Okay. Let me jump to -- the next two slides are actually not in your package. They're slides that I pulled out of an EDO briefing that are, I think, succinct summary of what happened at Callaway specifically.

CO-CHAIRMAN SIEBER: You'll have to provide us with copies of these.

MR. PEDERSEN: Yes, we will.

CO-CHAIRMAN SIEBER: Okay.

MR. PEDERSEN: I'm sorry I didn't. I didn't realize I was going to have to cover this in 15 minutes.

The fall of '99 outage at Callaway was very challenging to them. In shutting down, they had a CRUD burst that they didn't anticipate which caused the dose rates around the plant to go up significantly. They made a number of decisions as to what to do about that CRUD burst, and what to do about the jobs that were planned during that outage that resulted in significant discrepancies between what they considered ALARA in their planning process, and what they actually achieved.

CO-CHAIRMAN SIEBER: I have a short question.

MR. PEDERSEN: Yes.

CO-CHAIRMAN SIEBER: Callaway is a PWR?

MR. PEDERSEN: Yes.

CO-CHAIRMAN SIEBER: And typically you induce a CRUD burst when you shut down.

MR. PEDERSEN: Yes.

CO-CHAIRMAN SIEBER: Did they not do that?

MR. PEDERSEN: The details are fuzzy since it's been a few years. It's my understanding that they were trying a new process to induce the CRUD burst, and the CRUD burst didn't work. They got the CRUD burst at the wrong time. It wasn't being cleaned up as fast as they had anticipated. They decided to start the work without the CRUD burst being cleaned up.

CO-CHAIRMAN SIEBER: Okay. You can go on.

MR. PEDERSEN: As I said, there were a number of decisions that were made that were contrary to the ALARA planning that they put into place.

In fact, this is a list of the decisions of the issues that were brought out in the Notice of Violation that was issued for Callaway. They conducted work activities prior to the RCS cleanup and that affected a couple of jobs. They conducted activities prior to flushing the drains, et cetera. You can read them faster than I can talk about them.

They resulted in, on the next slide, actually three white findings. Earlier, I said two. I've misspoken. There were actually three white findings at Callaway in the ALARA area from this outage. The first white finding had to do with the scaffolding. As I said, we're judging their performance based on a unit of ALARA planning. At Callaway, as many licensees, their entire scaffolding, erection of the scaffolding is one planning unit. Now we call it one job. They pointed out that there were multiple, I think it was 57 JCNs associated with that, so they were trying to say that that was 57 jobs as opposed to one job, which we -- it was one of the points of contention in the appeal.

This action was appealed all the way up through the EDO, which is probably why we're talking about it as one of the issues as to whether we have the process calibrated properly.

Anyhow, the first job activity was the scaffolding. The first number there, the 22 person-rem was estimated. That was their planned ALARA dose. They achieved 46.35, a difference of 111 percent. The second job had to do with steam generator activities.

MEMBER LEITCH: Would you still have had the concern had they had this unexpected CRUD burst,

and went back and did some re-ALARA planning, and said hey, we've taken another look at this job. We've analyzed it. WE've done some things, and we now think the job is going to take 45 person-rem.

MR. PEDERSEN: That's exactly what we would expect them to do.

MEMBER LEITCH: Yeah. Right.

MR. PEDERSEN: And had they done that, none of these findings would be on this slide.

MEMBER LEITCH: Yeah.

CO-CHAIRMAN SIEBER: The other thing is to wait a little bit until --

MR. PEDERSEN: Well, that's the other thing too. Yeah, they could have just --

CO-CHAIRMAN SIEBER: -- the filters and demins absorbed the CRUD burst.

MR. PEDERSEN: There were a number of decisions that were made, and I won't go into my opinion as to why they were made, but --

CO-CHAIRMAN SIEBER: They all raised --

MR. PEDERSEN: -- they all impacted the dose, and there was no re-evaluation of what was ALARA for any of these jobs.

CO-CHAIRMAN SIEBER: Let me quickly ask another question. The steam generator work, that was

the electrosleeving work at that outage, or is this routine?

MR. PEDERSEN: I don't remember. I could --

CO-CHAIRMAN SIEBER: You don't remember.

MR. PEDERSEN: No. The third finding is something that I guess I didn't explain clearly. Could we go back to the actual SDP slide? The criteria for going to a white finding, there are two paths to that white box at the bottom. One is if an individual activity exceeds 25 person-rem, there's a performance deficiency that's made it through the screening process. In other words, the performance deficiency was greater than minor. It exceeded their planned ALARA dose by more than 50 percent. It was greater than five person-rem, et cetera.

If that resulted in greater than 25 person-rem, that's a white finding by itself, a single individual. And that's the first two of these. Collective dose, the nature of collective dose being the sum of many smaller doses, it was also recognized that you could have a significantly, or excuse me, a significant impact on collective dose, the overall performance of the program by having multiple failures of the program that don't exceed the 25. And that --

CO-CHAIRMAN SIEBER: Does this mean that the object behind that is to cause greater refinement of what a job is, so as to have smaller increments of dose? That's how you would defeat an absolute number.

MR. PEDERSEN: That is a safeguard built into it. That wasn't the rationale that went into providing for that path to a white finding. The rationale was that if you have, you know, five jobs that are greater than 5 person-rem, and you've had program deficiencies in all five of those, that that is exactly the same as having a program deficiency that has a 25 person-rem impact on your collective doses.

CO-CHAIRMAN SIEBER: Okay.

MR. PEDERSEN: That was the rationale, early rationale. What it does, however, is it does prevent you from saying well gee, if I plan all my jobs down to one person-rem, then I don't ever have to worry about getting through this process.

CO-CHAIRMAN SIEBER: Right.

MR. PEDERSEN: Which is an issue that came up when we discussed in public meetings. That's my presentation, I believe.

MEMBER ROSEN: I do have a question about the second and third. Now are those the same

activities, that you got them twice on?

MR. PEDERSEN: No. The first activity is scaffolding erection.

MEMBER ROSEN: No, no. The second and third.

MEMBER SHACK: Steam generator activities.

MR. PEDERSEN: Oh, the steam generator activities that are there in the --

MEMBER ROSEN: Yeah.

MR. PEDERSEN: No, they're separate activities.

MEMBER ROSEN: HP supports steam generator activities, they're not part of steam generator activities?

MR. PEDERSEN: They were planned separately. They were identified as separate units.

MEMBER ROSEN: No double jeopardy here. Now that's against the law.

MR. PEDERSEN: Right. We tried not to build that into this process.

MEMBER ROSEN: You can only be tried for a crime once.

CO-CHAIRMAN SIEBER: Yeah, but this isn't a criminal case.

MR. PEDERSEN: But to reiterate, we

started this process, the SDP process, with the understanding that it was to try to inform the assess process of the significance of an individual inspection finding. We didn't ever try to correlate between cornerstones. There was no attempt to determine how many person-rem collective dose corresponded to whatever conditional core damage frequency. It just wasn't in the process.

MEMBER LEITCH: May I ask you a question about that third sub-bullet, foreign object search and retrieval. That sounds like something that's evolved during the course of the outage, and I don't know whether it was or not, but it kind of sounds that way.

MR. PEDERSEN: No. I think they had a problem with it prior to that, and so they actually planned for that job.

MEMBER ROSEN: That's a fairly standard activity. Reactor Vessel Work, FOSR they call it, foreign object search and retrieval.

CO-CHAIRMAN SIEBER: Well, looking for it is standard, but trying to get one out that's lodged in there may not be standard.

MR. PEDERSEN: Yeah. That's the retrieval --

CO-CHAIRMAN SIEBER: You may be cutting

holes.

MEMBER LEITCH: Yeah, the retrieval part is what -- let's just assume in a hypothetical case that you had a foreign object that you're trying to get out, and you do some initial ALARA planning, and you say one and a half person-rem. And you use the one and a half person-rem, and you still don't have it out. You go back to do more ALARA planning, say you've got to spend another two person man-rem to get this thing out. Does that kind of an activity give you a problem?

MR. PEDERSEN: No. Actually, that's what we expect.

MEMBER LEITCH: That's what you expect.

MR. PEDERSEN: In that re-evaluation, however, we would expect the licensee to have a better idea as to what the cost in terms of man-rem was going to be, balance that against other consequences of maybe leaving it in there, or other remote handling. Whatever could be put into place to reduce the doses that weren't justified by the original cost.

MEMBER LEITCH: Yeah.

MR. PEDERSEN: The original was one man-rem. Well, we could just go in and grab it and pull it out. Now it's going to be ten man-rem. Well,

maybe we should have an engineer to remotely try.

MEMBER LEITCH: Right.

MR. PEDERSEN: Whatever those decisions are, and we're not trying to -- again, we're not trying to second-guess licensees.

MEMBER LEITCH: You're not willing to willy-nilly go from one and a half to six.

MR. PEDERSEN: That's right.

MEMBER LEITCH: You have to stop in the planning, reassessing the situation.

MR. PEDERSEN: Exactly.

MEMBER ROSEN: Now let me see if I understand what you're saying. If at the end of one and a half man-rem they still didn't have the object out, they knew where it was, and they knew what it was, and they had stopped the job and gone back and said here's what we're going to have to do to get it out. It's going to take us another five man-rem. We're going to have another job, because we're going to have to do a bunch of different things than we were doing. . A five man-rem job, and then they went in and did it, and ended up with a total of 6.39 man-rem, then they wouldn't have had -- that wouldn't have appeared on the slide. Is that correct?

MR. PEDERSEN: That's correct.

CO-CHAIRMAN SIEBER: Well, you end up with two jobs.

MEMBER ROSEN: You end up with two jobs. The first one within the --

MR. PEDERSEN: Maybe. Sometimes some licensees would initiate a different ALARA package. Some licensees would just use the same ALARA package, call it the same job, and re-evaluate what the man-rem they expected, and come to that determination that it is ALARA to do that. It's the licensee's process that makes the ALARA determination. We're not second-guessing those decisions, unless they're obviously unjustified. But the requirement is for the licensee to have a program to implement engineering controls and procedures to minimize the doses, if necessary. That "if necessary" is a very subjective issue, and we've left that to the licensee's program to decide. If the licensee is running an adequate program, the outcomes of that program is what we're judging their performance against.

MEMBER LEITCH: And none of this involves individual over-exposures.

MR. PEDERSEN: No, there's a whole second half to our SDP in the occupational cornerstone that talks to individual over-exposures.

MEMBER LEITCH: You could go through all of this without over-exposing any individual.

MR. PEDERSEN: Right. That's correct. As a matter of fact, it's not up there. The flow chart, if you notice, only went to a white finding. The original flow chart didn't go passed yellow. There was an early recognition that ALARA issues would not take you to a red finding. The only way to get to a red finding in our cornerstone is an over-exposure for an individual five times the dose limit, significant over-exposure, and that's a red finding. That's the only way you get to red.

CO-CHAIRMAN SIEBER: Have you made any attempt to correlate the risk, mortality risk due to ALARA at your limits here, versus an early fatality risk related to CDF?

MR. PEDERSEN: No. I've made no attempt to do that. There's a number of difficulties built into that whole concept. First of all, collective dose, if you blindly take the linear no-threshold hypothesis as gospel, you can calculate numbers.

CO-CHAIRMAN SIEBER: Right.

MR. PEDERSEN: There's a lot of uncertainty when you extrapolate down below 10 rem, whether what you calculate means anything or not.

CO-CHAIRMAN SIEBER: Well, there's new opinions coming out all the time.

MR. PEDERSEN: There's a lot of -- yeah, you're right. There's a lot of controversy right now in the radiation protection business as to whether the linear no-threshold hypothesis should be extrapolated all the way down to virtually zero, which is what --

CO-CHAIRMAN SIEBER: It's the latest.

MR. PEDERSEN: It's not the latest by this agency, but there --

CO-CHAIRMAN SIEBER: It's the latest I read.

MR. PEDERSEN: There are other agencies that have published risk factors down to per Becquerel, per disintegration per second, per 100 square centimeters of exposure. We've had some difficulty with that. We, the NRC, provided some comments to that, but that's a whole other issue. So even if you're talking about individual --

CO-CHAIRMAN SIEBER: Well, given that you need --

MR. PEDERSEN: Well, even if you're talking about individual exposure and not collective dose, you're talking about dose to the work force, and how do you compare that with the potential dose to a

number of the public through CDF? Even if you go to a full level 3 PRA you're talking about how do you balance the dose to the public versus dose to the occupational worker. There's a lot of issues in there that are very difficult --

CO-CHAIRMAN SIEBER: Well, the source term -- okay. Well, let's move on from there. I'm sorry I asked.

MR. FRAHM: Thanks, Roger. Next we have public radiation safety. Steve, are you ready to talk about it? Steve is, I believe, under the weather today, so be easy on him. We have ten minutes before the break, and we actually have two specific examples we wanted to go through, so I guess optimistically I hope we could get one before the break, and maybe pick this up right after the break, and then move into emergency preparedness.

MR. KLEMENTOWICZ: Good afternoon. Yes, I'm a little bit under the weather recuperating from a cold over the weekend. The public cornerstone, the overview is that it's designed for routine plant operation where radioactive material is either released into the environment, transported into the environment, or inadvertently brought into the environment. It's made up of four branches,

radioactive material control, transportation, radioactive effluent control, and environmental monitoring programs.

The example we'll be talking about is radioactive material control. The issue was with Comanche Peak. In the SDP, we have a sub-routine. I could point it out on the overhead here. We have a sub-routine that talks about how many occurrences, and that's how many occurrences over a two-year inspection period.

The public cornerstone deviates from some of the other cornerstones because besides being performance based and trying to be risk informed, we also have a public confidence factor. Because this cornerstone involves the public and radioactive material in the public domain, as one of the agency's goals, performance goals and objectives, public confidence is something that we are to promote. And any time radioactive material gets into the public domain, we know that the public is greatly concerned about that. So even though we do have dose standards and dose limits, and ALARA objectives for effluents, the public confidence factor was put into this cornerstone with the agreement of industry and stakeholders, public stakeholders.

Industry itself recognized that they would lose tremendous public confidence if they were to release material inadvertently, as we saw in Davis-Besse, and so the industry agreed, and we felt it was appropriate at the NRC to have this public confidence factor. So that's a major difference that I need to point out to you, that we have this public confidence factor that is subjective. We try not to build it up to such great extremes where it becomes an outrage factor, as has happened many years ago, but it is there.

That's where -- partly what this greater than five occurrence loop was to consider. It was also to consider that if you had very low level material releases on workers or contaminated soil or equipment -- I had just come off the Haddam Neck assignment where they had released contaminated blocks in soil throughout the countryside, and what we found there was there was multiple very, very low level doses from each one of these concrete blocks.

MEMBER WALLIS: What's the threshold for these very low doses?

MR. KLEMENTOWICZ: Five millirem.

MEMBER WALLIS: Well, that seems to be a bit more than five millirem if you go the other way.

MR. KLEMENTOWICZ: Correct. We have two branches. One is strictly dose-based. The other we add occurrences.

MEMBER WALLIS: There seems to be no threshold for an occurrence per se. I mean, is microrem an occurrence or --

MR. KLEMENTOWICZ: Currently, we have no release limits in 10 CFR Part 20. Many years ago, the agency tried to do a below regulatory concern to establish a threshold, and that went down in flames. The policy, the NRR policy is no detectible licensed radioactive material can be released other than effluents. So what we have is that the licensee has to have a material survey and release program, and it's based on instrument sensitivity, and so that becomes the de facto release limit. However, as I said, if it's ever detected, then that is a potential violation.

MEMBER ROSEN: Now wait a minute. I came into the plant with potassium 40 in my body.

MR. KLEMENTOWICZ: That's why I make it --

MEMBER ROSEN: Can I take my own potassium 40 back out?

MR. KLEMENTOWICZ: That's why I make it clear it has to be licensed radioactive material. It

has to by byproduct material that came from the plant.

MEMBER ROSEN: Okay.

MR. KLEMENTOWICZ: Everything is measured above background, or licensed material. So since Part 20 has no release limits, and I'm also on a working group where the Commission has directed us to establish a clearance rule, we hope that in the next several years we may have a limit. But currently we don't. We have a no detectible policy and, therefore, if anything is released and found off-site and is detectible, it's a potential violation.

At the Haddam Neck event, we found that these multiple events did not contribute a 5 millirem exposure, so what we would have as a situation, was all of this material was released over multiple -- over different time periods, and the public confidence would go down. And yet, all we could say this is a green issue, so we came to the number five that if there were very small releases, but yet it occurred greater than five times over two years, we felt that was worth a white finding, escalated NRC attention. And the example we have was Comanche Peak. They had eleven instances where they inadvertently released licensed radioactive material, and so they tripped the greater than five, and it became white.

The licensee appealed, and this appeal went all the way up through the EDO. And I have this example up here because it shows where we worked with stakeholders to refine the program. And this brings up your question about isn't there some de minimus level, and we've been meeting with stakeholders pretty much every month for quite a while now to try to establish what is a minor inspection violation. Give the licensee some credit that when they do surveys, they can only see to a certain level, and realizing if you want to account for 24 hours, you could see anything.

MEMBER WALLIS: It's the way you measure it too, if you're discharging something into the river.

MR. KLEMENTOWICZ: Correct.

MEMBER WALLIS: You have to measure it before it gets too dilute.

MR. KLEMENTOWICZ: Right. But here we're talking about workers carrying tools or equipment outside of the restricted area.

Comanche Peak felt it was completely unfair that some of their items, contaminated glove liner stuffed underneath a cap in a welding tank, a contaminated wrench inside of a tool box, and most of

this material was found within the protected area. And so they argued the public cornerstone's objective discusses things being released into the public domain. And here was a situation where there was negligible risk to the members of the public from this material being on-site and discovered. So they argued that, you know, you're not meeting your objective.

