFP) Cooling Strategies (Phase 2)
  - diverse SFP make-up source
  - flexible power-independent make-up source
  - flexible power-independent spray capability
- Core Cooling & Release Mitigation Strategies (Phase 3)
  - lays out process for developing strategies
  - use of operating reactor strategies must be justified
  - establishes separation criteria for crediting redundant safety systems in mitigation strategies

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

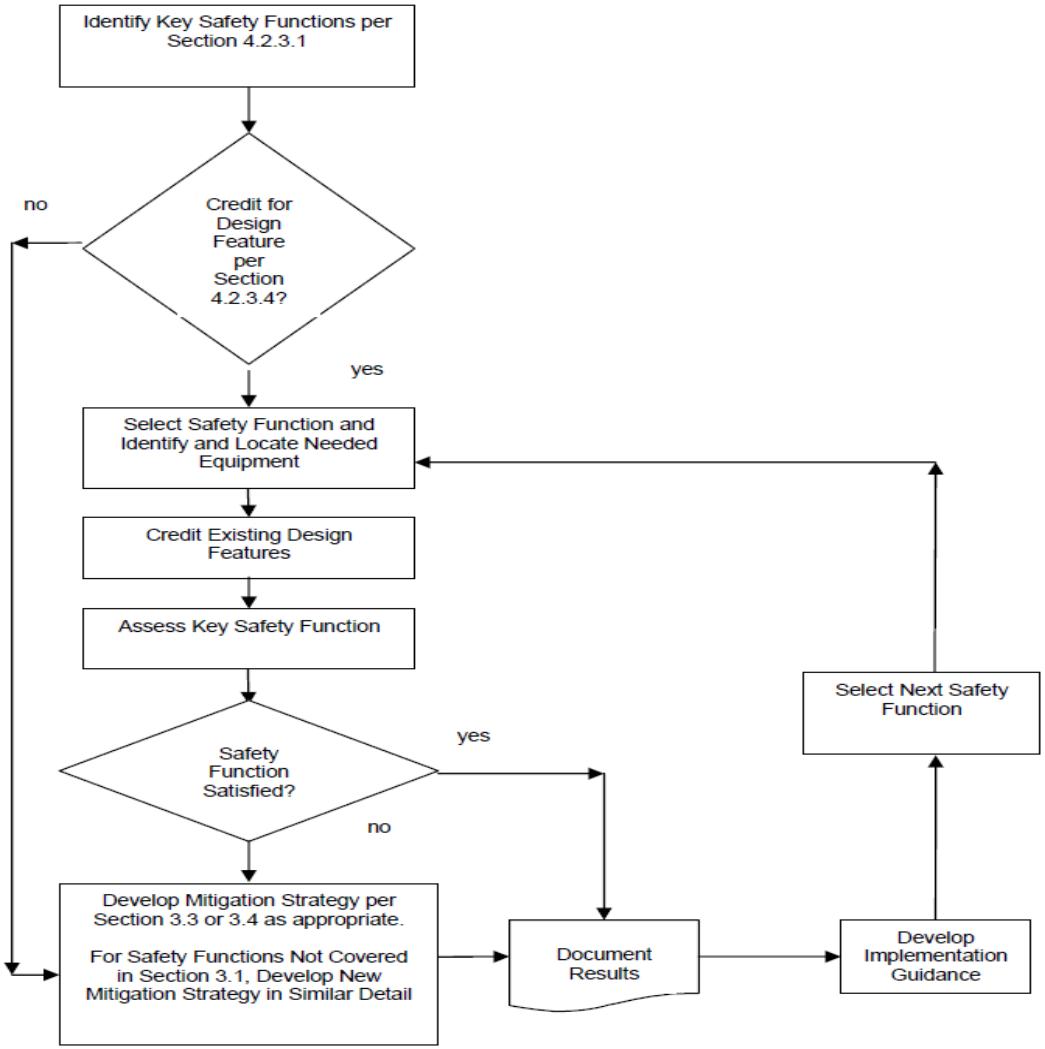
NEI Guidance (NEI 06-12 Rev. 3)

- 52.80(d) requires applicants to submit a description and plans for implementation of 50.54(hh)(2) requirements.

- Reporting template included in NEI 06-12, Rev. 3 provides for standardized license submittals.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Phase 3 Strategy Development for New Reactor Applicants



Official Use Only – Security Related Information

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Exceptions to NEI 06-12 Rev. 3

- Phase 1 guidance in NEI 06-12, Rev. 3 is incomplete.
- ISG adds additional Phase 1 guidance used by operating fleet.
- ISG describes lessons learned identified during operating reactor inspections and provides guidance for addressing them (not in NEI 06-12, Rev. 3).

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Resolution of Major NEI Comments on ISG

- **Comment:** ISG establishes new staff positions in Attachment 2 without a regulatory basis.
- **Resolution:** Staff reviewed Attachment 2 and modified several positions to assure that expectations did not exceed those for operating reactors. The language in several positions was modified based on the review.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Resolution of Major NEI Comments on ISG

- **Comment:** Provide a basis for the 30 day limit on unavailability of equipment needed to implement strategies.
- **Resolution:** A 30 day limit is consistent with "back-stop" approaches considered acceptable in the risk-informed TS arena. However, since a hard limit has not been established for operating reactors, Position is now that availability controls should be established with reasonable limits on unavailability.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Resolution of Major NEI Comments on ISG

- **Comment:** Position on having two SFP spray strategies inconsistent with NEI 06-12, Rev. 3 approach for new reactors.
- **Resolution:** Position re-written to make clear that applicants adopting NEI 06-12, Rev. 3 approach do not need two spray strategies and those following operating reactor approach do need two.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Resolution of Major NEI Comments on ISG

- **Comment:** Should be able to credit SFP portable spray for spraying leaks of radiation from containment.
- **Resolution:** Staff agrees; Position modified appropriately.

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Other changes to Draft ISG

- NEI process (NEI 99-04) for managing regulatory commitments acknowledged as acceptable for managing commitments associated with 10 CFR 50.54 (hh)(2).
- ISG now indicates that an implementation schedule be established by license condition; and, NRC expects to perform inspection prior to fuel load.