**UNITED STATES**
**NUCLEAR REGULATORY COMMISSION**
**ADVISORY COMMITTEE ON REACTOR SAFEGUARDS**
**WASHINGTON, DC 20555 - 0001**

November 21, 2011

MEMORANDUM TO: File

FROM: Sherry Meador **/RA/**
Technical Secretary, ACRS

SUBJECT: CERTIFICATION OF THE OFFICIAL TRANSCRIPT OF THE MEETING OF THE SUBCOMMITTEE ON RADIATION PROTECTION AND NUCLEAR MATERIALS HELD ON SEPTEMBER 23, 2011

The official transcript of the subject meeting is the official record of the proceedings of that meeting.

Attachment:
As stated

# Official Transcript of Proceedings

# NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Reactor Safeguards
Radiation Protection and Nuclear Materials

Docket Number: (n/a)

Location: Rockville, Maryland

Date: Friday, September 23, 2011

Work Order No.: NRC-1156 Pages 1-110

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

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

+ + + + +

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

+ + + + +

SUBCOMMITTEE ON RADIATION PROTECTION AND

NUCLEAR MATERIALS

+ + + + +

FRIDAY

SEPTEMBER 23, 2011

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Advisory Committee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B1, 11545 Rockville Pike, at 8:30 a.m., Michael T. Ryan, Chairman, presiding.

MEMBERS PRESENT:

MICHAEL T. RYAN, Chairman

DENNIS C. BLEY, Member*

JOHN D. SIEBER, Member

ACRS CONSULTANT PRESENT:

JOHN FLACK

NRC STAFF PRESENT:

DEREK WIDMAYER, Designated Federal Official

MARISSA BAILEY, NMSS/FCSS

DOUGLAS COLLINS, NMSS/FCSS

JONATHAN DeJESUS, NMSS/FCSS

MARGIE KOTZALAS, Acting Chief, NMSS/FCSS/TSB

ALSO PRESENT:

GERARD COUTURE, Westinghouse/NEI

JANET SCHLUETER, NEI

*Participating via telephone

T-A-B-L-E O-F C-O-N-T-E-N-T-S

P R O C E E D I N G S

8:29 a.m.

CHAIRMAN RYAN: All right. Welcome. The meeting will now come to order.

This is a meeting of the Advisory Committee on Reactor Safeguards Subcommittee on Radiation Protection and Nuclear Materials.

I'm Michael Ryan, Chairman of the Subcommittee.

ACRS Members in attendance are Dennis Bley and Jack Sieber. ACRS Consultant John Flack is also in attendance.

The purpose of this meeting is to hold discussions with NRC on proposed enhancements to NRC's fuel cycle oversight process, F-C-O-P or FCOP. In a letter to the NRC staff, dated April 19th, 2011, the ACRS indicated they would like the opportunity to review the staff's findings, conclusions and recommendations on proposed changes to FCOP prior to the NRC staff response to the Commission. This meeting is the second in response to the Committee's request. The Committee thanks the staff for the support of the ACRS' request for today's meeting.

The Subcommittee with gather information, analyze relevant issues and facts and formulate

proposed positions and actions as appropriate.

Derek Widmayer is the Designated Federal Official for this meeting.

A transcript of the meeting is being kept and will be made available on the web.

It is requested that speakers first identify themselves and speak with sufficient clarity and volume so they may be readily heard.

We received a request from NEI to provide stakeholder comments and an item has been added to the agenda to allow associated comments to be expressed.

If there's anyone on the phone link at this time, please introduce yourself. I know Dr. Bley is on. We just heard from him earlier, so we'll recognize his participation via the phone.

MEMBER BLEY: Right.

CHAIRMAN RYAN: Okay. We will now proceed with the meeting and I call upon Margie Kotzalas, Acting Branch Chief Technical Support Branch, Special Projects and Technical Support, Division of Fuel Cycling Safeguards of NMSS to open the presentations.

MS. KOTZALAS: Thank you. Good morning.

As Dr. Ryan indicated, my name is Margie Kotzalas and I'm the Acting Chief of the Technical Support Branch in NMSS.

With me is Jonathan DeJesus and Doug Collins. And we're going to update you on the enhancements that we are proposing to the fuel cycle oversight process, and these will be indicated in a Commission paper due in October.

Since we briefed you in June we have adjusted our enhancements. Your feedback has been valuable to us and you will see it reflected in the enhancements that we have proposed.

Okay. To put our work in context, the Commission ha not given us approval to completely revise the oversight process, though for several SRMs the Commission directed us to make modest adjustments to the existing process to enhance efficiency effectiveness and include incentives for licensees to maintain strong corrective action programs.

The Commission also directed us to develop a set of cornerstones for the oversight process and to provide recommendations for next steps.

Today we will present to you some of our recommendations for next steps, such as the conceptual framework for an enhanced process because we think it will help put the cornerstones and other proposed elements of the FCOP into context.

And we'll also highlight what we think the

benefits of an enhanced FCOP are, such as:

Aligning the core inspection program to the cornerstones;

Assessing the frequency of inspections to align with the risk significance and licensee performance, and;

Increasing transparency and predictability of the significance of inspection findings in the assessment of licensing performance.

Now gaining efficiencies in the oversight process is important now and it will become even more important in a few years. Right now there are ten fuel cycle facilities that are subject to the inspection program. In the next few years, five more facilities may become operational. With a flat or even declining budget, we need to be smarter about how we verify compliance with the regulations and license requirements and right-size our inspection programs to focus our resources so that it is appropriate to licensee's performance.

Now that I've provided some background, I'd like to turn it over to Jonathan who will walk you through the conceptual framework of an enhanced process and describe the evolution from the current oversight process.

MR. DeJESUS: Good morning. My name is Jonathan DeJesus. I'm the Project Manager for the enhancements to the fuel cycle oversight process.

And with this next slide, slide 5, my intent is to give you a high level overview of the current fuel cycle oversight process and then I will show how it evolves to the enhanced FCOP.

First, the current FCOP starts with a core inspection program. And the core inspection program provides the minimum amount of inspections to determine whether a fuel cycle facility is operating safely and securely and in accordance with regulatory requirements. With the core inspection program the NRC staff can identify indications of dependent safety or security performance.

Then the next element is reactive inspections. Reactive inspections include follow-up to events including special inspection teams, augmented inspection teams and incident investigation teams where an approach to reactive inspections is taken depending on the actual or potential significance of an event.

Then the next element is the generic safety issue inspections. Those inspections are initiated when it is determined that a safety issue

addressing a Bulletin or Generic Letter requires inspection, or verification or follow-up. And the Agency develops the requirements and guidance for the inspections and issues them in temporary instructions.

The next is as a result from the core inspection program temporary instructions and reactive inspections are screened to determined whether if it's a noncompliance. And that's a decision point here you see in the diagram.

If the inspection result is not a noncompliance, then the NRC doesn't take any additional action. And if the inspection result is a noncompliance, then there's another decision point: Is it greater then minor. Then if it's not greater then minor, then it's left to the licensee to correct the issue. And that normally is not documented in inspection reports.

And as I mention again, however the licensee is responsible for correcting the issue and that's why the diagram says "license control."

If it's determined that the noncompliance is greater then minor, The NRC evaluated the noncompliance in the NRC enforcement process to determine the significance of that noncompliance. And the significance of the noncompliance is described

using some severity levels in the current enforcement policy. And, as you may know, there are four severity levels in the enforcement process. The severity levels in increasing order of significance are:

Severity Level 4;

Severity Level 3;

Severity Level 2, and then;

Severity Level 1, which is the most significant.

And then in the assessment those inspection findings are accumulated and they are evaluated in the current licensee performance review. And based on that licensee performance review the NRC determines what supplemental inspections are needed. And that's how, and as you see in the diagram, the supplemental inspection, the findings from those supplemental inspections go through the process as the other three elements.

And this diagram right now is how we currently do business currently.

DR. FLACK: John, can I ask a question? I'm sorry.

At this point there's no consideration of risk at all in this process? It's pretty much compliance driven.

MR. DeJESUS: There's consideration of risk in my understanding in the selection of inspection samplings. The inspectors look at the ISAs and the Safety Evaluation Reports to determine what is appropriate and in a risk perspective goal to the facilities and inspect.

DR. FLACK: Oh, where to look?

MR. DeJESUS: Yes. Where to look.

DR. FLACK: Or where they find in this process -- I mean, it's just really whether it's compliance or not, right, I mean in this particular type of process that you're talking?

MR. DeJESUS: Yes.

MR. COLLINS: But in the determination of what severity level it is --

DR. FLACK: Yes.

MR. COLLINS: -- the enforcement policy is in a sense risk-informed. It's at a fairly high level.

DR. FLACK: Okay. So that's where it claims to --

MR. COLLINS: It also enters there.

DR. FLACK: Okay.

MEMBER SIEBER: And also there's no PRA so the numbers are not -- or they're risk-informing. The implications are not exact.

CHAIRMAN RYAN: If I'm recalling, correct me if I'm wrong and I apologize, but the severity levels have with them criteria of failure to control materials, you know as one kind of criteria. And then exposure to workers is another.

MEMBER SIEBER: Right.

CHAIRMAN RYAN: Releases from licensed material controls. And each one has no release or very low doses, or you know all those kind of scaled criteria from four to one. That's I guess is close to how the risk significance is being addressed. And I can't recall all the exact criteria, but it's along those lines, correct?

MR. COLLINS: Yes, sir. And for example if a system has two licensed controls and you lose one control, that would put you one place.

CHAIRMAN RYAN: Yes.

MR. COLLINS: Two controls would put it another.

CHAIRMAN RYAN: Right.

MR. COLLINS: And no controls but no event another.

CHAIRMAN RYAN: Yes.

MR. COLLINS: No controls, event another.

CHAIRMAN RYAN: And that's the other side

of it is this failure of controls and the consequence. All that's built into those tables, if I recall right.

Thanks.

MEMBER SIEBER: But the initial licensing you go over how many controls are required to processes is part of the licensing basis for it?

MR. COLLINS: Yes, sir.

MEMBER SIEBER: Okay.

MR. DeJESUS: And then now although I'm going to show how the enhancements to fuel cycle oversight process are that we are proposing.

First, one of the differences is the cornerstones, and that's how the Commission direction we developed a set of cornerstones that could be applied to the fuel cycle oversight process. And each cornerstone has a task objective and where licensees meet those objectives, it gives the staff a reasonable assurance that the NRC's mission of protecting public health and safety and the environment and promoting the common defense of our security is met. And after my presentation Doug Collins will go into a little bit more detail on what are the cornerstones.

And then similarly to the current inspection, the current FCOP inspection results -- okay.

What this arrow that just got in means is that the cornerstone objectives -- the reactive inspection, one of the changes is to focus the reactive inspections to the cornerstone objective to ensure that the mission is met. And that is similar with the generic safety issues.

And then with the inspection results from the three elements there's a decision point now where we ask: Okay, is there any criteria for traditional enforcement that apply? And those criteria for traditional enforcement are:

If there's an actual safety significance;

If there's a potential for impacting the NRC regulatory process, or;

If there's any willfulness aspect of that inspection result.

