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NUCLEAR REGULATORY COMMISSION

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JOINT MEETING OF THE ACRS

SUBCOMMITTEES ON PLANT OPERATIONS

AND FIRE PROTECTION

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THURSDAY, JUNE 28, 2001

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ARLINGTON, TEXAS

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The committee met at the Nuclear Regulatory Commission, 611 Ryan Plaza Drive, at 8:30 a.m., Jack Sieber, Chairman, presiding.

COMMITTEE MEMBERS PRESENT:

JACK SIEBER, Chairman

GEORGE APOSTOLAKIS, Member

DANA POWERS, Member

GRAHAM LEITCH, Member

ROBERT UHRIG, Member

ALSO PRESENT:

Dr. John Larkins, Executive Director, ACRS

Maggalean Weston, ACRS Staff

Howard Larson, ACRS Staff

Isabelle Schoenfeld, EDO Staff

Amarjit Singh

Pat Gwynn

Ken Brockman

Jeff Clark

Art Howell

Troy Pruett

Alberto Garcia, MIT

Eddie Horus Texas A&M University

Brandon Kennedy, Oklahoma Christian University

Brian Tindle, Oklahoma Christian University

Jeff Moreno

A-G-E-N-D-A

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

CHAIRMAN SIEBER: Good morning. This is a public meeting of the ACRS and so we conduct it under the rules published in the Federal Register, but before we begin I'd like to thank Region IV headquarters personnel for hosting this meeting.

These meetings are important to us, and every year we try to go to at least once licensee and one regional headquarters. This is intended to be a two-way meeting, and we are very much interested in your opinions, your candid opinions about how regional operations are taking place, the problems that you have, the successes that you're having, and what you think the ACRS could or should do to help improve the regulatory system not only at headquarters but also in the regions.

So with that I would like to read our formal statement to begin the meetings.

This is a meeting of the ACRS Joint Subcommittees on plant operation and fire protection. I'm Jack Sieber. I'm chairman of both subcommittees for plant operations and fire protections at this time. The ACRS members in attendance are George Apostolakis, Dana Powers, Graham Leitch, and Robert Uhrig. Also, Dr. Larkins, Maggalean Weston, and

Howard Larson from the ACRS and Isabelle Schoenfeld from the EDO staff are present with us today.

The purpose of this meeting is for the subcommittee to discuss Region IV activities and other items of mutual interest, including significant operating events and fire protection issues. The subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions as appropriate for deliberation by the full committee.

Amarjit Singh is the Cognizant ACRS staff engineer for this meeting. The rules for participation in today's meeting have been announced as part of the notice of this meeting previously published in the Federal Register on June 11, 2001. A transcript of this meeting is being kept and will be made available as stated in the Federal Register notice. It is requested that speakers first identify themselves and speak with sufficient clarity and volume so that they may be readily heard.

We have received no written comments or requests for time to make oral statements from members of the public, so we will now proceed with the meeting. But before we do I'd like to have each of the members and/or staff introduce themselves so you

get a feel as to who we are, what we have done, and what our experience is.

And as I said before, my name is Jack Sieber. My background is basically with utilities in the Navy. I worked at -- I've been in this field for 40 years and have retired twice. The third time is a charm. Shipping port, Beaver Valley, Perry, Surry, North Anna 1 and LaSalle are plants that I worked at, and I've been two years on the ACRS.

George.

MEMBER APOSTOLAKIS: Thank you, Jack.

I'm George Apostolakis, chairman of the committee. I'm a professor at MIT, and the area of interest to me is probably risk assessment.

MEMBER POWERS: I'm Dana Powers. I guess I'm the old man here. I have seven years on the ACRS. I was formerly chairman of the power protection subcommittee. Now my current focus of interest are in the areas of fuel and human factors.

MEMBER LEITCH: I'm Graham Leitch. I've been on the ACRS for about six months, and my background is primarily nuclear power plant operations. I was the site vice president of Limerick during the startup period, and later the vice president at Nang Yaki.

MEMBER UHRIG: I'm Bob Uhrig. I'm a professor at the University of Tennessee and also work at Oak Ridge National Laboratory. Previously I spent 13 years with Florida Power and Light, where I was vice president for advance systems and technology.

MR. LARKINS: I'm John Larkins, the executive director for the Advisory Committee on Reactor Safeguards and the Advisory Committee on Nuclear Waste. My responsibility is to provide administrative and technical support to the committee in addition to a bunch of other things.

I know some of you -- I started as the project director for Region IV in NRR, so somewhat familiar with what you do. I've been with the agency for 30 plus years and been in research, NRR, chairman's office, OP, so I've been around for a while.

I'd like to add to Jack's opening comments our appreciation for Region IV hosting this meeting. I realize it takes -- it does have a resource impact and takes time to get prepared for these meetings, so we certainly appreciate it, but it is a valuable part of the committee's information gathering activities. We hear a lot about programs being implemented in NRR and other parts of the agency, and it's important for

the committee to see how these activities are actually being carried out in the regions and other areas.

One of the key requests from the commission this year is an assessment of the revised reaction oversight program, so it will be useful for us to hear your candid insights on that program and other activities. And again, we appreciate your hosting us here today.

MR. LARSON: I'm Howard Larson. I work for John Larkins so that's why I was glad he talked first. I'm special assistant for the ACRS and the ACNW, so I work with both committees.

MS. SCHOENFELD: I'm Isabelle Schoenfeld, 16 years with NRC, four years with NRR, and 12 years with research, and currently I'm working as a coordinator -- the EDO's coordinator with ACRS and ACNW and the Office of Research.

MR. SINGH: My name is Amarjit Singh. I'm with the ACRS for the last seven years. Prior to that I was NRR inspector here with Region IV.

MR. GWYNN: We're proud of the fact that Jit helped us for quite some time in very important areas, including fire protection, and he continues to help the committee in outstanding fashion.

MEMBER POWERS: If you're responsible for

any of this training you're doing good.

MR. SINGH: Thank you, Pat.

MS. WESTON: I'm Maggalean Weston, senior staff engineer for ACRS and responsible for the plant operations subcommittee where I have South Texas Project and the reactor oversight process. I'm formerly with the tech specs branch and technical assistance to the director of NRR.

MR. GWYNN: Chairman Sieber, would you desire for us to provide background information about our employees that are going to present? They are just introductions.

CHAIRMAN SIEBER: I think it would be helpful if we had a little bit of background.

MR. GWYNN: My name is Pat Gwynn. I'm the deputy regional administrator for NRC Region IV, and I'd like to welcome the committee to our offices. We're pleased to have you back again.

I began my career in the nuclear arena in 1969 when I joined the United States Navy. I was a reactor operator and electronics technician until I went to Purdue University, got my bachelor's degree in nuclear engineering and joined the Bettis Atomic Power Laboratory where I worked for a period of time as a Bettis physicist and test engineer.

After that I joined the Nuclear Regulatory Commission in 1980. I was a resident and senior resident inspector in Region III at Zimmer and at the Clinton Power Stations. I joined the staff of Chairman Lando Zech in 1987, where I served until 1989. During that period I had the distinct pleasure of accompanying him and a group of 19 nuclear safety government professionals who went to the former Soviet Union and established a joint coordinating committee on nuclear reactor safety. During that time I also had the pleasure of working with John Larkins, and I'm pleased to have John here with us today.

Since Chairman Zech's term expired I've been assigned here in Region IV, first as a deputy director of the Division of Reactor Projects and then as director, Division of Reactor Safety, director Division of Reactor Projects, and now as deputy regional administrator.

I have with me today Ken Brockman, who's the director of our Division of Reactor Projects, and Ken is uniquely positioned to provide you insights about the initial implementation of the NRC's Reactor Oversight Program given that not only has he been leading that program here in Region IV but he was also an important member and contributor to the agency's

PACA panel, the IIEP that provided advice and recommendations to the agency on that program.

Ken, would you like to give a little background about yourself?

MR. BROCKMAN: Probably even more unique about me is I'm not Navy. I'm a graduate of the military academy at West Point, which puts me very much in the club because I'm so much out of the club, but I was eleven years in the military duty there, the last part spent with Armor H Airborne in research and development activities for weapons systems. When I left the Army I went to work for Westinghouse, so not only am I an Army person I'm Navy qualified on reactors by working for Bettis Atomic Power Laboratories.

I've got experience in the utilities side. I worked for Detroit Edison Company during their final stages of construction and initial startup as a member of their management team, their training department out there. I've been with the agency since 1984 at Region II as a license examiner and as an inspector out of that regional office. I was up at headquarters for about five years, worked on the staff of EDO, was a technical assistant for Chairman Selling.

I was also in charge of the incident

response organization up there now at the time they built out the new facility, made the transfer, had the opportunity to work with the Russian Federation and the Ukranian Republic as part of our USA IDG7 initiatives in establishing emergency response capability in those two countries, which many people don't know that they had absolutely no nuclear emergency response capability at all.

Then in Region IV now for six years in the Division of Reactor Safety, and now as a director in the Division of Reactor Projects.

MR. GWYNN: And to his right we have Jeff Clark, who's our senior resident inspector at the Cooper Nuclear Station. Jeff, would you like to give a little background about yourself?

MR. CLARK: Sure. Good morning. I started out my nuclear career -- nuclear Navy. I had nine years active duty in the Nuclear Navy Program. Subsequent to that I worked for 14 years for the Baltimore Gas and Electric Company. There I was maintenance supervision, planning and scheduling, and my last functions at Baltimore Gas and Electric was as a senior project engineer in capital improvements area.

After that I joined the NRC in 1996. I

was in Region III. After a short period of time in the Division of Reactor Safety I was the resident at Perry, and I moved on from resident at Perry to the senior resident at Cooper Nuclear Station in 1999. I came on board there just about the same time that the Revised Reactor Oversight Process was beginning, the pilot process at Cooper, so what I'm planning to do today is share some of those insights and dialog with you on what those insights are from that perspective of a pilot plant and going into the Revised Reactor Oversight.

MR. GWYNN: To Jeff's right is Art Howell, director of reactor safety in Region IV.

MR. HOWELL: Good morning. I also started my career in the Nuclear Navy. I spent five years on active duty nuclear powered submarine on the West Coast, worked briefly at Rancho Seco Nuclear Generating Station, which is near Sacramento, California before it was permanently shut down. Joined the NRC in 1985 in the former office of inspection and enforcement, spent my time primarily conducting safety system functional inspections, and then also in the former office of AAOD performing diagnostic evaluations before coming to the region in 1988.

And since that time I was a senior project engineer, resident inspector at Comanche Peak Unit 1 during the startup testing of that unit, section chief in the Division of Reactor Projects for South Texas Project in Wolf Creek, and also the deputy directors of both the divisions of reactor safety and projects, and then for the last four years the Division of Reactor Safety.

I too, like Ken, have spent a lot of time working with the Russians and Ukrainians with respect to the Lisbon Nuclear Safety Initiative. I was a co-team leader with some Russian counterparts at a fairly extensive team inspection at the Balakovo Nuclear Power Plant in 1995, and we've done a lot of work in hosting Russian and Ukranian regulators in this region over the years in both divisions, and I'm going to be sharing with you our experiences with respect to the new fire protection inspection program as well as some risk insights and how we incorporate risk into day to day regional operations.

Thank you.

MR. GWYNN: On my left is Mr. Troy Pruett, who is one of our senior reactor analysts here in Region IV.

Troy.

MR. PRUETT: Good morning. My name's Troy Pruett. I'm a senior reactor analyst.

I started off in the Nuclear Navy as well. I was an enlisted plant operator and staff instructor at the New York prototypes. After leaving the Navy I went to work at D.C. Cook as an instructor in their training department, and then joined the NRC in 1992 as a health physicist inspector in Region V in the materials group.

With the consolidation of Region V and IV I took a slot as a resident inspector at Waterford, spent three years down there, took a senior resident slot at the Clinton Power Plant in Illinois, and once we got them back on line I decided I needed to go back to a warmer climate and took the senior resident slot at the River Bend Station, and I was done there for about two years and I'm currently filling the senior reactor analyst slot now.

MR. GWYNN: Thank you, Troy.

We have a number of other staff members that will be making presentations throughout the day, and I think that we need to move forward with our presentation. However, I would like to recognize five special people that we have in the room today. Alberto Garcia is with us from the Massachusetts

Institute of Technology, Eddie Horus from Texas A&M University, Brandon Kennedy and Brian Tindle, both from Oklahoma Christian University, and Jeff Moreno from Oklahoma State University. They are five engineering associates who are working in our offices this summer and learning about the NRC, and they're here for training purposes.

Welcome, this morning.

I also wanted to express the regrets of our regional administrator, Mr. Merschoff. He unfortunately was unable to be here today. I'm sure you're aware that the agency's first meeting of the agency action review is being undertaken right now in Atlanta, Georgia, and for that reason he was unable to be here. He recalls that the last time you were here that was his first year in Region IV, and he also was unable to attend, and --

MEMBER POWERS: I hope that everyone congratulates him on his presidential award for meritorious service to the agency.

MR. GWYNN: Thank you. I'll pass that along to him.

I believe we have an interesting agenda today, and in addition we have arranged for some of the best Texas barbecue to be served at lunch, and

that will give us an opportunity perhaps to have some more informal discussions, and we've asked additional members of the Region IV management team and the staff to come and join us for that luncheon.

Does everybody have a copy of my handout, because you can see the colors from the handout, and I'll be referring to the colors.

The Region IV organization is consistent with the organizational structure found in the other three regional offices of the Nuclear Regulatory Commission. The only major differences are the lack of deputy division directors in two of the three technical divisions, and that difference exists because of our relatively small size.

At the top of the organization chart you'll see Mr. Merschoff and myself, the regional administrator and his deputy. We're responsible for the day to day operation of the region, which includes this office, 14 resident inspector offices, approximately 160 staff members, and a budget of about $4.3 million this year. The majority of our budget goes to office rent and travel expenses, but this year there's a substantial additional amount in our budget to provide for the upgrading of our incident response center for continuity of operations and continuity of

government functions, and Mr. Andrews, our emergency response coordinator, will talk a little bit more about that this afternoon.

To the left of Mr. Merschoff is a dotted line going to Mr. Lynn Williamson, who's the director of the Office of Investigation field office that's co-located with us here in Arlington, Texas. The Office of Investigation's field office is responsible for investigating allegations of wrongdoing by NRC licensed entities and their contractors.

The gray boxes below myself and Mr. Merschoff are the regional administrator staff including our allegation coordination and enforcement staff, our emergency response coordinator, our state liaison officer, our regional counsel, and our public affairs officer, who actually reports to the Office of Public Affairs in headquarters, Mr. Bill Beeacher.

From time to time some of the regional administrator staff members will be joining us today, and right now Mr. Charles Hackney, our state liaison officer, is sitting behind you, and Mr. Breck Henderson, who's our public affairs officer, is also here in the room.

We have three technical safety divisions represented by the blue, green, and yellow boxes that

you see below the regional administrator's staff. Two of these divisions, the Division of Reactor Projects and the Division of Reactor Safety, are involved in the implementation of NRC's power reactor inspection program. The Division of Reactor Projects or DRP is composed of the resident inspector's staff, their supervisors, and regional support functions. They are the eyes and ears of the NRC at every operating nuclear reactor in the region.

The resident inspectors are generalists who live in the vicinity of their assigned plants. They monitor the overall safe operation of their assigned facilities. They're the first to respond to events at the plant, and they are the primary NRC spokesman for the NRC in the local community.

The Division of Reactor Safety or DRS is composed of specialists, inspectors, and reactor operator license examiners that are all based here in Arlington. They include specialists in plant operations, maintenance, physical security, radiation protection, emergency preparedness, and engineering disciplines to name a few. These inspectors travel to all of the power reactors in the region performing scheduled inspections in their areas of expertise.

Mr. Brockman will talk more about the

implementation of our power reactor inspection program in a few minutes.

The Division of Nuclear Materials Safety, or DNMS, which is in the yellow, is composed of inspectors and license reviewers who implement all aspects of NRC's nuclear materials licensing and inspection program within the region except for those licensing and inspection activities that are specifically delegated to the states that have agreement state programs. Those agreement state programs are overseen by two agreement state officers that report to the director, Division of Nuclear Material Safety.

DNMS licenses and inspects nuclear medicine programs in hospitals, radiographers, nuclear gate users, and well loggers. they also inspect uranium mines and mills, a fuel cycle facility, and power reactor independent spent fuel storage and decommissioning activities within the region. The materials inspectors in Region IV have a particularly large challenge, since even though they're only on the order of 625 materials licenses and 25 uranium recovery facilities they're spread over large distances, including the North Slope of Alaska and Guam in the Western Pacific.

Finally, our Division of Resource Management and Administration, or DRMA, which is shown in the pink, is the administrative unit supporting our technical safety mission. They handle such activities as travel, budget, human resources, mail, information technology support, and a host of other service functions that keep the technical safety organizations functioning smoothly, and we're proud of the high level of service that our DRMA organization provides to our inspection and licensing staff.