The NRC agreed with that philosophy that if it's within the protected area, then we should not be aggregating these findings to a white finding. So as of November 29th, the SDP has been changed to reflect that if material is found within the protected area, it will not be aggregated to a white finding.

CO-CHAIRMAN APOSTOLAKIS: We were told earlier that the colors were determined by the action the NRC staff would take. You didn't mention any action. You just talk about public confidence. Are you the exception?

MR. KLEMENTOWICZ: No, we do the same thing. As a result of the white finding at Comanche Peak, there was a supplemental inspection that went back to

the --

CO-CHAIRMAN APOSTOLAKIS: But that's not how you determined white.

CO-CHAIRMAN SIEBER: No, that was a result.

CO-CHAIRMAN APOSTOLAKIS: That was a result.

MR. KLEMENTOWICZ: That was a result, yes.

CO-CHAIRMAN APOSTOLAKIS: We were told that white is determined by the action, and you don't seem to mention that at all. You just go with millirem.

MR. KLEMENTOWICZ: Well, that's part of the performance in risk-based. The 5 millirem is equated -- yeah. Well, I'm not sure I fully understand, but the action that the NRC will take, but we developed this criteria that would trigger a white finding, and then initiate the NRC action.

MEMBER WALLIS: Do you have an action matrix the way they do with the other --

MR. COE: Sure. Absolutely. It feeds the action matrix just like any other finding.

MR. PEDERSEN: Could I add something that might help? As I said, the way we developed the threshold was by subject matter expert and industry, with industry and stakeholder input as to what action would be warranted at certain levels. Those levels that would warrant NRC addition inspection, what

caused that additional inspection is what Steve is talking about. How much the staff and the stakeholders factored in public confidence, how much we factored in safety in the occupational radiation area, the fact that one over-exposure is one of the metrics in our strategic plan, and we would have to report to Congress. All of those things factored into what level of response we would expect the NRC to be in for any particular of these issues.

MR. COE: Another way of asking the question of Steve, I think, would be does the NRC feel comfortable that a white level of response and effort is matched appropriately to this threshold?

MR. KLEMENTOWICZ: And the answer based on our stakeholder meetings is yes, based on the possibility --

CO-CHAIRMAN APOSTOLAKIS: I really don't understand this process. Here you're telling us when we first did it, we considered the release of material anywhere. Then the licensee complains. It's okay. If it's within the protected area, it doesn't matter, so we don't include that.

MR. KLEMENTOWICZ: Well, it's a learning process, and when we first developed it, we were being, I guess, overly conservative. And based on

something like two years of experience, we felt that we were -- we found that we were -- this is what came out of some of the public meetings on the Comanche Peak and the appeal process, that we were unnecessarily causing public concern by escalating an issue that had zero risk to members of the public, so we were doing -- we gave it an unintended consequence by telling the public that this was a white issue, when in fact all of this material was in the licensee's protected area and had no risk to them. So if you want to call it this way, I screwed up by putting it in the first time. And then we did not want to alarm the public unnecessarily.

CO-CHAIRMAN APOSTOLAKIS: Did anyone ever ask you when you are in the white area, that's the same as if you had X number of scrams per year.

MR. KLEMENTOWICZ: No. No. I could not equate myself to reactor scrams.

CO-CHAIRMAN APOSTOLAKIS: You could not relate it.

MR. KLEMENTOWICZ: Right. We do not have a PRA like that. Absolutely not.

CO-CHAIRMAN SIEBER: By the way, even though you don't issue a color because there is radioactive material outside the radiologically

controlled area, but inside the protected area, that material still has to be identified, marked, and if it has loose surface contamination, has to be packaged.

MR. KLEMENTOWICZ: It can still be a finding.

CO-CHAIRMAN SIEBER: It's a finding. This doesn't have any color.

MR. KLEMENTOWICZ: No, it has -- it can have a green color, but if it's outside of the protected area, of it's in the public domain, it will get at least a green color. Plus, it will be added in this counter. The only thing we modified was for findings that are within the protected areas, we would not add them.

CO-CHAIRMAN SIEBER: And so all the rules on packaging, marking and all that other stuff still stands.

MR. KLEMENTOWICZ: Still stands, yeah.

CO-CHAIRMAN SIEBER: Okay.

MR. KLEMENTOWICZ: All the regulations, licensee following their procedures still stands. We can have a finding. It would be a green finding, but if they a hundred, it's one hundred green findings as opposed to going white. And we -- again, the mistake we made up front was that the unintended consequences

of alerting the public to something that was not a risk to them, so that's where we agreed with industry that we needed to change that, so that's the significance of the Comanche Peak item.

CO-CHAIRMAN SIEBER: Well, we'll need to really accelerate ourselves right now.

CO-CHAIRMAN APOSTOLAKIS: Is this an SDP or a performance indicator?

MR. KLEMENTOWICZ: It's an SDP. I have performance indicators on radioactive effluents based on how much gaseous and liquid effluents they discharge.

CO-CHAIRMAN SIEBER: Is there a way we can sum up, because we were supposed to --

MR. KLEMENTOWICZ: The next item, and I'll finish up very briefly, is radioactive material transport.

CO-CHAIRMAN SIEBER: Yeah, and let's not do that, because we have to take a break until 2:45. Okay. We'll come back at 2:50. Thank you.

(Off the record 2:07 - 3:04 p.m.)

CO-CHAIRMAN SIEBER: Well, we're a couple of minutes late. We'll get started anyway.

MR. KLEMENTOWICZ: Okay. Welcome back. I'd like to talk about one of the other branches of

our public cornerstone, and that's the transportation area. The example that I have here is about a failure to properly classify radioactive waste shipments.

This event came right out of the starting gate of the ROP. The program took effect in March or April, and then this was at Peach Bottom. And let me show you the actual SDP. It's the low level burial ground SDP. And we go through the was it an access denial situation? Yes or no? In this case, the event was the Part 61.55 waste under-classification gate. The licensee had packaged -- had labeled the material Class A waste, when in fact it was B, so under the old SDP, this is the revised one you see here, any time a licensee under-classified a waste shipment, it would be an automatic white finding. And that's what we had worked through with industry based on the regulations, public confidence, and any risk to members of the public or to workers.

The white finding was issued, and the licensee appealed. And the basis for their appeal was while they did call the material a Class A shipment, they had packaged it and did all the transportation, and shipping, and packaging requirements as if it was waste of Class B waste. So when you went through the SDP, okay, the under-classified it. They called it A,

but they met all the requirements of Class B, so the licensee made the argument that there really was no risk to members of the public, or to the workers during the transportation or the burial, because the waste was adequately packaged. The only error was that it was mislabeled.

We looked at that, ran through various scenarios, and ultimately agreed that the SDP needed to be a little more complicated, and not so simplistic as to just say under-classification, automatic white. So we added in this box, "Did the waste conform to the regulations, the de facto performance-based criteria?" They may have mislabeled it, but was the waste properly packaged and transported?

CO-CHAIRMAN SIEBER: Question, part of the packaging and shipping is radiation survey of the package. Was that correct?

MR. KLEMENTOWICZ: That's correct. And that's where the error was. They made -- the finding was that they -- their data showed that this material was Class B waste, but they didn't believe their own instruments, and some inexperienced technician had run the analysis. So while everything was telling them it was Class B, the data came out, the computer program came out calling it Class A, so we were -- it was a

somewhat difficult decision because we were concerned about the negative effects that they just happened to over-package it. We did not want to give credit for luck, so that's why we expanded the SDP, that some licensees we found out through investigations conservatively package. While they believe it's Class A waste, they will package it as Class B just to be sure. There's that added conservatism.

CO-CHAIRMAN SIEBER: It seemed to me, and I may be wrong on this, but the amount of money you pay to Barnwell, or Hanford, or wherever you're sending it depends on what the waste classification is. Right?

MR. KLEMENTOWICZ: Yes. Correct.

CO-CHAIRMAN SIEBER: So they got a discount misclassifying it as A, when it should have been B.

MR. KLEMENTOWICZ: Well, when it's received at Barnwell, they do their own independent surveys.

CO-CHAIRMAN SIEBER: Yeah, I know how it works.

MR. KLEMENTOWICZ: Yeah. But those are things we were concerned with. But the bottom line, we had to look at the regulations, and if the proper

packaging for Class B waste was met, and it was disposed of at Barnwell in a Class B trench, then there really was no risk.

CO-CHAIRMAN SIEBER: Well, how did Barnwell put it in a Class B trench?

MR. KLEMENTOWICZ: Well, they did the survey.

CO-CHAIRMAN SIEBER: Oh, this is after they surveyed it.

MR. KLEMENTOWICZ: They did the survey and they say no, this is a Class A waste.

CO-CHAIRMAN SIEBER: Okay.

MR. KLEMENTOWICZ: So this was found out when it got to Barnwell.

CO-CHAIRMAN SIEBER: Okay.

MEMBER KRESS: Once again, this is a question of whether or not we should ever have risk as part of the equation because, you know, just the fact that they misclassified it as a performance issue, and just because it wasn't very risky, transportation in general is not very risky. And, you know, it seems to me like it's a performance issue, and it shouldn't be ameliorated because of the risk-significance of it. It's a performance issue. You don't want waste to be misclassified it, whether they packaged it right or

not.

MR. KLEMENTOWICZ: Well, it still is a finding in the future. Under the original SDP it was a white finding. Now the same situation would still be a finding, it would be a green finding, so it --

MEMBER KRESS: I think it should still be a white finding is what I'm trying to say.

CO-CHAIRMAN SIEBER: You're too tough. It's like a parking violation. If you park in front of fire plug and there is no fire --

MR. KLEMENTOWICZ: Well, the way we have it is that it will be green in the future. The exception to that is when we get to the higher class waste, Class C. Then, you know, that's risky material, and we're not going to give much flexibility on that. That would be a white finding.

CO-CHAIRMAN SIEBER: But that stuff usually goes in the HIC.

MR. KLEMENTOWICZ: Correct.

CO-CHAIRMAN SIEBER: They're pretty easy to pick out.

MR. KLEMENTOWICZ: Yeah. But again, that was the part. That's the higher activity material. We were not going to de-escalate that in any way. But on the basis of our program being risk-informed, if

there was no risk, then we should not be taking additional action on the licensee when there was no risk, so that's why we agreed to do down to a green.

To make it the higher classification, the highest we have is yellow, and that's where the public confidence comes in with, if the licensee has several green or white findings, what will typically happen is the burial site becomes very agitated, and they say you've made your last mistake with us. You are now banned from disposal, you know. And here's where public confidence comes in.

The industry and the stakeholders agreed that while that may not represent the true risk to anybody, it's a severe public confidence issue that a licensee of the NRC got banned from waste disposal because of multiple errors. And that's typically what it takes, multiple repetitive deficiencies where the burial site says we don't want your thousands of dollars per cubic foot. So in that instance, it would be a yellow finding, and that's our highest level for the burial ground activities. It results in a suspension for greater than 30 days based on multiple findings, and that has not been changed, nor has that been tested.

MEMBER SHACK: When we just have findings,

do we trend the number of findings for a licensee? Is that --

MR. KLEMENTOWICZ: Trends? They're reported in the ROP database, but as far as a trend, the policy if it's a green, it's a green, it's a green.

MR. COE: We have about six to eight hundred findings per year total out of the entire program. About two dozen, about 25 or so, get looked at as potentially greater than green, and about half of those turn out to be greater than green. And that's a rough average based on experience to date.

MEMBER KRESS: Does the fact that you have no red color in this area give the message that you don't think transportation is as important as the other cornerstones?

MR. KLEMENTOWICZ: No. This transportation is broken up into several sub-branches to take care of all the different transportation regulations.

MEMBER KRESS: Oh, I see.

MR. KLEMENTOWICZ: We can get a red, and my next plan was to discuss where we could -- how we're dose-based, and we use dose for risk, to be risk-informed, and so we can get to red if they exceed

the regulatory limits. So clearly, if your multiples of the limits, you can go all the way up to red. We planned for situations that do occur. The package is breached. It's on the road, and we've had a few of those just recently where part of the material broke through the wall of the C-van, and now that's a package breach. But then we looked, are there any loss of contents, so we try to say what is the performance? Did any material leak into the public domain that could affect members of the public? Yes or no? If the answer is yes, then what were the dose consequences of this breach? So that's how we factored in performance with the regulatory limits and multiples of the limits. But again, if you exceed the public dose limit of 100 millirem, then that's going to get you a red. If you exceed the occupational dose of 25 rem, that would go red, so we've addressed public and occupational workers.

MEMBER KRESS: I think should avoid calling that criteria risk criteria.

MR. KLEMENTOWICZ: I should avoid calling it risk-informed?

MEMBER KRESS: Yeah, because there's no probability of frequency associated with it. It's all right to use it. I'm not against using it. Don't

mistake me. I just wouldn't call it risk --

MR. KLEMENTOWICZ: Right. And as far as reactor safety cornerstone, you know, we're totally different. But again, the concept is that we blended in dose, use of the regulations and public confidence to come up with a finding classification, and with this one exception of the under-classification, the rest of the cornerstone has worked very nicely.

MEMBER WALLIS: It's very interesting that you've mentioned public confidence many times.

MR. KLEMENTOWICZ: Yes.

MEMBER WALLIS: Who decides what the scale is for public confidence?

MR. KLEMENTOWICZ: That was based on our interactions with stakeholders.

MEMBER WALLIS: So you can actually poll the public or something?

MR. KLEMENTOWICZ: Based on all the meetings we had, we said what would be unacceptable? Where would the public -- it's subjective.

MEMBER WALLIS: Are these stakeholders members of industry, or are they members of the public?

MR. KLEMENTOWICZ: Both.

MEMBER KRESS: That's probably the best

way to get performance indicators when you looked at thresholds. I don't know of any other good way to get them. That's probably the best way.

MR. KLEMENTOWICZ: Well, let me go into this yellow example on the suspension. Now just because a licensee is banned from disposing of their waste from multiple minor infractions, that's a very subjective response by the burial site. You know, whatever -- when the governor gets too upset, he's going to say you're banned, so there's a subjective criteria right there. But what follows through? That's on the front page of the newspapers. The public reads Indian Point banned from waste disposal site for multiple violations. Was there any risk to people? Yeah, maybe slight, but it's a public relations nightmare. And what would be the expected NRC response? Clearly, green is not appropriate. They've just been banned. White, it did not seem significant enough. Yellow, we would have to find why are they doing repeat violations of this material that's in the public domain, and that is to be buried safely, and the public has to have the assurance that the waste is properly disposed of.

MEMBER WALLIS: What concerns me is you are making a decision of giving an award of yellow

based on somebody else's evaluation.

MR. KLEMENTOWICZ: Yes.

MEMBER WALLIS: But you're wrong.

MR. KLEMENTOWICZ: Yes, and that was a big discussion point, but the bottom line was that there were -- there would be violations. The NRC would have likely green findings, multiple green findings, so there would be performance deficiencies that would be documented. But the public confidence factor is what industry agreed that it was appropriate for the NRC to take additional action, because that would reflect entire industry.

MR. COE: I would offer that the SDP, as all SDP our staff -- they're defined ultimately, and approved and used by the staff. They benefit from the dialogue that Steve has talked about. And all of the SDPs have benefitted from similar dialogues with public and utility stakeholders. But when it's finally printed in an NRC inspection manual chapter and utilized by the staff in our decision processes, it is our decision process.

MR. KLEMENTOWICZ: That completes my presentation.

CO-CHAIRMAN SIEBER: Okay. Any further questions? If not, maybe should go home, get some

chicken soup and recover.

MR. KLEMENTOWICZ: I intend to. Thank you.

CO-CHAIRMAN SIEBER: Okay. All right. We'll just move right along.

MR. FRAHM: Thanks, Steve. Next we have Randy Sullivan to go over some emergency preparedness issues. Last but not least.

MR. SULLIVAN: I'm surprised. I didn't expect to get through this long agenda and be here. Hi, I'm Randy Sullivan. I'm a Senior Emergency Preparedness Specialist in NRR. I was the principal contributor to the EP cornerstone when it was being developed. I appreciate making a short presentation to you. I want to go to backup slide 31, and I want to begin there. It's a little different than maybe you were expecting.

This is a big surprise to us that there would be so many findings in EP. We've spent a lot of time wondering about this, studying it, trying to put it in context. We spent a lot of time --

MR. FRAHM: And actually, let me just point out, this slide looks a little bit different from the one in your package. And, in fact, there's an actual change. There's four white PI results in

the EP cornerstone versus three, so when I went and made that change, I also went and kind of columnized this slide to make it a little more legible.

CO-CHAIRMAN APOSTOLAKIS: Take the other one.

MR. SULLIVAN: Okay. Fine. Why don't I just take the other one. It started off easy, you know, because the early findings were Indian Point, and we could see that their program was a bit, perhaps had been -- not gotten the attention that you might have expected. But there kept on being findings, so we wanted to look at that, and we re-examined the SDP to see if we were in the right place. We examined the findings themselves. WE asked ourselves a lot of questions, can this possibly be equivalent across the cornerstones? You know, perhaps our view is myopic because we're EP experts, we're not reactor safety experts. And we came to several conclusions which I just want to relate to you.

Okay. So we have 20 findings in EP since the beginning of ROP. That's kind of a high number. There's five PI hits rather than the four you see on this slide. But there's some insight to be gained from this. The findings are grouped. We have three at Exelon, Pennsylvania; three at Indian Point; four

at Cooper, and three at NMC-Wisconsin. If you remove those numbers, you have seven findings over the other 57 sites. You know, that tells us maybe these programs were identified. You know, maybe the programs that racked up these findings were the ones that needed attention.