And if any those criteria apply, then it goes to traditional enforcement. And then if those elements from traditional enforcement, then we ask another question: If it's performance deficiency?

If the inspection result is not a performance deficiency, then similarly with a noncompliance we take no action.

And then if it's a performance deficiency, we ask the same question: If it's the performance

deficiency is greater then minor. If not, then again it'll go the license control and they must correct that minor issue.

If it's a greater then minor deficiency performance deficiency, it will turn the inspection result, we name it now an inspection finding; that is assessed in what we're proposing as a fuel cycle significant determination process. And that fuel cycle significant determination process assesses the significance of:

Safety and security findings;

It has four levels of increasing significance. At the lowest level we have very low significance and then low to moderate significance and then substantial significance and then high significance.

And then those results from the SEP we're proposing that they go into an action matrix that has NRC predetermined actions on what to do given the performance of the licensee. And those actions include management conference, monitoring licensee actions, additional regulatory actions. But the one that we're going to focus on today is the NRC inspections. That action matrix will determine what kind of engagement we do after a finding is

identified.

And then again, that's the feedback loop to supplemental inspections that again goes through the same process as the other three elements.

And in addition to the action matrix in the performance assessment process, we're proposing to have continuous and periodic reviews and also consider the crosscutting areas in the performance assessment process.

CHAIRMAN RYAN: How do you do a continuous review, unless you have onsite inspection all the time?

MR. COLLINS: Well, continuous based on the information. As we get the information it would be assessed. It may end up differing for major issues--

CHAIRMAN RYAN: Jonathan, you might want to move that stuff away from the microphone. It's under the papers because that's quite loud in that reporter's ear. You can actually push the microphone away from it a little bit, it'll help.

Thank you. I'm sorry.

MR. COLLINS: Again, this is defined yet. We haven't decided. For example, you could as a finding comes in look at the action matrix and see if

it's going to change what we intend to do. There will be a formal frequency quarterly, semi' I'm not sure where you would assess everything in an integrated manner.

CHAIRMAN RYAN: So it's really increased frequency of review. Because I don't think there is such a thing as continuous review unless you had an onsite inspector there all the time you're operating.

MR. COLLINS: And let me clarify. By continuous we mean as information comes in from inspections. And it may come in monthly or --

CHAIRMAN RYAN: Oh, it's enhanced periodic inspections?

MR. COLLINS: There you go. Yes, sir.

CHAIRMAN RYAN: Okay.

DR. FLACK: Yes, a question. On the comparing the two diagrams, one being the proposed versus the traditional, I guess the one that's currently in place now, you mentioned like that first box where it says "Criteria for Traditional enforcement." And you mentioned three things, I guess: Safety significance, the impact of the regulatory process and willful negligence I guess on the part of the licensee. How was that treated before? It looked like the first question you asked

me for was whether it was a compliance issue.

Now, these may or may not be compliance issues, right? I mean, it could be something in that set that was not a compliance issue or are you assuming they would all be compliance issues at that point that you're looking for that traditional enforcement box? Is that just compliance or is it more then that, or is it -- you know --

MR. DeJESUS: I believe it's more then that. If it has an actual safety consequence, the NRC would engage the license.

DR. FLACK: Okay.

MR. DeJESUS: And if it effects our ability to regulate the licensee, the same thing. If there's any wilfulness, I think from my understanding one of the big things that the NRC engages the licensees if there's any willfulness aspect to the action identified.

DR. FLACK: Yes. But is that being picked up before in the previous diagram? Oh, it's also involved in that first --

MR. DeJESUS: Yes. Yes. And the reason that it's a traditional enforcement, it's at the beginning as compared to now, is in the current program, in the current FCOP there's the enforcement

process. And here we're proposing to modify that determination with the fuel cycle oversight process.

DR. FLACK: Okay. So that's the major change there, right there? Right. Yes.

MEMBER SIEBER: Will your enforcement in most severe cases it's done through civil penalties, suspension of license or revocation of license?

MS. KOTZALAS: If there's an actual safety significance, then yes. Because then we would enter it met the criteria for traditional enforcement which could then lead you into civil penalties.

MEMBER SIEBER: And to get to those kinds of penalties would it necessarily required to be intentional?

MS. KOTZALAS: No, not if there was an actual safety significance, like somebody was hurt. There was an event and somebody got hurt.

MEMBER SIEBER: Yes. Because somebody gagged a relief valve and they shouldn't have?

MS. KOTZALAS: Yes, it was an accident.

MEMBER SIEBER: It was a mistake?

MS. KOTZALAS: Right.

MEMBER SIEBER: And a pipe broke and killed somebody?

MS. KOTZALAS: Yes, even though that was

not willful, it still resulted in an actual safety significance, therefore the criteria traditional enforcement with the civil penalties applies.

MEMBER SIEBER: Okay. Which could include the items I mentioned?

MS. KOTZALAS: Yes.

MEMBER SIEBER: Thank you.

MR. DeJESUS: And with that, I'll pass it on to Doug Collins.

DR. FLACK: Oh, one other question. About the crosscutting areas, I know it's a box there but has that been thought out how that integrates into the action matrix. I mean, how would that be taken into consideration?

Now I'm assuming in the same way is the reactor oversight process; the crosscutting issues are ones that go across cornerstones, right?

MR. DeJESUS: Yes.

DR. FLACK: And so that seems to be in a separate box next to the action matrix.

MR. DeJESUS: Right.

DR. FLACK: But how does that effect things at that point? Is that a separate initiative to look at this and then come up with something that would be in addition to what comes out of the action

matrix, or you haven't actually designed that yet, that piece>

MR. DeJESUS: We haven't employed --

DR. FLACK: To that level?

MR. DeJESUS: -- to that level yet.

DR. FLACK: All right. But it's there and you recognize it and it's going to be at some point put into the picture?

MR. DeJESUS: Yes.

DR. FLACK: Okay. Good. Yes, thanks.

MR. DeJESUS: Then I'll move on to pass you to Doug Collins who will present the cornerstones.

MR. COLLINS: Good morning. I'm Doug Collins. I'm from the Office of Nuclear Materials Safety and Safeguards. And today I'll update you on our development of a set of cornerstones that will be used to enhance the fuel cycle oversight process.

This morning I'll outline the goals for a new set of cornerstones that take into account internal stakeholder comments. I'll discuss two new proposed cornerstones and their elements that we use in this new set of cornerstones that we now call hazards analysis-based cornerstones. I'll briefly discuss the status of the cornerstones that we brought up during the June meeting. These are cornerstones

that we now call operations-based cornerstones. And I'll outline the pros and cons of the two sets of cornerstones.

Am I doing something wrong?

CHAIRMAN RYAN: No. There's buzzes and hisses all around electronics. Don't worry. It's not you, Doug.

MR. COLLINS: Okay. Slide 8.

Okay. Briefly this slide outlines the key goals and interests that led to the new hazards analysis-based cornerstones. The key goals and interest are:

That they meet the Commission's direction that would lead us to a process that is risk-informed, performance-based, et cetera, as Margie said earlier;

That they be based on the strategic plan;

That they result in a similar oversight framework to that used in the ROP, the reactor oversight process or ROP;

That they be responsive to internal stakeholder comments, and;

They be specific to fuel cycle safety and Safeguards requirements and the terminology to facilitate communications.

The key basis for developing the hazards

analysis-based cornerstone was internal stakeholder comment that the fuel cycle oversight process, or as you indicated FCOP, enhancement should use cornerstones that would result in an oversight framework more similar to that used in the reactor oversight process or ROP. This would contribute to having more consistency in cornerstone framework across the Agency's processes.

Next slide, please.

These are the set of hazards analysis-based cornerstones. They are:

Accident sequence initiators;

Safety controls;

Emergency preparedness;

Public radiation safety;

Occupational radiation safety, and;

Security/material control and accounting.

This framework would generally use the same inputs from the inspection results as the operations-based cornerstones to determine whether a licensee was meeting a cornerstone objective.

Here in the hazards analysis-based cornerstones, though, the accident sequence initiator and safety control cornerstones view licensee performance more in terms of how a licensee analyzes

ISA related or accident hazards. Under the operations-based cornerstones that we discussed in June, the same key attributes and inspection activities were repeated across the criticality safety and chemical safety, and to a lesser degree radiation safety cornerstones.

Under this new hazards analysis-based set cornerstones the ISA related key attributes for criticality safety and chemical safety and radiation safety are integrated safety controls.

Next slide, please.

DR. FLACK: No, before we leave that, if I can.

MR. COLLINS: Yes. Yes, sir.

DR. FLACK: Yes, I mean that's a big step forward right there in that change as compared to conforming process to another, reactor oversight process. When you lay then down side-by-side the one cornerstone that's missing there is obviously the barrier cornerstone. And now you look at the barrier cornerstone in the reactor side of it, and there's like three pieces there. You have the containment, you have the vessel, you have the fuel. And recognizing that the containment and the vessel are somewhat different here, but the fuel and its

performance as a barrier has attributes that are very similar to what one would see in a chemical facility given the performance, procedure quality, design control. And my thinking is, is well if you really want to articulate the cornerstones and how it protects the public and workers and so on, why wouldn't you want to include a barrier cornerstone in a similar sense?

MR. COLLINS: Well, at this point, all of the barriers, and the barriers in these plants are significantly different than those of power reactors, those in fact we have cast as the controls under the safety control section or safety controls cornerstone.

So, for example, if material is being used in a glove box, that glove box in a sense is a barrier in a way that the containment might be a barrier.

DR. FLACK: Right.

MR. COLLINS: And that would be placed in the safety controls cornerstone. So under safety controls you might have physical systems and barriers. You might have actions or activities by operators or other members of the plant. You would have the management measures as Part 70 uses the term that would assure that the barriers and the safety controls and the items relied on for safety or NCS controls

maintain in effect. So --

CHAIRMAN RYAN: Well, if you had a ventilation system, for example, had an automatic shutdown for various kinds of signals, that would be a barrier type?

MR. COLLINS: That's a barrier, but we--

CHAIRMAN RYAN: But you would put that in safety controls?

MR. COLLINS: Safety controls.

CHAIRMAN RYAN: Okay.

MR. COLLINS: If you have a UF6 bang and there's a UF6 release, then you have to switch over to the emergency ventilation system, that would be -- we would put that under safety controls.

MEMBER BLEY: Doug, this is Dennis Bley.

Is it fair to say that regardless of the names you're using for these now, that the new approach is really anchored in accident sequence considerations that would include things like barriers rather than in a set of independent items.

MR. COLLINS: Yes, that's correct.

MEMBER BLEY: That's what it looked like. Okay. Thanks.

DR. FLACK: So I guess there's no advantage to taking it out as a separate cornerstone?

I mean it's considered, I understand, within the safety controls but trying to express the cornerstones as each one having a certain feature, certain impact on a particular sequence of events that could occur at the plant and how one would look at each of those separately in a sense and try to draw conclusions as to whether they're being maintained. Wouldn't that sort of give you another piece of information on which to assess the facility? I'm still trying to understand why it would be folded into the safety controls? Is it too hard to separate out, is that --

MR. COLLINS: The way licensees did their safety analyses they would not be separated out, I don't believe. Some licensees may have some way of doing it. But basically they established safety controls to the point where the accidents were mitigated in the way that Part 70 requires.