We have a very large region geographically, as you will see on my next slide. Our travel office issues more airline tickets than any other NRC region and almost as many as our headquarters offices. Kathleen Hamill, who's the director of the Division of Resource Management Administration, is here in the room with us today.

The next slide, which is my last slide, depicts Region IV. It identifies the 21 states in the region and the location of the 21 power reactors and the 14 power reactor sites in Region IV. You'll notice that two of our power reactor sites, the Callaway Plant in Missouri and the Grand Gulf Plant in Mississippi, are physically located in states where the use of nuclear materials is regulated by a

different NRC region. This action was taken in 1994 as we consolidated NRC Regions IV and V to more evenly distribute the power reactor inspection work load across the regions and to place all the plants that were then operated by Entergy Operations Incorporated in a single NRC region.

If you look at the map that's in front of you you'll see a purple triangle in Missouri. That's Callaway. And a purple triangle in Mississippi, and that's Grand Gulf. Grand Gulf is one of the four Entergy plants that are located in NRC Region IV.

This slide also shows that 15 of the 21 states in the region are agreement states. The dark purple and the middle purple shades are the agreement states in Region IV. Notice that both Alaska and Hawaii as well as the Pacific Trust territories are included in the six states that are not agreement states in Region IV, and those are the lightest shaded states on the map.

What the map doesn't show clearly is the important work we in Region IV are doing to bring a higher level of radiation safety to work being performed on offshore oil platforms and on pipeline barges in federal waters in the Gulf of Mexico. It also doesn't make clear that our regulatory arms reach

to Johnston Atoll and Guam located on either side of the International Date Line. As a result of this circumstance we were able to state on December 1, 1999 that Y2K both began and ended in Region IV.

With that, I'm prepared to answer any questions that you have about the region overall before we go to the next presentation.

(No response.)

MR. GWYNN: If there are no questions I'll turn it over to Ken Brockman, the director, Division Reactor Projects.

Ken.

MR. BROCKMAN: Thank you very much, Pat. I have a strange feeling that I won't be quite as lucky on the lack of questions in my presentation. I'm passing around a set of slides I copied for everyone.

Over the next 45 minutes or so I'm hoping to have a very -- an opportunity for a good interactive discussion as to the insights that we've seen in Region IV with respect to the revised oversight process and also the insights that we've been able to gain from it. As Pat mentioned earlier, we've been very active over the last 18 months in the process. I've been a member of the pilot program

evaluation panel and the implementation evaluation panel, which has given me an appreciation for FACA rules that I did not previously have.

And Jeff has been involved with it since the very beginning, as he has said. The presentation that we're going to give you is basically going along these lines where we're going to talk about the process overview. We'll go with the time line as to how it's proceeded, inspection assessment process, how it's worked in the region, the insights we've got from there, specifically the results that we've seen in Region IV, and how we think that that has rolled into our assessment of licensee performance.

Is the process working? Does it appear to be getting us to the places? Does the gut match what your head says with respect to this. Certainly conclusions at the end. We've got questions and answers listed at the end. I would encourage I think however that at any time you've got something that you want to interject to keep the presentation more free flowing as opposed to in that manner. We have the capability to fill up any block of time that we are given with the presentation, and that may not get to all your needs, so feel free to interrupt.

MEMBER POWERS: Ken, you're not going to

discuss the significance of the determination process?

MR. BROCKMAN: No. Per se, we would discuss it only that we go through it. I think with the SRAs and what have you we've got that -- a more in-depth discussion on that later on. Some of the successes of it, some of the challenges of it. We will be sharing -- generally has it worked with an example there, but not the details for this presentation.

Okay. We'll go with our next slide then, and I'm probably going to start off with my old teaching type of philosophy with the infamous rhetorical question, do we need to go through a discussion of the ROP process: performance indicators, inspection findings, how they come together. Would that be of benefit as a refresher to everyone or is everyone here fairly familiar with that?

MR. LARKINS: I think we can go fairly expeditiously --

MR. BROCKMAN: Okay. Then we'll really cover -- at the 30,000 foot level. New program, performance indicators provided by the licensees in several different areas, inspection still an essential part of the program. We can't forget how that's come together. We have baseline inspection similar to the

previous concept of a core inspection. Now there are criteria by when you would either do supplemental inspection based upon performance deficiencies. That can escalate in its level, be a low performance issue, be a higher -- be a very significant type of supplemental inspection.

MEMBER POWERS: The first question that comes up in this comparison between core and baseline is that now the region's locked into a baseline whereas in the past they could adjust for a round in response to the needs of particular sites.

MR. BROCKMAN: We can flip back to our member of ours -- and let me refer you to a chart that's further within your packet.

MEMBER POWERS: If we're going to get to it I can wait.

MR. BROCKMAN: I'll get there. Yes, without a doubt the new program still allows us the capability to respond to changes in performance. It's just a criteria or a little more defined now, more predictable than they used to be. That's one of the insights that we have seen is anything that we have felt we need to inspect we can get to.

MEMBER POWERS: Well, you know, when give him a licensee, is this, what -- under the old

program, I was doing good and I had X number of inspection hours, and I haven't really changed and now I've got X plus delta inspection hours. I'm getting more inspections under this, and my performance is about the same.

MR. GWYNN: I'd like -- a few things on this subject, because this was one of my concerns when we first proposed having this new program, and it's an interesting result. But under the core program we had a minimum inspection program that we did at every facility. That was the core. We had core inspections, regional initiative inspections, and reactive inspections, and we couldn't change the core, so the baseline is like the core but the baseline includes all of the inspection that we plan to do at the facility, whereas the regional initiatives -- some of that was planned. Some of it was added as a result of performance insights that occurred during the assessment period, and of course reactive inspection only took place as a result of events.

And so for licensees that were high performing licensees under the core inspection program, that got very little regional initiative inspection and essentially no reactive inspection because there were no events at their plants, and as

a result they essentially got the core inspection program.

Now we in Region IV had a relatively high number of plants that were performing at a high level, and as a result the majority of the plants in Region IV were on core or reduced inspection programs, and so when the baseline inspection program began its implementation here they did experience an increase in the total number of inspection hours. But as you can see from Ken's chart, the increases weren't that great.

MEMBER POWERS: The problem I see is that when they put in this new reactor oversight they didn't say, Tom, here's 16 more FTEs to help you carry out this additional inspection. I'm very certain they didn't do that. So it looks to me like you must have the same problem that the licensee is facing in that you did have a lot of high performing plants. Now you're doing more inspections with the same number of people. Something's got to give some place. What's giving?

MR. BROCKMAN: It's a good insight, and we might as well -- I'm going to stay free flowing in the presentation, so you've got this chart in your package about two-thirds of the way back.

What you can see off this chart right here is a look at -- right here is the last year -- this light colored bar -- it's the last year of the old program. Now, that's not the year right before the new one, because that was a transitional year. I've gone back to '99 when the old program was solid in its implementation and then compared that with the dark line against the first year of the new program. You're going to see some a little more, some a little less.

Why is the variance in the different plants? Remember, we've got some procedures -- big team inspections that are done biannually. Some are done triennially. So the first year you haven't gotten all of the program done anywhere, and we haven't tried to normalize the data here. So you're getting the actual raw data that was conducted, and you can see, some above, some below.

Now --

CHAIRMAN SIEBER: I think that question then needs to be extended a little further because if you increase the baseline inspection basically for all plants then reactive investigatory inspections have to decline because you have fixed manpower, and because of that do you feel that you lose some versatility for

those plants that don't perform as well as the average plant to gain appropriate insights into the failures of that plant?

MR. BROCKMAN: What's happened because of -- we have to visually try to capture this a little bit. We had several plants before. We had everybody who was all South Point, and they'd get a small amount of inspection. Then we had those who may have had three 1s and a 2, two 2s and two 1s. What we've done now is about everything from three 2s and a 1 on up have been all brought together with the new criteria to where you're at. That's about the number of plants we're talking about. Right now we've got about 85 plants in America who are all in the all green arena, the licensee response arena.

Therefore, the amount of inspection that you need to have to maintain your comfort that that performance level is now based on the lowest person of that 85, not the highest person of that 85 -- my gradations are different now. That's why plants that were very good performers are now seeing more. My inspection program was verified with comfort the lower level of performance. That addresses I think the utilities issue as to why they're seeing more inspection.

What they're seeing less of is less regional initiative. I've got an itch that needs to get scratched. Everybody's getting that itch scratched on a baseline now in that aspect of verifying, so have I lost that flexibility? No. That flexibility is now built into the baseline program.

Your reactive question is a superb question. It was one of my big concerns going in there is our capability to respond to events as they arise. We're going to talk about a couple of those and where they've gone. The criteria now are very much more prescribed. Management directive 8.3 certainly gives us definitive criteria at which time you start considering a special inspection, an AIT, an augmented inspection team, an incident investigation team. We use those criteria and they're based on risk -- as an entry point into the decision-making process.

We've got overlap where deterministic -- your gut comes into play on it -- yes, I could. No, I couldn't -- so we've got some overlap. The way I describe it is PRA number gets me to the ballpark and then my gut tells me what position I'm going to play out there, whether I go or not.

So we put that together and what we've

been able to find now is under the baseline program if I have an event that occurs -- we're going to talk about two events today. If we've got an activity that goes on there is a baseline module called event response that I go out there with, and the purpose of that module is to identify what is the risk significance of this occurrence? Get me to the ballpark. Am I at the ballpark, am I not at the ballpark?

And then I can use one of two options to inspect -- or one of three options to inspect it. A, I can pass. Risk number didn't get me to the ballpark. It's not worth the investment of the issues. I will follow up. I leave it in the licensee's domain and I will follow up with problem identification and resolution inspection later on to see did -- verify that they addressed it properly. That's one option.

The second option I have is the other end of the spectrum. I'm there. It requires a special type of inspection, so that's inspection AIT, IIT. The instincts are there and we will, based upon the risk insights, the deterministic insights, we will launch a unique activity outside the baseline program to do that.

The third option that you have then is I am going to use this to define the samples that I want to do under the baseline program. I have identified a risk significant sample set. It's time -- I'm supposed to evaluate emergent work activities. Well, I have a potential transformer that has exploded that doesn't have a risk number, but boy the licensee's scrambling about. They're doing things that have impact on the plant operations. How are they dealing with it? It's a wonderfully appropriate sample to be using right now, and the insight gets me there, and the baseline program lets me inspect that in a real time method.

As I said, we have not found a thing that we want to inspect that one of these three legs of the program will not let us get to. We've been able to go out and inspect everything we want. One of the insights we do have with respect to resources though is they are very tight. We have our people scheduled out to the week, and Art's impacted by this even more than I -- 18 months in advance. We know when our people's leaves are going to be taken.

MEMBER POWERS: I don't understand whether that's an acceptable situation. That really does impact your flexibility.

MR. BROCKMAN: One of the lessons I think we learned nationally is in Region I with IP2. The initial estimate for an activity -- if you get an activity that turns up red and goes into our large scale supplemental inspection, the 95003 inspection, I think they would tell you the initial resource estimates associated with that were not nearly what it winds up becoming.

MEMBER POWERS: It expands like --

MR. BROCKMAN: We have been blessed in that we haven't been challenged with one of those activities. We would really have to do some significant resource decisions with respect to what we've got to do. We've been challenged with a couple of things ANO this year. I had -- in one year I've got the new program, steam generator replacements, and license renewal. Steam generator replacements and license renewal are not part of the baseline inspection program.

Now, many of the activities that went on as part of our inspection for those things were appropriate risk informed samples to put into the baseline program. They're doing plant modification -- major plant modification going on with steam generator replacement. What better modification to look at

during this year's inspection than the replacement of steam generators? I gain great insights there. I can take credit for that under the baseline inspection program while we're inspecting the steam generator replacements. This makes sense.

Were we type at ANO? Yes. We're type. One of the insights I've seen is here in the regional office I have two project engineers which support each one of my branches. Their inspection time is fully up to in the neighborhood of 30 percent on the road inspection time. Every region-based inspection -- we don't call them a DRS inspection, a DRP inspection. DRS and DRP share the inspection program. Some of the modules are resident based. Some of them are region based. The region based inspection -- many DRP people support those.

We have a schedule worked out where I've got a resident who is leased on one region-based inspection a year. Every resident is. Every one of my project engineers are. So you have these scheduling dilemmas much more a part of the branch chief's job, and they schedule those much further out than they did in the past.

MR. GWYNN: I have a couple of comments that I'd like to make.

One of the major thrusts of the new inspection program was to provide consistency across all licensees and across all regions, and I think that goal has been advanced substantially by the new baseline program. Ken used the term if we have an itch that needs to be scratched. That's now the agency's itch. When I was leading the Division of Reactor Projects if we saw an area that we thought needed to be looked at more closely across the entire fleet of plants in our region we would go and do that. But the agency wouldn't do that, and so three other regions didn't receive that inspection.

Now those decisions are made nationally and if in fact that itch needs to be scratched it's scratched at every plant in the country, and I think that's a significant improvement in the conduct of our inspection program.

We had a different threshold for event response. Now if the licensee has a good corrective program and they're in the licensee response band we typically don't respond to a low-level events that occur at their plants. And so the things that we were doing in the past we're not doing now that were unique to this region, but we're applying additional resources at plants in areas that have been deemed by

the agency to be of risk significance, and as a result of that we've had some excellent findings that we would not have achieved under the previous inspection program, and that's focused attention for all of the utilities in the countries in areas that it hasn't been focused in before.

so I think that the new program has brought a lot of value to the agency and has advanced a number of goals, including the goal of consistency across the regions.

CHAIRMAN SIEBER: I'm going to ask another question which probably will take you beyond where you are in your talk right now, and if that's the case then just remember it and when you get there you can address it. But we are about to introduce as an agency the performance indicators, and it's purported that these performance indicators will allow a reduction in baseline inspections.

Do you feel that there is an equivalency between performance indicators and reductions in inspections such that the combination of the two will result in an adequate regulatory program, or do you have other views? And you can address this now or later on.

MR. BROCKMAN: You've looked at my

presentation notes. Bear with me. That's a major topic we're going to talk about in just a couple of minutes.

CHAIRMAN SIEBER: All right.

MR. BROCKMAN: It's a great segue. Let's move -- everybody understands how we're organized now under cornerstones, that concept, cornerstones come together under reactor safety, radiation safety, or a safeguards application. Performance indicators feed a cornerstone. Inspection findings feed a cornerstone.

And, Jack, we will be getting to bring those together.

Let's very quickly move to the time line that we're talking about so everybody is together there. The pilot program for the ROP started in June of '99. There were feedback lessons learned associated with that commission meeting on that. SECY paper went up and what have you. We implemented the initial year on April 2, 2000. That went on for a 12-month period. We've changed our basic planning cycle now to an annual planning cycle as opposed to the old South methodology, which was 18 plus or minus your comfort factor.

And that's -- another point Pat brought

up, to be consistent. We are now it looks like going to transition and get that annual cycle on a calendar year basis. That's one of the things you'll see coming up -- a recommendation is to right now play the next nine months as another transitional period and get this on a calendar basis. That's an efficiency issue with respect to the agency to be able to do that. So there's the basic time frames we're talking about.

If you'll look at the next slide we've got here real quick you can see in the initial year the pilot program -- there are the sites that were involved in the pilot program. In Region IV that was the Fort Calhoun Station and the Cooper Station, and as we've mentioned Jeff was the senior resident through all of that. He's been one of my key people who's been involved as we have made that transition.

What we're going to do now is talk about out of this -- and we're going to start moving, Jack, right to where you want to go.

The next slide takes us to the end of the first year. Where are we? What has this program told us? This is off the web page. It's currently there right now. The column on the left is the licensee response column, and there is about 85 plants that are

in that column --

MR. CLARK: This chart would actually continue down. This is just a representative --

MR. BROCKMAN: Yes. But even though a lot of information that's been heard is the performance indicators, the findings, we've only gotten 2 percent of the performance indicators that are not green. When they come together, when the synergism of the process comes together if you look at the regulatory response column --

MEMBER APOSTOLAKIS: These columns are from the action matrix. Right?

MR. BROCKMAN: This is what comes out of the action matrix. This is what differentiates the performance that we've got now. This is equivalent to the old south in the aspect of here's your ones with a couple of twos. The next one -- here's the ones that probably got a three or so in there, and there is no correlation. I'm just trying to give you a visual picture of where it goes. So even though the individual data has 5 percent of the performance indicators, 5 percent of the findings aren't white. When you put them together you get a differentiation of performance on plants.

And in fact it's greater than 5 percent.

We've got 15 plants out of 103 that are in the regulatory response column, three in the degraded cornerstone column, one in the multiple repetitive degraded cornerstone column, each one of these being a more significant level of performance deficiencies.

MEMBER POWERS: I guess I agree with you that if you'd asked me before this matrix was done about what the distribution would be this is about the distribution we would have thought. Right?

MR. BROCKMAN: It's probably not far off.

MEMBER POWERS: Maybe one or two were up in the multiple response region, but not many more in the regulatory response.

MR. BROCKMAN: No. That's -- there may even be a couple more here than we'd have gotten, but as you're beginning to see a distribution of performance come about.