By the way, it's kind of instructive to note that of the five PI hits, I mean, PIs crossing a threshold, three of them are from that same group. Nice sort of -- when the -- the EP cornerstone is designed to identify problem programs, and to focus the effort there. If a program is operating in the green band, our inspection is more focused on problem resolution, critiques, rather than the performance itself. When a program ends up with these findings, then we get more involved with the performance.

Now the original EP SDP recognized that there could be false positives. We'll go through a little bit of the SDP, but that was actually written into the cover page of the EP SDP. It's a long paragraph that's kind of well-written, but it basically say we recognize that we could have false positives. This SDP was designed to have no false negatives, and what that means is that there may be at times be a finding that is characterized at too high

a level. In other words, it runs through the SDP as white. Maybe it should be green or yellow, maybe it should be white. And it gave the panel the latitude to use that judgment. It's supposed to be the exception rather than the rule. We think perhaps it was invoke more than - it was invoked I think three times, twice, three times. We think that was too many, so - but nevertheless, it was there.

We are in the process of almost finalizing a revision to the SDP that tightens up several areas. We think we learned over the first couple of years, and we did change the SDP to provide some flexibility. It was a little inflexible in terms of the risk-significant planning standards. I'll explain that concept in a minute or two. It was either yellow or green. We were kind of unsatisfied with that, so now there's an intermediary step of white, and it actually tightened up the critique finding to make sure it really is doing what we wanted it to do.

Okay. I'd like to move on to a couple of examples. When you take a look at emergency preparedness -- well, I'll tell you what. Rather than do that, why don't we look at the SDP? Can you put up the SDP? We thought this was simple. It looks kind of simple, but it's not.

You have a finding. There's three paths to go down. Actual event is the far left, we'll get that in a minute. If it's a drill or exercise critique problem, you go down the middle. If it's a risk-significant planning standard problem that wasn't ID'd, then it's white. If it's anything else, it's green.

We have 16 planning standards in emergency preparedness and some requirements in Appendix E. Rather happily, four of those planning standards relate most directly to protection of the public. That's classification, notification, PAR development, and assessment, dose projection and the like. So those are what we call the risk significant planning standards, because they live closest to protection of the public health and safety. Sirens are subsumed in notification, planning standard 5, so it's both notifying the off-site agencies and notifying the public are talked about in planning standard 5. That's what we got.

The other eleven planning standards are less important or less significant. You've got to comply with them but, you know, it might be a white finding instead of a yellow finding, or a green finding instead of a white finding. That's just the

way it is.

On the right hand side is the failure to meet. That's an actual programmatic deal. Failure to meet a planning standard, no, it's green. You know, some plan commitment or some other thing starts green. If it's a failure to meet a planning standard, you're at least going to get a white finding, and if it's one of these risk-significant planning standards, it's yellow.

On the next page is real events. Anything you do wrong in an unusual event can't be worse than green. There's about 30 unusual events a year. There's about three alerts a year, so some of the things you do wrong during an alert, like a failure to classify which is the Peach Bottom case you brought up this morning, can be white. Any of the missed steps that aren't associated with the risk-significant planning standards would be green. And it bumps up in that fashion for site in general. You can get to a red under the general emergency. Okay.

CO-CHAIRMAN APOSTOLAKIS: What's RSPS?

MR. SULLIVAN: Risk-significant Planning Standard, that's classification, notification, PAR development and assessment, 50.47(b)(v)N.

CO-CHAIRMAN APOSTOLAKIS: So if there is

a general emergency, and they fail to implement RSPS

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MR. SULLIVAN: That would be fail to classify or fail to notify, or fail to issue a protective action recommendation.

CO-CHAIRMAN APOSTOLAKIS: In a real emergency.

MR. SULLIVAN: Real emergency, not a drill.

CO-CHAIRMAN SIEBER: In a general emergency, that would be the least of your problems.

MR. SULLIVAN: It's the least of your problems, yeah. Nobody argued with this much because the next general emergency --

MEMBER ROSEN: The next guys are going to have to pay a --

MR. SULLIVAN: Yeah. It will be the last general emergency. Industry didn't really argue with that much, but that's our only red finding. And we think that's appropriate. We can get yellow findings, and we have gotten yellow findings, but a red finding in EP is really only if you really deny the locals a chance to protect the public. And that would have to happen, you know, during a general emergency.

Let's go to the examples. This is an interesting one. If you do a bottom-up analysis of emergency preparedness, you find much to our surprise when we did it, that the siren system is absolutely the most important piece of gear you've got in emergency preparedness.

Now under the old program we would invest quite a bit of inspector time looking at field monitoring kits, and equipment lockers at TSCs and the emergency lighting within the -- we don't do any of that any more. But we do look at the siren system because you cannot protect the public health and safety without the siren system, in fact. There's no other -- you know, it would be nice if you notify, but if the locals can't then light off the siren system and turn on the EDS station, you don't protect public health and safety, so we invented this PI that's a little unsatisfying.

We've been calling it reliability. In any case, it's a measure of successful tests over tests on a per siren basis. We took 60 plant years of data. We looked at the average. It was high. The regulatory limit is 90 percent. The average was 98 percent. We chose 94 percent for the limit. In the 60 plant years of data, there was one plant that was

below that, I mean, one data year that was below that, one data year that was near it. We chose it on a consensus basis, declared victory and pulled out. Lo and behold, we get these findings.

CO-CHAIRMAN APOSTOLAKIS: Why didn't you do what the safety guys did with their indicators, where they considered the plant-to-plant variability curve, and they took the 95th percentile?

MR. SULLIVAN: Good question. Maybe we weren't that sharp, but what we did do is we took an average which turned out to be 98 percent. Oh, I'm sorry. I shouldn't have answered you that way. This, in fact, is something like one sigma off the -- I mean, if you use sigma in a very loose --

CO-CHAIRMAN APOSTOLAKIS: Yeah, well they didn't do it that way. They actually went to the 95th percentile.

MR. SULLIVAN: No.

CO-CHAIRMAN APOSTOLAKIS: That's more than one sigma.

MR. SULLIVAN: Right. It would be two sigma. Right? We used one sigma for --

CO-CHAIRMAN APOSTOLAKIS: I mean, why not do what they did? It's not a matter of being smart. It's a matter of having somebody overseeing the whole

effort and saying, you know, this is how we do it. I think, you know, we keep talking about public confidence. I think we are undermining public confidence by doing things like that. In the same program, some things are done in one way, some other things in a different way, some other things in yet a different way. That's what we're -- you know, that's a major determinant of public confidence, in my opinion.

CO-CHAIRMAN SIEBER: That pretty much goes back to what we said, you know, months ago about consistency.

CO-CHAIRMAN APOSTOLAKIS: Yeah.

MR. SULLIVAN: We were constrained by the 90 percent reliability number. That's the FEMA regulatory number. If you drop below 90 percent, FEMA gets involved in your siren system reliability, so we felt that that was an absolute floor.

CO-CHAIRMAN APOSTOLAKIS: Yeah, but presumably then all 102 units are above 90 percent.

MR. SULLIVAN: They are above 94 percent.

CO-CHAIRMAN APOSTOLAKIS: Yeah.

MR. SULLIVAN: The average is 98.

CO-CHAIRMAN APOSTOLAKIS: Yeah.

MR. SULLIVAN: So they're well above it.

CO-CHAIRMAN APOSTOLAKIS: They're well above it.

MR. SULLIVAN: So rather than use the analysis you're talking about, we felt constrained by the 90 percent, and we did a much simpler analysis.

MEMBER WALLIS: How many tests do you run to get this 98 percent?

MR. SULLIVAN: It varies from site to site. They'll file a siren design document with FEMA which was formerly approved. In that design document is the testing regimen. In general, it's a bi-weekly test, so 26 a year.

MEMBER WALLIS: This is averaged for three years or something?

MR. SULLIVAN: No, it's averaged over on year, but it's on a per siren basis, so if you had 100 sirens, there's 100 siren tests every two weeks. And so the number get happy. Now many sites do a lot more than that. There are sites that test daily, so they turn in 4,000 tests per month. And actually, the PI is designed to encourage testing, because the more tests, the more stable the number is, and one missed step doesn't make you cross the threshold to --

MEMBER WALLIS: Do these sirens work in ice storms and things like that?

MR. SULLIVAN: Yeah. It is challenge though. Salt water ice storms are particularly challenging. In any case, we ended up with quite a few findings in this area.

In this particular item, this system was not one of the better ones. They started to trend downward and then they had a system failure, so they were probably only testing every two weeks. They were already at 96 or 95 percent. They had a total system failure, and it drove them down below the threshold. We got involved. They did a root cause analysis, and that's where we were. This is a PI, this is crossing a PI threshold.

The next item is a finding, and this is an interesting one. This finding has to do with -- let's see. Siren systems have gotten more sophisticated over the years, and the systems now have control units with feedback, so there's a radio at the siren that talks back to the central, and it says, you know, it gives health and safety data, or health and welfare data. Maybe seven data points, maybe 20 data points, whatever it is, so when my signal goes out for a test, the siren comes back and says I'm okay. Or it says I sounded, because sometimes there'll be a little speaker, you know, it's fairly sophisticated. So

there's a siren feedback system.

However, many of the older systems don't have that, and among those systems, there are some that have no way of knowing whether the siren sounded or not, so they have automatic route alerting. It's adequate. You know, the sirens are designed to work, they'll probably work. You know, you're giving me 98 percent reliability, so automatic route alerting may be necessary. They'll do it anyway. There's some benefits to that.

At this site, they had a feedback system that wasn't working and they didn't know it, and there was no automatic route alerting. They could do route alerting, but they didn't know to ask --

MEMBER ROSEN: What does that mean, "route alerting"?

MR. SULLIVAN: It's firemen and policemen run a route with a bullhorn and tell people to get out of their houses.

MEMBER ROSEN: That doesn't sound so automatic.

CO-CHAIRMAN SIEBER: Automatic is when you notify, and they go without being told to.

MR. SULLIVAN: Let me say it a different way. These fire trucks and policemen leave

automatically. They don't have to be told to leave. If there's a general emergency, they're summoned and they start their routes. That's what I mean by automatic.

At other sites with the feedback system, they say well, siren six failed. Get, you know, police car A to go run its route. That's all we need. At these less sophisticated sites with no feedback, they all go. As soon as they get to their police cars they go and they run their route.

By the way, route alerting is the way public evacuation works everywhere else in America. That is the way neighborhoods are evacuated should there be a tanker truck turned over, or a train derailed, is route alerting by police and firemen, so although it's foreign to use in the nuclear industry, that is the way the whole country operates in -- you know, where there's no siren system.

Well, so initially it looks like they're not implementing a risk-significant -- they're not meeting a risk-significant planning standard. They cannot assure about 100 percent of the people will get notified should the sirens be needed. They thought they had a feedback system. The feedback system in fact was not working. They were unaware of that.

They would push the button and have no idea. Well, you would assume most of them would work, but you could not assure that 100 percent, about 100 percent of the people were notified within 15 minutes, so we felt well, you're not meeting the planning standard.

Yellow just didn't seem right. And our SDP was inflexible enough that it was either yellow or it was green. Well, we used that judgment clause and declared it to be white.

CO-CHAIRMAN APOSTOLAKIS: How could the process be inflexible to go from green to yellow without going through white?

MR. SULLIVAN: Well, let me help with that. It's kind of simple minded. Can you put this back up, the first slide of the SDP? It looked like a good idea when we started, but in fact maybe it wasn't.

CO-CHAIRMAN APOSTOLAKIS: There has to be some continuity in the judgment.

MR. SULLIVAN: If you look at the right-hand side, the way this is rigged, it's a failure to meet a regulatory requirement.

CO-CHAIRMAN APOSTOLAKIS: Right.

MR. SULLIVAN: You drop down. Is it a failure to meet a planning standard? If the answer is

no, it's just some plan commitment, but not a failure to meet a planning standard. It's green. If you fail to meet a planning standard, you drop down. Is it a risk-significant planning standard? The risk-significant planning standards include notification of the public. That's 50.47(b)(v) .

CO-CHAIRMAN APOSTOLAKIS: Right.

MR. SULLIVAN: If you fail to meet it, it's yellow, period, no step for white. So when -- we've rewritten the SDP to put in an intermediate step. We'll call it a degraded risk-significant planning standard and it will give the SERP more room to assign a white when we think a white is correct.

CO-CHAIRMAN APOSTOLAKIS: So there was a problem with the original --

MR. SULLIVAN: Yeah, sure. Frankly, we thought these kinds of failures would be so rare, these systems were 20 years old. They had been out there. They had been reporting good data to FEMA, and when we looked at it closer, many of these findings have been in ANS, and they've been difficult to struggle with. We've taken those lessons and we've rewritten the SDP to help a bit more. I'm sure we'll still be challenged. That's what we're trying to do. I'm done, if you're done.

MEMBER LEITCH: There are a number of places that are spending big bucks replacing siren systems, and I wonder to what extent that's being driven by this process. In other words, if we say this is performance-based, not particularly assessing the risk of the situation but assessing performance, and I think particularly when you get in the area of emergency planning, the public interprets it as risk-based. And I just wonder if that's an unintended consequence, if the utility is really spending -- if we're forcing, forcing may not be exactly the right word, but if you're influencing the utility to spend really big bucks in an area that may not be -- where we may not be getting our bang for a buck. Not to say it's not important, but is it the most important thing we should be doing?

MR. SULLIVAN: Let me put this premise forth. It is the most important piece of equipment in EP.

MEMBER LEITCH: Yeah.

MR. SULLIVAN: So rather than buy me new field monitoring vans, or updating the TSC, or putting in a new phone line, I would rather see -- I mean, this is a revelation that ROP showed us. Yeah, we knew sirens were important, but (a) we didn't know how

many problems we'd find. And (b), we didn't realize they were the most important piece of gear until we actually sat down and did the analysis, so yeah. I think that's a fact of performance indicators. If you measure it, people will pay attention. And we decided this is worth measuring, and people are paying attention. And there have been problems revealed.

MEMBER ROSEN: I think that the reason that you're seeing that is that many localities rely on these sirens for evacuation, a natural phenomenon. And because of that, the towns and localities that the plants are situated in feel very strongly about the importance of these, not because of the nuclear emergency so much, although they recognize they'll be important in the nuclear emergency. They are grateful and pleased to cooperate and the rest if the sirens are upgraded and work better because of the alerting capability of the instruments for a natural phenomenon such as hurricanes.

MR. SULLIVAN: This stuff is 20 years old too, I mean, much of it. So it is, and many of these designs are no longer -- you can't get spare parts any more so it's not surprising that some of them are being updated.

MEMBER LEITCH: How do you feel about

operating -- I've been looking at operating event history on a daily basis. I'd say they were probably within the past two months, there's probably been eight plants that have their sirens totally crippled because of weather conditions primarily. Sometimes for a period of several days. I mean, major ice storms and so forth, so many of these siren failures where they're spending big bucks to correct, replace the siren systems can be fixed in half an hour, so what should be our reaction when the siren system is inoperable for 48 hours, total inoperability for 48 hours? I mean regardless of the cost, this is risk significant, would we not be very concerned when the siren is not working for 48 hours?

MR. SULLIVAN: Yeah. It's a dilemma. One way to approach it would be to change this PI to availability, and we're pursuing that. But it's successful tests over tests loosely called reliability. I'm told that's not the exact definition.

CO-CHAIRMAN APOSTOLAKIS: It doesn't mater. We will use whatever you like.

MR. SULLIVAN: Okay. Well, that's what we've been calling it. Well, in front of this scholarly body, I didn't want to be caught misusing

the word. But availability, we'd be happy with availability, so if you're above 94 percent, you fix the problems. Even if it's out for 48 hours, you use route alerting. I understand that in certain ice storms, route alerting could be challenged too, you know, but we're happy with the average availability of these systems, and they will be out for a day at a time.

CO-CHAIRMAN APOSTOLAKIS: So what you're calculating now is the failure of the sirens to start.

MR. SULLIVAN: Yes.

CO-CHAIRMAN APOSTOLAKIS: That's the PI.

MR. SULLIVAN: Yes.

MEMBER ROSEN: Start and run.

MR. SULLIVAN: Yes.

CO-CHAIRMAN APOSTOLAKIS: No, not --

MR. SULLIVAN: Well, it could be a silent test, which is less than satisfying too.

CO-CHAIRMAN APOSTOLAKIS: That's for the PI.

MR. SULLIVAN: That is for the PI.

CO-CHAIRMAN APOSTOLAKIS: For the significance determination process now, do you include the possibility of repairing it in half an hour?

MR. SULLIVAN: In the significance determination process, we've invented an algorithm that sort of bridges the gap between availability and reliability, and that's just being published now, so we've attempted to grapple with that. I don't know if we'd be down to a half hour, but we've attempted to put together an algorithm that addresses availability. And should a siren system be unavailable, yet the PI testing in the green, we might issue a finding, and it would be a finding against the program, you know, against maintenance.

CO-CHAIRMAN APOSTOLAKIS: The reason why I'm asking is in the safety, reactor safety SDP, I think recovery is considered routinely. Right, Doug?

MR. COE: Yes, where it's appropriate, recovery of the equipment is. And in order to meet the equipment's objective, yes.

CO-CHAIRMAN APOSTOLAKIS: Yeah. So we could do the same thing here. Now I don't know exactly how your algorithm comes with that.

MR. COE: Well, I'm questioning whether you can recover a siren in 15 minutes. If the objective is to notify within 15 minutes, it's going to be, depending on the situation, of course, pretty tough to recover that siren.

MEMBER LEITCH: Like for example, I'm familiar with a case where a utility went to actuate the sirens from the county and none of them actuated, and it basically was -- maybe you pressed the wrong icon on your computer. It's you don't click there, you click over here. You click over here and they all work, so I think that turned out to be a white finding, but it was --

MR. SULLIVAN: I'm sorry, sir. It's closer to what the chairman is saying. The icon was missing. It had been accidentally deleted from the screen and they didn't know it.