DR. FLACK: Yes.

MR. COLLINS: And their likelihood are the way Part 70 required. And that may be a barrier in the sense of a go box. It may be a barrier in the sense of an alarm that a operator responds to. I mean, it could be done, but right now you would look at the safety of a system in an integrated way whether it's containment or whether it's operator action.

DR. FLACK: Okay.

MR. COLLINS: Because that was the way it would have been analyzed.

DR. FLACK: Okay. All right.

MR. COLLINS: Slide 10.

This will show a diagram of the hazards analysis-based cornerstone. The fuel cycle regulatory framework starts at the highest level with the NRC mission. The mission is to ensure, of course, that licensees use licensed materials in a manner that ensures adequate protection of public health and safety, promote the common defense and security, and protects the environments.

The staff used the Agency's strategic goals of safety and security as the second level in the fuel cycle regulatory framework. The safety and strategic goal is to ensure adequate protection of public health and safety in the environment and the security strategic goal is to ensure adequate protection in the secure use and management of radioactive materials.

The Commission established strategic outcomes for each of these strategic goals. And briefly, the strategic outcomes are:

Prevent the occurrence of an inadvertent

criticality;

Prevent any acute radiation exposure that results in death;

Any releases of radioactive material that results in significant radiation exposures, or;

Cause a significant adverse environmental impact.

As we discussed last time, in addition to these radiation related strategic outcomes for facilities in the fuel cycle area the NRC regulations require the licensees to control the potential impacts on workers and the public from certain hazardous chemicals used at the facilities that are associated with processing material. And a Memoranda of Understanding with the U.S. Occupational Safety and Health Administration will clarify this understanding.

The strategic outcome from the strategic plan for the security strategic goal is prevent any instances in which licensed radioactive materials are used domestically in a manner hostile to the United States.

This next level down, the strategic performance area level, are those areas that are similar to those in the ROP. And here they are fuel facility safety, in the ROP it's reactor safety,

radiation safety and Safeguards.

Next, please.

This level shows the current actual hazards analysis-based cornerstones. These cornerstones are, as I said before, more aligned in the way the safety analysis is done. This organization meets, we believe, to an oversight program that is more similar in framework to the ROP then the one we discussed previously.

Next slide, please.

And now we'll go through the two, as we call them, new cornerstones. And you'll find in one sense they're not necessarily that new.

We now will discuss in more detail the two new cornerstones.

The accident sequence initiators cornerstone is similar to but not the same as the initiating events cornerstone in the ROP. 10 CFR Part 70 requires the licensee to develop an ISA for the processes in the plant. The ISA must include potential accident sequences caused by process deviations, other events internal to the facility and credible external events including natural phenomena.

As discussed in two NUREG reports that were companions to Revised Part 70, those being NUREG

15.30 on how to do ISAs and NUREG 15.20 which is the standard review plan for Part 70 licensing accident sequence initiators include: Initiating events, enablers and controls. Not all licensees use these terms in developing their ISAs, but they did use the concepts.

So initiating events could be, as we discussed: Deviations from normal operational processes for credible abnormal events or events external to the process being analyzed but within the facility in the external events.

Enabling conditions or enablers are conditions or assumptions whose increase or change is credible and if changed, could cause an increase in the accident frequency or consequences.

Controls can be items relied for safety, or IROFS, it could be nuclear safety controls or other controls that are needed to ensure safety of a facility.

The objectives of the accident sequence initiators are to verify that a licensee limits the frequency of accident sequence initiators that lead to the need for IROFS, NCS controls or other safety controls.

The ISA assumed frequency for accident

sequence initiators in establishing IROFS and NCS controls lead to the conclusions in the ISA. These IROFS or NCS controls would be required by Part 70 as a result of the ISA or NCS analysis showing that they are required to limit the likelihood or consequences, or prevent the nuclear accident.

The next slide, please.

The second objective is to assure that the licensee evaluates and limits as appropriate the accident sequence initiators that are not required to be limited or controlled by higher Ops, NCS controls or other safety controls. These are accident sequence initiators that the licensee has determined do not need to be prevented or have their likelihoods limited based on the ISA. This could occur because the ISA shows that they may be allowed to occur without causing likelihoods or consequences defined in Part 70.

CHAIRMAN RYAN: Doug, could you maybe give us a practical examples of what would be in this category?

MR. COLLINS: Right now the licensee may have controls on a process. Because they believe from their safety philosophy point of view they need five controls. It could be -- let me do a simple example.

Five inline monitors with activation and actions off of each inline monitor based on what's in the pipe. But when they do their analysis, they may only need two.

CHAIRMAN RYAN: Yes.

MR. COLLINS: So two of those inline monitors might be identified as IROFS and the other three as other safety controls.

CHAIRMAN RYAN: I see. So I understand the example. If you have one inline monitor and it fails, you still have the second one.

MR. COLLINS: Yes.

CHAIRMAN RYAN: And the other three may be different locations, further down the pipe or whatever it is, and it might be a process control information piece that's helpful, but it's not relied on for safety; those kinds of things?

MR. COLLINS: Right.

CHAIRMAN RYAN: Okay. And you kind of understand the way they're using those terms.

MR. COLLINS: Yes.

DR. FLACK: There is a couple of things, though, involved there. One is, of course, this may act as a means of a defense-in-depth, the ones that you're not taking credit for.

MR. COLLINS: Yes.

DR. FLACK: But are they maybe also dependent on the other controls which means if one of the other controls failed, they also fail in a common cause kind of way.

MR. COLLINS: That's correct.

DR. FLACK: So unless one looks at that, you don't know how much credit to give them, but they're not taking credit for it is what you're saying.

MR. COLLINS: Yes.

DR. FLACK: Right.

MR. COLLINS: And that's a bad example. It may well be that you have an inline monitor and a conductivity monitor; two different kinds of monitors.

DR. FLACK: Different, yes.

MR. COLLINS: And they'll follow the same thing.

DR. FLACK: Okay.

MR. COLLINS: And then the final objection is to verify that the licensee has identified in the ISA all accident sequence initiators associated with the use of Part 70 materials and has appropriate assessed the accident sequence to identify those that require IROFS and/or NCS controls that are there to

prevent or mitigate intermediate or high consequence events or prevent nuclear criticalities.

DR. FLACK: I'm sorry if we can go back to the discussion we just had.

MR. COLLINS: Sure.

DR. FLACK: And now if these other ones that have not been credited in the ISA were to become unavailable, would that effect the cornerstone?

MR. COLLINS: If they maintain the two or three, or whatever needed to meet the Part 70 criteria, it would not cause an enforcement issue on the cornerstone. But it could be something that we as an Agency are interested in because it may be telling us a lot of different things about the licensee. But we may well not come to enforcement as a result of that.

DR. FLACK: So previously it was not a compliance issue, you would sort of drop it. But now in this new framework you would keep that as additional information and have that move forward through the process, I guess is what you're saying.

MR. COLLINS: It would depend on what was found, we might engage the licensee under this. Now, I wouldn't say currently we would drop it. But in fact right now the inspections, as I understand them, do

focus on items relied on for safety and the management measure to ensure this.

DR. FLACK: Right.

CHAIRMAN RYAN: I understand and appreciate it, but I'm thinking about the licensee that has a complicated system; a new plant, a MOX plant at Savannah River site. They have a number of IROFS. It's breathtaking. Fifteen thousand, is that right?

DR. FLACK: Twelve thousand if you're talking about MOX facility.

CHAIRMAN RYAN: Twelve thousand? How are you going to get all those sequences straight right off the bat? I mean, they're going to evolve over time and there's going to be, I think, updates and improvements. How do you deal with a new facility that has an awful lot of IROFS that's going to need to evolve a little? Although, I guess, how do you deal with that in the context of the system you're envisioning?

MR. COLLINS: Well, they all have accident sequences --

CHAIRMAN RYAN: Yes.

MR. COLLINS: -- that have established the IROFS. Now how an inspector or inspection team

intelligently selects which sequences to review is some guidance that has not been developed for a big facility. There is guidance in today's current procedures --

CHAIRMAN RYAN: Yes.

MR. COLLINS: -- as how to do that. But it's for facilities that don't have 12,000 IROFS. So that's to be determined, to be honest with you.

CHAIRMAN RYAN: Fair enough. Yes.

And simple facilities, you know I guess it really comes down to a discussion between they may be thinking about a particular sequence one way and then by inspection the inspectors may have a different view of how that sequence should be treated, or you know how it should be characterized in terms of its risk significance. And then, you know it's kind of a negotiation between the licensee and the regulator to decide how its going to be collectively treated.

MR. COLLINS: Or recent license it also could lead to enforcement.

CHAIRMAN RYAN: It could?

MR. COLLINS: Yes. If the accident sequence is for example, misses a pathway that could lead to a intermediate or high consequence event and that's one of the purposes of this inspection is to

take a good hard look at the sequences and the reality and see that -- that's a very difficult thing to do, of course.

CHAIRMAN RYAN: Yes.

MR. COLLINS: Yes, sir?

MEMBER SIEBER: I take it one of the supplies to process controls where you don't have safety significance or criticality, but in this performance or the process you generate properties that make somebody else's process fail. For example, grain size in mixed oxide fuel as a big impact on the safety as a fuel when its used in somebody else's reactor pond. I take it none of this applies to process controls to prevent malfunctions or accidents, or what have you that might occur in somebody else's facility, is that correct?

MR. COLLINS: This process would not do that. Now we do have a vendor inspection group that go into these facilities. I'm not terribly familiar. Maybe the industry can give you the information. At some frequency and they do look at those kinds of things.

MEMBER SIEBER: Yes. But they do that on the end user's license. The end user buys something from Facility A who is a supplier. When it does that

vendor surveillance takes over. But it's not particularly clear to me whether a facility will produce something specifically for another licensee to use where vendor surveillance would come in, or if they're just stockpiling it. For example, there's a lot of stockpiled stuff around the country that, you know could be used for fuels or isotopes, or what have you. I take it there's no controls on that except for the safety controls?

MR. COLLINS: Under this process we're going to -- we intend to look at the safety controls, not the quality of product controls.

Next slide, please.

So the key attributes under this cornerstone are:

Protection against external events;

Design to identify the accident sequence initiators;

The accident sequence initiator frequency, and;

Corrective action program.

Next slide, please.

This slide shows, and its very busy, but you have t o --

CHAIRMAN RYAN: I'm sorry, Doug. Would

you just back up to that other one? Where does a licensee's inspection program come in? I guess that's a different chorus, though.

MR. COLLINS: The licensee's --

CHAIRMAN RYAN: You have protection against external events, design to identify accident sequence initiators, accident sequence initiator frequency and corrective program action.

MR. COLLINS: Yes.

CHAIRMAN RYAN: Okay. That's just at the key attribute stage, the implementation comes --

MR. COLLINS: Yes, sir.

CHAIRMAN RYAN: Okay. I got it. Thanks.

MR. COLLINS: Here is the current status of accident sequence initiators including down to potential inspection activities to verify that a key attribute is acceptable. Some of these inspection activities we have not had the opportunity to vet them well with external stakeholders at this point, because this is a relatively new concept.

Next slide, please.