One of the things with the new process is it takes a little time. You've got to let this play out. When you get into the risk consideration of issues and you put all this together the processing of the issue takes a little longer than the old process did. Very deterministic in the past. Did you comply or did you not comply with the regulation? Significant non-compliance -- you could get to an

escalated enforcement decision fairly quickly.

It is a little longer process now to really put a an appropriate risk perspective on the issue, and Troy will be able to talk to that probably in more detail later on when we get into talking about the SDP and where that goes. Art's probably got some insights that he'll be sharing too. But it gets you there.

MEMBER LEITCH: A question about Calvert Cliffs, for example, where you're dealing with two almost identical units, one in -- Unit 2 is in column one and Unit 1 is in column two. I suspect that what's driven Unit 1 to column two might be the fact that it had three SCRAMs in a fairly short period of time, but one was as I recall was a lightning strike. Another one was a failure in an electronic component, which could have just as easily occurred on the other unit. It doesn't represent a different program or different level of management attention. It's the same management team.

And I just wondered does this indicate that your level of inspection would actually be different on Unit 1 for example than Unit 2?

MR. BROCKMAN: What you would immediately get out of this would be Unit 2 would get what we call

the 95001 inspection -- excuse me. Unit 1 would get the first level of investigatory inspection. This is approximately one inspector for a week, and that inspector goes out there and says, Okay. What is behind here? I have a performance indicator that threshold's been crossed, or I have this type of insight that is not very low significance, but it's not big. Let's go out there -- and this inspection is to put that in the context, and it may be just what you say. I've had a piece of equipment that had a random failure to it, could not have been predicted, caused the threshold to be crossed. The licensee's dealing with it aggressively. That's the extent of additional inspection they received.

MEMBER LEITCH: But that additional inspection in this case would actually focus on Unit 1 as compared to --

MR. BROCKMAN: Yes. It would focus on Unit 1 to put that insight into context and then identify what's the right response that there should be. Maybe there is something that is broader and I have an extent of condition of vulnerability in Unit 2 that is appropriate to follow up on when I do the problem identification and resolution inspection. Maybe it's not.

Maybe I have got a unit-specific -- something that's going on here. If I had looked at ANO, which is our site where I've got two different vendors and the organization is very common in some areas. In some areas it's not quite so common. Maybe I determine it is something unique or maybe it's more cross-cutting on the different units.

MEMBER LEITCH: Okay.

MR. BROCKMAN: That's the beauty of this program.

MR. GWYNN: I think that it's particularly insightful that the plant that's at the top of the degraded cornerstone column which we do know about -- in a way we're not very familiar with Calvert Cliffs, but we do know about that plant, and the things that contributed to that situation are I think important outcomes of this new baseline program and its focus on risk important activities at the plants. We'll be talking about a couple of those as a part of the agenda later today.

And that plant was a category one performer under a reduced inspection program for a very long period of time, both when it was part of the Region III oversight and then as a part of Region IV's oversight, so this new baseline program has made a

difference at that facility.

CHAIRMAN SIEBER: Let me ask the question, let's assume for the minute that the new reactor oversight program is effective in coming up with a distribution of performance across the fleet of plants. However, under the old process there was a different kind of response from the NRC that has to do with significance determination to a great extent where civil penalties were enacted, pressure releases occurred when you've got a level three finding, sometimes a public meeting in a local community, and as a senior -- former senior vice president and chief nuclear officer I can tell you those are attention getters for the licensee.

So my question is now that civil penalties are down and you don't have a lot of this fanfare do you feel that the licensee's attention is just as high under the new process as it was under the old process?

MR. BROCKMAN: Let me address that. I would challenge one premise --

CHAIRMAN SIEBER: Okay.

MR. BROCKMAN: -- that you're presenting. The fanfare is not down. In fact, the fanfare is more. The only thing that's different is right to check. If you go to the action matrix, which we've

got a copy of in your handout here back -- action matrix right here --

CHAIRMAN SIEBER: Right.

MR. BROCKMAN: -- when we have one of these issues -- and now it's done real time in a supplemental inspection -- you're going to get regulatory conference, and depending upon it it will be in the local area, and you're going to get the press releases associated with the white issue.

One of the things we do in Region IV, we've gone to quarterly integrated inspection reports. By that I mean for a given facility on a quarterly basis the resident report is combined with all of the small level region-based activities, the one, the two-person inspections. We would give an exit presentation if it's a DRS an HP inspector. They would give an exit when they left. But the written part of their report would come in at the end of the quarter.

What are the differences for those? Exceptions would be major team inspections. I've got an engineering team out there. That report doesn't wait for a quarter. It's a big activity. We cull that out. It gets a separate report. Problem identification resolution, any major activity that

we've got going on gets a separate report. Any inspection that looks like it's going to have a white finding or above we don't wait until the quarter. That is culled out right now. It gets its own unique inspection report number and comes out.

So it's addressed very contemporaneously and we go right into the process: public meetings, that regulatory meeting, the press release that goes along with it. All of the other as you described fanfare that went on is still fully there under the new process. The only thing that's not is the change in the enforcement policy for writing the check.

CHAIRMAN SIEBER: Let me follow up just a little bit. If you ask the average member of the public in the old days they understood $50,000 or $10,000 pretty easily because it related to things that they do, and when you say they had a violation, they paid this civil penalty, they admitted that they did wrong, that was pretty clear as far as the public was concerned as to what actually happened there. But if you tell the public that you went from a green to a white perhaps there's some head scratching.

And I know that the NRC has spent a lot of time in public meetings trying to explain the process, but I don't think the public has as clear a notion as

to what is going on now with the grade of performance as it used to be when it was pretty clear. The fact that there were violations found, penalties being enacted, and so forth.

Do you have any insight to that as to how the public perceives the new process?

MR. CLARK: Kenny, can I address that?

MR. BROCKMAN: Jeff can probably do it very well because he's at a site that's had several of these change issues.

CHAIRMAN SIEBER: Right.

MR. CLARK: To address it let me go back and talk about going into the pilot process and going into the revised reactor oversight process.

As the senior resident at Cooper, Cooper had performance problems going into this process. I dealt very closely with the senior resident at Fort Calhoun, and we dialogued throughout this process and we saw big differences throughout this. I also dialogued with the public a lot. We had several public meetings. I live in Southeast Nebraska. Everybody knows what your neighbor does, so --

CHAIRMAN SIEBER: Well, there aren't too many neighbors.

MR. CLARK: I can see one house from my

house, so --

VOICE: Is it occupied?

MR. CLARK: No. So you go to the grocery store and you go to a church meeting and you will get dialogue about what is happening at Cooper, and I saw in the transition phase they were still asking about are they going to get fined for this thing that just happened last week? Are they going to get fined for this? And it took some discussion up front, but we said, No. The new process is doing this by channeling through the action matrix what type of response we take, and it's going to have indicators. We explained the indicators to them. That was a little fuzzy, but I think the public is, at least in the vicinity of the plants, coming onboard with what these indicators mean.

And I'm going to say that from the standpoint of we just had a number of performance issues in the emergency response arena in emergency preparedness at Cooper, and I have the public asking me, How many whites did it have to get? So now they're on board. They know what the indicators are, they know how we respond now, and I think they're becoming more aware of what risk was.

If I could turn the tables a little bit as

a resident under the old inspection program it was sometimes difficult for me to defend the agency's position on why these particular actions resulted in this type of penalty. When we were looking at it as combined significance or not being risk informed it was sometimes difficult to defend what those actions were. Conglomerating actions, conglomerating some inspection findings to get an escalated issue with the licensee was sometimes harder to explain to the public than it is to say that we're going to put these into these arenas, into these cornerstones. As you see the performance match out it's going to come out.

And as we've seen and we'll discuss later, we're seeing over a period of time that we're getting the distribution, we're getting those colors, and we're getting the response from the plants that we somewhat predicted.

MR. GWYNN: I'd like to add to what Jeff just said, and my perspective is a little different from his. I was in the position that he's in back when we were first starting to implement the systematic assessment of licensee performance.

Number one, we still issue significant notices of violation and impose civil penalties on licensees for significant violations of NRC

regulations. I think that Jeff just explained that we have a better threshold for determining the significance of those violations now than perhaps what we did in the past so the public can better understand why we consider the issues significant.

I can tell you that making a number of public presentations of SOWP under the early stages of the program the public didn't have a clue what we were saying, and we did very little to educate them as to what SOWP was and what it meant. For this new baseline inspection program we've had significant public outreach, lots and lots of communication as Jeff just indicated with the local community to educate them as to what the program is, how it works.

They're learning over time, and as we continue to hold these public meetings, as we continue to gain experience with the program I think that the public will become much more educated and much better able to understand the agency's decision-making process.

Now, an interesting side light from this, there were times in the past, for example, the Waterford steam-electric station that you just visited, where it was like somebody turned a switch. They went from being all SOWP category I to having a

category III in engineering and almost being on NRC's watch list essentially overnight.

How does that happen? Under the new program it doesn't. We have our action matrix. People watch over time. As our inspection findings and as the performance indicators build leading to increased agency attention and more significant agency actions up to and including major inspections, commission attention, and perhaps even a plant shutdown. And so I think that our process under this new baseline program, which was one of the major desires at the outset, is much more scrutable by the industry and by the public.

They can understand where we've been, where we're going, and why we're doing what we're doing much better under this program than what they could under the previous program, and so even though I was not a major proponent of the program at its outset I've become a major believer in the program as I've seen it work.

CHAIRMAN SIEBER: Maybe I can comment on the answers so far. First of all, I would congratulate the agency and the region for the outreach that's occurred, and I think that's the prime reason why you're getting some degree of public

acceptance and understanding of what's going on, and had that been done in the old system to the same extent you might have had a different result under the old system. But the resident still says -- the first question they ask me is will they get fined for this? So that's the expectation of the public, just like going 30 miles an hour in a 25 mile zone. In Pennsylvania where I live that's $141. I understand that.

On the other hand, that's what the public expects, and so it takes some explanation to explain what this new system is, and probably it's a better system, and I'll leave it at that.

On the other hand, you did mention, Pat, one aspect that intrigues me when you talked about Waterford where you said they went from a SOWP I to a SOWP III instantaneously, and that wouldn't have happened under the new system which tells me then that you believe that it's predictive to some extent, and I would be interested in knowing whether it truly is predictive or the same thing could happen under a baseline --

MR. BROCKMAN: The same thing can happen.

CHAIRMAN SIEBER: Okay.

MR. BROCKMAN: You cannot -- it is not

going to be the rule. The premise is that you're going to see gradual degradation that would occur, but you can't -- for example, there's nothing I can go against stupid, and that could happen somewhere that you've got someone out there who intentionally does something and puts it into a vulnerability. You get a catastrophic piece of equipment failure that has implications. We did not have -- IP2 did not have some whites, going to yellows and then proceeded on into red. They had the catastrophic failure and it had the significance that it had.

The system is not a 100 percent that can't happen. It can happen. But --

CHAIRMAN SIEBER: So it's a mixture?

MR. BROCKMAN: -- it will be an exception.

CHAIRMAN SIEBER: It will be a mixture, much less likely --

MR. BROCKMAN: Much less likely. We are seeing with plants that in our old system seemed to be the ones that continually had performance problems, and as the data is building up we are seeing the things coming together in the performance issues and in performance indicators not so much, but the performance issues coming together along those lines -- let me answer a different question you had

earlier now that I've touched on that.

The next couple of slides show you a couple of printouts off the web page, which I know everyone here is intimately familiar with, being able to get all the data. You see performance indicators and inspection findings. I have emphasized the fact that the new program consists of performance indicators and inspection findings. If you look at that chart that we had up there with all the plants you can pretty well -- I haven't looked at all the region specific data, but I would guess I could pretty well predict which one of these plants are in the regulatory response based upon performance indicators and which ones are on inspection findings, and all the ones that are one site out of multiple unit sites my first question would be I'm going to guess that's a performance indicator problem that got them there.

Without a doubt all the ones where I've got both Quad Cities 1 and 2 and what have you, most likely those are coming out of inspection findings. Our experience here in Region IV is the inspection findings are without a doubt still the driving component of this program. You cannot give away the inspection findings. The performance indicators are a good insight but the thresholds are such that

without the inspection findings that predictivity you're talking about, Jack, in being there would not be there nearly as comfortably as we want it to be.

MEMBER APOSTOLAKIS: What's wrong with the -- can you elaborate on that?

MR. BROCKMAN: I'll give you an example. We're recently seen the agency received a communication from Mr. Lochbaum talking about the threshold on reactor trips and how we don't gain insights on crossing reactor trip threshold III or V or whatever it is. The risk threshold for reactor trips to go from green to white 19. We're not going to set up 18 trips to have in a year is okay.

The absolute risk part of it doesn't necessarily go in with your gut, and certainly from what the history is and what the performance of the industry is from where they're at doesn't go into the match up what you should have as your deterministic, and once again, the risk number gets me to the ballpark. What position am I playing? My gut says I'm behind the plate. Five trips is enough, thank you very much. And you've got to bring that together. If this thing becomes risk based then the difference in the PRAs at the different plants -- you've got to then bring all of the data into a perfectly common playing

field, and we've got to have total confidence in its absolute accuracy.

The industry and PRA is not there yet. That's why we need to maintain the deterministic part of it.

MEMBER APOSTOLAKIS: So the green-white threshold for initiators is the three. That's not unreasonable, is it? I understand that the red is --

MR. BROCKMAN: But if I did it on nothing but risk -- the initial number that came up on risk when we were developing this would have been -- it was a humongous number. I want to say 19 -- 25 I think was -- it was a crazy number.

MEMBER APOSTOLAKIS: That has to do with how these numbers are derived and stop already because every such program --

MR. BROCKMAN: Yes, sir.

MEMBER APOSTOLAKIS: But I'm trying to understand. Let's say we had the right numbers. Do you think that the inspections give you insights that the performance indicator will never give you?

MR. BROCKMAN: Absolutely. The performance indicator gives me insights in one aspect. The inspection gets to things we don't have performance indicators for, and the overlap is my

verification. The inspection also does some verification that the performance indicator is being properly reported, appropriately focused, so that's my overlap on my vin, but the inspection definitely looks at parts that we don't have performance indicators for. There's not a good way that we've been able to identify yet to gain that indication off a quantifiable, reportable data.

Problem identification resolution's a great example. I don't have a number that gets calculated to say how good a licensee's corrective action program is, and we all know that's the basis upon which this entire new program is premised. I think one of the key things out of the IIEP report was the executive summary. If you read anything on that report read the executive summary, because it takes the data and actually takes a step back and tries to start drawing some conclusions about what it's telling you: the difference between risk informed, deterministic applications.

There is a difference. It's a philosophical difference. It's changing the way in which the public looks at things. It's very easy. You're going to get a fine. I understand that. $55,000. Wow. I look at my budget. That's a hell of

a fine. I look at the licensee's budget. No. That press release caused much more concern than that $55,000 check did in the overall scheme of things at the level we're talking about for a licensee.

But that --

MEMBER APOSTOLAKIS: But it seems though that we have again a conflict here, because it appears -- I agree with you that an inspection gives you a better picture of what's going on. At the same time the agency wants to go the performance-based route, so --

MR. BROCKMAN: I'll challenge that. Yes. Performance based, risk informed. Yes, sir.

MEMBER APOSTOLAKIS: You're challenging what, that the agency wants to go that way or that it's a good idea to go that way?

MR. BROCKMAN: No, no. I misspoke. I've had so many discussions with other people. The first thing I hear is risk based and that's not what you said. You said performance based. So, yes, I'm with you. Performance based.

MEMBER APOSTOLAKIS: So it seems to me that the performance indicators are consistent with this philosophical approach, and you might say that maybe we could have a first screening based on the

performance indicators, and then if you find that the numbers are disturbing then you go and do a more detailed inspection. Would that be a better --

MR. BROCKMAN: That's exactly what we do.

MR. CLARK: Let me address that.

MEMBER APOSTOLAKIS: Well, the baseline inspection is independent of --

MR. CLARK: I see it from the other perspective. As an inspector I see it as the performance indicators are overall view of the performance of the plant, and those are the roll-up perspectives of the plant. The insights that you get from the individual inspection items will be the precursors to those initiating events or those things that get you into the performance indicators.

So we're being somewhat predictive, but also if you actually look in the details of what the inspection attachments that we do are -- let me step back and say when we initially went into this in the pilot process -- I speak somewhat for many of the inspectors throughout the region and throughout the country -- we were skeptical, because we said we're moving from a process where you follow your nose after something you don't like to you fill the bins, going out there and getting inspectable areas accomplished,

and we said we are not going to be able to follow what we feel is risk significant.

Well, I can tell you -- I have some risk background -- I misunderstood what risk significant was. After going through the process for a period of time, having findings, placing them through the significance determination processes Troy and Kriss will talk about a little bit later, we gained some very valuable insights as to what the precursors to these events are, what the precursors to performance indicators are. We're seeing those come out, particularly at my facility at Cooper. We're seeing now connect the dots between some of these inspectable areas then going into performance indicators.