MEMBER LEITCH: Yeah, right. That's correct.

MR. SULLIVAN: Until the test happened, and that -- these sirens -- well, we've been through the mill on sirens, and it was a very sleepy issue three years ago. We had willfulness. You know, we had willful tampering of -- I mean, at two sites. Who would have thought that such a thing would happen. We've had these computer issues where an icon is deleted and, you know, who would have thought that that would happen. This just turns out to be a more important system and there are problems.

CO-CHAIRMAN APOSTOLAKIS: You said that

FEMA has 90 percent.

MR. SULLIVAN: Yeah.

CO-CHAIRMAN APOSTOLAKIS: So this occurs through other natural phenomena that require evacuation.

MR. SULLIVAN: FEMA has a -- well, you know that FEMA is responsible for oversight of nuclear plant off-site programs.

CO-CHAIRMAN SIEBER: Right.

MR. SULLIVAN: And part of those programs, the siren design-basis criteria are issued by FEMA, you know, so we use FEMA's determination in this. And if a siren system has a reliability of less than 90 percent -- now they use a calendar year. WE're using four quarters, it's regulatory involvement. FEMA will get involved.

CO-CHAIRMAN APOSTOLAKIS: It's like the EPA and the NRC in another context.

MR. SULLIVAN: I think we're closer.

CO-CHAIRMAN APOSTOLAKIS: But I thought that these sirens are used also in other emergencies.

MR. SULLIVAN: Yes, of course.

CO-CHAIRMAN SIEBER: Yeah, but other industries, like the chemical industry, is not required to have sirens.

MR. SULLIVAN: That's right.

CO-CHAIRMAN SIEBER: So the only industry that's required to have them is nuclear plant licensee, and it's under FEMA Reg. 1. Right? That's the regulation.

MR. SULLIVAN: Right.

CO-CHAIRMAN APOSTOLAKIS: So what other phenomena, I mean, if there is an earthquake or what?

MEMBER ROSEN: Hurricane.

CO-CHAIRMAN SIEBER: Or the chemical plant next door goes up.

CO-CHAIRMAN APOSTOLAKIS: No, but then you say they're --

CO-CHAIRMAN SIEBER: They're going to use the nuclear ones.

CO-CHAIRMAN APOSTOLAKIS: And they have plans for doing that?

MR. SULLIVAN: Sure.

CO-CHAIRMAN SIEBER: They do. That happened down in Louisiana some place.

CO-CHAIRMAN APOSTOLAKIS: So they're going to use it, but they have no responsibility for their functionality.

MR. SULLIVAN: The utility maintains them. The county operates it, and the county may operate it

for other purposes if it helps them.

CO-CHAIRMAN APOSTOLAKIS: Put it a different way. If there is no nuclear plant around --

MR. SULLIVAN: Then there's no sirens.

CO-CHAIRMAN APOSTOLAKIS: So if there is a chemical emergency there are no sirens.

MR. SULLIVAN: And FEMA has standards for sirens. I'm not familiar with them. Their nuclear siren standards are the ones that I'm relating to you. There are other sirens. You know, the county has a tornado siren in certain counties and, you know, certain hurricane alert along coastal areas. I'm not saying there's no other siren systems, but by and large when you see a public evacuation in America, there's no siren system covering it.

MEMBER WALLIS: I was listening. You seem concerned about whether or not the siren works.

MR. SULLIVAN: Yes.

MEMBER WALLIS: What assurance do you have that people hear it? I mean, audibility depends on lots of things.

MR. SULLIVAN: We actually learned some lessons there too. When the siren system is installed, there's a sound mapping verification that's part of the design basis.

MEMBER WALLIS: Weather makes a tremendous difference.

MR. SULLIVAN: Yes, it does. And what this has done, is it's done -- the time of year is then calibrated perhaps using an algorithm for winter and summer. There could be a gale blowing, in which case the siren might not reach its design sound. That's true, but we didn't design for the gale. We designed for 60 dB at the front door in normal, you know, winter and summer conditions.

MEMBER WALLIS: So and old person with a hearing aide not functioning won't hear it and things like that.

MR. SULLIVAN: Right. Actually, there's a study -- there's a whole set of case law that addresses that. It really is 60 -- FEMA would prefer that we only discuss 60 dB at the front door. We went into our administrative law judge --

MEMBER WALLIS: We can't even hear the grandchildren at 60 dB at the front door.

MR. SULLIVAN: Yeah. Maybe, 60 dB or 10 dB above background at the front door. In fact, there are sociological facts that cause for informal alerting networks. They really do exist. Is it a sociological fact.

MEMBER LEITCH: You may have a 98 percent success rate with getting the siren to work. The audibility may be down to 80 something.

MR. SULLIVAN: And, in fact, the 90 year old neighbor of your's, you will knock on her door and let her know that --

MEMBER WALLIS: She may knock on our's too.

MR. SULLIVAN: Yes, that's right. She may very well, and the neighbor you hate will be in the back seat of your car. I mean, these are just sociological facts. You know, they're kind of amusing, but in fact, there is informal route alert -- informal alerting, and neighbors just don't let neighbors stay behind. It just -- hurricanes, other events, that's just the way it works.

MS. WESTON: What about the hearing impaired?

MR. SULLIVAN: Yeah. The counties spend a lot of time on special needs groups, and so I -- you know, sometimes it's a shoebox with cards in it, but in general, it's a computerized system that's updated, you know, in accordance with their FEMA commitments of lists of people who have special needs. They'll be ambulances assigned and other workers assigned to pick

up on those special needs.

In general, in an evacuation time estimate, the special needs people take about the same time as the rest of the population. Rule of thumb, not always true, so the hospitals, and the jails and the deaf people really don't take any longer than the massive population to leave an area in general.

MEMBER WALLIS: The most dangerous is probably a discotheque, you can't hear anything.

MR. SULLIVAN: Yeah, but those are the young people and they're resilient anyway, so --

CO-CHAIRMAN SIEBER: If you're there, you're young, and if you're young, you're immortal.

MR. SULLIVAN: Well, thank you.

CO-CHAIRMAN SIEBER: Okay.

MR. COE: Mr. Chairman, if I can offer a summary comment. I think what you've heard today, and I hope we've achieved our objective of giving you a sense of why the staff in general feels comfortable proceeding as we have with the set of SDPs and PIs that are available and are in use.

I think what you have seen here is that in each cornerstone, subject matter experts have taken a fairly hard look with collaboration of industry and public stakeholders, and as well as our internal folks

to come up with a way of grading our inspection findings that could arise from our inspection activities in each of these cornerstones.

To the extent we can, we've used risk insights either on a general kind of industry basis, or on a plant specific basis where those tools are available. And in an ongoing process, or an ongoing manner, we continue to seek the inputs and experienced that we've gained as we have and as we continue to get, to make refinements, to adjust these thresholds to produce what we believe is an appropriate regulatory response for a specific finding.

We continue to see the aggregation of these findings on a unit-by-unit basis in the action matrix, and it appears to be providing a relatively good spread between the plants that get the most attention, and the plants that get exceedingly lesser levels of attention from us above and beyond the baseline program.

On this basis, we believe that the program is working, I guess as the slide here starts out saying. And I would be interested in the Committee's reaction to two things. One is, do you believe that we've accomplished our objective today. I'd be very interested to know of helping illustrate why we feel

comfortable where we're at. Secondly, I would be, of course, very interested if there are any remaining issues on your minds that we could better understand as a result of this meeting today.

CO-CHAIRMAN SIEBER: Well, let me say a few words about where we are, and where we've been, and where we're going. We wrote a letter back on October 12th, 2001 which you read, which is a lengthy letter that talked about a number of things, but among them were the inconsistencies that result in the differences between using PIs with colors versus SDPs with colors, and then equating those as though they were the same thing. And also, how we deal with multiple sets of colors. You know, two whites equal a yellow, two greens equal a white, that kind of stuff, and what the rules of the game were.

I think there were some telling things that occurred today. Of course, we elaborated on all that at great length, which caused the Commission to write an SMR that basically told the staff to resolve all these things, and consult with the ACRS in the process of doing so. I don't feel from reading that SRM that it's our obligation to necessarily write a letter. On the other hand, we just can't let this thing float off into oblivion either. Okay. And you

folks have invested a lot of time, and a lot of your own infrastructure and credibility into developing this program, so I'm sure that you want to try to keep going in the direction you're going without having to stop and redo a bunch of things.

So the questions becomes, are there irreconcilable differences? Are there things that can be done to remove inconsistences in some of these intellectual pitfalls that we seem to find ourselves jumping into from time to time to make the process seem intellectually more legitimate. And I think there are some telling things.

One of them was an observation by Steve Rosen where he defined what it is we think, what you think this process really is. And what it amounts to, and because of a failure of that fundamental definition I think, and the fact that we all don't see that definition as correct, is one of the root causes of the difficulties and the struggles that we're having, so I think that was one of the key statements that was made today, and should be taken into account.

I think that we would be remiss to allow this to float off into oblivion, and so we must think about responding to the Commission one way or another, even if it's an interim letter. And I think that you

folks have put a lot of effort into this process, and I think that it deserves at least a statement that there's progress being made.

I think that it is a living process and you'll never be done. No matter how -- as long as there's reactors out there and people making mistakes, I think there's opportunities to improve their corrective action system and our own. So I think that we're faced with the potential, since the Federal Register notice for the February meeting is already out, potential for us to ask you to come back in March so the full committee can further deliberate on what it is we want to do.

I think that in fairness now though, since we have a few minutes before we must close this portion of the meeting, that I ask our co-chairman here for his perceptions of what he's heard today, and how he puts this all together, and where he thinks we ought to go. George.

CO-CHAIRMAN APOSTOLAKIS: Sure. Well, first of all, before I go to that, I think when we have a process in place or a PRA in place, how do we decide that it's effective, realistic, or it's meaningful? Well, it seems to me the only way is to look at the real world, our experience with the real

world. And a process that gives green to Davis-Besse, and then we find out what's going on, just can't be effective. I don't know why you call it -- you say it's working effectively.

I mean, the fact that you are finding things at various plants, and then you miss such a major incident for a potential accident, in my view shakes up -- should shake up our confidence in the process. And we should really try very hard to fix it as soon as we can, because I don't care if I have 50 small things, siren here, or a transient here and I miss the big one, so I guess I disagree with you that the process is working effectively.

Now more generally, I'm not sure -- I get the impression that you really didn't take the ACRS letter seriously. Today we hear well, you know, we are considering abolishing the red. Then I pushed a little bit to say okay, we're not going to abolish it. And 30 seconds later somebody else says no, we're still considering it. Now that's not a serious position, you know, we are doing this, not doing that. I mean, it was very clear that you said that this is a meaningless number, and it has a fundamental flaw that you are determining it using the delta CDF by changing a single element of the PRA. And I didn't

see any -- you didn't address that issue, and we're getting conflicting -- I mean, at the end of January, after almost a whole year from the SRM, we're getting conflicting answers.

That tells me that in preparing to come here, you didn't really have a meeting and say how do we address this? This is the position, everybody say the same thing. And this is the reason for it. And I think you're more or less rejecting everything the letter said.

I haven't seen a single change in what you're doing as a result of that letter, so you're disagreeing with us. So maybe if we write a letter, we can write one line. We continue to believe what we said a year ago. Then we have to press to understand what the basic philosophical approach is. Is it performance focused? Is it risk? Then we get the answer that, you know, it's really performance. And I think from what you've described in certain -- the analysis of certain events, it is really performance with heavy doses of risk insights, which I think is great.

Then we ask, you know, how do you decide that these things are equivalent? And the answer was, based on our intended action, which now runs counter

to risk-informing the regulations, but also doesn't seem to be universally true, because later on when other colleagues of your's took the floor and they talked about other things, and I asked them did you decide these colors on the basis of action? They said no, so evidently there was not again a policy for the ROP that said look guys, this is how you determine yellow and white, based on what you would do.

I think that they were developed independently by various groups. We have another example with the sirens. They took the mean value and they went up a little bit. And here you have the performance indicators for reactors taking the curves from plant to plant, and using the 95th percentile. I mean why? Why can't they be consistent?

Is it going to make a big difference in what you're doing? No, but we keep talking about public confidence. The public is not just the average guy on the street. The public is also the statistical associations, the informed scientists. And if they take a look and they say well gee, these guys really don't know what they're doing, you know, that's not good. You're losing the confidence of important constituencies.

I believe that we should separate

performance from risk. And I think, you know, originally I was going to propose that maybe the reactor safety PIs should weight it more than say the emergency preparedness, because the emergency preparedness will be required after many very unlikely events occur. Whereas, if I have an initiating event, that really creates a lot of commotion immediately. But if I look at it from the performance point of view which Doug explained in the SDP for reactors, then maybe they should not be weighted, because as far as performance is concerned, if you don't do a good job in the emergency planning, it should be the same as if you don't do it in the mitigating systems.

So you see, if you have a philosophical approach, a lot of these things are resolved. If you say I'm performance focused with heavy doses of risk information.

CO-CHAIRMAN SIEBER: From time to time.

CO-CHAIRMAN APOSTOLAKIS: Where appropriate.

CO-CHAIRMAN SIEBER: Right.

CO-CHAIRMAN APOSTOLAKIS: Comma, where appropriate, period, as amended. So then, you know, the issue of the consistencies of colors, not so much whether white means the same everywhere, but should

two whites and a yellow be equivalent? Then this -- well, but this is not a problem with the ROP, but I think we need better guidance on root cause analysis, since a very important part of doing the SDP for findings is the determination, whether they're independent or not. And there is an underlying root cause, then it seems to me you have to be a little more formal when it comes to root cause analysis, and guide people, because you will only put their causes that come from your experience or your knowledge. And if you're not very familiar say with organizational factors, you never put anything there, unless it's obvious.

Then this other thing that Doug mentioned about timing, I'm a little uncomfortable with that. I can see your point, and again from the performance point of view, maybe what you're doing makes perfect sense. I'll have to think a little bit about it more, but from the risk point of view it doesn't. If it happened during preventive maintenance, well tough. The risk assessment will tell you this is a delta CDF. Right? But you are not risk-based. So you see, again, if you have a consistent philosophical point of view, it seems to me you will be able to resolve a lot of these issues and say, you know, this is the -- and

the other thing is the pressure boundary, it seems to me, is kind of unique, and you sort of agreed here, in the sense that, you know, one may still make the argument that if the cross-cutting issues are deteriorating, we will have advance warning. Say maybe a valve will fail here, or we'll see a consistent pattern of failures of hardware. But with pressure boundary, you may not have that luxury. And I think we need to pay special attention.

You may not have this advance warning. I mean, you had the steam generator rupture, tube rupture at Indian Point. And as we said, it was due to a defective inspection program, and then you have Davis-Besse, again defective corrosion control program. And we almost came close to an accident again because of the pressure boundary, although there there were indications. So again, this doesn't go back to the ACRS in all fairness. We didn't say anything at that time, but I think this is a new development now, and we probably have to pay more attention to this particular cornerstone as opposed to the other ones.

So that's what I -- oh, and the insistence of keeping the red in the performance indicators for reactors, and then two hours later we find that other

guys say well, we don't need the red. I mean --

CO-CHAIRMAN SIEBER: It doesn't make sense there.

CO-CHAIRMAN APOSTOLAKIS: Yeah. I mean, if it is logical not to have a red, don't have it. Why don't the other groups, I don't know which one it was now, why don't have this issue with public confidence? They certainly want to increase public confidence. Only the reactor safety guys feel that they have 24, 25 scrams there as a threshold for the yellow/red.

MEMBER WALLIS: Under some indicators you couldn't get to the red.

CO-CHAIRMAN APOSTOLAKIS: That's why we said that they should be abolished.

MEMBER WALLIS: It doesn't mean to say you abolish all reds just because for some indicators you can't --

CO-CHAIRMAN APOSTOLAKIS: No, for the transients you will never get there. You will never let anybody get there. The industry itself would not let itself get there. I can't imagine a plant management seeing 15 reds, 15 scrams and saying well gee, I still have seven to go.

MEMBER WALLIS: But that's for scrams.

But there are --

MEMBER ROSEN: That's this year. Another 22 next year.

CO-CHAIRMAN APOSTOLAKIS: Other than that, Mrs. Lincoln, I thought the show was good.

CO-CHAIRMAN SIEBER: Okay. Well, I'd like to hear a few words from everybody. Dr. Wallis.

MEMBER WALLIS: Well, I sort of agree with George. We've heard a lot of detail which I found very, very interesting. What this committee has to do is abstract from that a few things which are important where can influence, and George has picked out ones. I don't have anything to add to those. I think they're good items for the rest of the committee to think about and take a position on.

CO-CHAIRMAN SIEBER: Dr. Ford.

MEMBER FORD: Yes. I echo what has been said. On Davis-Besse, when this came up in discussion, you mentioned well, we didn't catch that. It was a green because we didn't have the ROP process being exercised for long enough. Is there any way of going back retrospectively to see if you would have predicted there was a performance issue at Davis-Besse?

MR. COE: I suppose that's possible, but

it would involve going back through a number of inspection reports prior to the implementation of ROP and trying to cast them into a different light in terms of the processes that we have today.

MEMBER FORD: Because it strikes your first bullet, when you say ROP is working effectively, and George very appropriately said that Davis-Besse said that you're not working effectively.

CO-CHAIRMAN SIEBER: Well, it depends on what you think working effectively means. I think that's a good choice of words because we don't know what it means. I don't think anybody has advertised ROP as being a predictor of anything. And, therefore, it's not a leading indicator, it's not a predictor. And you can't go back in Davis-Besse because the issues of interest occurred before ROP and the new system were in place. I think --

MEMBER FORD: My question, Jack, I said would such information be available so you could do a retroactive assessment?