DR. FLACK: Oh, before you leave that one.

MR. COLLINS: Yes.

DR. FLACK: Sorry. Looking at the corrective action program, I guess, on that last slide

and it talks about findings. I mean, as far as events, I mean are you looking into that for sort of repeat failures, they're not getting it fixed? Is that where it comes into play in increasing the accident initiator in some way?

MR. COLLINS: Yes.

DR. FLACK: I'm trying to get --

MR. COLLINS: To see whether or not they're having events that are caused by accident sequence initiators in a way that they didn't understand or they are not taking action appropriate. It's basically to do a slice of accident sequence initiator factings in their corrective active program.

DR. FLACK: Okay. And that itself is a crosscutting issue, right? Because it could effect not only action sequences, but it could effect other controls and so on. So that's going to be this new piece that's coming up, I guess, that you'll be talking about.

MR. COLLINS: As contemplated now this, the oversight would involve, which is by the way the reactor program. During a technical inspection area you would look at the corrective action program, take a slice of the corrective action program findings for that technical area.

DR. FLACK: Yes.

MR. COLLINS: In addition, the intent is that we would have an overall programmatic look that these findings that would feed into. And I don't know what the periodicity of that would be; two years, three years, to be determined. But there would be an overall programmatic look and these findings from the individual technical areas that's intended would feed into that overall look, too.

DR. FLACK: All right. And that's where you would basically identify if there is a crosscutting issue, I guess at that point, when it all feeds together like that?

MR. COLLINS: That's one place. Now if during a year a half a dozen inspections of the individual technical areas in the corrective action area find problems, you know it may cause us to say "Gee, let's see if they have a crosscutting issue here" even before we did the programmatic look. But we're not sure how we're going to do that. We're not sure how we're going to accumulate and assess that; that's to be determined.

DR. FLACK: Yes. I'm trying to understand the technical area versus cornerstone.

MR. COLLINS: Ah, cornerstone.

DR. FLACK: You should be cornerstone. Okay. Okay. Yes, that makes more sense.

MEMBER BLEY: Dennis Bley. I suppose if we implement the changes, then charts like this one will provide first level guidance on how one might revamp the inspection guidelines that go along with this, is that right, or is that in the process?

MR. COLLINS: That's the intent. The intent is once we've come to a decision on the inspection activities, the people who would look at this to revise the individual inspection programs would start with this as the -- I mean, you might even say these would be maybe the objectives in the procedure or something, or you know the key areas in a procedure.

MEMBER BLEY: Okay. And that occurs out in the region then, right?

MR. COLLINS: Well, NMSS has the responsibility to develop the inspection procedures. I'm assuming, though, that you guys get involved, the inspection staff.

MEMBER BLEY: Oh, okay.

MS. SIMON: Yes, that's correct.

CHAIRMAN RYAN: And, Doug, on this point and for Dennis' benefit I think you said that this is

kind of your first approach here and that you're going to stakeholder input and licensing input on this process and then maybe fine tune it based on that input?

MR. COLLINS: Yes. This is recently developed and we really have not given industry much opportunity to give us feed back on this because it was done after the -- we've had one meeting I think with the stakeholders --

MS. SIMON: One meeting on this.

MR. COLLINS: -- since -- since --

CHAIRMAN RYAN: Okay. That's fine. But that's a work in progress? We understand.

MEMBER BLEY: Yes, thanks. I guess I understood that part, but I didn't understand completely how this would all weave together eventually. So this is helping a lot.

MR. COLLINS: Let's see, slide 17. Let's see what 16 is. Okay. Safety Controls. I moved ahead. The safety controls cornerstone. I don't think I'll talk about this yet. I don't know.

This is a new cornerstone. I use the term "new cornerstone" but in fact when you look at the details it's very similar to some of the cornerstones we discussed in the June meeting. The objective of

this cornerstone is to ensure the availability, reliability and capability of IROFS, NCS controls and other safety controls. These IROFS, NCS controls and other safety controls prevent or limit the frequency of, or mitigate the consequences of accident sequences that could lead to intermediate or high consequence events.

Next slide, please.

Safety controls for this cornerstone are:

Staff performance;

Procedure quality;

Facility and equipment performance;

Design;

Configuration control;

Corrective action program.

And these were the key attributes that we discussed during the June meeting, but there we applied these key attributes to the criticality safety cornerstone, the chemical safety cornerstone and to some degree to the radiation safety cornerstone for the ISA related aspects of that.

Next slide, please.

DR. FLACK: Just before you leave that one.

MR. COLLINS: Yes?

DR. FLACK: Which slide are we on? Okay.

MR. COLLINS: I was on 17.

DR. FLACK: Yes. The design one, I guess I was looking at. I'm looking at the other ones as things that you can really get feedback on from observing the plant's observation. But the design one is sort of built in there, isn't it? I mean, how is that piece fit in?

MR. COLLINS: If you'll wait just a second, when we get to the big diagram used for this cornerstone you will see the kinds of things.

DR. FLACK: Okay.

MR. COLLINS: We're looking at design changes.

DR. FLACK: Okay.

MR. COLLINS: As we discussed last time, though, when we license these plants we don't do a 100 percent review of the design either in licensing or in inspection. And so we may end up with people taking smart samples of things that are fairly close to original design. Well, not at these plants. Maybe fairly close to the current ISA, but not the ISA that we looked at when we approved the ISA originally.

DR. FLACK: Okay. So there's really two pieces there I think you're talking about. One is

changing the design as it operates. But the other is that the design as you know it is not exactly what is there the way it was built. And so you find things that may have been different from square one, often times or you know from the beginning, is that right?

MR. COLLINS: It could be, yes.

DR. FLACK: Which may not be in the ISA at that point because it didn't pick it up, right?

MR. COLLINS: Well, for example annually I think you have to submit a revised ISA summary. And NMSS will look at that ISA summary, the changed summary and they'll make some decisions as to what -- this is the current process, what happens in the future I'm not sure. What ought to be looked at by the regions.

DR. FLACK: Okay.

MR. COLLINS: These are the high risk issues. And they'll send them over to the region and say "When you do your" -- it's not called design control, but whatever the procedure is, "focus on these areas." So that could be some of what this would --

DR. FLACK: That would be like a change that they've found.

MR. COLLINS: Yes.

DR. FLACK: Well, I'm thinking of the ones that there was no change but you discovered something or suddenly recognized something there that you didn't know before existed, let's see.

MR. COLLINS: Yes.

DR. FLACK: And maybe that needs an IROF now because there's a sequence there that suddenly you find exceeds the performance criteria --

MR. COLLINS: Yes.

DR. FLACK: -- unless they make an IROF out of it within that sequence.

MR. COLLINS: Yes.

DR. FLACK: That would be a different part of the design piece that you're looking at, right? I mean there's two different things there going on.

MR. COLLINS: Yes.

DR. FLACK: I see. Okay. I was just trying to understand that.

MR. COLLINS: But again, how this is going to be done exactly is to be determined.

Where are we? Slide 17. How about slide 18?

This slide here. This slide shows the safety controls cornerstone including the proposed key attributes and inspection areas.

And just like accident sequence initiators we've not had the opportunity to have much interaction with the stakeholders other then the top level of this slide.

Next slide, please.

The remaining hazards analysis-based cornerstones, basically they're not a lot different then in the operations-based. They're emergency preparedness, public radiation safety, occupational radiation safety and security/material control and accounting. They are essentially the same as we talked about before, except here we did make a minor change from "worker" to "occupational" to be consistent with the ROP.

CHAIRMAN RYAN: Can I go back to the previous diagram?

MR. COLLINS: Yes, sir.

CHAIRMAN RYAN: I was trying to get my head around the top numbered criteria. And I guess they're in no particular order. I mean, I always think about the fact that you start out with facility equipment. I mean you're going to start with the design, you have facility equipment, you have configuration control and then, you know governing both of those is staff performance and product quality

and then corrective action program. There's no particular meaning for this sequence across the top?

MR. COLLINS: No, there is not.

CHAIRMAN RYAN: Okay. All right. Then I think about that in any order I want?

MR. COLLINS: Except that I hope that they're close to the way ROP did it, in the same order. But there's no priority.

CHAIRMAN RYAN: Okay. Great. Thanks.

MR. COLLINS: Now this slide. I think we talked about -- I think we talked about that. Slide 20.

I want to talk just a little bit about now, a very little bit about the operations-based cornerstones that we've talked about in June.

The notable changes are -- well, here they are, of course: Criticality safety, chem safety, radiation safety, emergency preparedness, security/material control and accounting. The notable changes, none of them are very significant. Is that we remove "systems" from the safety cornerstone, the word "systems." We consolidated public and worker radiation safety. And we decided that we would at this point have security/material control and accounting under the same cornerstone.

Next slide, please.

And rather than walk you through it in detail because we did that in the last meeting, this is basically the operations-based cornerstone with those modifications that I talked about just a second ago.

Next slide, please.

We then looked to do pros and cons and how these two sets of cornerstones might meet the goals and interests that I discussed earlier. And we concluded that both sets of cornerstones meet two key controls.

1: They meet the Commission direction, and we believe both would result in a process that could lead us to reasonable assurance that the strategic plan mission goals and outcomes will be met.

Next slide, please.

So doing pros and cons, these are the pros and cons for the hazards analysis-based cornerstones. And the pros:

They result in an oversight framework across NRC program areas that are very similar and that result in a simpler and more effective communication and understanding among people who are already familiar with the ROP;

They are organized in a way that licensees did the hazard analysis and controls development as they did their ISA;

The key attributes for the ISA-related activities are integrated into one cornerstone and that reflect the way the ISAs were developed rather then dispersed in one cornerstones and the other option;

And the cornerstones will be consistent across types of licensees, that is we would not for example have to delete criticality safety from certain licensees who don't deal with enriched uranium.

The cons:

Because of the complexity of the accident sequence initiator cornerstone, stakeholder communications regarding this cornerstone could be difficult;

The other is the accident sequence initiators cornerstone is not the same as initiating events; initiating events are only part of it in the ROP and might be assumed to be the same by some external and external stakeholders as a matter of communication.

DR. FLACK: I just really don't see much difference between the two in some way. I mean, in

either case something has to set the sequence off.

MR. COLLINS: Yes.

DR. FLACK: That's what you're looking for. And then you have some conditional probability that could change depending on the controls that could influence the likelihood of the sequence as well as it appears as a sequence. But still, you know I don't really see much difference. You know, it's just a matter of the way you're looking at it I think. But, anyway, that's just my opinion.

MEMBER SIEBER: Maybe that's why they're worried about.

DR. FLACK: What's that?

MEMBER SIEBER: Maybe that's why they're worried about it because people don't see much difference.

DR. FLACK: Yes.

MR. COLLINS: Next slide, please.

We reviewed the pros and cons of the operations-based cornerstone.

Pros:

They are organized along safety program lines similar to Part 70 and how licensees implement their safety programs;

They are easy to communicate with

stakeholders because they use day-to-day operations structured particularly in-plant stakeholders, operators and so forth.