Performance indicators haven't tripped I'll say as yet, but you're actually seeing some degradation in those areas, and I think with the inspection findings we can go back and say this is why, because they don't understand design basis. They don't understand the performance of their operators.

MEMBER APOSTOLAKIS: I think that raises another interest in philosophical question. This business of leading indicators and trying to predict what's going to happen. Again, you can say I have the initiating events cornerstone and I would like to have

inspections before that to figure out when that indicator of initiating events will go over the first threshold.

Then you may stop and ask yourself why would I want to do that? The initiating event cornerstone is itself a leading indicator for core melt, so there is no end to this. At some point you have to draw the line and say enough is enough. I don't really want to know that the plant is going this way and eventually the initiating event cornerstone will go over to white, because that by itself is telling me something about the risk, and to say no, if I do something else I will be able to tell in advance when the initiating event cornerstone will go to white, why would you want to do that? That was against the performance based approach, was it not?

MR. BROCKMAN: Absolutely.

MEMBER APOSTOLAKIS: So where do you draw the line? I understand the desire to know, but the licensee on the other hand says, wait a minute. This was supposed to be performance based.

MR. BROCKMAN: Let me put a different spin on it, and I think you and I are very much cut from the same cloth on this.

There's not a performance indicator,

there's not an inspection finding out there that's predictive. Everything they've reported or we find has already happened.

MEMBER APOSTOLAKIS: That's right.

MR. BROCKMAN: It's reactive.

MEMBER APOSTOLAKIS: Right.

MR. BROCKMAN: And we need to admit that up front. It is reactive.

Now, the thresholds we set try to get us to the point of saying it's becoming more than coincidence. The licensee is not controlling their destiny to the way they need to be. We need to get interactive and provide assistance, provide more oversight. That's the predictivity of it. It's not that I'm going to predict when it happens. I'm not going to do that. It's the level of interaction that needs to be done to try to assuage a problem that's moving from going further down the line. I think that's very good for the individual items.

We've got the other thing that we haven't -- the magic word we haven't talked about yet, and I guess it's time we throw it on the table, cross-cutting issues.

MEMBER POWERS: We're going to get to it.

MR. BROCKMAN: That might be the one that

has a bit of predictivity. And once again, as you've told -- I talk with a little picture, and let me throw my view of cross-cutting issues here. I have a house sitting on stilts by the ocean. Each one of these cornerstones is a stilt. When I have a degraded cornerstone I've broken a stilt. My house tips a little bit. If I break another cornerstone it tips more. If I break enough and you get into degraded multiple the house slips off and it falls down in the ocean. We have a problem.

The cross-cutting issues -- I've got somebody out there who's taking nibbles out of all of my stilts. I get to the point finally where I have not had a single stilt break, but the stilts as a whole will not hold the weight of the house, and the house catastrophically comes down, and I didn't have the cornerstone fault beforehand. That's what cross-cutting issues are trying to address, taking a bite out of each stilt.

Typically in the licensee's corrective action capabilities, human performance initiatives, those are the areas that manifest themselves throughout plant operations as we all know. That's the concept of cross-cutting.

MEMBER POWERS: And your analogy is nice,

because we understand gravity. Now come to the real situation. What's the phenomenalogical consideration that leads me to believe that I can tell people who are having the bites taken out of their human performance activities and I can tell that because of one of the performance indicators.

MR. BROCKMAN: I personally believe that the cross-cutting issues we identify I'm finding more out of the inspection findings. I've got to go into the whys are these happening. I don't have a human performance indicator --

MEMBER POWERS: It's really coming out of your root cause analysis.

MR. BROCKMAN: You've got to -- and it keeps on going back to their corrective action program. Are they effectively managing -- have they identified it? Are they dealing with it? Then I back off.

MEMBER POWERS: But the trouble is are you looking -- well, the question is are you looking at the root cause analyses for all the non-cited, non-written up kinds of inspection findings?

MR. BROCKMAN: We sample. There is a sampling, and Art can probably speak very well. The leadership for our corrective action inspection

problem identification resolutions under his domain -- you may want to share --

MR. HOWELL: Right. First of all, we do try to identify those things that are potentially the most significant to understand better the nature of the extended condition and why they happen, and we use not only the docket but we also use licensee records to do that, and we get all that information.

So to answer your question directly, yes. We look at issues that are not in the docket that we have not necessarily already inspected and put into our inspection reports. We try to assess trends and patterns from our review of information and to make some judgments about how effective a particular part of the program is working.

The difficulty is what do you do with all that? How significant is all those minor issues or issues that don't trip an SDP threshold. So you have a collection of insights that perhaps you can share with a licensee but it's not at all clear what that's telling you about performance given that we're only sampling to a very small rate. A very small percentage of issues ever get looked at in the form of our reviews. We try to do the best we can.

MR. GWYNN: I have a question if you don't

mind. While you were at Waterford did the licensee share with you its internal performance indicators --

MEMBER POWERS: Yes.

MR. GWYNN: -- the indicators they used to manage their facility?

MEMBER POWERS: Well, they shared with us some set of them and --

MR. GWYNN: Typically what I see is that they have very different thresholds than what we use, and it's appropriate. It's their -- they're in the control bin. And I think significantly all of the licensees that I'm aware of monitor human performance and have human performance indicators that they rely on to get them clues that things are not going in the right direction at their plants.

That's perhaps the closest thing that I've seen to a predictive indicator that licensees use, but they're very -- there's a lot of variability. Every organization has a different approach, and there's a lot of unreliability in the data systems, and so we wouldn't adopt those for the agency's use.

MEMBER POWERS: Yes. They can't. Certainly Waterford -- they've identified human performance as one of their concerns, whereas if it's one of your concerns about Waterford it's not one of

your high level concerns, but it is for them, and they've also looked at safety culture, which I don't think you would ever try to look at. They probably are looking at management philosophy, which I hope you wouldn't look at.

Clearly they have a different set.

CHAIRMAN SIEBER: I think the tools that they use are management tools and not regulatory tools, and you can't use one for the other, and actually the Waterford system is pretty common. I can name you a dozen other plants that use basically the same system. Wherever that steward went that system went with him. Look at Palo Verde and --

MEMBER APOSTOLAKIS: We will discuss the cross-cutting issues later.

CHAIRMAN SIEBER: Yes. One of the things I would point --

MR. BROCKMAN: If it's a topic and you're not tied to the agenda this would be the time to talk about it.

CHAIRMAN SIEBER: Okay. One thing I would point out -- and I think this has been a great conversation because we're finding out the things that we needed to learn to do our jobs from you, and that's a great benefit for us. On the other hand, I keep

looking at the schedule and my airplane ticket, and I would like to move on.

MEMBER APOSTOLAKIS: The cross-cutting issues though -- if there is a place to discuss them then we should. Otherwise we do it now.

CHAIRMAN SIEBER: Yes. It's important.

MR. BROCKMAN: This would be where we would do it. Now, also if it's an individual thing we've got the entire noon hour if you would like to talk about that. I'm not trying to suggest -- however you all want to do it we're here to support you.

MEMBER APOSTOLAKIS: The thing about the indicators that we saw at Waterford yesterday when it comes to human performance I don't know how much they're telling you, because there is an implicit assumption there that -- when they plot the human error rates these are during normal conditions. Right? In fact, they told us that every morning they have a senior management meeting where they evaluate what happened and they declare something as being a human error. I think that's a reasonable thing to do because it's obvious what is a human error.

But these human errors are found to occur during normal operations, and there is an assumption there that if you're doing well in that respect then

if you actually have an initiating event you will also do well. And it's so clear to me that that's the case, that if you're doing well with respect to routine maintenance then if there is a need to decide to go to bleed and feed it will do equally well. I don't see that --

MR. BROCKMAN: In fact, you can build the argument it could take you in either direction. The higher sensitivity and the urgency makes people more focused, they'll do better, and the other side is is the infrequently performed activity and the stress will come up as they perform less efficiently.

MEMBER APOSTOLAKIS: That's right. Exactly. So again, I'm not arguing that you shouldn't be doing well because you don't know. I'm not saying that. But I think to feel comfortable that one was switched to this -- when the initiating event occurs you have a very different culture perhaps, so if that doesn't help me that the human error rate goes down what does? It seems to me that I have to do inspections and evaluate what is happening and maybe also use questionnaires because now the issue of safety culture in my mind becomes much more important.

Now, at the same time I know that the commission has cooled to the idea of the agency

looking into safety culture issues, so they're clear it's a problem, because if they say don't do it you don't do it. But we have this problem it seems to me -- and maybe -- first of all, I would like to know what your reaction is to these thoughts and second, perhaps we should try to sensitize the commission to these issues.

But I just don't see how normal indicators help me understand what the operators are going to do under extreme time pressure in a critical situation.

MR. BROCKMAN: Let me give you my thoughts, and I want to ask Troy to inject a point too here based upon your November finding over at River Bend where you made the cross-cutting issue finding.

MR. PRUETT: Okay.

MR. BROCKMAN: One thing that I would say with respect to human performance if they can't do it well under normal conditions I have no faith they'll do it right under stressful ones.

MEMBER APOSTOLAKIS: And I think that's a very good point.

MR. BROCKMAN: It establishes that's why we're looking at it from the normal. At least it says -- I have not lost confidence. I can't say I've got it, but if they don't do it right under normal

then I have lost my confidence they'll be able to do it under more exigent conditions. So I think that's the value that brings. It answers that question. Not the other side of the coin.

Now, Troy was my senior resident out of River Bend, just recently has come into the site. He mentioned that to you. One of the things that he has done -- the new program allows us as part of the normal inspection program to try to identify cross-cutting issues in this area, and he's one of the few who's been able to put together logic and have a respected inspection finding in this area nationally, and I'd like him to be able to share what his logic was on going about that last fall.

MR. PRUETT: Essentially we've developed a human performance cross-cutting issue in the operations area which involved questioning attitude and operator awareness of plant conditions, and initially that started with -- we looked at performance indicators associated with the risk significant systems of the plant. None of those performance indicators had crossed a threshold over into the white band, but we were seeing an increase in hours in plant unavailability on selected systems, mainly service, water, and some diesel generator

systems.

With that we decided to take a multiprong approach and look at -- implement the baseline inspection program by -- we used a maintenance rule procedure to look at those systems to see if they were accounting those unavailability hours correctly, if they classified the deficiencies properly and implemented the appropriate corrective actions.

We also went after post-maintenance testing in those areas as well as surveillance in those areas, and our op evals inspection focused on those same systems, and what we were able to come up with was a number of deficiencies involving each of those inspection modules on those systems, and as it turned out there were inappropriate engineering evaluations with inappropriate operator reviews associated with those that involved a lack of understanding of the system or a lack of awareness of plant indications associated with that issue, or inappropriate post-maintenance test methodology which was due to a lack of operator or engineering or maintenance craft understanding.

And eventually we developed a trend of approximately 20 to 30 findings associated with some type of poor or inadequate human performance aspect

with each of those inspection modules, and we rolled those up together and termed it a cross-cutting issue.

And it gets to what Ken was pointing out earlier. There's a lot of stilts out there, and what we were seeing was bites being taken out of a half a dozen or ten different areas.

MR. BROCKMAN: The key thing is what do you do with that? We brought it forward as a finding. The licensee in fact embraced the finding. They didn't necessarily like it being documented. That's a different issue. But they had no disagreement at all with the insight, with the assessment, with the finding being brought forward. And they have initiated corrective actions to be dealing with that within the licensee response arena, and that's what we did. We brought it forward and then we sat back and watched the licensee deal with it.

You would notice from our annual assessment letter that came at the end we see they are making progress. They are doing what you would expect a licensee to do in the licensee response man, and that was not a conceptual problem with respect to our annual assessment. We didn't carry it on as an annual level concern because they were dealing with it in a manner that was responsive to try to improve and make

that problem go away.

CHAIRMAN SIEBER: The big question here though is -- obviously, Troy, you've done a really good job. The question is do the other 12 resident offices in your region -- can they do the same kind of job and can they do it nationwide to gather together these insights to make it work?

MR. PRUETT: There's only one of me. We don't have --

MR. BROCKMAN: There is no pride in Troy's family. He has garnered it all in his --

MEMBER APOSTOLAKIS: But that was my next question is very much related to what Jack said. Let's say the commission said go ahead and do something about safety cultures and work environment. Do you --

VOICE: And they will say that eventually.

MEMBER APOSTOLAKIS: But do you think that it is possible to identify a number of indicators that will tell me something about the safety culture, because this is the argument right now. In fact, Commissioner Diaz came to me and we asked why do you feel that we shouldn't be looking into this? He says, You can't measure it so leave it alone. Essentially that's what he said.

So is it -- measuring it probably is a very ambitious thing to do, but at least can we identify if your indicators say if I look at A, B, C, D then I can tell something. Now, my colleagues with the utility experience sometimes tell me that the moment you walk into a plant within a minute you know whether the culture is good. Right? And if they talk about Coca-Cola cans being left --

VOICE: In the ventilator ducts.

MEMBER APOSTOLAKIS: Yes.

MR. PRUETT: I think you can take some of the performance indicators we have right now, the SCRAMs or the safety systems or BSF actuation type indicators and look at those and provided there's not a single issue with -- where you take fault exposure hours that put you into that threshold, but if you have multiple instances of where you're increasing your unavailability numbers and you actually look at the data, that's an insight I believe into human performance.

MEMBER APOSTOLAKIS: So it's the repetitiveness --

MR. PRUETT: I think so.

MEMBER APOSTOLAKIS: -- because it points towards an underlying cause.

MR. PRUETT: That's right. And you have to use the inspection program to go find out what that underlying cause is.

CHAIRMAN SIEBER: It's not performance indicators that's doing this though. It's analysis.

MR. PRUETT: Right.

MR. BROCKMAN: Absolutely. And the challenge is going to be how thin do you want to slice this? How good do you want it to be? We're going to talk later on today about some things we're doing with California plants. PG&E right now has declared protection under Chapter 11. We know that. I have specific things that the residents are following up on on basically a daily basis as part of plant status reporting that gives us indications that the safety culture that I'm talking now at 30,000 feet is being properly focused, that we're not losing it.

Yes. I can come up with something at that level pretty good. Now, if you want to know do I have the ultimate confidence that everybody's going to record every single issue no matter what and bring it in, that's a much thinner slice and becomes much more difficult to do. So the answer is where we want to set that threshold to be able to do that.

MEMBER APOSTOLAKIS: So to close this

subject so Mr. Sieber will not have a heart attack or high blood pressure --

CHAIRMAN SIEBER: No. I already have that.

MEMBER APOSTOLAKIS: -- you would not discourage the ACRS from pursuing this issue and coming back -- going back to the commission and saying this is something we have to look into? Look into it doesn't mean establishing a regulation tomorrow, because that's a common misunderstanding sometimes among the licensees, but understand it a little better. What do we mean by safety culture, and maybe are there any insights one can draw by looking at certain things and saying something about it? Would you discourage us from doing that?

MR. GWYNN: I think this is a very difficult subject. When you're talking about true safety culture you're talking about are the operators sleeping in the control room? Are the operators and the maintainers performing their duties by the book so that you have confidence that the surveillance tests have really been performed, that they've really met their acceptance criteria, that the logs in the control room haven't been tampered with, that the strip charts from the control room recorders haven't

been flushed down the toilet. That's very difficult to get at from the outside. I think that it's almost impossible to get at from the outside.

And so I don't know and I don't have a clue as to what this agency might be able to do to get at that type of safety culture issues that are I think at the root of what the industry and the public ought to be concerned about. I know from inside the organization you can get at those problems.

VOICE: Yes, you can.

MR. GWYNN: But from our position it would be extremely difficult if not impossible in my view to be able to deal with and identify safety culture problems. That's just a personal opinion.

MR. BROCKMAN: -- morally I can't argue with that. Your premise has the moral high ground totally captured. The difficulties of implementing an inspection program in this area though are significant, especially with no rules or regulations to fall back on. You have to -- and this program does more to get there than anything else because it's performance based.

We make findings now -- we've made findings in the first year that under the old program would have not even been documented that have been in

observation, and we've got white findings out there now. It's a performance finding. It was not a violation. You did not violate the rules, but your performance is of such significance that it's white.

We've got other ones on the other arena. I think those issues go very much toward the aspect of the safety culture there.

MR. GWYNN: I think that we -- if the agency did put together an inspection program to deal with safety culture we could do it, but I think that we would be fooling ourselves that it had any meaningful results in terms of evaluating the true safety culture at the facility.

MEMBER APOSTOLAKIS: But there is a later question. Maybe I agree with you that this would be very difficult for us to do, but there is also another side, that what we do intentionally or unintentionally does affect the safety culture of the plant, does it not? Should we try to understand then our impact on the safety culture of the plant? Would that be easier to do in terms of the inspections we do, in terms of other things we do?

There was this report in England where they had as an example of an overly prescriptive system that had a negative impact on the safety

culture of the licensees, the American system. Now, should that tell us something that we should be doing something about it, or no, they don't know what they're talking about, because that's something we are doing now. It's not that we're trying to evaluate what the licensees' processes are. We are doing that to them. Do we understand enough to do that or is that a hopeless thing or maybe shouldn't be very high on the priority list?