MR. COE: I would have to think about that. I think the point that what is effective is a very good one, because from one perspective you could say that the self-revealing event or condition at Davis-Besse has been handled with a defined -- with

the defined process that's defined within the reactor oversight program, and that we have a special category for plants such as that that we're exercising now for Davis-Besse.

In other words, all of the tools that we have that have been utilized at other plants that have self-revealing conditions of significance are available and are being utilized in the case of Davis-Besse. And the question about could we predict another Davis-Besse in the future is a good one, and it's one that we ask ourselves a lot. And it motivates us to examine the operating experience that we do have, and try to find better ways of focusing our program and our inspections to help us find those things before they do become significant.

CO-CHAIRMAN SIEBER: It would be interesting though if you did find some leading indicators, and what would you do with the information? Could you go to the licensee and say you really haven't done anything bad, but you're going to. Okay? And what part of Title 10 do you stand on when you do that?

CO-CHAIRMAN APOSTOLAKIS: I think in all fairness, we have to separate the issue of what to do in the future from the existing, a disagreement

between the ACRS and the staff, or the apparent disagreement.

CO-CHAIRMAN SIEBER: That's true.

MEMBER SHACK: We'll set up a pre-crime unit like "Minority Report".

CO-CHAIRMAN APOSTOLAKIS: No, I mean this is the research everybody should think about. Even this committee I don't think has performance indicators to indicate -- to recommend for this particular issue, so this is for the future, but I was referring to the past. But coming back to the working effectively, the staff itself on page 8 of this thing writes, "It is important to note that the intent of these defining principles of the ROP was to result in an oversight process that provides adequate margin in the assessment of licensee performance, so that appropriate licensee and NRC actions are taken before unacceptable performance occurs." From that point of view, Davis-Besse is a failure.

CO-CHAIRMAN SIEBER: That's true.

CO-CHAIRMAN APOSTOLAKIS: At least, you can't say it's working effectively. I mean, this is in black and white here, "before unacceptable performance occurs." And I think we all agree now that that was completely unacceptable what happened

there. And yet, our own process said green. I mean, that's what the Chairman says. I hadn't seen -- but Chairman Meserve in his talk says yes, the day before it was green.

MR. SULLIVAN: I'm hoping this perspective helps, but when we were developing ROP, it was recognized -- two points were recognized that I'd like you to consider in your deliberations. One was that there were certain obscure issues we would miss. For instance, the D.C. Cook engineering problem that took place, it was just a closing as ROP was being developed, would not have been revealed by ROP either. It wasn't revealed by the core program, and it wouldn't be revealed by ROP.

And that leads me to my second point. It's not that ROP was ever claimed to be the absolutely perfect oversight program. We only thought that it was head and shoulders above the old one.

CO-CHAIRMAN APOSTOLAKIS: And I fully agree with you.

MR. SULLIVAN: Okay.

CO-CHAIRMAN APOSTOLAKIS: My disagreement is in saying that it's working effectively. I think we should be humble and say we did a good job up until now, though there are some disagreements. Now we

learn from experience we have to do something, but obviously it's not working effectively.

CO-CHAIRMAN SIEBER: Why don't we move on with the comments? Do you have anything else?

MEMBER KRESS: Yeah, I agree to a large extent with George. In particular, I would like to see this be viewed as a performance system and divorce it from risk almost entirely. And I think that's one of the problems.

I'd also echo his view that multiple findings ought not to be determined whether they're independent or not. They ought to almost assume that the root cause is such that they're related to each other, and they ought to be taken as an aggregate. I shared a consistency concern.

The question of how you should set thresholds of performance, we have a mixture now of judgment based on expert opinion and experience, and trying to use PRAs. I think that is one of the big problems we have with that, is throwing in the mixture. That ought to be based on judgment, expert opinion, and maybe use a Bayesian technique to improve on it as you go along. I don't think you should use risk to set thresholds.

I do think we need a different set of

performance indicators to deal with the boundary issues, as George says, and I think we ought to give some thought as to what those ought to be in order to be leading performance indicators that would pick out a degraded barrier a lot earlier than before it reaches a Davis-Besse.

As far as getting rid of the red, I think I'd keep it, but I'd sure look at the threshold, and change the threshold to a value that's meaningful. I think the red has significance in terms of, you may reach a red sometimes if you've got an appropriate threshold for it. And I think I would think about keeping it, but changing the threshold to an appropriate level.

CO-CHAIRMAN APOSTOLAKIS: Well, then I wouldn't disagree with that.

MEMBER KRESS: Yeah. I think that's basically the only expansion on what George said earlier.

CO-CHAIRMAN SIEBER: Steve.

MEMBER ROSEN: Yeah, thank you. I would disagree, being a confirmed rationalist here, that we ought to throw out risk. I think it works very well in initiating events and mitigating systems area, and that's really where it was intended, in my mind, to

function. It's been applied imperfectly in some of the other areas, and that's where we get into the trouble, so I would go to that point, where it's keep it for initiating events and mitigating systems, and apply it much more gingerly in the other areas.

I also have another worry that comes out of a visit of the ACRS to region two the last time we were there. Region two was very hospitable, brought in a whole bunch of people to talk to us, including a number of the residents on the plants in region two and the senior reactor analyst. And one of the things that we heard, which I've been sort of mulling on since that time and worrying about, was the statement by some of the residents that it was very, very hard to fit into their schedule the defense of a finding.

In fact, if they made findings in their work, the ROP, be they white, yellow, or you know whatever, it turned into a major, major work load for them. Maybe that was just because it's new. I hope so, but if it's not, if the process is so intensive, work intensive for the residents, the law of unintended consequences got us again.

We set in place a system. We rely on the residents to do it, and in fact, because it's so punishing they stop finding the things, or reporting

the things we want them to report. Now I'm not making an accusation. I'm just repeating what some of them said about their work load. They didn't say they were doing that. They just said it seems like it's almost very difficult for us to make a finding and then defend it.

You guys who are managing the agency using this process to upgrade it. And I agree, it's better than it was before, better than the process we had before. You need to think about the work load you're putting on the residents, give them all the help you can.

CO-CHAIRMAN SIEBER: Thank you, Steve. Dr. Bonaca. MEMBER BONACA: I pretty much endorse the perspective that George presented. One thing that I want to say, however, is that first of all, the presentations were helpful because I think I understood a number of things and reflections that you had. But it seems to me that since you're agreeing that the process is not cast in concrete yet, and there are opportunities for refinement, I mean, you could be open to some of the suggestions we are making here, or some of the inconsistences, because I think we discussed them, and you recognized some of them in certain cases. And I understand that probably it is

going to be hard to go back and say yes, performance is the issue, and the threshold should be not risk-informed. I mean, the threshold should not be -- but still you should consider doing that.

Anyway, that's -- so I mean, in general, the comments we put together in the original letter are still there, and really we haven't got any closure on that. And, you know, I think, however, in the context of again, your openness to consider improvements and the possibility of doing so, you should really -- it's going to be difficult for us to answer that SRM for the commission and say that we have worked with the staff at improving the process, because really we haven't been able to do that right now. That's pretty much that.

CO-CHAIRMAN SIEBER: Mr. Leitch.

MEMBER LEITCH: Well, I think the presentations today have been helpful, and my understanding, at least, of the aims of the ROP. I do believe that, as Steve Rosen has mentioned, that I think the initiating events and mitigating systems should still be risk-based, and others performance-based. I think that there's good basis for doing that, and I think it works well.

I guess I have a concern though in a

different vein, and that is, how we find -- and although the process isn't primarily designed to be predictive, yet I think what it is intended -- it is stated that it is intended to head-off things before they become big consequences. And I really think what gives us really big issues in the industry are not the individual things that are revealed by the ROP, but rather some way those things are summed and unexpected consequence, a major consequence occurs.

We've all mentioned Davis-Besse. We mentioned the D.C. Cook engineering issues. I guess in my own experience, harkening back to the operators asleep at Peach Bottom. You look at individual things, and I don't know how you get to some of these underlying problems, cross-cutting issues unless you drill down into those cross-cutting issues. If we stop our look, if we say that well, you're not going to look down that far because that's really beyond our scope, or beyond our charter to look down into those safety culture issues, into those management issues, I don't know how we find those things, because I think those are the things that really cause the industry and the agency big problems.

It's not the individual pump failure or valve failure. We can deal with those things. It's

those major cross-cutting issues that are the areas where we have high vulnerability. And I think we have to be looking down deeper into the process.

I know that's supposedly beyond our charter at the moment. I think there are some significant performance indicators that could be developed, that would give us a clue. Maybe not all the answers, but give us a clue as to some very important safety culture issues. And if we're not drilling down to look at those, I just think we're missing a big opportunity there.

CO-CHAIRMAN SIEBER: Dr. Shack.

MEMBER SHACK: Well, I do want to congratulate you on the presentation. I found it very helpful in understanding much of your rationale for getting towards the SDP, and coming up with things. I guess I'm fairly comfortable, if not total agreement would be expected, with a mix of performance-based and risk-informed, you know. I'd stay away from risk-based. I really think the notion here is to evaluate performance. And if I can use risk-informed views to do that, that's fine. If I have to use performance-based that's fine. And consistency from that, I don't see any other way you can do it except from judgment and experience, so I expect we will be adjusting these

performances as we do go along.

I agree with Graham that, you know, we do want to get back to -- you know, I see all this effort on the system indicators. You know, I actually think somebody would be doing -- you know, to go back to the other kinds of programs, you know, the problem-solving programs. You know, the system indicators I don't think are where the problems are at. And it's really the other kinds of performance we have to think about measuring. And we need more effort focused on that than we do developing new, more global safety system indicators. It's the corrective action program that perhaps is really the heart of what we're trying to know, as to how -- you know, you can't possibly inspect everything. What you have to have confidence is that the licensee's corrective action program is finding and fixing things. And, you know, that's where I would be focusing my efforts to look at performance indicators and better performance measures, not on my system performance. We can do that with the PRAs.

The ones you have may not be perfect, but as far as I'm concerned, they're probably good enough until I can handle other more important things that I don't think are dealt with, as well. I'd sort of

argue for some sort of re-focusing of the effort in developing performance indicators, I would see as the kind of highest priority I would like to see in improving the ROP.

MEMBER BONACA: Looking at different areas.

MEMBER SHACK: Looking at different areas. Again, the corrective action program is really the --

CO-CHAIRMAN APOSTOLAKIS: The completeness issue. Are we really --

MEMBER SHACK: Well --

CO-CHAIRMAN APOSTOLAKIS: It is an issue of completeness. You cover these, the staff, the systems, the hardware, the staff. Now we realize there's a hole there.

MEMBER SHACK: I mean, I also understand this need to have an objective program, and that really is kind of -- you know, you want to bury down -

- you know, the deeper you burrow, you know, the harder it is perhaps to come up with objective measures, but that's really where we need to be working.

CO-CHAIRMAN SIEBER: Thank you. I would like at this time to thank our presenters from NRR.

And I think it was very helpful, and gave us some insights that, frankly, we didn't have before.

MEMBER SHACK: Can I ask one question sort of off --

CO-CHAIRMAN SIEBER: Sure.

MEMBER SHACK: That's on the workbooks. You know, the other thing that we heard from the people, you know, using the workbooks and the SDP process was a bear. Do you think -- do you see ways to improve that?

MR. COE: Yes. There are ways to improve that. We have a task group that has just reported out, and has made some recommendations, and we're dealing with those now. And I believe that our ultimate objective is to improve the user-friendliness, if you will, of these processes. But in the very same breath, I will also acknowledge that using probabilistic tools in the program as intrinsically as we've made them a part of our program requires an additional intellectual effort. And we have to stand up to that and say we're willing to do that, and we'll make that as easy as it can be, as predictable, as scrutable, as understandable. But there's no question, and should be no question in anybody's mind that that is something we haven't done

in the past, and that we're expecting more not only of our inspectors, but of our staff management decision makers who make decisions at these SERP panels. So the answer is yes, but there will always be this need to make a greater effort to understand the tools that we're using because of their inherent complexity. There's no way around that, and so we have to acknowledge that.

Mr. Chairman, I have found this all very useful discussion. I'm pleased to hear that in some ways I think we satisfied the need to help give you a better understanding of our program. I would offer that the earlier letter that you sent us, although we may disagree that we need to redefine the theoretical basis for the program across all the cornerstones, we did agree that we need to be very much more clear about how we did design the program and its basis. From that standpoint, we believe that the scrutability of the program is our objective. And although we might debate the merits of one basis or another, what's important to us is the basis is clear. It's written down, and then we can debate something that hopefully is understood, and we can evaluate the different perspectives.

CO-CHAIRMAN SIEBER: Well, clarity is

important. Consistency is important, that we're in a position where you folks have a pretty well developed program, and we have a pretty well developed position, and somehow or other we've got to reconcile.

MR. COE: I understand. I was only reacting to Dr. Apostolakis' comment that maybe we didn't agree with anything in your previous letter. We did agree on that --

CO-CHAIRMAN SIEBER: Well, that would be a summary response.

MR. COE: So we thank you.

CO-CHAIRMAN SIEBER: I would like to take us off the record at this point.

(Off the record 4:34 p.m.)

CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

Name of Proceeding: Advisory Committee on Reactor Safeguards Subcommittees on Plant Operations and Reliability & Probabilistic Risk Assessment

Docket Number: n/a

Location: Rockville, MD

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and, thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Rebecca Davis

Rebecca Davis
Official Reporter
Neal R. Gross & Co., Inc.

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
PLANT OPERATIONS AND RELIABILITY AND PRA SUBCOMMITTEES
THE REACTOR OVERSIGHT PROCESS
ROOM T-2B3, 11545 ROCKVILLE PIKE
ROCKVILLE, MARYLAND

January 21, 2003

-AGENDA-

	SUBJECT	PRESENTER	TIME
I.	Introductory Remarks		8:30-8:35 a.m.
	Subcommittees Chairs	J. Sieber G. Apostolakis	
II.	NRC Staff Presentation		
	The Reactor Oversight Process		
	Overview	Ronald Frahm	8:35-9:30 a.m.
	Reactor Safety PIs	Donald Hickman	9:30-11:00 a.m.
		*****BREAK*****	
	Reactor Safety SDPs	Douglas Coe	11:00-12:30 p.m.
		*****LUNCH*****	12:30-1:00 p.m.
	Occupational Radiation Safety	Roger Pedersen	1:00-1:30 p.m.
	Public Radiation Safety	Steve Klementowicz	1:30-2:00 p.m.
		*****RETIREMENT*****	2:00-2:45 p.m.
	Emergency Preparedness	Randy Sullivan	2:45-3:45 p.m.
III.	General Discussion and Adjournment		3:45-4:15 p.m.

****

NOTE: Presentation time should not exceed 50 percent of the total time allocated for a specific item. The remaining 50 percent of the time is reserved for discussion.

Number of copies of the presentation materials to be provided to the ACRS is 35

ACRS CONTACT: Mrs. Maggalean W. Weston, mww@nrc.gov or (301) 415-3151.

Three (3) White Findings

- 1st White Finding - Reactor Building Scaffolding (22 p-rem (est), 46.35 p-rem (act), 111%)
- 2nd White Finding - Steam Generator Activities (21.19 p-rem (est), 57.66 p-rem (act), 172%)
- 3rd White Finding
  - Steam Generator Manways/Inserts (3.99/8.54/114%)
  - HP Support SG Activities (2.46/5.64/129%)
  - Foreign Object Search & Retrieval (1.50/6.39/326%)
  - RCP Seal Replacement (6.61/12.87/94.7%)

Notice of Violation

10 CFR 20.1101(b), requires, to the extent practical, the use of procedures and engineering controls to achieve doses ALARA:

- Conducting activities during RCS clean-up (Scaffolding/SG)
- Conducting activities prior to flushing SG drains (Scaffolding/SG)
- Conducting activities w/ SG secondary side drained (RCP/SG)
- Insufficient mock-up training (SG)
- Ineffective communications between RP personnel and craft (Generic)

ACRS ROP Subcommittee Meeting

January 21, 2003

Ronald Frahm

ROP Team

ACRS Concerns from September 9 Briefing

- SRM Regarding Risk-Informed and Performance-Based Elements
- Risk-Informed Performance Indicator Thresholds
- Assessment of Concurrent Findings
- Discussion of Greater-Than-Green Examples and Their Basis

SRM - Staff Approach

- Use Performance-Based Thresholds Linked to Appropriate Regulatory Response, Incorporating Risk Insights If Available
- Continue to Adjust PI and SDP Thresholds to Ensure a Consistent Regulatory Response
- Meet Competing ROP Objectives to Remain Predictable, Understandable, Risk-Informed, and Objective, and the 4 Strategic Performance Goals
- Seek Continued Improvements Through the ROP Self-Assessment and Feedback Processes and Interactions with Other Stakeholders

SRM - Staff Conclusions

- ROP is Working Effectively, Plants Are Receiving Appropriate Level of Oversight
- There Are Acknowledged Differences Between Risk-Informed and Strictly Performance-Based Aspects of the ROP
- Need ROP Basis Document to Consolidate More Transparent Basis for PIs and SDPs
- Expect Continued Incremental Improvements via Ongoing Self-Assessment Process
- Plan to Work With RES to Explore the Use of Formal Decision Analysis for the ROP

Performance Indicators

Cornerstone	**Threshold Method**
Initiating Events	G/W - PB, W/Y/R – RI
Mitigating Systems	G/W - PB, W/Y/R - RI
Barrier Integrity	PB with Risk Insights
Emergency Preparedness	Performance-Based
Occupational Rad Safety	Performance-Based
Public Radiation Safety	Performance-Based
Physical Protection	Performance-Based

Risk-Informed Performance Indicator Thresholds

- Considering Eliminating the Yellow-Red Thresholds for the Initiating Events PIs
- Highly Unlikely Any Plant Would Cross These Yellow-Red Thresholds
- Provide a Gauge of the Relative Risk and Demonstrate the Safety Margin
- MSPI Pilot Program Will Evaluate the Mitigating Systems PI Thresholds

SDP / Inspection Findings

Cornerstone	**Threshold Method**
Initiating Events	PB with PS Risk Insights
Mitigating Systems	PB with PS Risk Insights
Barrier Integrity	PB with PS Risk Insights
Emergency Preparedness	PB with Gen Risk Insights
Occupational Rad Safety	PB with Gen Risk Insights
Public Radiation Safety	PB with Gen Risk Insights
Physical Protection	PB with Gen Risk Insights

Assessment of Concurrent Findings

- SDP Clarified in IMC 0609 Appendix A
- If Common Underlying Cause, Then Analyzed as Single Finding With Color Based on Combined Risk
- If Independent Causes, Then Analyzed as Separate Findings With Distinct Risk Determinations (Colors)
- Inputs into Action Matrix Accordingly

Discussion of Greater-Than-Green Examples and Their Basis

Reactor Safety Issues (IE, MS, BI)

- Ex. A - ESW Pump Failure
- Ex. B - S/G Tube Failure
- Ex. C - Loss of Instrument Air
- Ex. D - Operator Requalification Failures
- Ex. E - Fire Suppression

Greater-Than-Green Examples and Their Basis (Cont.)