The cons:

Key attributes for ISA-related inspections are similar across cornerstones, thus separating what might be come inspection into separate areas. For example, a failure in a design of a system could impact several cornerstones and thus could move a licensee across an action matrix for a single kind of a problem;

Another con is that we would result in two very different regulatory frameworks for oversight across the Agency, that is we would have one framework for FCOP and another for the ROP, when in fact having different frameworks is not necessary;

And cornerstones would not be the same across licensees, that is under the example criticality safety would be applicable to some and not to others.

MEMBER SIEBER: Would that change the severity of an event and a violation just because of the way we define it or it involves multiple cornerstones?

MR. COLLINS: I don't --

MEMBER SIEBER: Would that be an artifact of the structure or is that a result of the incident?

MR. COLLINS: The things that come to mind have me coming to the conclusion it would be an artifact of the structure. Because if you have --

MEMBER SIEBER: Which is what I was thinking, too, which isn't good, right?

MR. COLLINS: That's not good.

MEMBER SIEBER: Okay.

MR. COLLINS: That's the point, it's not good.

MEMBER SIEBER: So how would you deal with that? Does it just promote that?

MR. COLLINS: The operations-based cornerstone, and we've talked about that, we would have to consider that somehow in coming up with safety significance and in an action matrix. I mean, if you have a yellow in criticality safety and a yellow in chemical safety for the same failure, that may not be the right thing to do to give somebody two yellows and them move them, if we were to go that way.

MEMBER SIEBER: Yes. On the other hand since you brought those two up, I think I would get excited and upset if somebody had two yellow violations in that area. So, I'm not sure that's all

that bad but if I had a comment on the whole structure, it would be in this area.

CHAIRMAN RYAN: You know, the last one I guess I understand it, but I guess what are you going to do about it? Nothing is the answer. Different licensees are different, but a lot more than reactors. And, you know criticality safety really doesn't apply to natural uranium. So I don't know why that's a con.

MR. COLLINS: Well, it could be a con because people who deal with enriched uranium might have another cornerstone that could go bad and cause them to move across; maybe that's right, by the way.

MEMBER SIEBER: Yes.

MR. COLLINS: Maybe move across the action matrix in a way different then others.

CHAIRMAN RYAN: Well, it's different but it's appropriate for that licensee. So the appropriateness for the licensee is what I would focus on rather then the fact that, you know a depleted uranium licensee and an enriched uranium licensee are going to have differences in their cornerstone. You know, the common thread here is that they each have one that's appropriate for the risk associated with their materials and their system and the functions they are conducting with it, right?

MR. COLLINS: Yes, sir.

CHAIRMAN RYAN: Okay.

DR. FLACK: You know, when I look at the two, when I compare the two I really see that you can see things like the point that Jack brought up actually could play out differently, it could in some cases increase, some cases decrease. Because you're really looking at these things from two different perspectives.

I mean with this one you're really looking at the program and how it's safe and it divides safety criticality chemical as programs in and of themselves. Whereas, the one that you're proposing now looks at accidents. And accidents can happen in any different way, shape or form. And what you're interested in is preventing accidents and keeping equipment in place that in case you do have one, it's going to respond and it's going to be available to respond.

And it's more that kind of thinking on accidents, on how they can occur and how they can be mitigated versus what can I do to maintain a program, which is more like the way of the first set. Am I missing something? Is that pretty much the difference between these two; it's actually the way you actually see them through the cornerstones as being

fundamentally in a way different from one another?

MR. COLLINS: I would agree, yes. And we've tried to accommodate in the names, although we may not have picked the right names.

DR. FLACK: Yes. Yes. That's why I think this is a much better approach then the one you're proposing anyway.

MR. COLLINS: Next slide.

In summary, based on the internal stakeholder comment, we developed a hazards analysis-based set of cornerstones.

And we recognize that licensees would prefer the operations-based cornerstones because they believe that this set could result in better communication with workers and members of the public surrounding the facilities.

Any questions, any further questions or comments, insights?

CHAIRMAN RYAN: I assume that dialogue continues?

MR. COLLINS: Yes, it does.

CHAIRMAN RYAN: You know, on working through how that hazards analysis-based versus operations-based and maybe there's some continued work in that area.

DR. FLACK: Yes, I do have a question. It maybe comes out later on in the next one in significance determination process. But, you know when you did the comparison study between the ISA and PRA and I guess part of the SRM said well do the study, give it to the ACRS for review, which was done, there was a report written and so on. And that would help you enhance the process. Did that help enhance in anyway this process or the process you've talked about up to now? Not looking at the significant determination process because I think that probably had some bearing there, the pros and cons, but did it have any effect on your decision on the cornerstones that comparison study?

MR. COLLINS: It had an effect on how we developed the cornerstones and the thought process in coming up with key attributes.

DR. FLACK: Okay.

MR. COLLINS: And, unfortunately Dennis Damon is not here, but Dennis and I had a lot of communication, a lot of which you see here comes from the knowledge that he developed in putting that paper together. So he had significant input into what the cornerstones are and what's in a cornerstone.

DR. FLACK: Okay. So it fed back into

your development of the four cornerstones?

MR. COLLINS: And particularly in the hazards analysis approach to cornerstone.

DR. FLACK: Okay.

MEMBER BLEY: Mike, this is Dennis.

CHAIRMAN RYAN: Yes, Dennis.

MEMBER BLEY: Yes. I just wanted to add, I've appreciated the discussion and presentation. And I kind of like what you've done with the hazards analysis-based cornerstones, at least for me they hang together as a unit a little better then the operations-based cornerstones do when I look at them. And they're anchored to the thing we really are concerned about, which is the risk.

This issue Jack brought up about the possibility of getting multiple hits is interesting. I'm not sure at all how it shapes out. It's got some baffles. Either way it's an artifice of the way the things are organized. So that's worth some further thought and maybe some examples would be really helpful to understand the implications of it. But there doesn't seem to be really clear to me right now about that other then, yes, it is a possibility. That's it, Mike.

CHAIRMAN RYAN: Okay. Thanks, Dennis.

Jack?

MEMBER SIEBER: As I think about that too and what suggestion that a change is necessary, but I think it's a very -- or a clarification. Some more thought needs to be placed there and perhaps more clarification so there's no doubt in anybody's mind what it is you're doing.

MR. COLLINS: Thank you.

MEMBER SIEBER: But I haven't determined in my own mind exactly which is the best approach yet.

CHAIRMAN RYAN: And I think we've talked about a little bit, and correct me if I'm remembering this wrong, but you are planning a pilot activity you know once this gets a little bit more firm, is that correct?

MS. BAILEY: Well, I think that's something that the implementation is still something we need to work out.

CHAIRMAN RYAN: To work out.

MS. BAILEY: This is a high level concept that we're going to present to the Commission.

CHAIRMAN RYAN: Yes.

MS. BAILEY: And then if the Commission approves, we're going to have to have a lot of work to do with both our external and internal stakeholders to

develop the details. And part of that is the implementation.

CHAIRMAN RYAN: Okay. So that's on the agenda for down the line.

MS. BAILEY: Down the line.

CHAIRMAN RYAN: No, I understand.

MS. BAILEY: But that's on the direction we get from the Commission.

CHAIRMAN RYAN: Absolutely. Okay. Great. That's fine.

MS. BAILEY: And by the way, this is Marissa Bailey.

CHAIRMAN RYAN: Thank you.

MR. COLLINS: And with that --

MEMBER SIEBER: You want to take a break?

CHAIRMAN RYAN: If you like.

MEMBER SIEBER: If you want to.

DR. FLACK: Well, we're probably ahead of schedule.

CHAIRMAN RYAN: I think we're pretty way ahead of schedule. It's for a break at 10:30, which is 40 minutes from now.

So, okay, go ahead.

MS. KOTZALAS: Okay. Unfortunately, Dr. Damon is recovering from an injury and is not able to

be with us here today. So I will present the conceptual types of a fuel cycle significance determination process that we're considering.

We'll attempt to answer your questions, but it is likely we will need to take an action to take the questions back and provide you a response.

CHAIRMAN RYAN: Fine.

MS. KOTZALAS: Next slide.

One thing to remember is that the Commission has not approved for us to develop an SDP. However, we have integrated the knowledge that we gained from the ISA/PRA comparison paper and the cornerstones to identify three conceptual SDP types, and we will propose further development of one of those types as next steps in enhancements to the FCOP.

The SDP types are applicable to the ISA-related cornerstones and would be apply to either set of cornerstones that Doug just described.

For the non-ISA-related cornerstones the SDP will be a deterministic process similar to the deterministic evaluation within the ROP's SDP.

Next slide.

Okay. We began thinking about SDPs by identifying what the desired characteristics of it should be. And we determined that any SDP must be:

Realistic and accurate; practical and consistent. It must also be cost effective.

And with this in mind we considered three conceptual types which we refer to as: Deterministic, case-by-case and PRA-based.

In the next few slides I'll go over a general description of each type and give you the pros and cons.

First we'll talk about the deterministic type. This type of evaluation is a deterministic evaluation of the safety significance based on qualitative criteria, not actual numerical risk quantification. This process will be based on an evaluation of the reduced number and quality of controls and on the duration of the deficient condition. The revisions that are refined risk-index methods such as described in the standard review plan would be a part of the approach.

A pro of this type is that it is simpler and less resource intensive than the other two types and it recognizes the limitations of quantitative data and tools available and applicable to the fuel cycle industry.

The assignment of controls to general categories would be more objective than justifying

assignment of generic failure data to plant-specific controls.

And the last pro is that this type will be standardized, and therefore the significance evaluation will be more predictable and consist across licensees and the types of deficiencies.

Now a con to this approach is that it is least informed by best analysis and data available, therefore it is the least realistic and precise of the three approaches.

Next.

DR. FLACK: I'm sorry. Before you leave this, anyway I'm trying to understand a little bit further. The second bullet says "But would have similar risk and safety significance objectives to other types." To other types being the other types being using PRA in ISA and understanding the significance?

MS. KOTZALAS: The other types are, yes, the PRA-based and --

DR. FLACK: Right. So I kind of see -- you know how does one compare a deterministic process where you're going to be in many ways subjective on the way you pick things to a process that's quantitative and then end up with the same result?

Without doing the risk assessment you wouldn't know. But I just see a difference there.

Maybe Dennis -- I know probably Dennis and I would talk about this for a while at this point.

MEMBER BLEY: Dennis is here. Meaning Dennis Damon.

DR. FLACK: Yes. And also to both Dennises.

CHAIRMAN RYAN: And Dennis Bley, sure, why not?

MEMBER BLEY: Yes. Well, you know I think this kind of discussion probably is better after being built.

MS. KOTZALAS: Yes.

MEMBER BLEY: Because there are issues in the pros and cons that are worthy of discussion. And I think they're highly stylized and over simplified in that.

DR. FLACK: Right. Okay.

MEMBER BLEY: And we can talk about a little more if you'd like.

DR. FLACK: Okay. And with respect to cons, I would also add that this would be a more conservative approach because you would have to be, in a sense. And also completeness could be questioned.

I mean, there's other cons that I could come up with as to this -- and the margins. How does one know margins and so on, and how it degraded and going and finding it, and things like that. I just find there would be a number of cons. But that's --

CHAIRMAN RYAN: It seems to me that, you know these three slides of deterministic and case-by-case and the PRA are something we'll be thinking about. And I'm thinking we'll have you at our next meeting and, you know maybe when Dennis is back with us we can be prepared for a more detailed discussion and that kind of thing.