MR. BROCKMAN: Our processes -- put yourself in the laboratory with yourself being the professor. I now have a process going on that has 10,000 input variables to it, and I want to identify what's the impact of this one, and it has both positive and negative impacts and I want to determine are the negatives greater than the positives. It's easy to do as long as I can separate out the other 9,999, and that's what I don't know how to do.

MEMBER APOSTOLAKIS: Okay. I think I've got basically -- you will be out there fighting with us.

MR. BROCKMAN: The other thing that would cause me a concern is the further we get down this path the greater the expectation by external stakeholders that we could be totally predictive on a

step change would never occur. You won't -- if you can do this you'll never go from green to yellow. That can still happen no matter how much of a handle we've got on their safety culture --

MEMBER APOSTOLAKIS: All right.

MR. BROCKMAN: -- and I would be concerned about that.

MEMBER POWERS: It seems to me the insight that Ken -- that I need to spend more time thinking about with respect to safety culture is the examination of the corrective action program and the root cause analysis. I think if what I have is a great deal of confidence that there are a number of licensees that know exactly what they mean by safety culture. I see documentation that they have identified deficient safety culture, they've sat about correcting it.

Those corrections that they have documented, written down in magazines say we address these things are to my mind safety culture issues, and they seem to have gotten better performance by their metrics.

Their metrics are a little more sensitive. They're a little more comprehensive than yours, but they're their metrics and they did well.

It seems to me Ken's offered us an insight here that we can get an appreciation appropriate for the regulatory program by looking at how they handle the root cause analyses in their corrective action programs, and that might be a better way to pursue it than looking for performance indicators and things like that.

MEMBER APOSTOLAKIS: And again, by safety culture -- maybe we should have said that much earlier -- I don't just mean the attitudes of people. It's the totality of how they do business which includes the organizational issues, how certain analysis are done, and these are more tangible in my view. I agree with Dana that it would be easier to see what would you do -- how would you do the root cause analysis here rather than trying to figure out what the attitudes of people are, which is really a hopeless task?

So I think I got your input --

CHAIRMAN SIEBER: Enough to write your report?

MEMBER APOSTOLAKIS: Well --

CHAIRMAN SIEBER: Why don't we move on?

MEMBER LEITCH: Another question about the reactor oversight process. There seems to be some

confusion regarding the difference in the meaning of the green color between performance indicators and inspection findings. Does that difference cause any confusion in the agency? It causes us a little bit of confusion. We see green meaning one thing in performance indicators and green meaning something different in the inspection finding areas.

MR. BROCKMAN: Green means the same thing in both. Green as -- but let me -- as has been defined, green means the issue of significance such that it is in the licensee's control bin. That's what green means.

However, the American public does not see green that way, and we as engineers can define it all we want to and they don't accept that definition, and that's Dr. Lippoti's argument is you call it green, you've told me what it is. That's very nice but I'm sorry. I forget about that ten seconds after you tell me and green is good, and in performance indicators green is good, and all my residents have a sign out there at their resident's office, green is not equal to good when it comes to inspection findings. It's still an issue.

MEMBER APOSTOLAKIS: So it doesn't mean the same thing.

MR. BROCKMAN: And that's the dilemma you get to is we as engineers can define it all we want, which we've done in this program, and it is a continual challenge to put that in perspective. More and more that it's out there the more people are understanding what we're saying.

There was a point that Jeff brought up earlier where he -- everybody is understanding what's going on at Cooper, in the neighborhood of Cooper. I can promise you at Fort Calhoun the public does not have an understanding of white issues and how they're dealing to the degree they do at Cooper. Why? They haven't had any. And until you get this being played out in the local arenas and they see one and have to deal with it there's going to be confusion out there.

Art, your thoughts?

MR. HOWELL: No. They clearly are different. Licensees strive to maintain themselves in the green band for PIs and they strive very hard not to have any green inspection findings or any other inspection findings for that matter.

MEMBER LEITCH: I have another question about the reactor oversight program. It seems to me that there are apparently different weights unconsciously applied to the different cornerstones.

For example, there was one plant in Region IV that we read about in our briefing material -- I think it was Callaway -- that had three radiation protection issues, and so they had three white findings in radiation protection. There was another plant, San Onofre, that had a major operational event, switch gear fire, wound up melting the turbine bearings down and grinding to a stop, and that got a non-sited green violation. At least that's the way I read it.

VOICE: You're accurate.

MEMBER LEITCH: I think -- and it seems to me that those are just disproportionate. I'm not questioning the significant determination process if the blanket was properly followed and correctly led you to those conclusions, but do you find in your mind that there's something disproportionate about those two findings?

MR. HOWELL: Really, one of the challenges that we have is how to deal with issues that don't lend themselves to PRA analysis, and that's really what we're talking about. And we've made an effort to define deterministically what's important and what isn't in this first year, and as we've gone along we've found as Pat indicated that issues heretofore that perhaps we wouldn't have considered to be

particularly important or spend a whole lot of time looking at have been elevated in importance vis a vis the new process, and certainly that's also true in the other direction.

And the question is are we in the right place yet, and I think there's still a number of questions out there and a number of these deterministic SDPs where the results are getting us to the right place. Are we truly treating -- is it truly appropriate for example to have ALARA findings cross a green-white threshold or a white-yellow threshold for that matter when on the other hand you can have a fire at a plant melt your turbine, challenge the operators, put them under stress, et cetera, and so it's very difficult to make comparisons in terms of significance.

MR. GWYNN: I'd like to just make a comment at this point that I think helped me to put the ALARA findings at Callaway into good perspective from a safety standpoint. I was visiting the Palo Verde plant with Commissioner Merrifield not too long ago and as we were being briefed they raised the issue of the Callaway white findings in ALARA, but right behind the head of the vice president at the plant were their ALARA statistics, and for three very large

power reactor units their total dose to their operating staff was less than the dose to the operating staff at Callaway for one smaller unit.

And how can you say that we're not putting our attention in the right place at Callaway by focusing on ALARA when in fact they have those types of results at their facility? On the other hand at San Onofre there were no safety systems that were challenged as a result of the fire and explosion that occurred. And so I think from a risk standpoint the program is taking us in the right direction at both of these facilities. It's just -- I may be wrong, but that's my belief.

MEMBER LEITCH: I don't mean to down play in any sense the Callaway incident. In fact radiation safety is a critical part of our business. That's not where I'm going. What I'm trying to say is did the process -- and I believe the process was properly applied as per the process, but my question really is did the process lead us to reasonable conclusions?

MR. BROCKMAN: We asked the same question when we were processing the Callaway aspect. There was a lot of debate going back here -- three whites as to where this is going. It was a great deal of exactly what you're saying. Is this taking us to the

right point?

One of the things we used to reach our decision was we're going to follow the process in the first year and then we're going to identify that as part of the feedback process, this needs to be looked at. We're not going to set off down the path and in the first year, which is the initial implementation year, say first time we come across a bump in the road we throw away the process. What credibility do we have with our stakeholders if the first time we hit a bump in the road we abandon the process? We chose not to.

If that in fact had not been given as one of the issues to be looked at at the end of the year of lessons learned -- and it was if you remember, and the internal working groups and the external working groups, the SDP for ALARA was one of the issues that needed to be looked at to see is it coming up in the right spot and if in fact it's being looked at and there are revisions coming out.

So I would say your concern is one a lot of people had and there are certainly some marginal adjustments that are being made to it that may preclude such an imbalance in the future. I'm not sure exactly where it's at at the moment, but I know

it's something that's definitely being looked at because it just didn't pass the initial wow test.

CHAIRMAN SIEBER: When I looked at that I didn't come to the same conclusion because in my opinion the regulator's job and the licensees' job are the same, which is protection of the public health and safety, protection of the health and safety of their workers, which is Part 20 and the protection of the reactor and cone system pressure boundary and your mitigating systems and so forth, but if you melt a turbine bearing that's dollars and outage time, not safety related, so that tells me the whole significance determination process one way or another worked in this case to distinguish between what is important from a regulatory standpoint from those things even though they may be costly are not safety significant, and so that's what I got out of that. That's the way I would have looked at it.

MEMBER LEITCH: But it wasn't just the main unit though. There were other aspects of fire -- failure to identify precursors that could have led them to the --

MR. BROCKMAN: Yes. And there's a lot there, and I can go into that, but very much all of that was in the power generation side of the house.

And what it really becomes is appropriately communicating that to all the concerned stakeholders, because that's what we're talking about. Three whites versus one white. Will that define the action that we took? And we were questioning not whether it was a white issue. It was how many.

The other part of it very much though is to us doing our job in communicating that, generating confidence in our external stakeholders that we're appropriately regulating the industry, making sure the industry is appropriately focused on the corrective actions in addressing embracing issues, addressing them, correcting them. Those are where you get out on some of the other parts of it. And it's an interesting dilemma at the moment when everything is not perfectly risk informed.

CHAIRMAN SIEBER: But that's what safety culture is, is being able to make these decisions between what is significant from the standpoint of human beings and the safety of the plant versus what is significant as far as being commercially viable is concerned, and that is something that has to be taught by the agency.

MR. GWYNN: We have both of these issues on the agenda for today, and --

CHAIRMAN SIEBER: We may have covered them.

MEMBER POWERS: I think there's a lot more that we want to go into in a couple of those issues, but they follow this track.

MR. GWYNN: Yes, and I would like to note that Gail Good, who's the branch chief for our emergency preparedness health physics and safeguards inspections here in Region IV has joined us in the room, and she will be presenting the Callaway ALARA experience a little bit later this morning. And we have the SONGS electrical fire on the agenda for this afternoon.

VOICE: So what's next?

CHAIRMAN SIEBER: Let me suggest at this time since we are a few minutes behind, if you are finished, which it appears that we are, maybe we can take a 15 minute break at this point.

(Whereupon, a short recess was taken.)

CHAIRMAN SIEBER: The next presentation we're going to listen to is the significance determination process as it's implemented here in Region IV, and I think after that we'll break for lunch because lunch is a hot lunch, and if we don't break then it will not be a hot lunch. And so let's

move briskly through the SDP.

MR. GWYNN: Our two senior reactor analysts, Kriss Kennedy and Troy Pruett, will be making this presentation. I've asked Kriss, the primary presenter, to try to skip through some of the information and maximize the time focus on areas that might be of interest to the committee.

Kriss?

MR. KENNEDY: Good morning. My name's Kriss Kennedy. I was selected as SRA, started the job in November of 2000, started the training in December, and I'm still in the qualification process as is Troy, who you met earlier. My background is I started out in the agency as an operator licensee examiner. I've been the resident inspector at Comanche Peak and the senior resident inspector at Arkansas Nuclear 1.

The senior reactor analysts in Region IV are assigned to Division of Reactor Safety. Art Howell is our boss and we are the focal point for risk informed activities in the region. In addition to Troy and myself we have a branch chief in the Division of Reactor Projects that was previously qualified as an SRA, and we also have three staff members that are going through the advanced risk training that some of the regions are sending their people through. In

fact, they're in their second week of training this week, so those are the resources we have available in Region IV.

We're going to go ahead and skip the next couple of slides where I was prepared the discuss the SRA functions in Region IV, the various tasks that we perform, and we'll go directly to the slide entitled status of risk tools. I think that may get us more into some of the discussion areas that you are interested in.

CHAIRMAN SIEBER: One quick question which would prompt a yes or no answer --

MR. KENNEDY: Okay.

CHAIRMAN SIEBER: -- you said that these are the resources available to Region IV to conduct these functions. Are those resources in your opinion adequate, two people? Yes or no?

MR. KENNEDY: Yes or no.

CHAIRMAN SIEBER: Everyone is ready to take notes.

VOICE: You will be quoted.

MR. KENNEDY: Yes. I think right now they are. If the process goes where the program office wants it to go it will be enough also. There -- I guess I'm not going to give you a yes or no answer.

CHAIRMAN SIEBER: I accept that.

MR. KENNEDY: During the first year of --

CHAIRMAN SIEBER: You've already said enough.

MR. KENNEDY: During the first year of implementation and during even into the second year of implementation there's a lot of startup costs with using the new process. The phase two worksheets which we'll talk about more are just coming out, inspectors are learning how to use them -- actually using them and so we're pretty busy.

CHAIRMAN SIEBER: I imagine.

MR. GWYNN: I'd like to just make a parenthetical note here that Region IV management made a decision early on in the process that we were going on select the very best people that we could to be senior reactor analysts in the region because they were such critical positions, and as a result those people are also very promotable. We had two of the very most talented senior reactor analysts that were available to the agency. Both of them were promoted to branch chief positions and that's why both of our SRAs at this point in time are in training.

But we have two highly talented SRAs in training. Their work load will go down as soon as

they complete their training, and I think that we'll be back in a more normal mode of operations and then Kriss might have been able to answer yes to your question emphatically.

CHAIRMAN SIEBER: Thank you.

MR. KENNEDY: And Troy didn't get an input either, so Troy may have --

MEMBER POWERS: I guess the question goes on. It will probably get into it as you go through your presentation, but I note one of the slides that you skipped over is the development of comprehensive risk informed resources, and I'm going to be anxious to know what kind of risk resources that you have in the area of fire risk, shutdown risk, and seismic risk.

MR. KENNEDY: You haven't looked at the last slide. Those are actually listed as challenges that we'll get into.

MEMBER POWERS: If the resources are adequate then why is what we have adequate?

MR. KENNEDY: If we could go on to a couple of slides I'll hold that as a question and we'll go on to that.

This portion I wanted to discuss the status of the risk tools that we have available to us,

and primarily these risk tools come out of manual chapter 609, significance determination process for the first part. The risk informed inspection notebooks also known as the SDP phase two worksheets -- in Region IV NRR has issued eleven of the 15 worksheets for Region IV plants. We're at 73 percent there. NRR has also has a processing program to go out and benchmark those phase two worksheets, make a site visit, sit down with the licensees, PRA folks, and go through system by system, compare the results that the licensees get with their models, compare the results that we get with the worksheets, and identify any changes or errors that we need to correct on the worksheets.

MEMBER POWERS: I take it this has not been done with Waterford?

MR. KENNEDY: It has not been done with Waterford. No.

MEMBER POWERS: Because they were wincing. I mean, they feel left out. They feel hurt and unloved and unwanted.

MR. KENNEDY: Well, they shouldn't. There's only been four benchmarking trips to date. Three of them have been in Region IV, so it's a process that's ongoing and will continue at least

through -- to completion, which may be the end of next fiscal year, so some plants will wait -- will have to wait.

The other risk tool -- one of the other risk tools that we use is the standardized plant analysis risk models, the SPAR models. Those were developed by INEL. They've come out with revision three for some plants. In Region IV we have eight of 15 revision three models out, and of those eight none have been QA. None have gone through a site QA process.

MEMBER POWERS: What is the meaning of QA? They've presumably complied with the NRC's mandates on software QA.

MR. KENNEDY: By QA I really mean similar to a benchmark trip where they go out to the site with the model, compare the results of the SPAR model to the results of the licensee's model and identify where the differences are.

MEMBER POWERS: So it's really a verification then?

MR. KENNEDY: Yes. The term QA comes from the revision two models where they issued a revision -- what they called 2I and then after the QA process they would call it revision 2QA, so we're at

revision 3I for these plants and once they're QA'd they'll be a rev3QA.

CHAIRMAN SIEBER: Quick question. When you make a benchmark trip to a licensee's facility you're comparing the results of the SPAR model against a licensee's PRA. What criteria if any do you use to judge the quality of the licensee's PRA?

MR. KENNEDY: We're not really there to review the quality of licensees' PRAs. That's the first part. But what we do is when we identify significant differences in the results of the worksheets and the results of the licensee's model then we start asking questions, figure out what they have in their model, why they're getting different results, and if we're looking specifically at that area and there's a specific problem with the licensee's model in that area -- although that's not the norm. It's typically a problem with the worksheet -- then we'll point that out.

And we had one example of that at South Texas I believe where they -- we identified an error in their model. It was a minor error with the steam generator PRBs, and --

MR. PRUETT: The PRBs. They assumed they only needed one PRB for an accident. In reality, we

challenged that, and I believe they needed to have a minimum of four.

MEMBER POWERS: This is not a trivial mistake.

MR. KENNEDY: Well, in the overall impact on the PRA it was not a large significant error.

CHAIRMAN SIEBER: Now, if you're using the SDP process for enforcement for example or to evaluate a licensee application to NRR even though NRR will probably do that examination, or ask CENED-ED-EH to do it, as they have in the past, would you do some different kind of evaluation of the licensee's PRA?

MR. KENNEDY: The SDP is designed to evaluate inspection findings, performance issues that are identified at the plant. So for in the case of amendment requests where a risk analysis is done that is done using standard risk analysis techniques and is done by headquarters or other contractors.

CHAIRMAN SIEBER: Okay.