Other Performance Issues

- Ex. F - ALARA Findings (ORS)
- Ex. G - Rad Material Control (PRS)
- Ex. H - Rad Material Transport (PRS)
- Ex. I - ANS Reliability PI (EP)
- Ex. J - Failure to Meet RSPS (EP)

Ex. A – ESW Pump Failure

Issue

- Essential Service Water (ESW) Pump Failed Surveillance Flow Test
- Foreign Material (Tygon Tubing) at Pump Inlet and Impeller
- Single Train of ESW Inoperable for ~ 132 Hours
- White as Result of At Power Reactor Safety SDP in IMC 0609, Appendix A

Ex. A – ESW Pump Failure
SDP Logic

- Phase 1: Finding Represented an Actual Loss of Safety Function for a Single Train for > AOT (Phase 2 Analysis Required)
- Phase 2: All Affected Sequences Evaluated and Dominant Sequence Identified
- LOOP(3) - Emergency AC Power (EAC)(2) - Recovery of AC Power in < 5 hrs (REC5)(1)
- 3+2+1= 6 (WHITE)

Examples A – C
Sensitivity and Assumptions

- Exposure Time
- Mitigation Capability
- Common Cause Effect
- Recovery

Ex. B – S/G Tube Failure

Issue

- S/G Tube Failure Results in a 146 gpm RCS Leak (ALERT)
- Minor Radiological Release (Within Regulatory Limits)
- Several Licensee Performance Issues Identified Which Complicated Event Response, and Delayed Plant Depressurization and Cooldown

Ex. B – S/G Tube Failure
SDP Logic

- Phase 1: Deficient S/G Inspection Program Considered More than Minor, Finding Contributed to The Likelihood of A Primary System LOCA Initiator (Phase 2 Required)
- Phase 2/3: Detailed Analysis Focused on Probability and Consequences of Spontaneous Tube Rupture
  - No Operator Recovery Credit With Resulting Core Damage and Containment Bypass
  - Estimated Incremental CDF Between 5E-5 and 1E-4 (RED)

Ex. C – Loss of Instrument Air
Issue

- Identified Potential for Damaging AFW System Pump on Loss of Instrument Air (LOIA)
- AFW Minimum Flow Recirculation Valves Fail Closed on LOIA
- Pumps Assumed to Fail Within Minutes
- LOOP, Loss of Service Water, and Seismic Event May Cause LOIA
- Condition Was Present Since Initial Startup

Ex. C – Loss of Instrument Air
SDP Logic

- Phase 1: More Than Minor Issue, Represents Loss of Safety Function (Phase 2 Required)
- Phase 2: All Affected Sequences Evaluated and Dominant Sequence Identified
- **LOIA** 2 LOIA (3) + AFW (0) = 3
- **LOSW** 2 LOSW (5) + TDAFW (0) = 5
- **LOOP** 1 LOOP (2) + AFW (0) + HPR (2) = 4
  2 LOOP (2) + AFW (0) + FB (2) = 4
  3 LOOP (2) + AFW (0) + EIHP (3) = 5 (RED)

Ex. D – Operator Requalification Failures

- Issue: High Crew Failure Rate During Annual Simulator Examinations
- Logic: Yellow as Result of Operator Requal SDP in IMC 0609, Appendix I. Failure Rate (4 of 7) Exceeded 50% for the Annual Operating Test
- Sensitivity: White if Lower Failure Rate

Simulator Operational Evaluation

September 21, 2000

Number of Crews
with
UNSAT Performance in the
Annual Operating Test

Number of Crews that took the Annual Operating Test (Includes Dual Units)	1	2	3	4	5	6	7	8
4	G	W	Y	Y	NA	NA	NA	NA
5	G	W	Y	Y	Y	NA	NA	NA
6	NF	G	W	Y	Y	Y	NA	NA
7	NF	G	W	Y	Y	Y	Y	NA
8	NF	G	W	W	Y	Y	Y	Y
9	NF	G	G	W	Y	Y	Y	Y
10	NF	G	G	W	W	Y	Y	Y
11	NF	NF	G	W	W	Y	Y	Y
12	NF	NF	G	G	W	W	Y	Y
13	NF	NF	G	G	W	W	Y	Y
14	NF	NF	G	G	W	W	W	Y
15	NF	NF	G	G	G	W	W	Y
16	NF	NF	NF	G	G	W	W	W

NF = < 20% Failure Rate - No Finding
G = 20 - 34% Failure Rate
W = >34 - 50% Failure Rate (NUREG-1021, Rev 8 - UNSAT Requalification Program)
Y = >50% Failure Rate
NA = Not Applicable

Note: If more than 16 crews are tested, or more than 8 crews are UNSAT in a given cycle, use the percentages above to determine the appropriate color.

18A

Ex. E – Fire Suppression

- Issue: Degradation of Fire Suppression Capability
- Logic: White as Result of Fire Protection SDP in IMC 0609, Appendix F
- Sensitivity: Credit Given for Manual Suppression, No Credit for Fire Barriers or Automatic Suppression

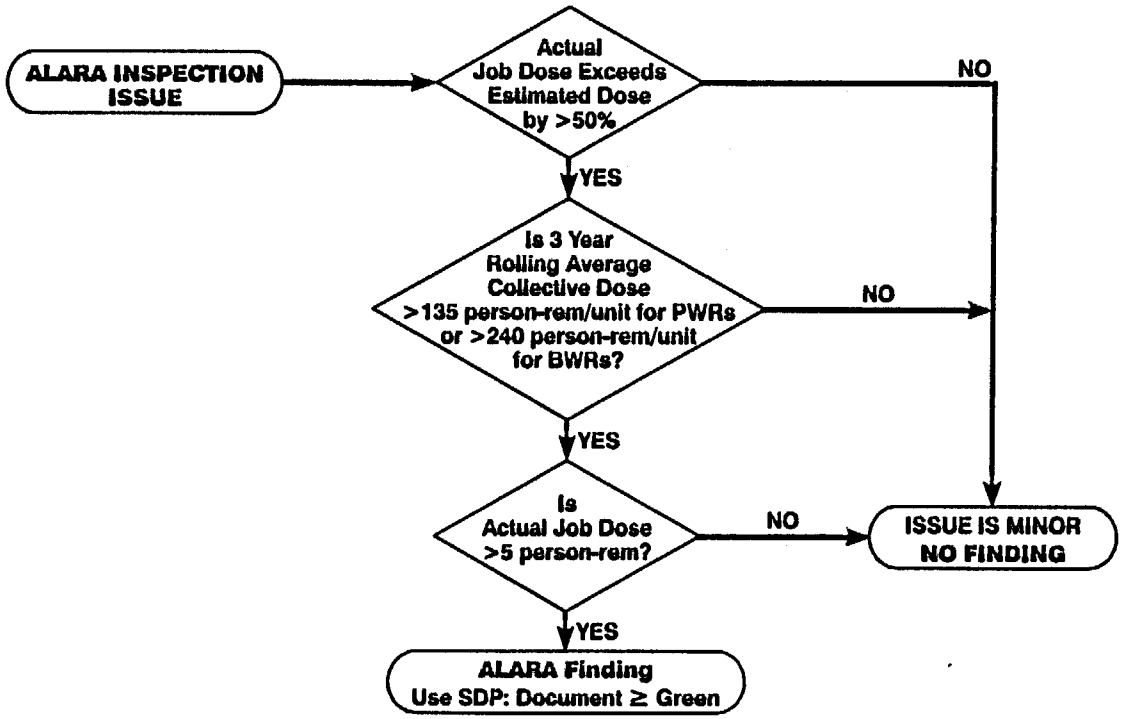
Ex. F – ALARA Findings

- Issue: ORS – Failures to Maintain Radiation Dosage ALARA
- Logic: White per Occupational Radiation Safety SDP in IMC 0609, App. C
- Sensitivity: No Higher Than White for an ALARA Issue

Ex. F – ALARA Findings (cont.)

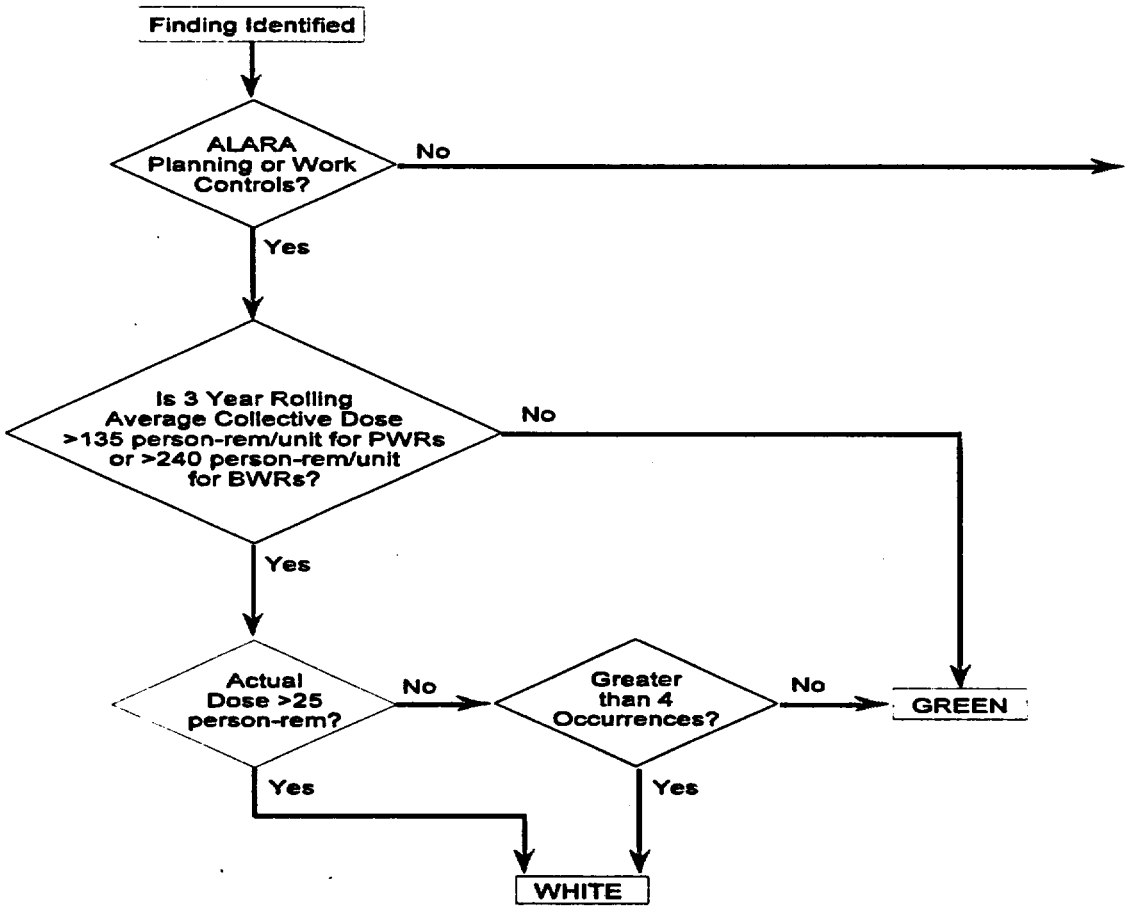
- S.O.C. for 1994 Part 20 Revision (Federal Register Vol 56, No 98, Pg 23367)
- Compliance Judged by "admittedly subjective criteria"
- Program Performance Assessed Against:
  (1) Average Industry Performance
  (2) Licensee's Own Planning

Original
ALARA Group 2 Screening Questions



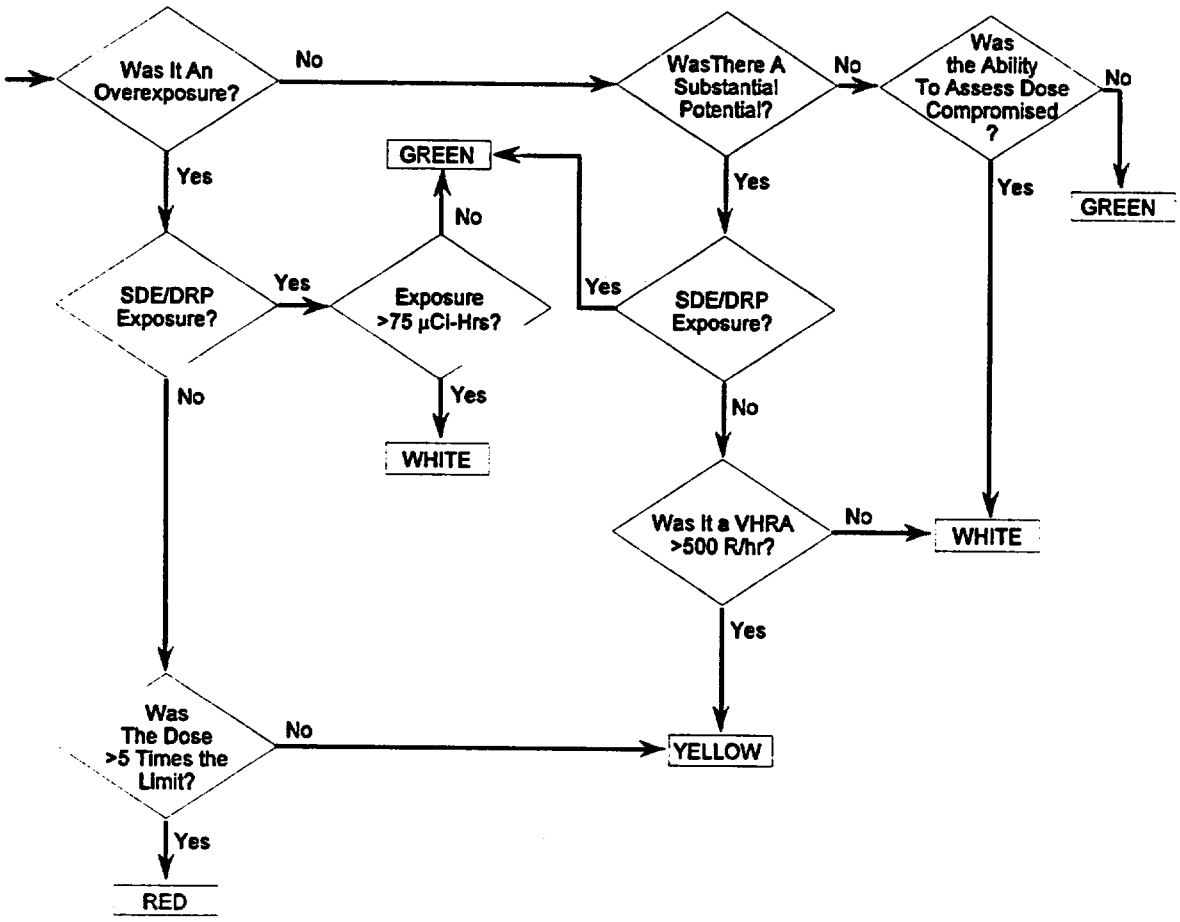
Logic for designating an ALARA inspection issue as an ALARA finding or as a minor issue.