MS. KOTZALAS: Yes.

CHAIRMAN RYAN: Because I think, you know there's going to be a range of views on the strengths and weaknesses of each one. And, you know we'll have to be thinking about what we would want to advise about that and we want to be thinking about how that works. And of course, you've got stakeholder input from licensees and others.

So, I think we've recognized that it's a ongoing and somewhat complicated thought process to get through. So we appreciate that to have this opening discussion.

MEMBER BLEY: This is Dennis again.

I might not comment and just say from what John says to get a hint at where the problems are if we say the first one is more conservative but it also has some completeness issues. Well, if you have completeness issues, you might not be conservative. So there's a whole range of --

CHAIRMAN RYAN: Yes, that's right.

MEMBER BLEY: -- issues that really ought to be worked out in more detail. And I think that's almost worthy of a meeting itself.

CHAIRMAN RYAN: Yes. No, I think we may end up with that. But I think that's probably one of the core areas where we want to really understand your thought process in a lot detail so when we do offer advise in a letter we want to be fully informed.

MS. KOTZALAS: I agree. And I actually would appreciate further in more detailed discussions with the Committee on the types of SDPs. For it to be a beneficial discussion we do need to have our risk expert.

CHAIRMAN RYAN: Well, maybe we'll just take an action to have some more planning discussions after this meeting to think about how we would structure that, what we would want to talk about--

MS. KOTZALAS: Okay.

CHAIRMAN RYAN: -- and include and, you know what materials you have available to us and all that so we can plan a good meeting and get around that.

MS. KOTZALAS: Okay.

CHAIRMAN RYAN: Fair enough?

MS. KOTZALAS: Fair enough.

CHAIRMAN RYAN: Okay. Dennis, does that cover your thoughts as well, Dennis Bley?

MEMBER BLEY: I liked that a lot. I liked that.

CHAIRMAN RYAN: Okay. Thank you.

MS. BAILEY: So I think Margie will be reading slides from this point on.

MS. KOTZALAS: Okay. The next is the case-by-case type. And this type of evaluation is performed on a case-by-case basis and is informed by the ISA. The evaluations would be performed by the staff with information from licensees and will evaluate the significance of inspection findings when they occur.

The conservatisms in the ISA results would be adjusted using standardized guidance and data and needed. The staff considers this type to be a simplified quantitative method.

Some of the pros of this type are:

The significance would not be as accurate as a PRA-based, but would provide order of magnitude results and this order of magnitude is really what is needed for an SDP to determine the four categories, the very low, the low to moderate and onward;

This type would be standardized and therefore the significance evaluation would be consistent across the licensees;

It will be less resource intensive than PRA-based type since we would be doing this on a case-by-case basis as the inspection findings were made;

And this type would be more generic and simpler than plant-specific.

Now con is that:

The quantitative risk-technology for fuel cycle is not sufficiently developed and significant resources would be needed to evaluate the significance of inspection findings.

And another significant con is that once we have an inspection there is a limited amount of time that we have to make a determination of the significance. So any technical difficulties that we would run into in evaluating, you know finding the data and determining the process might preclude this

type of evaluation providing timely support of an ongoing oversight process.

Next --

MEMBER BLEY: Dennis Bley.

I agree with having a bigger discussion later, but there's a number of myths that are imbedded in these things that are a little troublesome. And, you know the truth is if you really do a good qualitative job, that's a great deal of what you need to do on a PRA-based approach. The PRA is absolutely developed. Well, there's been a lot of PRA process facilities around the globe It's not that it's a bugaboo.

And I like their case-by-case because that's really what PRA is. You do it to the depth that you need for the situation and for the possible consequences.

DR. FLACK: Well, I was just going to add that all these cons, you know you look at them and at one point reactors were in the same stage of development. I mean, they didn't have the PRAs. They would use the same sort of items and say it's going to be too expensive, it's going to cost us. And now I mean we're in a whole different paradigm with PRAs and reactors. And it's just a matter of growing through

it. But, you know keeping it as probably the best way of going, I would think. But that was just a comment.

CHAIRMAN RYAN: Well, I'm thinking to add to the more detailed meeting later, you know one of our members, Dr. BAnerjee, has done an awful lot of work in this kind of hazards analysis in the chemical industry.

DR. FLACK: Yes.

CHAIRMAN RYAN: So maybe his insights would be helpful and we could shape some more additional discussions on this topic with that added input.

MEMBER SIEBER: Yes. I do think there is sort of a difference between reactor-type PRAs and chem plant-type PRAs because reactor you only have what's the accident. You melt the core and you release it. In a chemical plant you don't have that kind of very severe accident and you have lot of little smaller accidents which would be chemical safety, radiation safety and so forth. It really doesn't in my mind lend itself to a single PRA, but a bunch of little PRAs that have a lot of elements to them with very little standardization across the industry. So it's not clear to me that PRA may have some precision to it provided you have the database to

support it to know what the risk really is. But it's not clear to me that it's worth the effort.

DR. FLACK: Well, I think you'd need small PRA in any case. One of the questions, of course, would be with all these processes which are the most risky processes.

MEMBER SIEBER: Then you got to decide what thing you don't want the most. You know, do you want some guy hurt or do you want him overexposed?

CHAIRMAN RYAN: Well your key point, Jack, which I think to me is at the root of it having worked in facilities that were both radiological and chemical, you know in terms of mixed waste treatment, it's a very different animal than a reactor where the big accident sequence is the same and the reactor melts, for whatever reason. There's lots of ways it could melt.

So, I think that trying infuse some of the smart ideas that we're hearing a little bit about today and we'll hear more about is really the right track. Now whether we're going to be a 100 percent happy all around and we're going to be in a learning environment, I guess is the best way to say it as it gets developed and implemented. And I think if it's approached in that way, it could be done. And I think

that's where you end up getting to the point that John made, is that you end up with a smart approach to PRA in this area.

MEMBER SIEBER: And I plan to keep an open mind with regard to whatever the staff decides.

CHAIRMAN RYAN: Yes. Me, too at a future meeting. We probably ought to think about perhaps getting some licensee stakeholder views on how they're thinking about it because they're the owners and operators of these facilities. So if you had dialogue with them or we could be engaged with them a little bit on their views, that would be helpful to us.

DESIGNATED FEDERAL OFFICIAL WIDMAYER: You either lost Dennis or you've got somebody new.

CHAIRMAN RYAN: Did we have somebody else join the phone call besides Dr. Bley?

MEMBER BLEY: No. Dennis just clicked in and maybe that's what you heard.

CHAIRMAN RYAN: Okay. No problem.

MEMBER BLEY: But I got a thought on this last discussion.

One, the advantage of PRA isn't precision. The advantage is considering a broad, integrated look that incorporates and encompasses uncertainty.

Two, there's a lot of small accidents that

you could model it around the reactor but need to limit it in low-consequences. It's chosen not to model those in detail because they don't effect the overall risk. That's one of the things that are getting in our way here is we think we have to model both consequence events at the same level that you model others. It's not true.

CHAIRMAN RYAN: Okay.

MS. KOTZALAS: Okay. Now I'll discuss a PRA-based type of SDP. And this type of evaluation is based on a fully quantitative PRAs that would be performed before the SDP process is applied. It's analogous to the SDP and the ROP. It would require a full PRA for all processes at all facilities.

This type would also require inspection notebooks or similar guidance. And these PRAs would be performed by licensees due to the great variety of processes and designs and their unique in proprietary nature.

A pro of this approach is that it would be based on each licensee's PRA. Therefore, it would use the licensee's best information and analysis. It would be performed ahead of time and therefore the results would be readily available to the staff when the inspection finding occurs. Thus, the significance

evaluation would be based on a higher quality of risk information then the other types, and so the results would be more realistic.

A con is that this type would likely require prohibitively large resource expenditures for both NRC and licensees to develop and implement. This is partly because the tools and data for fuel cycle PRAs would have to be developed, but also because large resources would be needed to the relatively large number and variety of processes to be evaluated.

Another con is that the PRAs would not be standardized because each licensee would carry out its PRA differently. Therefore, the SDP may not be consistent across licensees. And NRC development of standards, tools and data would help, but it would require extensive resources in time.

And the final con is that the quantitative risk technology for fuel cycle is not sufficiently developed to support this type of analysis. To support it failure data would need to be developed, computer analysis capabilities for a wide variety of fuel cycle risk phenomena would need to be developed and probabilistic variation of magnitude of criticality events, chemical releases and weather would also have to be developed for fuel cycle

situations.

The next slide.

So based on a careful analysis of the pros and cons and the realization that resource expenditure in the future are going to be very difficult based on a flat or declining budget, the staff is going to recommend developing a deterministic SDP. The industry generally supports this recommendation, however both the staff and the industry understand that further discussion of the development of this method is needed.

CHAIRMAN RYAN: Thanks very much.

Well, we're at a point where we're going to have Jonathan with some additional materials and conclusions and recommendations, and then stakeholder comments. But just to recognize the time, why don't we take a 15/20 minute break here and we'll come back at, say, 10:20 and then finish up with those two presentations. Is that suitable to everybody?

All right. With that we'll stay adjourned until 10:20.

(Whereupon, at 9:57 a.m. off the record until 10:23 a.m.)

CHAIRMAN RYAN: All right. Could we come back to order, please?

And with that, Margie, I turn it back to you I think.

MS. KOTZALAS: Okay. I would like to now turn it over to Jonathan --

CHAIRMAN RYAN: Okay. I'm sorry. To Jonathan. Yes, that's right. Very good.

MR. DeJESUS: In the next couple of slides what I'm going to do is present the staff's conclusion and recommendation. And I first would like to start with and restate the direction that we got from the Commission. The concise paper comparing ISAs and PRAs, that would be the ISA/PRA comparison paper.

It made the modest adjustments to the existing oversight process to enhance its effectiveness and efficiency. That's the corrective action program method.

Develop a set of cornerstones that could be applied to the FCOP.

And the Commission said that once the cornerstones are developed and the ISA/PRA paper is complete, that the staff should provide the Commission an assessment of the work accomplished and the recommendations for next steps. And that's basically our direction for the SECY paper that's due in early October.

And with that, we're proposing this set of elements as the recommendations for next steps. At first this addresses the cornerstones placed to further develop all cornerstones in the hazards analysis-based option.

And then we're proposing to begin use the concept of performance deficiency and then develop the deterministic type of SDP. And also develop a performance assessment process based on the more objective and predictable SDP, and that includes the action matrix and considers the crosscutting areas.

And develop of a supplemental inspection program based on licensee performance, and further revise the enforcement policy to address that change from severity levels to the significance levels of very low, low to medium, substantial and high significance.

That's basically the staff's presentation and recommendation to the Commission.

CHAIRMAN RYAN: Any questions? Dennis, do you have any other comments or questions at this point?

MEMBER BLEY: No, no additional comments.

CHAIRMAN RYAN: Anything else?

DR. FLACK: Well, I'm just looking at the

conclusions and recommendations. I don't see the word "risk" at all in any of them. And, in fact, I see PB and deterministic, and then the performance assessment is going to be based on that, which that means that it's based on deterministic-type of analysis. And then everything flows from there.