MR. GWYNN: When we get into the enforcement arena and we're talking about the risk significance of an issue, then typically that is extensively discussed at the enforcement conference with the licensee and differences between our results and their results are determined as a part of that

pre-decisional enforcement conference.

MR. BROCKMAN: But if it's a regular conference which is what the new process has, as opposed to the old pre-decisional enforcement conference, those same rules apply. Significant discussion on the risk insights that they gain. In fact, we've recently had one with Cooper and there was a lot of subsequent submission of material back and forth because of inadequacies we found in their presentation on their risk assessment.

MEMBER APOSTOLAKIS: A related question -- I noticed in the -- in attachment two of our notebook here, which is the attachment to the letter you transmitted to Mr. Ray of Southern California Edison. It says somewhere here that the team concluded that the risk assessment was conservative. Using the current leading probablistic risk assessment model in the San Onofre office safety monitor in Unit 3 condition of core damage probability for the event was calculated as 1.4 x to the minus four, and the team noted that the assessment did not take that into account.

Now, the thing is it seems that you are using additional risk tools in addition to SPAR and the SDP --

MR. KENNEDY: Right.

MEMBER APOSTOLAKIS: -- worksheets, and in this case it was a safety monitor signing off. Now, has anyone from the agency reviewed this safety monitor to know what's in it and that it does a good job calculating core damage probabilities?

MR. KENNEDY: I don't know that there's been any formal review of that particular tool at San Onofre, although just to note -- and we'll get into this -- we also used the safety monitor when we did the benchmarking trip at San Onofre and compared those results too. But as far as a formal review of their safety monitor, I don't believe that's been done.

MEMBER APOSTOLAKIS: But the South Texas Project PRA has an excellent reputation in the community, and we were just told --

MEMBER POWERS: They couldn't even get their success criteria right.

MEMBER APOSTOLAKIS: So, I mean, just because they have television screens in every room at San Onofre that doesn't mean that their underlying models are meaningful.

MR. KENNEDY: And we agree 100 percent with you, and that's why we don't rely solely on the licensee's models and tools and information to come up

with a risk assessment. We --

MEMBER APOSTOLAKIS: So in this case you also did your own calculations, because it says the core damage probability was calculated at San Onofre?

MR. KENNEDY: Yes.

MR. BROCKMAN: We did. In fact, we used the -- actually I was only here for the very beginning of this event and then I was in training the next week, but we did run this on this SPAR model.

MEMBER APOSTOLAKIS: You did?

MR. BROCKMAN: Yes. In fact, if my memory serves me correctly, Jack Shackelford had that -- ran that particular -- was our SRA who did that. Our process would be -- is any time on a daily basis that we identify an issue -- an operational issue we get the SRAs involved with it very early, and for something like this, a regulatory conference, we would have our SRAs running their independent analysis. We would have that being confirmed with insight from headquarters, research, IIPB, the NRR risk insights so that we would have a relatively consistent position as an agency.

This statement here then would be made because there was a reasonable agreement between the two numbers.

MEMBER POWERS: I guess I'm curious what you mean by you ran it on the SPAR model. A SPAR model's not a fire model. It doesn't have a fire growth model in it. It doesn't have a smoke model in it. So what does it mean that you ran this problem?

MR. KENNEDY: Essentially we input the transient into the SPAR model.

MEMBER POWERS: Yes. But that doesn't --

MR. KENNEDY: The transient that was caused by the fire.

MEMBER POWERS: That doesn't explore what the fire could do. That wasn't even questioned.

MR. KENNEDY: It did not explore what the fire could have done. We evaluated what actually happened. The transient that resulted from the fire is what was evaluated.

MR. GWYNN: And that's our typical approach, including the typical approach of involving both NRR PRA experts and research PRA experts in validating our results for those significant events that they were contemplating to respond to as a result of our risk assessments.

MR. BROCKMAN: And this is an essential difference. An event under the new program is evaluated for what happened, whereas an identified

condition is identified for what could happen.

MEMBER POWERS: We'll come back to that I suspect. For instance, in one of your findings was that there were unqualified fire barrier penetration seals --

MR. KENNEDY: Right.

MEMBER POWERS: -- and a conclusion was reached that that was not risk significant based on ignition frequency. I don't really understand ignition frequencies myself, but when I say I look at risk significance on a penetration barrier I really should be looking at the ignition frequencies on two sides of the barrier, and I should be looking at the probability if the barrier fails, none of which show up in most fire protection models and certainly don't show up in a SPAR model.

MR. KENNEDY: That's correct. A SPAR model does not model fires, external events, and most of the fire studies done at the plant are really screening type studies and not risk studies.

MEMBER POWERS: And most of them assume 100 percent liability of fire bearing penetration seals.

MR. KENNEDY: Right. That's true.

MEMBER POWERS: And so when you're looking

at the risk significance of a penetration seal it's going to come up zip.

MR. KENNEDY: It depends on the issue. In the event where the inspector has identified that a fire wrap around a cable in a room is degraded or is not in accordance with the tested configuration --

MEMBER POWERS: I can do that one by hand. But a penetration -- that's a real risk item. I'm sure I can do that one by hand.

CHAIRMAN SIEBER: Well, that tells us as we said in our research report we need to do more work as an agency on fire, because there's a lot of stuff that isn't --

MEMBER APOSTOLAKIS: It's not just fire. It's also a bigger issue here. We've got to move into risk information inspection processes of the regulations in general. It seems to me that we are not spending or paying enough attention to the tools that we will be using --

CHAIRMAN SIEBER: That's right.

MEMBER APOSTOLAKIS: -- to make these assessments, and even the SPAR models there is an underlying computer problem which has never really undergone any kind of review.

Now of course the situation is not very

bad because you have independent assessments. You use SPAR. They use -- the licensee uses his own model and so on, but here is a safety monitor -- people have been talking about the San Onofre safety monitor for a long time now, and pretty soon it will be accepted because we've been talking about it. It's like a celebrity. You're well known for being well known.

MEMBER POWERS: The other problem -- inconsistency that I see is we plow down through these thermohydraulic codes worrying about every twitch in the computer language, and make arguments for compensating errors and things like that to the third decimal point --

MEMBER APOSTOLAKIS: That's right.

MEMBER POWERS: -- and then in the risk assessment tools we say, Well, we use SPAR for a fire problem.

MEMBER APOSTOLAKIS: There is a reason for that, because the risk guys are better than the thermohydraulic system.

MEMBER POWERS: Granted.

CHAIRMAN SIEBER: Let us move on.

MR. GWYNN: I'd like to just mention that this is a risk informed program. We have very smart people. We pay them a lot of money to be smart.

MEMBER APOSTOLAKIS: Do they agree?

MR. GWYNN: If in fact there was a significant potential associated with a fire protection feature at a plant that could have and would have significantly adversely contributed to an event had some circumstance not occurred, some unplanned and undesigned circumstance not occurred then we would pay close attention to that, and we can make regulatory decisions even though the risk numbers don't quite get us there.

MR. BROCKMAN: That's a good point. All I want the risk number to do is get me to the ballpark, and I want it to bring me to the ballpark on several nights when the game's going to be rained out too.

MEMBER POWERS: But I think -- I'll accept that argument. I even like that argument, but here I'm wondering if it gets you to the entirety of a ballpark or are you only looking at first base, and when you've got a tool that you're jerry-rigging to work on one kind of a problem because you don't have a real suitable tool for that -- it's not your fault. You only have the tools that people are willing to produce for you, but it seems to me that you've got to squat.

It's the squeaky wheel that gets the grease in a time of limited resources, which is the problem the agency has. They've only got so many guys to generate models that here's an area that what your challenges -- it's really important. This affects the way you do your job. This is a front line problem the agency -- there's nothing the agency shouldn't be pulling out to address for the guys that are out on the line doing things. If this is what they see as a challenge address it. Don't put it off and say we don't need to do this. If you guys need these tools you need these tools.

MR. KENNEDY: Let me comment on something you said earlier. I agree with I think everything you said. We rely on licensee IPEs that have been reviewed but not QA'd. We don't get -- necessarily licensees don't submit updates to their IPEs to us, and our tools don't -- are not very good, and we'll get into this more on considering external events. I think Troy and I agree with you 100 percent.

MR. HOWELL: But I would add that the exercising of the tools we do have has put the spotlight on some of these questions.

MEMBER POWERS: Don't get me wrong. My that goes off to you guys. I think you do a fantastic

job with the tools you have. I just think that getting you better tools needs to have a higher priority in the agency and plowing down through thermohydraulic codes to the fifth decimal point -- it's a useful exercise. Don't get me wrong. And it may be important, but right now you've got a problem now, today. Future licensing actions that had to do with realistic assessments of thermohydraulics are things that can be put off.

MR. KENNEDY: This slide --

MEMBER POWERS: Not to mention the risk analysts are better than the thermohydraulics --

MR. KENNEDY: This slide is a summary of the results of our first three benchmarking trips in Region IV, and as it turns out the first three in the country. The only one that has a final report out is the Diablo Canyon one, but at SONGS -- let me go through what these mean.

Rev zero indicates the worksheets that we had issued when we arrived onsite, and we did a comparison between those rev zero worksheets and the licensee's model, and by non-conservative I mean that the SDP came out with a lower color than what the licensee's model would have indicated, and so 13 percent were a lower color than they should have been.

Twenty-two percent were a higher color than they should have been, and 65 percent were the same results. We identified some corrections to be made to the worksheets, and you can see the final numbers there, 4 percent non-conservative, 9 percent conservative, and 87 percent same results.

Keep in mind that the process when we -- if we get a white or greater color we're going to do a phase three evaluation, so this tool tells us when we need to go on and do a more detailed evaluation.

The SPAR model --

CHAIRMAN SIEBER: Looks like that is the worst of the bunch --

MEMBER APOSTOLAKIS: It's very bad.

MR. KENNEDY: Not plant specific.

MEMBER APOSTOLAKIS: Not plant specific --

MR. KENNEDY: It's supposed to be -- they take aspects of the plant model or the plant configuration and they put it into the SPAR model, so it's supposed to be a --

MEMBER APOSTOLAKIS: Well, they have done 30 plant specific -- they developed 30 plant specified models. Is San Onofre one of them?

MR. KENNEDY: Yes, sir. That's a Rev 3I no QA done on that model yet.

MEMBER APOSTOLAKIS: Sixty-four percent?

MR. KENNEDY: Yes.

CHAIRMAN SIEBER: Non-conservative.

MEMBER APOSTOLAKIS: That means it may not be accurately non-conservative. Just disagrees with the licensee's assessment?

MR. KENNEDY: Yes.

MEMBER APOSTOLAKIS: And it's not that much better for Diablo.

MR. KENNEDY: Well, it actually is significantly better.

MEMBER APOSTOLAKIS: Twenty-nine percent non-conservative. My goodness.

MR. PRUETT: That's non-conservative to the licensee's model or to the notebook?

MR. KENNEDY: Non-conservative to the licensee's model.

MR. PRUETT: Okay.

MR. GWYNN: Before you go on to Diablo Canyon I think it would be of interest to hear whether this site visit identified any anomalies with the licensee's model as the South Texas facility.

MR. KENNEDY: None jump out. I don't remember that there were any. Of course, they use the PLG model, so it's very difficult to find problems

with those large event models, so --

CHAIRMAN SIEBER: Right. They've got a lot of chains.

MR. KENNEDY: But in SONGS' case I don't think we identified anything where the licensee said, Oh, yes, this is an error in our model that we need to do something about.

In the Diablo Canyon case you can see the numbers there. The SPAR results were a little better. The -- and the final results with the fixes were very similar.

CHAIRMAN SIEBER: Who's their PRA vendor?

MR. KENNEDY: PLG also.

CHAIRMAN SIEBER: PLG?

MR. KENNEDY: Yes. The first three were all -- San Onofre is not. Right. So Diablo and South Texas were PLG.

CHAIRMAN SIEBER: Who was San Onofre, do you know?

MR. KENNEDY: They used -- I don't know who their vendor was, but they used the typical small event tree, large -- see the numbers for Diablo Canyon? The other thing we looked at that was beneficial was San Onofre, Diablo, and South Texas -- their models all purport to include some aspect of

external events. And at Diablo Canyon we found that the affects of fire, flood, and seismic initiators in some cases increased the results by one order of magnitude, so for some scenarios, not all, the SDP would give results that were one order of magnitude lower than the licensee's model when you considered external events.

MEMBER APOSTOLAKIS: So Diablo doesn't have external events?

MR. KENNEDY: Diablo does.

MEMBER APOSTOLAKIS: Does?

MR. KENNEDY: Yes. It does have, and that's --

MEMBER APOSTOLAKIS: So the 29 percent refers to -- the licensee did it with external events?

MR. KENNEDY: Yes. No. I'm sorry. Let me go back. The numbers that you see are internal events only.

MEMBER APOSTOLAKIS: For Diablo?

MR. KENNEDY: For Diablo.

MEMBER APOSTOLAKIS: And the South Texas?

MR. KENNEDY: And -- well, South Texas is two numbers, but at Diablo the external results are not listed but the words there indicate that it's kind of a summary that -- for those -- we found up to an

order of magnitude difference when you considered external events.

MEMBER APOSTOLAKIS: I was always under the impression that by using the worksheets you would be getting very crude results and that you should be using PRA models, but this SPAR thing now --

CHAIRMAN SIEBER: It's the other way.

MEMBER APOSTOLAKIS: It's the other way.

CHAIRMAN SIEBER: That's the way it looks.

MEMBER APOSTOLAKIS: And both for Diablo and San Onofre I would rather go with the sheets.

MR. KENNEDY: Yes. A couple of things about the SPAR model though. They -- we don't rely on them too much right now for this reason, because we don't really trust the numbers that we're getting, and so --

MEMBER APOSTOLAKIS: But the worksheets are also based on SPAR, aren't they?

MR. KENNEDY: No. The worksheets are based on the licensees' IPEs.

MR. BROCKMAN: One thing to look at here -- let's look at the worksheets revenues with the fixes. At SONGS we would basically be saying that 91 percent of the time -- that's the 87 plus the 4, the regulatory posture -- 87 percent of the time the

regulatory posture that we would propose off the worksheets would be what we would anticipate would be the licensee agreeing to for the reg conference.

The key thing -- look at Diablo. SDP is conservative. Thirty-six percent of the time the results of our regulatory conference would be to decrease the significance of the issue. Now, that's great from the aspect that we're looking at everything. It certainly can result in a public relations challenge.

MR. HOWELL: Which it's why it's important to do more than just exercise the worksheets before you ever get to that point.

MR. KENNEDY: What we typically do is when we -- and typically we haven't done a lot of these, but if we come out with some results greater than green on the worksheets the first place I don't go to is -- I don't go to SPAR the first thing. I go to the licensee's IPE and make sure I have enough data at IPE and I'm looking at the systems they have and what their risk achievements are for those systems and --

MEMBER APOSTOLAKIS: But why when the office of research comes to us and they advertise SPAR as a major achievement they never tell us this?

MR. KENNEDY: I think they use SPAR -- I

don't want to be put in the position to defend research, but I'll provide some defense.

When they use these SPAR models they use them for accent sequence precursor evaluations, and they are much more skilled in going into the model and making changes to the model than most SRAs are, so they actually get into the model and do a lot more manipulation, do a lot of research to determine the proper way to model whatever they're trying to model and use it for that.

MEMBER POWERS: I come back to my thermohydraulics. We don't let people do that in the thermohydraulics code. That code -- you can't change anything once it's been approved, and it doesn't do you -- it doesn't help you to get a model that has to be tweaked to get the right answer.

MR. KENNEDY: We would agree.

MR. PRUETT: We agree. Kriss can speak for himself, but from my perspective I'd like to see more time spent on developing the SPAR models, improving the end-user interface so that I don't have to make significant manipulations to the model. I can point and click on certain basic events and initiating event categories and get a reliable answer. Right now I can't do that.

MEMBER POWERS: You've got a full-time just interpreting the results.

MR. PRUETT: That's right.

MEMBER APOSTOLAKIS: Now, why shouldn't the agency demand that every licensee do a complete level to PRA? How much is it? Is it the million dollars? Big deal. Look at the --

VOICE: Level two?

VOICE: Big deal to you.

MEMBER APOSTOLAKIS: Well, look at all the uses. We have to fight and try SPAR, and there is nothing and do this and do that. If we're going to have risk informed regulations we should have good risk assessment tools.

CHAIRMAN SIEBER: The risk informed regulations is optional for the licensee.

MEMBER APOSTOLAKIS: Right.

CHAIRMAN SIEBER: And so you can't make him do something that's optional.

MEMBER APOSTOLAKIS: Speaking of optional, can they tell you do not use the revised oversight process when you inspect us, oversee us? Can they tell you that? So it's not optional.

MR. BROCKMAN: Yes, they can.

MEMBER APOSTOLAKIS: They can?

MR. BROCKMAN: They could do that.

MEMBER APOSTOLAKIS: But has anyone done it? No.