Occupational Radiation Safety SDP



2.B

Occupational Radiation Safety SDP

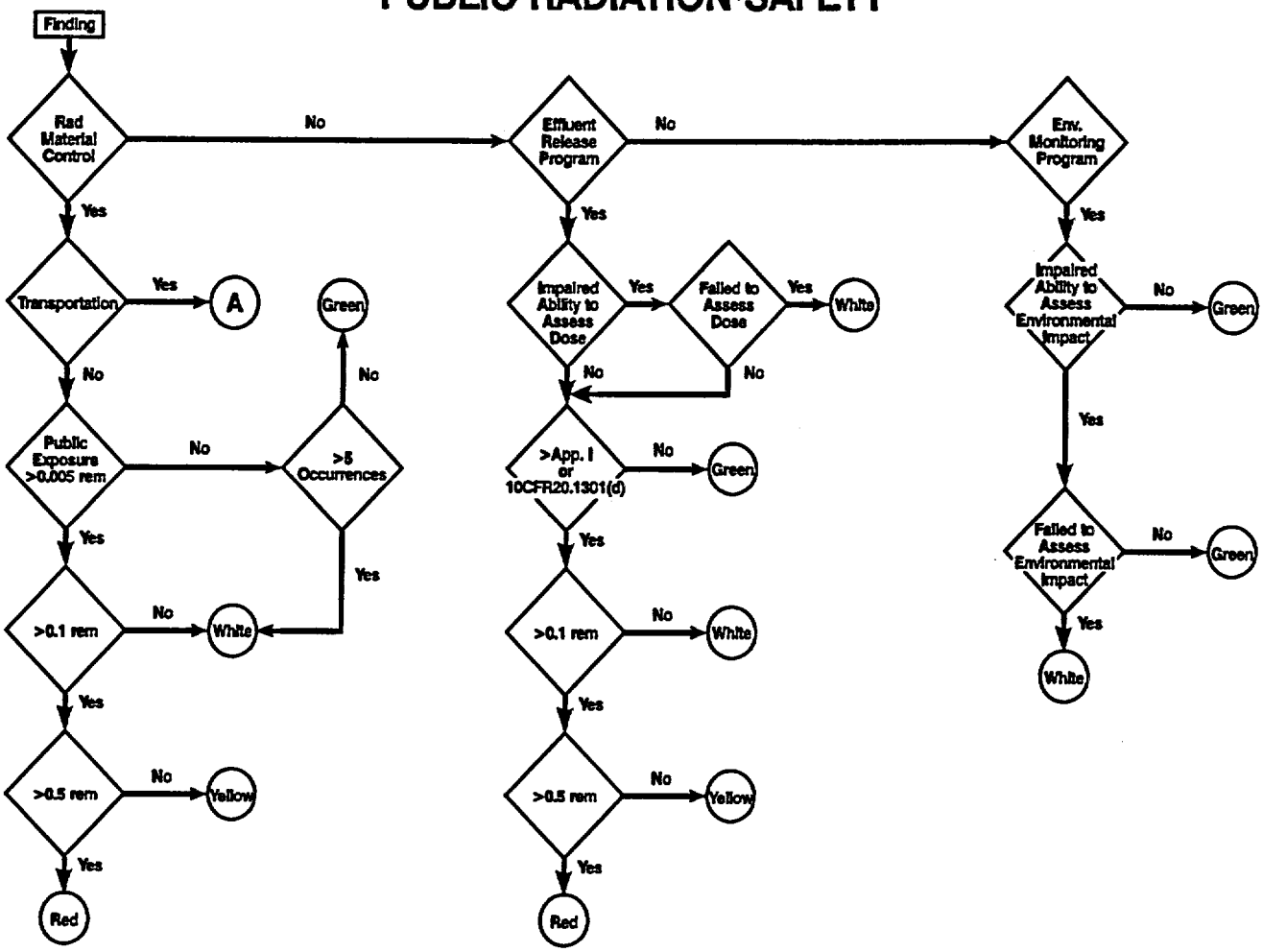


21C

Ex. G – Rad Material Control

- Issue: PRS – Failure to Control Radioactive Material
- Logic: White per Public Radiation Safety SDP in IMC 0609, App. D Based on < 0.005 rem Public Dose and > 5 Occurrences
- Sensitivity: Yellow if Dose > 0.1 rem, Red if Dose > 0.5 rem

PUBLIC RADIATION SAFETY

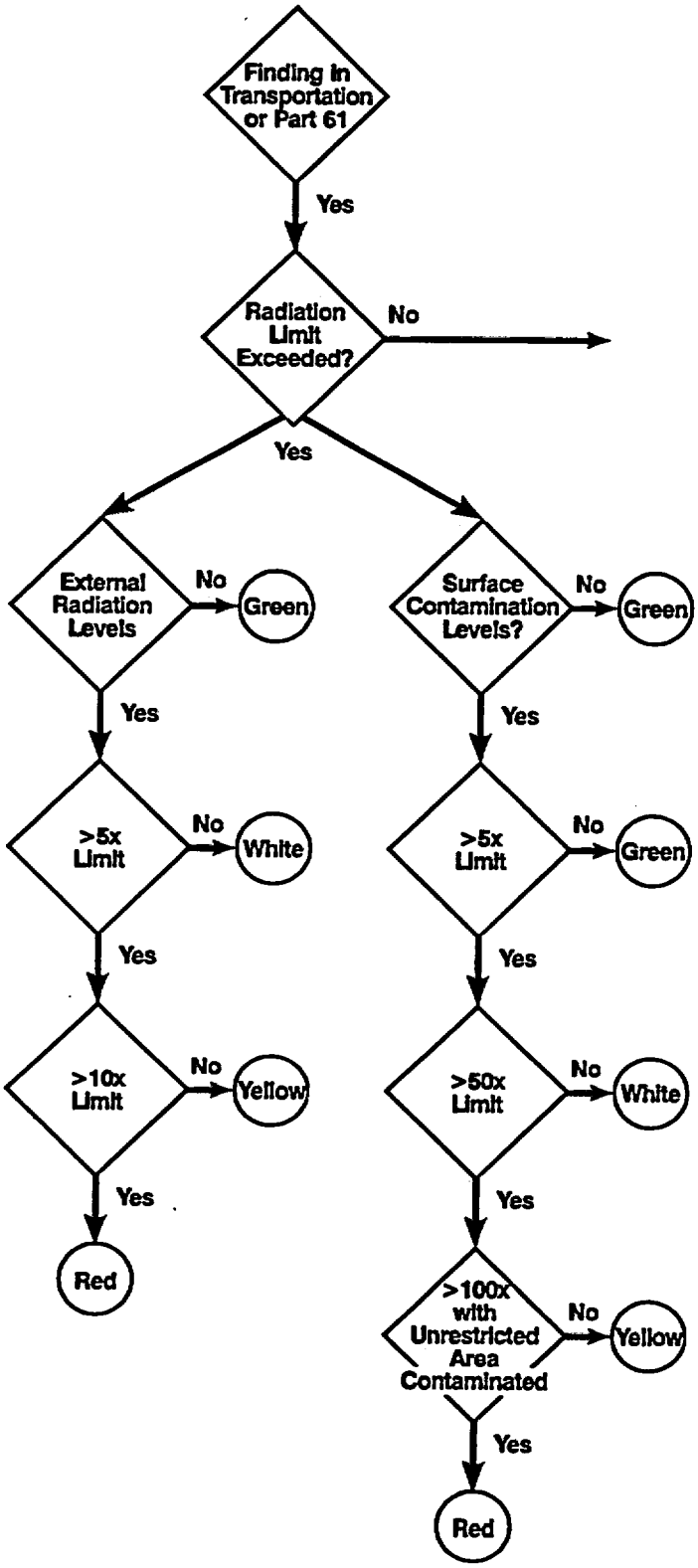


22A

Ex. H – Rad Material Transport

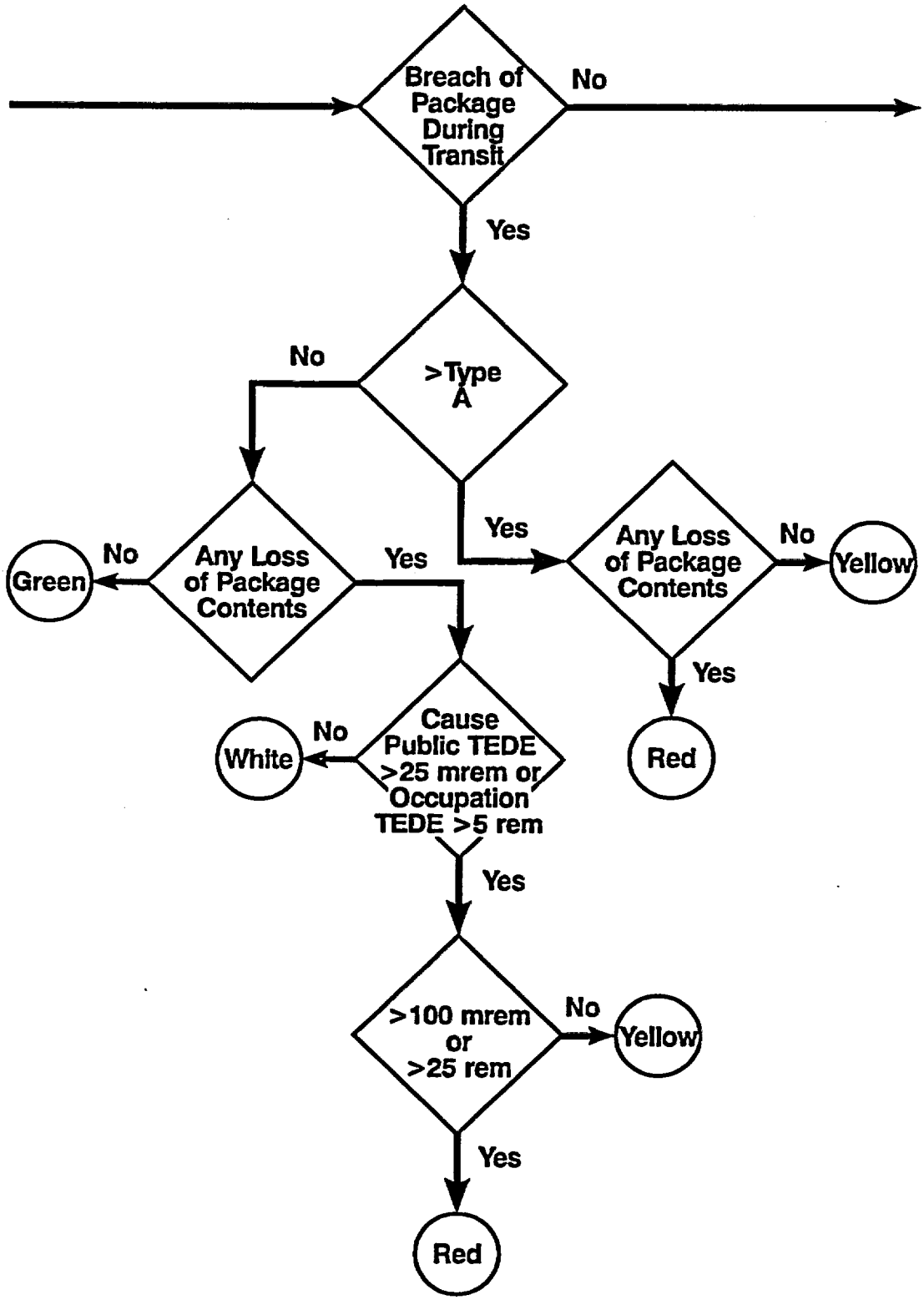
- Issue: PRS – Failure to Properly Classify Radioactive Waste Shipment
- Logic: White per Public Radiation Safety SDP in IMC 0609, App. D for Nonconservative Classification
- Sensitivity: Yellow if Nonconformances Lead to Suspension of Burial Rights

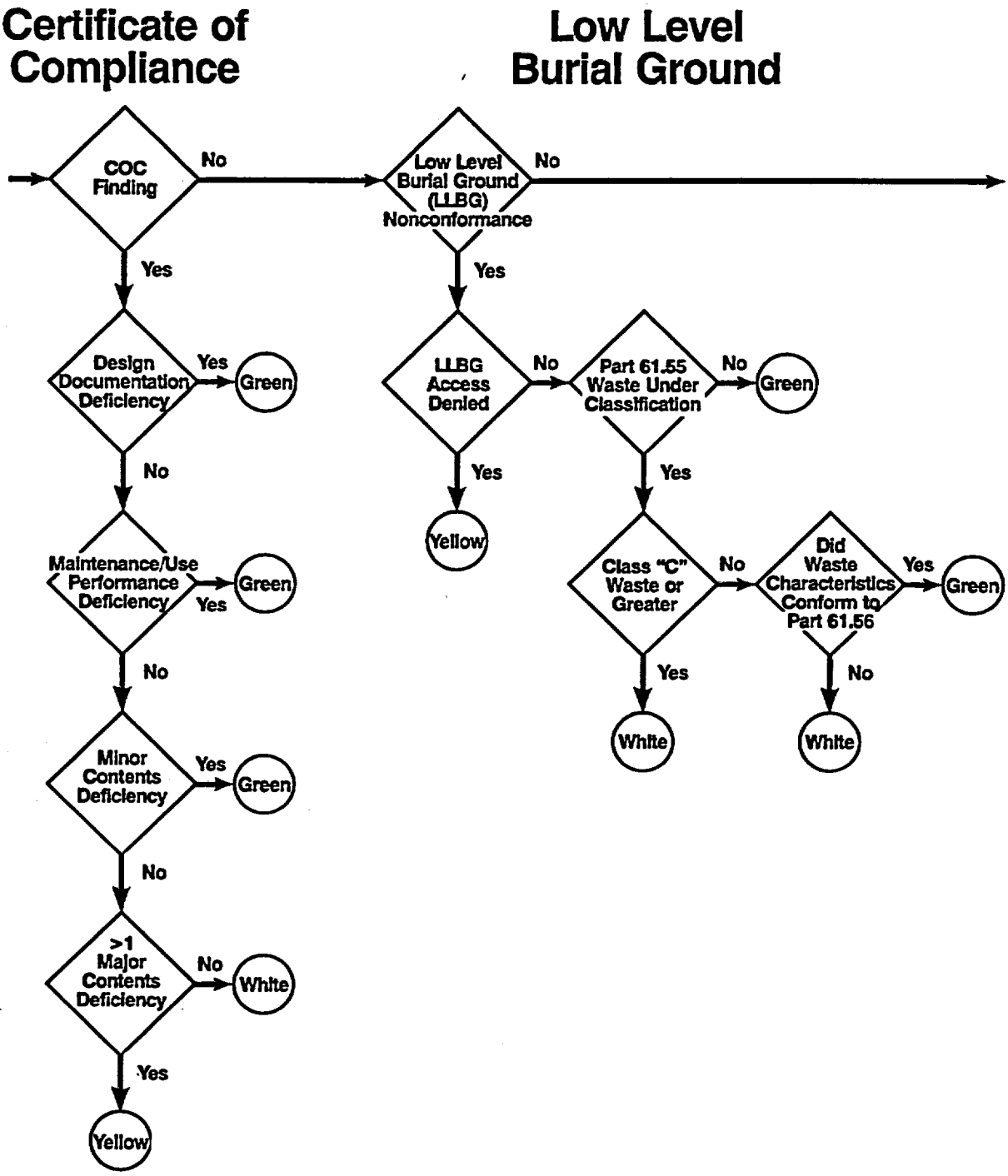
Radiation Limits



23A

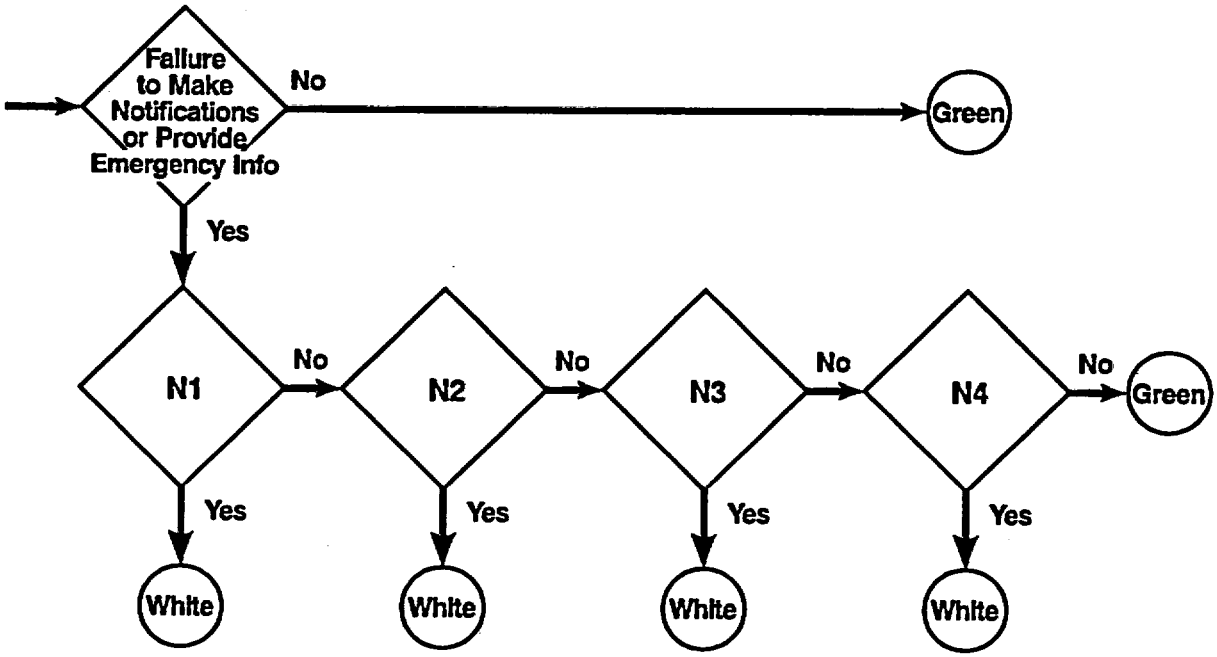
Package Breach




Certificate of Compliance
Low Level Burial Ground
COC Finding
No
Yes
Low Level Burial Ground (LLBG) Nonconformance
No
Yes
Design Documentation Deficiency
Yes
Green
No
LLBG Access Denied
No
Yes
Yellow
Part 61.55 Waste Under Classification
No
Green
Yes
Maintenance/Use Performance Deficiency
Green
Yes
No
Class "C" Waste or Greater
No
Yes
White
Did Waste Characteristics Conform to Part 61.56
Yes
Green
No
White
Minor Contents Deficiency
Yes
Green
No
>1 Major Contents Deficiency
No
White
Yes
Yellow

23 C

Notification & Emergency Information



N1 - Failure to comply with 10 CFR 71.97 - Made a shipment w/o notifying state governor prior to shipment entering state