Well, I guess that raises the question what, if anything, had the comparison ISA/PRA paper brought to the table on these conclusions and recommendations and all the discussions that took place there? And I understand that there were some good insights in developing the cornerstones. But in coming to these conclusions and recommendation did it play any role at all in making them?

CHAIRMAN RYAN: I guess I would simplify your question from my point view, too. Is this going to be applied in a deterministic way to the licensees? It sounds like the answer is yes.

MR. DeJESUS: In a qualitative way of doing things. And the ISA/PRA paper came into place in one of the types that we considered for the significant determination process, and that's the case-by-case basis. And when Dennis Damon developed that paper, that's the basis for that case-by-case type SDP. And that's his example in section 5 of the

paper, it's basically how the case-by-case SDP would work.

CHAIRMAN RYAN: I mean, I understand that part. But in terms of implementation there's going to be no further treatment of risk significance or risk information and how it's applied by staff.

MR. DeJESUS: And will the cornerstone as we revise the --

CHAIRMAN RYAN: That's not my question. We have a basis in risk for some of the things you've picked, but the way you're going to use them is completely deterministic. Is that fair or not?

MR. COLLINS: Let me put that off for Dennis. But when Dennis uses the term "deterministic" and what margin he talked is it has inputs and some of the thoughts that come from the ISA/PRA paper. Part of that developing, what we might call deterministic, seeks and intended to use some of that information. But it's not well flushed out. And, you know when Dr. Damon talks about it, you can tell that it's not just "if then," "if green go this way." I mean, there is some of that in what he considers and what he's briefed management on to be deterministic. So it's not totally --

CHAIRMAN RYAN: Yes. And I think that

detail of how risk is considered and used is really what the Committee is probably most focused on at this point. Because it's not -- and we understand that this is developing process, but that particular point is going to really shape I think how the Committee views the overall process. Because until there's some common understanding of how its used. I mean, not used as a basis for a deterministic process, but integrated into the process that's used that will shape the Committee's views, I think. At least that's my opinion of how the Committee with react, and it's certainly my own reaction.

I'm broad and open-minded to thinking about it, but if we end up with a deterministic process, how are things change very much. And the answer is not probably a whole lot. Because as facilities get designed, developed and built the things you based your initial thinking on will probably evolve over time. I haven't seen one that didn't.

MS. BAILEY: Yes. I think that what we're proposing is not a deterministic process. That it is a risk-informed process. It allows for a systematic way of improving and right-sizing an inspection program for that facility based under their

performance. And it is going to be using risk insights as part of that continuous improvement loop that I think Jonathan showed in the conception --

CHAIRMAN RYAN: Yes. At the beginning of the presentation, that was very clear. But here at the end I think the point that there really isn't any recognition of kind of risk concepts in the conclusions and recommendations, it sort of stopped flowing through the whole discussion, it sort of ended just before this. So maybe it's a matter of terminology.

MS. BAILEY: I think it's a matter of terminology. I think now that probably the use of the word "deterministic-type SDP" might be a misnomer. Because it's not devoid of risk information. It is based on risk information and maybe it's at a qualitative level, but we are using this --

CHAIRMAN RYAN: Well, I think it's very helpful, it will be for the Committee to hear how the risk significant information is carried through the entire process.

MS. BAILEY: Okay.

CHAIRMAN RYAN: And how licensees will use that kind of information as well as the other to come to decision making and compliance programs and all the

rest.

DR. FLACK: Yes. And if I could just follow-up on that a little bit.

When I think of deterministic I think of it as either it's black or black, it's yes or no. It's very specific. It's either you meet it or you don't meet it. And so that's fine I think if you have all the answer. It's fine if you're not concerned about too much of the consequences if you're wrong. Or, you know when you do the PRA you're also dealing with the fact that you don't know everything. And there's a certain amount of unknowns that you understand are there but you can't treat it in a model. It's there and you have to deal with that separately. But it gives you a field of framework in which to understand what you do know and then what you don't know.

And so with deterministic it's like trying to define everything and then saying whether you meet or not. And it kind of makes it very narrow in a sense is because people then look at it as okay, this is all I need to do. I just need to meet these things. And then if I meet them, I'm okay. And that's why in reactor space we moved away from all that.

You know, you had design-basis accidents.

You met your GDCs. You met your -- and that's it, you're there, you're good to go. Then we're finding out that that wasn't all there is to the story. There were a lot of things there that were driving the risk that were not being captured.

CHAIRMAN RYAN: I think --

DR. FLACK: Well, I can go on with this.

CHAIRMAN RYAN: I gave you time to talk a lot about this.

DR. FLACK: But anyway, I guess that's my feelings on it.

CHAIRMAN RYAN: Okay. Appreciate that. You know, it's useful to go back and think about the history of it, but we want understand how they're looking at it, too.

DR. FLACK: Sure.

CHAIRMAN RYAN: Jack, do you have any thoughts or comments?

MEMBER SIEBER: Actually, none beyond what I've already said. And I would caution about the terminology a little bit because you don't want to use words that would imply that you're risk-based when it isn't, if you know what I mean.

You know there are advantages to deterministic determinations. For example the setting

of the relief valves and so forth are all deterministic and they're relatively simple. And it is black or white and from the standpoint of regulating a facility where the hazards are confined to the facility in all the cases there is deterministic kinds things are appropriate.

On the other hand, I think that what the staff has done is looked at all these options and try to define how they would set up a fuel cycle regulatory system where you would define these things. And I think they've gone pretty much to the right degree in this presentation as to how they would modify the process to make it similar to the processes in which they were used for reactor plants and so forth. So you don't end up with a lot of turffology issues that sort of obstruct the understanding by people with familiarity of one section but not so much with another section.

So, I think that all of this is going to take some compromises to develop a system that's consistent with the Commission's direction and provides the goals that we want to see.

So my overall feeling so far is that the staff has done a pretty job of naming these issues and pretty much headed in the right direction. But I'm

sure by the time that the full Committee hears this, there will be some details that we want to discuss further.

CHAIRMAN RYAN: Okay. Well, great. Thank you very much.

With that we have a briefing --

MEMBER BLEY: Can I --

CHAIRMAN RYAN: I'm sorry, Dennis. Yes, please.

MEMBER BLEY: This last discussion makes me want to say just a couple of things.

I think you did miss an opportunity in the conclusions and recommendations, and one that you shouldn't miss that will be helpful to you, to point out the somewhat -- of revised -- I think you missed an opportunity --

CHAIRMAN RYAN: Dennis, are you on a speaker phone?

DESIGNATED FEDERAL OFFICIAL WIDMAYER: He's on Skype.

CHAIRMAN RYAN: Are you on a speaker phone?

MEMBER BLEY: I can make it better in just a second.

CHAIRMAN RYAN: Okay.

MEMBER BLEY: Usually this works out great.

CHAIRMAN RYAN: Well, it's breaking up quite a bit.

MEMBER BLEY: Let's see if this will fix it. Just a second.

Okay. Is that any better?

CHAIRMAN RYAN: That's fabulously better.

MEMBER BLEY: Okay. I'll stay with it. I don't know if you heard anything I already said.

CHAIRMAN RYAN: Start over.

MEMBER BLEY: My basic comment was that I think you've missed opportunities. You missed opportunities in the conclusions and recommendations to point out that the hazard analysis-based option takes you more on a parallel with the -- that it has some risk-informed features that are attractive to people that are interested in that factor.

And three -- the deterministic-type SDP, you even said some words about how you're including some risk information there. And I'm saying -- and Dennis has offered --in his previous example.

The real places from risk information are important that are on the kinds of events that an lead to offsite health effects. There are very few of them

for most of these facilities. So if it's a dose kind of things, it's not necessary.

That's a quick summary.

CHAIRMAN RYAN: Well, thank you, Dennis. We still had a little bit of trouble, but a little bit less with your new audio hookup. So we're better informed about your thoughts.

With that, I think that finishes the staff's presentation. We do have a scheduled presentation from Mr. Gerard Couture from Westinghouse. Are you with us? Please come out front and we're happy to listen.

CHAIRMAN RYAN: And we got to do something with the phone. It's buzzing and cracking. It sounds like lightening going off. We need to do something about it.

Okay. That's sounds a little bit quieter.

MR. GERARD: Okay. We ready?

CHAIRMAN RYAN: Yes.

MR. GERARD: All right. Well, thank you.

My name is Gerard Couture. I'm the Manager of the Licensing and Regulatory Programs Group at the Westinghouse Columbia Fuels Facility. And I'm here today to offer some stakeholder input from the NEI perspective on the fuel cycle oversight process that's

under discussion.

The next slide.

CHAIRMAN RYAN: We have the next one, so--

MR. GERARD: Okay. Thank you.

Again, from the licensee's perspective, and we believe the staff also recognized this, that there was really no safety deficiency with our current oversight process. Our facilities have been operating safely for a long period of time, and continue to do so. I always like to inform my friends in the reactor community that we had manufactured a fuel before they could ever take their reactor operational, so we were there first, if you will.

NEI, and we are a little bit concerned about the revolutionary approach and want to make sure that the resource intensiveness and overly complex approach that's being looked at for this hazards analysis-based/accident initiator-based approach, we want to make sure that we use a smart application of both the Nuclear Regulatory Commission's and the licensee resources.

We believe that the Commission's Directive can be best approached through an evolutionary and structured minimal increase in both NRC and licensee resources.

And I notice we did base our slides off our August meeting and we did have some concerns with the definition of performance deficiency. But we see the staff choose not to repose that today, so we'll just let that go. And obviously that's something that needs to be worked out as well as the significant determination process. Both of those have to be clearly articulated and understood by both parties.

We believe that NRC and industry are essentially aligned on the importance and use of effective corrective action process.

Industry is willing to generate a guidance document for NRC endorsement, similar to what was done on the reactor side of the house. Once if the Commission provides direction and NRC resources are made available to support that effort. So that I think is something that I believe was essentially agreed to at our last meeting with NMSS.

Pertaining to the cornerstones, we are concerned with the complexity and the public's ability to understand that process, especially the accident initiator process, the hazards analysis-based. And I'm glad to see that our previous input was addressed and that they're not proposing the use of the color code system. So that's good, because obviously the

risk profiles in the reactor and fuel cycle facilities are not even close to comparable. And so we support relying solely on the descriptive terms, very low, safety significance; very similar to what was proposed today.

We do believe that it is important to better integrate the ISA knowledge and understand the risk significance of the plants' conditions. I would say that our ISAs are very much risk-informed. We have a much better comprehensive understanding of the overall risk for a given process or a given operation today than we did prior to pursuing the development of the ISAs. So I think that there's a certain risk element that's been recognized by both the NRC and the licensees.

CHAIRMAN RYAN: Just a question on that if you don't mind. And does that come from sort of, you know a component unit operations integrated system operations perspective, you can kind of carry it through those well as complexity or --

MR. GERARD: Well, most of the ISAs are based on a pretty thorough process hazards analysis which includes all of the various safety disciplines as well as the operational staff, you know where appropriate.

Now you got to understand, and I'll just speak from our facility, we have a pretty intensive chemical operation.

CHAIRMAN RYAN: Yes.