MR. BROCKMAN: The only thing that was done Cook as they were coming up said we're not quite ready yet. We don't have the data. They were captured in O-3 process, that we need to get our baseline going and they wanted about a six-month delay in getting into it because of the lack of historical --

MEMBER APOSTOLAKIS: First of all, it's not a million dollars because they've already done the IB. We're talking about documenting the IB, having a serious review of it, and then all these issues are --

MEMBER POWERS: If you're talking about a level two.

MEMBER APOSTOLAKIS: That's what we're using.

MEMBER POWERS: I don't think you can get a level two done for a million dollars, and you certainly can't get one that anybody would agree with.

MEMBER APOSTOLAKIS: You can get a full level three for a million and a half, so --

MEMBER POWERS: You can't get one that anybody will agree with.

MEMBER APOSTOLAKIS: What, because of the nature of the severe accident -- those are you guys.

MEMBER POWERS: But --

MR. GWYNN: The South Texas Project folks tell me that they spend about a quarter of a million dollars a year just maintaining their PRA, and so the initial cost is not the entire picture. But whether or not the licensees are required to have level two PRAs is a matter of policy that we don't have -- it's not our decision, and so --

MEMBER APOSTOLAKIS: I understand that. Sometimes these simple questions come to you and you say, Gee, why didn't I think of that? Here we're risk informing a lot of things, and yet we are willing to leave with models that have not been reviewed, that are incomplete, and everybody knows that, and the question is why? I can see a reporter asking that question if there is a nuclear incident some place. You're doing all this and you don't have the underlying tools.

CHAIRMAN SIEBER: Well, this is why it's risk informed instead of risk determined.

MEMBER APOSTOLAKIS: It seems to me if it's risk informed you should be able to assess the risk to the best of your ability.

MR. GWYNN: If you look at the nuclear power industry historically when we first started down this road we would never have built the first power reactor if we took the approach that it's got to be perfect before you build the first one, and so these tools are being improved over time. The question is whether or not they're adequate for the thing that we're using them for today. And I think that they've -- based on the results that we've achieved over what we had before and what we have now I think that we've seen an improvement as a result of implementing this tool --

MEMBER APOSTOLAKIS: There's no question that there's an improvement. It's just it's kind of odd we don't have the right tools.

CHAIRMAN SIEBER: Well, we know that, and we have determined that we don't know how much they cost.

MEMBER APOSTOLAKIS: No, no. We know very well.

MR. KENNEDY: Not to add fuel to the fire, if you look at South Texas, when we -- this was the third visit made in the country. We showed up in South Texas with the rev zero worksheets and found that there was a fatal flaw in the worksheets. They

considered -- the worksheets contained a mitigation strategy for high pressure recirculation that South Texas doesn't do, so we couldn't run through the samples using the worksheets as --

MEMBER APOSTOLAKIS: Wait a minute. The worksheets we were told come from the IP.

MR. KENNEDY: Yes.

MEMBER APOSTOLAKIS: And the IP for South Texas is really a PRA, so how come there -- the PRA itself had this flaw?

MR. KENNEDY: No.

MEMBER APOSTOLAKIS: It was in the translation?

MR. KENNEDY: It was in the translation. Yes. So we did run a revision zero, but that was a fairly easy fix. We did it onsite and corrected the worksheet and ran the examples through. The number in parentheses compared the results considering external events to the worksheets, and that's what those numbers are.

CHAIRMAN SIEBER: Well, I guess I have a question then. It would appear that we got better results for South Texas than other places. It also --

MR. KENNEDY: Well, in what area?

CHAIRMAN SIEBER: Well, in comparison

between worksheets and their PRA.

MR. KENNEDY: Okay. But keep in mind the South Texas -- the only numbers we have for South Texas are the final numbers. Those are after the changes were made onsite.

MR. PRUETT: Yes. The high pressure re-cert was not the only change made.

MR. KENNEDY: Right.

CHAIRMAN SIEBER: Okay.

MR. PRUETT: There were several that we made as we made a high pressure re-cert change.

MR. KENNEDY: Right. And so what we're missing is the rev zero which would have been just terrible.

MEMBER APOSTOLAKIS: Diablo looks very good. Read the fixes.

MR. KENNEDY: Yes. Diablo looks good, and SONGS doesn't look too bad.

MEMBER APOSTOLAKIS: Tom told us earlier that SDP conservative means that you go into conference with the licensee and you find that 36 percent of the time for Diablo for example you back off. You were conservative.

MR. KENNEDY: Well --

VOICE: Maybe.

MEMBER APOSTOLAKIS: So 15 percent of the time then the licensee tells you, No, Mr. Regulator, you are not conservative enough so you have to give us a white instead of a green?

MR. KENNEDY: No.

MEMBER APOSTOLAKIS: Is that what it means?

MR. BROCKMAN: No. In fact that's really the type error that we need. Our goal has to be to get that to zero, because --

MEMBER APOSTOLAKIS: No. But what does it mean?

MR. BROCKMAN: -- the potential exists there that I am not going to pursue a white issue because I come up with a green determination. My goal on that has to be to get that number to zero, and that's the challenge. I never want to have an issue that I don't pursue because I have underclassified it.

I need to get that to zero but on the contrary my public relations dilemma is the other side of the coin. I don't want to have too many times where it looks like all I do is back off, and I get the reputation of not being an effective regulator. I cut deals in dark, smoke-filled rooms. And there are certain people out there right now who make those

accusations.

MEMBER POWERS: Then they've got type one and type two errors.

MR. BROCKMAN: That's it. Type one-type two errors traditional.

MEMBER APOSTOLAKIS: But you actually find out if the licensee's assessment was worse -- the result was worse than yours?

MR. KENNEDY: No. Let's step back a minute. The only thing we're really concerned about is do we come up with a green on the worksheet that is really white?

MEMBER APOSTOLAKIS: What do you mean, really white? There isn't such a thing as really.

MR. KENNEDY: Well --

MEMBER APOSTOLAKIS: Somebody else's assessment is white?

MR. KENNEDY: Yes.

MEMBER APOSTOLAKIS: Okay.

MR. KENNEDY: The worksheets are underestimated the risk, the actual risk --

MEMBER APOSTOLAKIS: Right.

MR. KENNEDY: -- and so the results of the worksheets are a green, and in our process we don't do anything. We do some other things, but we don't go to

a reg conference. We don't engage on further risk analysis.

But right now if we do come up with something greater than green, a white, yellow, or red, we don't go straight to the reg conference based on the results of the worksheet. We engage their risk analysts onsite and do a phase three type analysis to determine what the risk really is. So we would avoid this 36 percent downgrade in the color even before we went to the reg conference because we're doing that phase three analysis.

MR. PRUETT: Right now I'd say about half of that 36 percent that Kriss is talking about is due to the way we implement the county rule in the significance determination process, so if we have three greens adjacent to a white block we're going to call that white finding. In reality it may really be a green finding, but for the purposes of the phase two analysis we're going to call that white.

MEMBER APOSTOLAKIS: So you're referring to the action matrix?

MR. PRUETT: That's correct.

MR. KENNEDY: No --

MR. PRUETT: Not the action matrix.

VOICE: The SDP --

MEMBER APOSTOLAKIS: That takes you to the headings of the action matrix. Isn't that the same thing?

MR. PRUETT: Well, no. You've got the greens next to whites. You're right. The output from that would take you as to where you start going in the --

MEMBER APOSTOLAKIS: Are you happy with the headings? I think they're very arbitrary, but two whites or three greens or -- do these make sense? And then all of a sudden the last one -- this is changing the subject a little bit, but I don't think we discussed it at all.

MR. BROCKMAN: Well, there was --

MEMBER APOSTOLAKIS: What's the basis?

MR. BROCKMAN: The one thing with three greens next to a white was to try to prevent the error of missing one. It's too close and we know there's uncertainty in our tool, and if we come up with three greens next to a white we say we're going to pursue further. It's like a performance indicator. I don't know there's a problem but I need to look further because I'm in my uncertainty band, and that's where we're trying to -- should it be three next to a white? Should it be two next to white? We started with

three.

MEMBER APOSTOLAKIS: All right.

MR. KENNEDY: If you go to the next slide, Troy, I think we've discussed almost all the challenges that I have listed here. By challenges I think these are challenges that Troy and I faced that regional management faces and the inspectors face out in the field, and that is the accuracy of the SDP phase two worksheets.

We have to sit down -- the inspectors implement the phase two worksheets. They fill they out, and they have to sit across the table from the licensee, and if there's errors in those worksheets that the licensees are pointing out to them that's not desirable. And the second one, availability and accuracy of the SPAR models, we've discussed that.

And to get on the question that you asked earlier, Dr. Powers, the tools that we have for fire protection shutdown operations and containment integrity, in the case of the last two those are really under construction. There's procedures out there, but what you -- they're really screening procedures that you end up going back to NRR whenever you have some issue, and the fire protection SDP is probably harder than it needs to be.

MEMBER POWERS: I don't even understand it. You come in here and you say, Okay. Is the manual fire question capability degraded a little bit, half way, a bunch. I have no idea, but having made that determination then I start -- I get an exact number.

MR. KENNEDY: Right.

MEMBER POWERS: That turns out to be an exponential. Now, there's a numerical error in it, but that's okay. We get these numbers out. I have no idea how to do that.

MR. KENNEDY: We share the same frustration.

MEMBER POWERS: I don't even know where the exponential numbers are. I know exactly where they come from. They come from five, but that doesn't help me. Where did five get them?

MR. KENNEDY: And the numbers that you get from five are screening values and they don't really --

MEMBER POWERS: And they did things that I think are obnoxious in fire protection modeling.

MEMBER APOSTOLAKIS: That's another mystery to me, again, and it has to do with these simple questions I mentioned earlier. Why did most of

the licensees choose to do a screening analysis for fires when we have all this risk informed regulatory system facing us? Very useless. You just screen things out and say they're not important. How does that help me implement a significance determination -- I don't understand these things.

MEMBER POWERS: Whenever they have an inspection finding you tell them it's green because it got screened.

MEMBER APOSTOLAKIS: It got screened out.

MEMBER POWERS: It doesn't matter if the fire protection seals all fail and it's going to be a roaring inferno in there in the event of a fire, but that's -- it's screened.

MEMBER APOSTOLAKIS: Okay.

MEMBER POWERS: The fire's smart. It knows. It goes around those --

MR. KENNEDY: But in all these -- in these three areas in particular NRR does have some projects going on to further develop the shutdown SDP, the containment integrity SDP --

MEMBER POWERS: Right.

MR. KENNEDY: -- and I'll be honest with you. Their efforts on the appendix F improvements -- I'm not sure they're headed in the right direction,

but they are trying to do something with it. From what I've heard it doesn't simplify the process though. I think it goes from 60 pages to 100 pages, but --

MEMBER POWERS: -- as long as I'm just rolling dice and guessing at a number to begin with.

CHAIRMAN SIEBER: It seems to me these are areas where we have to pay a little closer attention.

MEMBER POWERS: There's no question about it. We're getting the same story from both sides of this coin, and -- all apologies, Kriss. You're not the first to tell us this.

MR. KENNEDY: I'm glad. I didn't think I was.

MEMBER POWERS: And so when we prepare our September report to the commission -- they've got to understand what's going on, and I like this. It's challenges to the one guy -- one set of people that I really don't want to throw any more challenges to, and that's the guys that are out in the front line dealing with the plants, and then they should go in with a measure of confidence that what they're doing has a good technical, sound foundation, that the uncertainties in it have been examined fairly closely.

I don't think it's a fatal flaw, but I

think it's an issue of priorities.

CHAIRMAN SIEBER: Do any other members have questions?

(No response.)

CHAIRMAN SIEBER: Well, thank you, Kriss, for your discussion and I would point out that even though this has been more dialogue than presentation so far, this method is important to us to get a really good insight in a short period of time as to what your problems are and how do you perceive the operation of the agency.

What I'd like to do is we are on schedule if we ignore the fact that we have not covered topic five. What I'd like to do is perhaps go until 12:15 rather than 12:30 for lunch. We can gain at least 15 minutes in the process and so I would suggest we break for lunch right now.

MR. GWYNN: If I could I'd like to ask the Region IV staff to allow our guests to go first for lunch, and the lunch is in our executive conference room just around the corner here. We'll go in, pick up our lunch, then come back and eat it here if that's all right.

CHAIRMAN SIEBER: Fine.

(Whereupon, a short recess was taken.)

AFTERNOON SESSION

(12:20 p.m.)

CHAIRMAN SIEBER: I think in the plant operations area I think a number of us have questions about the general topic of Callaway grid experience and how that impacts other plants. We're aware the information notice that was published in the incident in 1999, but you may want to give us some insights as to what your expectations are for the future under the burn energy situation and what it is Region IV is doing about it.

And so with that I will turn it back to regional management for their next presentation.

MR. BROCKMAN: Thank you, sir.

We're really in what I'll call our segue transitional part here of moving along and focusing on the electrical part and then we'll be moving into the fire protection part. The first thing we want to do is share with you a little on the SCRAM trends. This will be very quickly. This is a transitional issue.

As we've looked over the last couple of years as to what have been the trends that we have seen in our SCRAM data and what have you and the insights we're getting and how that's trying to

focus us in different areas, and you're going to see it's going to lead us right into this afternoon's topic.

So with that, Bill Johnson, who is my chief of the Branch B in reactor projects which just happens to be where Callaway resides --

MR. JOHNSON: This is some data that was put together by regional personnel on total SCRAMs across the nation for years 1998, '99, and 2000. I don't see any distinct trends from this presentation of the short-term SCRAM data. I did notice one interesting point that the number of manual SCRAMs in year 2000, 33, was the same as the number of manual SCRAMs in here 1999, also 33, which indicates that the new performance indicator which counts both manual and automatic SCRAMs might not have had much of an effect on the number of manual SCRAMs. It's a good sign.

Since we noted that a number of the SCRAMs in Region IV were caused by electrical systems a further review was performed, and later on the agenda Mr. Pruett will summarize the results of that review.

CHAIRMAN SIEBER: Just a quick question. Licensees complain that including manual SCRAMs

prevents or induces an operator to try to wait it out as opposed to taking a safety protective action before an automatic action occurs, which potentially might not occur as we would like it. In view of that is there any consideration or any thoughts that you would have about counting manual SCRAMs and the total number of scams as an unintended consequence or an unintended driver to rely more on the automatic action rather than the operator's intuition?

MR. BROCKMAN: In fact, I think an accurate characterization is is there were two or three individuals placed in the industry who expressed a personal concern that this could be an unintended consequence. Across the board in all of the trips that I think we have taken out to our licensees they have unequivocally stated, No. This performance indicator would have absolutely no impact on the intent of their operators and the actions of their operators.

It was a couple of people who said this.

MR. GWYNN: Every licensed operator that I've spoken with in a control room and asked that question of has said, I'm going to follow my license requirements and my boss is going to be very upset

with me if this thing goes out automatically when I should have punched it out manually, and it has -- the performance indicator had no bearing on their thinking in that arena, and the data that Bill just put up I think supports, at least during the first year of initial implementation that there hasn't been an impact.

MR. BROCKMAN: But with that said, NRR is revising the performance indicators to preclude that. There's activities going on to revise it and get it into an arena where that potential supposedly could not even exist.

CHAIRMAN SIEBER: Another quick question. Are there any other performance indicators that come to your mind like the counting of outage hours and certain risk conditions that might have an unintended consequence?

MR. BROCKMAN: Yes. Probably the one that comes to my mind most easily is unplanned power reductions.

CHAIRMAN SIEBER: Okay.

MR. BROCKMAN: Currently there is -- it was the old AEOD performance indicator that had absolutely no risk association to it but was without a doubt the highest correlation factor toward those

plants that degraded in the NRC's overall assessment.

For plants that had unintended power changes, unplanned power changes, the more they occurred it wound up being that those were the plants of concern. Not anything to do with risk. This was brought forward in the new program. Without a doubt you have the what is an unplanned power change? Are you talking about an automatic run back? Are you talking about a condition evolves and I've got to take action within the next six to eight hours to reduce the power to make that happen?

In the old AEOD performance indicator that would have been an unintended power change, doing it within that time, but currently the way the performance indicator is done is any power change done within 72 hours is an unplanned power change. Give you adequate time to get all your things together, plan the activity, prep your people, and embedded into more of your normal processes. If you're a utility and you've got the choice of doing this at hour 68 or at hour 73 it's a no-brainer. You're going to do it at hour 73.

CHAIRMAN SIEBER: If I have a --

MR. BROCKMAN: We have seen indications

where decisions are being made -- now, they're being risk considered into it, but if risk is not an issue and they have a choice of doing it in less than 72 hours or quicker or after 72 hours, they're doing it in longer than 72 hours so they don't take the PI hit.

CHAIRMAN SIEBER: So if I have a small, below tech specs reactor cooling system leak in a joint, which is allowable, I should allow it to leak for 72 hours before I go in and do something about it?

MR. BROCKMAN: I'm not sure that they would take it at that particular point, but we've had -- and your memory is always better on these things than mine where once again, if risk isn't an issue, if the tech specs aren't an issue, and if I've got reactor cooling system leakage I'm going to be in a short action statement there, but if it's a valve packing leakage, which we know is right there, and I've got a choice of reducing the plant down tomorrow night or waiting until Saturday night to do it, they'll probably figure two things with respect to that, and that's going to be with the load, the system load is requesting on -- they'll factor that in there, and then they'll look at that outage time

too on the hit for the PI.