N2 - Failure to provide emergency response info required by 49 CFR 172.602

N3 - Failure to respond during actual request IAW 49 CFR 172.604

N4 - Failure to make notification of 5x limits exceeded as required by 10 CFR 20.1906

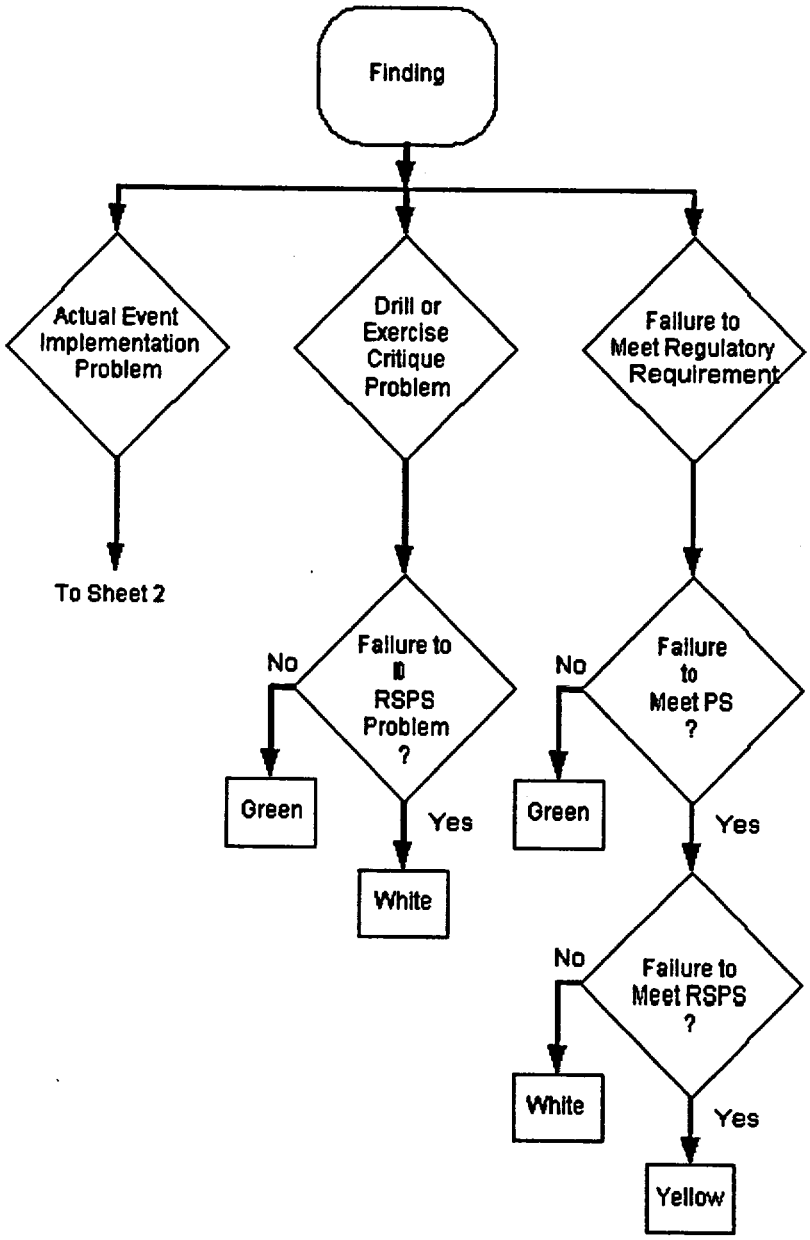
23 D

Ex. I – ANS Reliability PI

- Issue: EP – Alert and Notification System Reliability of 92.3%
- Logic: Reliability Below White Threshold of 94% Over Past 4 Quarters
- Sensitivity: Yellow Threshold of 90%, No Red Threshold

Ex. J – Failure to Meet RSPS

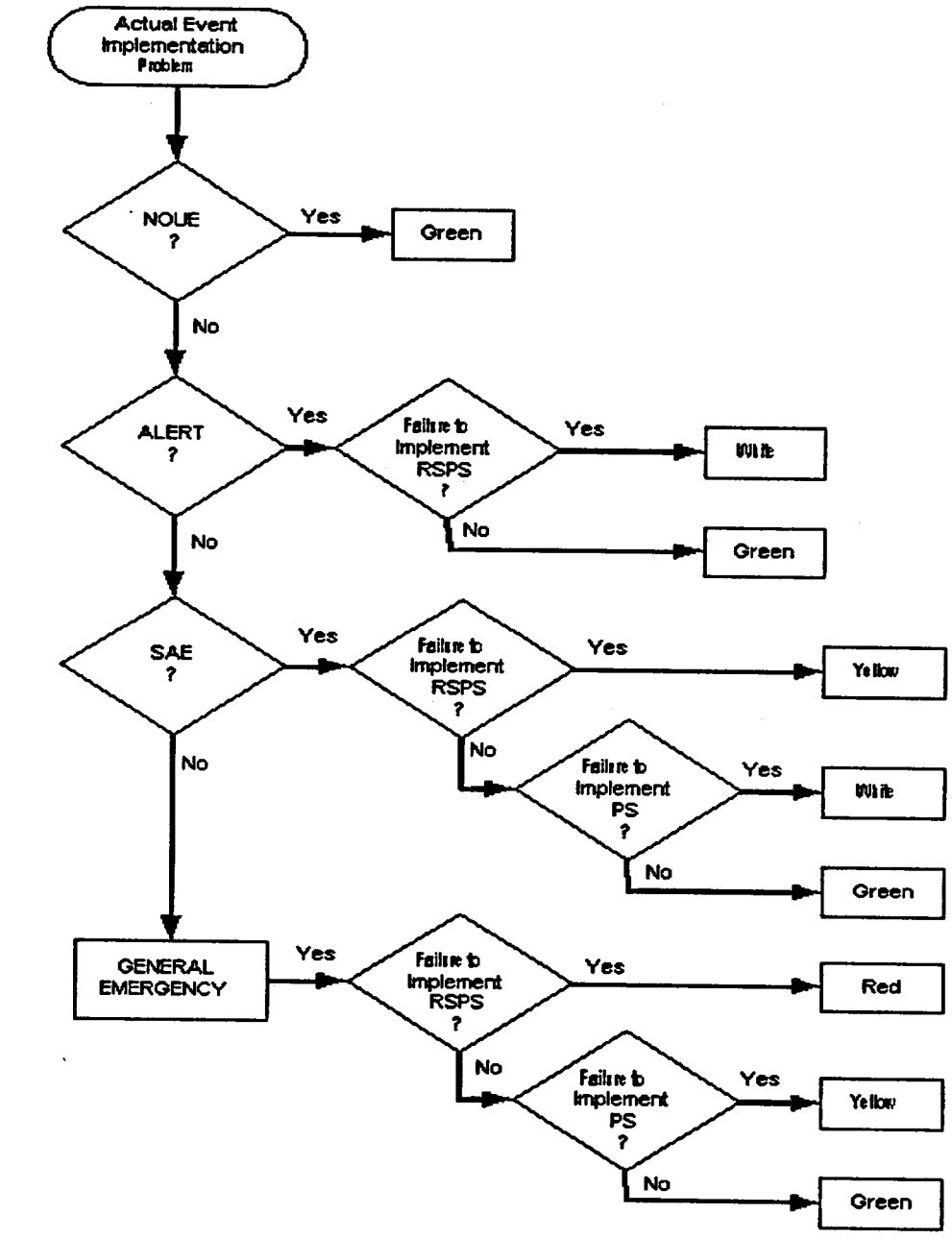
- Issue: EP – Failure to Meet Risk Significant Planning Standard to Promptly Notify Public
- Logic: Initially Yellow per EP SDP in IMC 0609, Appendix B, Changed to White by SERP
- Sensitivity: Yellow if RSPS was Inoperable Vice Degraded



Sheet 1

2/18/00

25A



Sheet 2

2/18/00

Back Up Slides

SRM Regarding Risk-Informed and Performance-Based Elements

"The staff, with ACRS input, should provide recommendations for resolving, in a transparent manner, apparent conflicts and discrepancies between aspects of the revised reactor oversight process that are risk-informed (e.g., significance determination process) and those that are performance based (e.g., performance indicators)."

SRM - Background

- Performance-Based Thresholds Linked to Appropriate Regulatory Response, Incorporating Risk Insights If Available
- ROP Regulatory Framework Includes Seven Equivalent Cornerstones of Safety
- Regulatory Response Based on the Action Matrix With Equal Weighting to PIs and Inspection Findings Across All Cornerstones
- Assessment Reviews Performed on a Continuous, Quarterly, and Annual Basis For All Plants

Documents Provided to ACRS

- Draft ROP Basis Document - October 10
- NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," – December 3
- Written Response to Issues Discussed During September 9 ACRS Briefing - December 19

ROP Program Documents

- MD 8.13 Reactor Oversight Process
- MC 0608 Performance Indicator Program
- MC 0609 Significance Determination Process
- MC 0305 Assessment Program
- MC 0307 ROP Self-Assessment Program
- ROP Basis Document
- Annual SECY Papers

Results as of December 2002

Cornerstone	PI Results	SDP Results
IE	13 W	1 R
MS	1 Y, 16 W	1 R, 2 Y, 24 W
BI	3 W	2 W
EP	1 Y, 3 W	2 Y, 18 W
ORS	None	5 W
PRS	None	4 W
PP	2 W	1 Y, 3 W

2002 Action Matrix Summary

Column	**# of Units**
Licensee Response	63
Regulatory Response	30
Degraded Cornerstone	6
Multiple Repetitive Degraded Cornerstone	3
Unacceptable Performance	None

Table 1 – PERFORMANCE INDICATORS

Cornerstone	Indicator		Thresholds (see Note 1) Increased Regulatory Response Band	Required Regulatory Response Band	Unacceptable Performance Band
Initiating Events	Unplanned Scrams per 7000 Critical Hours (automatic and manual scrams during the previous four quarters)		>3.0	>6.0	>25.0
	Unplanned Scrams with a Loss of Normal Heat Removal (over the previous 12 quarters)		>2.0	>10.0	>20.0
	Unplanned Power Changes per 7000 Critical Hours (over previous four quarters)		>6.0	N/A	N/A
Mitigating Systems	Safety System Unavailability (SSU) (average of previous 12 quarters)	All Plants			
		≤2EDG	>2.5%	>5.0%	>10.0%
		>2EDG	>2.5%	>10.0%	>20.0%
		Hydro Emerg. Power	TBD	TBD	TBD
		BWRs			
		HPCI	>4.0%	>12.0%	>50.0%
		HPCS	>1.5%	>4.0%	>20.0%
		RCIC	>4.0%	>12.0%	>50.0%
		RHR	>1.5%	>5.0%	>10.0%
		PWRs			
		HPSI	>1.5%	>5.0%	>10.0%
		AFW	>2.0%	>6.0%	>12.0%
		RHR	>1.5%	>5.0%	>10.0%
	Safety System Functional Failures (over previous four quarters)	BWRs	>6.0	N/A	N/A
		PWRs	>5.0	N/A	N/A

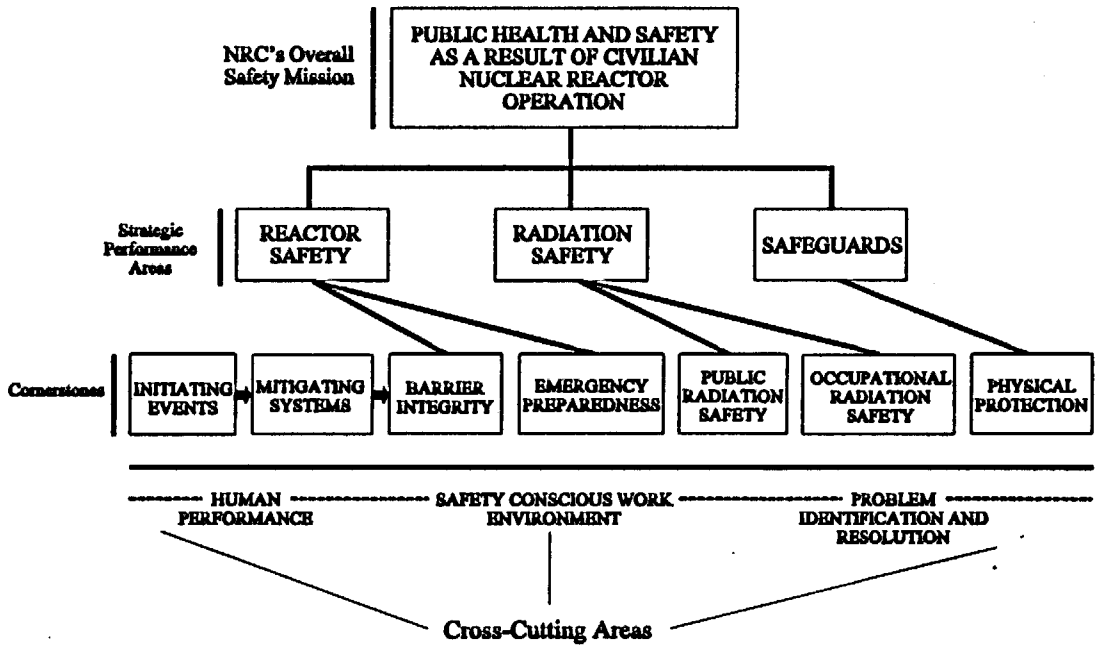
Note 1: Thresholds that are specific to a site or unit will be provided in Appendix D when identified.

1

Table 1 - PERFORMANCE INDICATORS Cont'd				
Cornerstone	**Indicator**	**Thresholds (see Note 1)**		
		Increased Regulatory Response Band	**Required Regulatory Response Band**	**Unacceptable Performance Band**
Barriers Fuel Cladding	Reactor Coolant System (RCS) Specific Activity (maximum monthly values, percent of Tech. Spec limit)	>50.0%	>100.0%	N/A
Reactor Coolant System	RCS Identified Leak Rate (maximum monthly values, percent of Tech. Spec. limit)	>50.0%	>100.0%	N/A
Emergency Preparedness	Drill/Exercise Performance (over previous eight quarters)	<90.0%	<70.0%	N/A
	ERO Drill Participation (percentage of Key ERO personnel that have participated in a drill or exercise in the previous eight quarters)	<80.0%	<60.0%	N/A
	Alert and Notification System Reliability (percentage reliability during previous four quarters)	<94.0%	<90.0%	N/A
Occupational Radiation Safety	Occupational Exposure Control Effectiveness (occurrences during previous 4 quarters)	>2	>5	N/A
Public Radiation Safety	RETS/ODCM Radiological Effluent Occurrence (occurrences during previous four quarters)	>1	>3	N/A
Physical Protection	Protected Area Security Equipment Performance Index (over a four quarter period)	>0.080	N/A	N/A
	Personnel Screening Program Performance (reportable events during the previous four quarters)	>2	>5	N/A
	Fitness-for-Duty (FFD)/Personnel Reliability Program Performance (reportable events during the previous four quarters)	>2	>5	N/A

2 Note 1: Thresholds that are specific to a site or unit will be provided in Appendix D when identified.
3

REGULATORY FRAMEWORK



ACTION MATRIX

		Licensee Response Column	Regulatory Response Column	Degraded Cornerstone Column	Multiple/ Repetitive Degraded Cornerstone Column	Unacceptable Performance Column
RESULTS		All Assessment Inputs (Performance Indicators (PIs) and Inspection Findings) Green; Cornerstone Objectives Fully Met	One or Two White Inputs (in different cornerstones) in a Strategic Performance Area; Cornerstone Objectives Fully Met	One Degraded Cornerstone (2 White Inputs or 1 Yellow Input) or any 3 White Inputs in a Strategic Performance Area; Cornerstone Objectives Met with Moderate Degradation in Safety Performance	Repetitive Degraded Cornerstone, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or 1 Red Input; Cornerstone Objectives Met with Longstanding Issues or Significant Degradation in Safety Performance	Overall Unacceptable Performance; Plants Not Permitted to Operate Within this Band, Unacceptable Margin to Safety
RESPONSE	Regulatory Performance Meeting	None	Branch Chief (BC) or Division Director (DD) Meet with Licensee	DD or Regional Administrator (RA) Meet with Licensee	RA (or EDO) Meet with Senior Licensee Management	Commission meeting with Senior Licensee Management
	Licensee Action	Licensee Corrective Action	Licensee root cause evaluation and corrective action with NRC Oversight	Licensee cumulative root cause evaluation with NRC Oversight	Licensee Performance Improvement Plan with NRC Oversight	
	NRC Inspection	Risk-Informed Baseline Inspection Program	Baseline and supplemental inspection procedure 95001	Baseline and supplemental inspection procedure 95002	Baseline and supplemental inspection procedure 95003	
	Regulatory Actions[1]	None	Supplemental inspection only	Supplemental inspection only	-10 CFR 2.204 DFI -10 CFR 50.54(f) Letter - CAL/Order	Order to Modify, Suspend, or Revoke Licensed Activities
COMMUNICATION	Assessment Letters	BC or DD review/sign assessment report (w/ inspection plan)	DD review/sign assessment report (w/ inspection plan)	RA review/sign assessment report (w/ inspection plan)	RA review/sign assessment report (w/ inspection plan)	
	Annual Public Meeting	SRI or BC Meet with Licensee	BC or DD Meet with Licensee	RA (or designee) Discuss Performance with Licensee	EDO Discuss Performance with Senior Licensee Management	
	Commission Involvement	None	None	None	Plant discussed at AARM	Commission Meeting with Senior Licensee Management
	INCREASING SAFETY SIGNIFICANCE ---------->					

Note 1: The regulatory actions for plants in the Multiple/Repetitive Degraded Cornerstone column are not mandatory agency actions. However, the regional office should consider each of these regulatory actions when significant new information regarding licensee performance becomes available.

ENCLOSURE 2