CHAIRMAN SIEBER: Yes. Well --

MR. BROCKMAN: And if they don't think it changes their risk profile they'll wait.

CHAIRMAN SIEBER: The reason why you do it is for ALARA, and the reason why you don't want the leak to stay there for 72 hours is because leaks never get better. They always get worse.

MS. WESTON: Are there any plans to change that possible consequence?

MR. BROCKMAN: They're looking at that one, but I don't know what --

VOICE: That's one that's being reviewed. The power reduction is being reviewed. I'm not sure whether there's a work force on it. I'm not sure exactly --

VOICE: That one could be manipulated two ways. One is a 72 hour and the other is whether or not you go to 81 percent or 79 percent, because the cutoff is 80.

MR. BROCKMAN: And that becomes an ALARA consideration too, and that's one thing they used to take it down to 75 and say, If I've got no additional ALARA --

CHAIRMAN SIEBER: Okay. Thank you very

much. You may go on.

MR. JOHNSON: I pulled a couple of trends graphs out of SECY-01.0111 just because I thought they were interesting and probably worth a quick demonstration. And overall there aren't any industry trends that seem to be heading in the wrong direction.

For ASP program results there were no significant precursors in fiscal year 2000, and it looks like an overall downward trend in the overall number of the precursors.

Looking quickly at some of the ex-AEOD indicators the one for automatic SCRAMs overall trend of course is still down. We've noted on this one as well as on the first slide in 1999 there was an increase. I don't know exactly what that means, but it still fits within the expected boundaries. Safety system actuations also down.

Looking at a couple of the raw performance indicators I wanted to look at unplanned SCRAMs per 7,000 annual critical hours. Don't see much of a trend on that, but this is short-term data and you couldn't draw a very firm conclusion from it. Scrams with loss of normal heat removal -- I still don't see a trend there either, but it will be

interesting to see this data accumulate for a few years and see if it tells us anything.

And the other one I wanted to look at is safety system failures. I do think I see a trend there, even though it's short term. That's for PWRs. And the similar curve for boiling water reactors -- there's a similar possible trend that a statistician could figure out.

And that's the ones that caught my interest. We're open to questions if you have any, sir.

(No response.)

MR. JOHNSON: Okay. Thank you very much.

MEMBER POWERS: It seems to me that the question that arises, especially when we look at what the risk significant thresholds for PIs are that we've really chosen PIs that are too limited. It's really combinations of things together that are really the PIs that we want. Unplanned SCRAMs -- that frequency combined with frequency of something else is really the indicator that we want to have.

Do you have any thoughts on that?

MR. JOHNSON: I'm not well versed on that, but I do know that the unplanned SCRAMs in

itself does not have a lot of risk significance, but the unplanned SCRAMs with loss of heat removal might well have serious significance, and that might be one to watch more closely.

MEMBER POWERS: I'm wondering about more complicated combinations. When you go through and you come out and you find out I've got to have 19 or something like that unplanned SCRAMs to get to a red level, you know that's never going to happen. It's just looking at the wrong thing, because that particular measure is just in itself not risk significant, but it's some unplanned scams -- a couple is something else -- where having one might get you certainly to a white.

Is there --

MR. HOWELL: That's why we look at every one to see --

MEMBER APOSTOLAKIS: If we had a good safety monitor and calculated the core damage frequency every time we have something happening then that would be a good indicator, would it not, because then you could set it at levels of CDF, and you don't care how you got there. It could be a combination of ten things.

MR. HOWELL: And that's why --

MR. BROCKMAN: True. That's why we look at it on the front end.

MR. HOWELL: Yes. Our inspection threshold looks at the CDP that comes up there that instant. Basically, that instantaneous probability --

MEMBER APOSTOLAKIS: No, because when you do the SDP and performance indicators really the thresholds are such that the change in that indicator would cause a level CDF greater than some threshold. Not a combination.

MR. HOWELL: Correct, but we do look at that on the front end for events, and even conditions too. So Kriss and Troy, they do that, using the tools that we have we talk to the licensees and we'll ask San Onofre, What does your monitor indicate, and if it trips the threshold the --

MEMBER POWERS: Then you didn't believe him.

MR. HOWELL: You have to get the information the best you have.

MEMBER POWERS: Well, they came back with 1.4 times ten to the minus four, and you said, We don't believe that. That's way too conservative.

MR. HOWELL: But we still did a special inspection though. We sure did.

MR. BROCKMAN: You've got two different things. What you bring up here is very interesting to the performance indicator, but as I tried to say earlier, the inspection is without a doubt still a critical component, and we'll look at exactly that for an event or condition that occurs.

And this weekend you saw the 5072s where the potential transformer at San Onofre that disassociated itself all over the Pacific Coast Highway, and we also had one at Cooper.

So we took -- the risk guys looked at that right away. Where are we at on that thing -- the startup transformers lining out out at Cooper. Well, it becomes a risk interesting issue if that startup transformer is out five days. They're at about two and a half. Are we monitoring that as we're correcting?

We're inspecting right now on it, and if they get up to five days with the other issues that identify themselves in some other areas there we'll definitely be looking at changing that inspection threshold, which then gives us an additional vehicle to identify the issues that we've been talking about

corrective actions and things so we can get those insights.

MEMBER POWERS: I know what I want to do for sport on the 4th of July. I want to get an inspector proponent like Ken, lock him in a room with a risk guy like George, and see who comes out alive. I've had numerous discussions with some of the staff risk guys.

MEMBER APOSTOLAKIS: If the safety monitor could be trusted that would be the best method, really, to core damage treatment, the condition of core damage probability, but unfortunately, we can't trust it.

MR. KENNEDY: But there's also a deterministic aspect to the threshold that's been picked for SCRAMs, and that is it's a pretty good indicator irrespective of risk that if you have too many there's a problem at that site, and --

MEMBER APOSTOLAKIS: So what do I care if it's an element of risk? Ultimately it has to be connected to risk. Right, because we are regulating -- protecting public health and safety. If they want to lose money, that's their business.

MR. KENNEDY: There's a lot of deterministic SDPs out there though, and several of

the SDPs are deterministic.

MEMBER APOSTOLAKIS: Well, there wouldn't be if you had a very good reliable safety monitor.

MEMBER POWERS: Well, don't get over enamored with this risk analysis. There are other issues.

MEMBER APOSTOLAKIS: Like?

MEMBER POWERS: Like sabotage, site security that you can invest in that, and there are elements not only of the regulations but of the oversight program that address those things. And as I often say to you when we discuss defense in depth even if the probability of event is low if it occurs I'd really like something between me and the bad stuff.

MR. BROCKMAN: My residents will all echo that.

I think next up is Ms. Good, who is our plant support branch chief, to talk about the Callaway ALARA issue which we agreed to wait until now to discuss.

MS. GOOD: Thank you.

Good afternoon. My name is Gail Good. I'm the chief of the plant support branch here in

Region IV. I am responsible for reactor inspections in the area of security, emergency preparedness, and radiation protection, and my presentation this afternoon will focus on the radiation protection area and specifically on some problems that were identified at the Callaway Plant in Fulton, Missouri that involved their ability to implement their ALARA program. And ALARA stands for as low as reasonably achievable.

My presentation will cover the findings that were identified during the initial inspection, the specific performance problems that were associated with the findings, the NRC's assessment of the findings, and that would be the significance using occupational radiation safety significance determination process and any enforcement issues. It will cover the licensee's response to the decisions that we made and then the NRC's actions to address the licensees' appeals, and then finally I'll discuss the special follow-up with the supplemental inspection that we conducted.

In August of 2000 Region IV conducted a baseline routine inspection of the licensee's ALARA program. That inspection focused on a review of jobs that were completed during refueling outage ten

that was in 1999. Specifically we reviewed those jobs where the actual job doses exceeded the projected job dose by greater than 50 percent and accrued more than five person rem, and based on that review we identified six jobs that exceeded that criteria.

CHAIRMAN SIEBER: Just a real quick question.

MS. GOOD: Yes.

CHAIRMAN SIEBER: If I were the RCM at a plant and I knew you were going to operate this way why would I not fudge the estimates so that I couldn't miss? Do you have a way of looking at absolute values?

MS. GOOD: We have a way of looking at their justifications for the projected doses that they're assigning, and if we see a significant increase from doing a similar job in a previous outage we might question why they were saying there would be an increase in the projected dose for this particular job. So we would be reviewing their justifications.

CHAIRMAN SIEBER: But you would be on a different kind of philosophical framework that way, saying, I don't really have great confidence in the

way you're doing your estimates, as opposed to the numerical issue of you're double what you said you were going to be.

MS. GOOD: It's a concern that we have.

CHAIRMAN SIEBER: Thanks.

MS. GOOD: And so with respect to the six jobs, the six jobs included all of the scaffolding work that was done in the reactor building. That was all considered to be one job, and the actual dose for that job was 46 person rem. The second job was the removal and installation of the steam generator manway covers and inserts, and the actual dose for that job was 8.5 person rem.

MEMBER LEITCH: My question here is are we talking about bad estimates or bad performance?

MS. GOOD: Bad performance.

MR. GWYNN: As a matter of fact, there's a screening criterion that says that if these conditions exist but the overall ALARA results for the facility are good then we don't pursue them. Correct?

MS. GOOD: We would expect that there would be a performance problem. Our initial look at it is for those jobs that are greater than five rem and where they exceeded the projected dose by

greater than 50 percent, and we're using that greater than 50 percent as a filter to say we need to go out and take a look at these jobs to determine if there is a performance problem associated with it.

MEMBER LEITCH: So it's just not that the job proceeded along an unexpected course but there were some performance deficiencies --

MS. GOOD: Yes. There were performance deficiencies.

CHAIRMAN SIEBER: It also would seem to me though in the process of estimating -- and I'm thinking like a licensee now -- if I would project, for example, scaffolding erection to be 20 man rem I would automatically have at least six jobs called scaffolding erection. Okay. And --

MS. GOOD: They actually had -- I think it was about 160 individual scaffolding tasks.

CHAIRMAN SIEBER: At one job.

MS. GOOD: But they considered it to be one job and the ALARA planning and controls were done at that higher level, and that was one argument that the licensee tried to make when we had the regulatory conference was that we really should have been looking at the individual scaffolding work

tasks.

CHAIRMAN SIEBER: The licensee should have been planning at the lower level.

MS. GOOD: And that was the argument we made, that there weren't sufficient ALARA planning and controls established at the level they wanted us to look at.

CHAIRMAN SIEBER: Right. Thank you.

MEMBER POWERS: Will you give me a feeling for the context? This is all part of one refueling outage?

MS. GOOD: Yes, it was.

MEMBER POWERS: And what was the duration of that refueling outage?

MS. GOOD: I don't know.

CHAIRMAN SIEBER: Roughly?

VOICE: About 35, 40 days.

MS. GOOD: About --

VOICE: It was a little bit longer, right, because of the -- went over -- 40, 50 days.

MEMBER POWERS: We see a lot of this I'm going to set the record for outage for this kind of plant, or I'm going to break my current record, things like that. We've got a whole dose of it at Waterford. This is -- I'm happy for them to have

good planning and do their outages quickly, but this setting record business is going to lead to this kind of problem.

CHAIRMAN SIEBER: But generally when the outages get shorter the man rem expenditures get lesser.

MR. HOWELL: Yes. But that didn't happen in this case.

MS. GOOD: In some cases.

MR. HOWELL: But that was one of the arguments that they said. We took into account as part of our planning. We want to have a shorter outage. We'll do the hotter work early in the outage and then we'll get done quicker and the overall cumulative dose will be less, but that's not what happened.

CHAIRMAN SIEBER: This is one of the snupps plants?

MR. HOWELL: Yes.

CHAIRMAN SIEBER: Did they use the hot boron injection to try and get the source turned down?

MS. GOOD: I'm not sure they did.

MR. HOWELL: I think so, but they were -- I don't know, but they were doing work

before they cleaned up the RCS. They were erecting scaffolding before they cleaned up the RCS. They were --

CHAIRMAN SIEBER: That sort of explains it.

MR. HOWELL: Right.

VOICE: And their source terms was complicated by the anomaly that they had --

MR. HOWELL: And they were trying out electrosleeving of the steam generator tubes for the first time, new technology here in the states, and it had complications which contributed to some of this.

CHAIRMAN SIEBER: But none of those were scaffolding, and scaffolding was 40 something man rem?

MR. HOWELL: Yes.

CHAIRMAN SIEBER: Okay.

MR. HOWELL: A lot.

CHAIRMAN SIEBER: That's a lot. That's two outages.

MR. HOWELL: Steal some of Gail's thunder -- to cut to the chase, they went from 305 man rem in refuel ten to 100 in refuel eleven as a result of corrective actions --

MS. GOOD: So they can do it. It can be done.

CHAIRMAN SIEBER: I apologize for interrupting.

MS. GOOD: All right. Moving along with the jobs, the third job that I have listed here is the eddy current testing, the robotic plugging, the stabilizing, the electrosleeving, and that job actually was the highest, and it accrued a 58 person rem.

MEMBER UHRIG: How much of that was electrosleeving were normal procedures?

MS. GOOD: I don't have that figure off the top of my head because they lumped all of that together under one job, under one RWP, and I can attempt to get that but I don't have that answer for you right now.

The fourth job was the health physics support for the primary and secondary steam generator activities, and the actual dose for that job was 5.6 person rem. Fifth job was the foreign object search and retrieval, and the actual dose for that job was 6.4 person rem --

CHAIRMAN SIEBER: That was one steam generator?

MR. HOWELL: I think it may have been a couple of objects that they dropped in --

CHAIRMAN SIEBER: But they went in through the -- where the flow blocking device is? Most of that was probably extremity. Right?

MS. GOOD: I don't --

MR. HOWELL: We'll have to get the report. It may have actually --

MS. GOOD: I think we had that --

MR. HOWELL: -- been during refueling. I don't know if it was necessarily the steam generator. It may have been the --

CHAIRMAN SIEBER: It must have been extremity dose?

MR. HOWELL: I can get you the report.

MS. GOOD: I'll move along then.

As I mentioned, the sixth job was the reactor coolant pump seal removal and replacement, and the actual job dose for that was 13 person rem. And again, I'd like to point out that all six of these jobs exceeded that filter that we use for focusing our inspection activities, that they were all over five person rem and they all exceeded the dose projection by greater than 50 percent.

CHAIRMAN SIEBER: Industry experience is

mockups for coolant pump seal replacement are invaluable. Did they use mockups in their -- did they have a mockup seal?

MS. GOOD: Some but not enough. That was one of the areas that was a performance issue was the lack of the use of mockups.

MEMBER UHRIG: On an object search and retrieval is not a normal part. That's sort of an accident? Did somebody drop something?

MR. HOWELL: Yes. Right.

MEMBER UHRIG: So this is just simply the fact that it went over five rem, because normally that would be zero.

MS. GOOD: Well, they planned to do this job and they said, We think it's going to take this much dose to do this work --

MEMBER UHRIG: Right.

MS. GOOD: -- and they went over that by greater than 50 percent, so it was work that they planned to do.

Getting into the performance problems, the licensee conducted post job reviews and had prepared an outage report, and the licensee actually identified five performance problems that caused the higher than predicted doses. And those problems

were the maintenance activities were conducted in the vicinity of the reactor coolant system during a time soon after shutdown when area dose rates were temporarily elevated by a chemical cleaning process and without taking any additional protective measures for personnel.

The second performance problem -- maintenance activities were conducted in the vicinity of the steam generators before the steam generator bowl drains were flushed resulting in higher than normal dose rates, and again, without taking any additional protective measures for personnel. Third, the maintenance activities were conducted on the reactor coolant pumps and the steam generators without the secondary sides filled with water resulting in higher than normal dose rates, again, without taking additional protective measures.

The fourth performance problem was that maintenance activities were conducted without sufficient practice training to familiarize worker -- contract workers with plant equipment, the use of tools, and techniques to effectively reduce the dose that they would receive. And then the last performance problem, maintenance activities were

performed with ineffective communications between radiation protection personnel and the primary contractor, which resulted in additional worker exposure due to ineffective planning and the sequencing of work activities.

Now, in addition to these performance problems the NRC was aware that high collective dose was a problem at the plant. The collective doses had increased between 1997 and 1999 and exceeded the 135 person rem which is the industry median for pressurized water reactors. They were -- at the time we did this they were at about 178 person rem, and there was only one other PWR that had a greater person rem, and that was Indian Point 2.

MEMBER LEITCH: Were there any concerns with individual exposures?

MS. GOOD: No. There were no overexposures.

MEMBER LEITCH: Do you know if any of the licensee's administrative limits were violated for individual exposures?

MS. GOOD: I don't believe they were.

MEMBER LEITCH: Okay. Thanks.

MEMBER APOSTOLAKIS: What exactly is ineffective communication? What does that mean?