MR. GERARD: We also have a pretty expansive mechanical operation. So the tools, the process hazards analysis tools that lend themselves well for our conversion process which were the standard chemical industry process, PSM-type process, you know where the correct tool to choose for that type of operation.

For the mechanical operations, you know we come to found that the "what-if" type scenarios, and that more basic "what-if" type analysis from the hazard analysis perspective worked itself much better to look at the various accident initiators, what could occur and what types of controls we could put in place. And, of course, a lot of that integration. You know, because there may have been controls that as a safety analyst I would want to have in place, but my chemical safety analyst is saying well that may help you but it's going to hurt me. So you got to look at the trade-off and you got to make sure that you pick the best control that provides the most protection for, in our case, most of our facility workers.

Because we don't really have any accidents, bar a couple, that would have any potential for an offsite impact. So I think --

CHAIRMAN RYAN: I think that's one example of where the integration is really the key to balancing all the components with regard to the risk and the safety that you end up finding the appropriate level. Is that a fair conclusion on my part?

MR. GERARD: That is very much a fair conclusion. And that's one of the reasons that we like the operations-based approach because that's -- if you will, I'm looking at the other one and I don't really have a good slide for it. But, you know I kind of viewed swapping over to that accident initiator-based one that that's like a human error precursor for all of my knowledge workers in the plant, who I rely upon day in and day out to perform the 70/72 change reviews, who would do the updates to the hazards analysis, who understand the control schemes and what they're there for. I'm introducing a whole new concept after having training them for about ten years on here's how we're going to proceed with business. And here's how we're going to integrate this.

So, if you did a thorough enough hazards analysis, you will identify all those defense-in-depth

things, you will learn your process, you will make changes to your process. And I would say that we, and most of the other licensees, did the same thing. So there's not a knowledge gained in the development of the ISA, probably comparable to the knowledge gained by the reactors when they did the PRA-type analysis.

CHAIRMAN RYAN: Thank you.

MR. GERARD: Again, we think that there's an opportunity to gain some efficiencies in the baseline inspection program based on whichever cornerstone you go with.

Some other recommendations. We'd like to see a more timely review of our ISA updates. I know Doug mentioned that when he was giving his presentation. You know, annually we submit these are the process changes that we've made to our facility, these are the changes to the ISA summaries. And we submit those to the NRC. Pretty much everybody does it in January. We think they could do something there to change that timing, focus on timely reviews versus everybody submitting all their documentation in the same month.

CHAIRMAN RYAN: So what's the typical time for you to get feedback on those submittals?

MR. GERARD: It can run from three months

if they were minor to eight months if they were not minor. Now I can only speak for myself. We turned in -- I think our average number of changes which are evaluated range around 800 a year that add potential to impact the ISA. And then of that, you know some -- probably half of those may make some changes to the ISA summary. So it's a very robust process that we perform as part of our change management review. And that can include we've got to go redo that what-if analysis that was performed initially. So, you know the what-if analysis or the hazards analysis that was performed when the initial baseline ISAs were done back in the 2000/2004 time frame may look nothing like what it looks today because we made substantial changes.

CHAIRMAN RYAN: And I guess there's got to be some safety significance or risk significance to some of those 800 versus all the 800. A fraction of kind of major really significant ones out of the 800 per year, would you say?

MR. GERARD: Yes. Well, I guess it depends on your term of "significance." To me anything that's impacting my criticality safety program, which is my highest risk for my own facility workers is very much a safety significance. So we

have several, probably a quarter of those that could impact that.

CHAIRMAN RYAN: So about 200 might be in the criticality safety area?

MR. GERARD: Right. And if we're doing a major process change for a new product line or for a new customer, okay, then that can change even more. So it runs year-to-year. You know, we have to do especially on our manufacturing side because there's a lot of changes that can get made over there based on our products.

CHAIRMAN RYAN: Thank you.

DR. FLACK: And these changes you're describing are really changes that affect the?

MR. GERARD: The IROFS. These are changes that potentially can affect the IROFS or they can affect the accident initiators, accident sequences. You know anything. They could impact the hazard analysis itself.

You know, we'll do targeted revisions to hazards analyses based on some modification because you're changing some enabling condition or some initial condition, or something else that may impact the baseline assumption you made in that hazard analysis.

DR. FLACK: Which means that you would have to either add an IROF then at that point maybe?

MR. GERARD: The template if you end up exceeding performance requirements.

DR. FLACK: Right. I mean, it could go either way, right? I mean, you could have things where you could take them away. But in any case it seems like it would all lead back to adjusting the IROFS somewhere along the line, right? I mean, either adding or taking away?

MR. GERARD: If the IROFS need to be adjusted, yes. In some cases they may not. It some case that IROF may provide production or in some cases you may analyze it and determine that you're never the intermediate or high consequence events, therefore you won't apply IROFS, but you'll certainly apply controls.

DR. FLACK: And do you continuously look at your plant in coming up with, say, a sequence that you didn't recognize before and now you believe you would need to add an IROF because when you did your ISA, I mean there's always a question of completeness in these ISAs, right? So you're going to look at this and say "Gee, nobody thought of that one before. Maybe now let me go calculate it. I find out I'm not

meeting the performance criteria. I need to add an IROF." Does that happen.

MR. GERARD: I guess I could make the same arguments for PRAs.

DR. FLACK: Oh, yes. Absolutely.

MR. GERARD: And as we do our change review process we're looking at that baseline analysis, that hazards analysis, that safety evaluation as it goes through it review and approval process, there's always that opportunity.

DR. FLACK: But there's the difference between PRA. Because, I mean you have a set a safety-related equipment that doesn't change. You could enhance safety by adding things in. But here it's required to meet certain performance criteria. There's no requirement in reactor space that says you have to meet this performance criteria with respect to consequences and likelihoods. I mean we have the safety goals, which is a goal, it's a policy. It's not an explicit regulation. Here it is, right.

So you really need to identify --

CHAIRMAN RYAN: Is that correct?

DR. FLACK: That's the way I read it. I mean, tell me if I'm wrong.

MR. GERARD: Yes. We have to identify any

accident scenario that could result in an intermediate or high consequence event to the various --

CHAIRMAN RYAN: Right. Okay.

MR. GERARD: I mean, we have license commitment to do that.

CHAIRMAN RYAN: Right.

MR. GERARD: It's in the regulatory framework.

DR. FLACK: Right.

MR. GERARD: So that's the minimum that we do.

DR. FLACK: For reactors we have, of course, benefit analysis and backfit that we would have to do. But here you don't I think, right? You still have to come up with that?

MR. GERARD: We have to demonstrate --

DR. FLACK: Right. It's a lot different.

MR. GERARD: That's correct.

Another suggestion that we made, and again you'll see a footnote here in March of this past year, we did provide some input to the staff on what we thought would be some recommendations to enhance the oversight process.

CHAIRMAN RYAN: Right.

MR. GERARD: And one of those being an

annual licensing performance review. It should be easily understandable for all of our stakeholders. There's nothing that's more painful then to having gone through an LPR for the current process and then have people ask me what exactly does that mean? We shouldn't have to explain what that means is the point of that particular role.

If you look on this slide here, these are several of the initiatives that several of which were underway probably before the fuel cycle oversight process got underway that either we had contacted NRC or from the course of different activities and conferences, et cetera, are different things that we've identified, regulatory initiatives, rulemakings. Several of these regulatory initiatives we think may actually help us enhance some safety. So we'd like to see some stuff, you know the industry would like to see some work there more than we would really like to see it in the oversight process. There are other initiatives out there that we feel if you want to make a benefit argument, there'd be more benefit to the cost of pursuing some of these other regulatory initiatives.

And then on top of that you've got you've got a large suite of rulemaking also underway.

CHAIRMAN RYAN: Just out of my own areas of interest, I'm curious what your thoughts are on the 61 rulemaking to risk-inform low level waste regulations. What would your views be there?

MR. GERARD: For that one I would pass it to my friend Janet because I'm a fuel cycle. I manufacture fuel. That's outside my realm of -- Janet, you want to answer that one? No?

CHAIRMAN RYAN: You want to save it for another day, that's fine, too.

MS. SCHLUETER: Yes. Exactly.

CHAIRMAN RYAN: All right.

MR. GERARD: All right. Okay.

CHAIRMAN RYAN: But it's on your list?

MS. SCHLUETER: Oh, yes. It's on the page.

MR. GERARD: And then as part of my industry summary, I'd just like to flip back. So I was trying to take some notes because unfortunately I was on travel and I did not get a chance to see the presentation that Doug provided here. If you go back to the slides where he talked about the pros and cons for the hazards analysis-based cornerstone, and then the slide was the pros and cons for the operations-based cornerstones. From a licensee perspective, and

I agree with you there's probably a lot of pros and cons on there that probably weren't listed. But I would say that the second bullet under pros for the hazard analysis-based organize in a way licensees did hazard analysis and their controls development would be just as applicable for the operations-based cornerstone. I don't really see any difference. In fact, I would say it's more aligned with that one than it is with the hazards analysis-based cornerstone. Equally applicable.

CHAIRMAN RYAN: To the point where it might be terminology more than anything else.

MR. GERARD: Yes, that may very well be. Yes.

CHAIRMAN RYAN: Okay.

MR. GERARD: So I just wanted to point that out.

And then on their summary I thank the staff for recognizing that licensees would prefer the operations-based cornerstone which we're going to talk -- if the Commission provides that direction.

I think I would have to add two points. I think I already mentioned the knowledge work for issues that we'd have to deal with. And then there's also not only our workers and our members of the

public, but another key stakeholder for us, of course, is our corporate partners, our management structure. And again, the international facilities that we're on a competition with on a day-to-day basis, okay? And to use one of our partners, Westinghouse Fuels Facility Vasteras, okay, their environmental health and safety department which is equivalent to me, deals with an entirely different framework of regulations then we do here in the United States. But we can get through that and we can work together on continuously improving our environmental health and safety program because we all understand the operational safety cornerstones.

So, you know when I'm working a corporate level and with my partners and my partners overseas, the fuel fabric facility that we deal with, like NFI, we all understand those core basic safety program elements. If I start to deviate from that, it's going to add another level of confusion, especially for international companies such as ourselves and I'm sure AREVA has the same issue. I didn't get a chance to talk to Bob about that, but I'm sure they'd have the same issue because you know everyone is working off the same page. And you go introduce another level of complexity for my management structure and how to deal

with my peers, you know that's just one more thing I got to worry about, one more place I can make a mistake, which I don't like making mistakes.

So I would add that as another piece of that why we would prefer the operations-based cornerstone.

DR. FLACK: Having said that, do they also do ISAs at all?

MR. GERARD: They do some hazards analysis. We've had our friends from Japan have been to look at CR ISA, and they're looking at doing some of that. And everyone -- you got to remember that I have, just to give you a rough ballpark number, I've got 1100 IROFS. A 1,000 of those are safety IROFS. So I've got a small percentage there that are not for safety. So that both of my IROFS are for safety-related.

Off of us do very similar, the same style safety evaluations. So we have a very consistent -- you know so if I have to provide resources to support a safety function at one of our other facilities, we can do so. And the same thing even in chemical safety here in the States. You know our Ogden, Utah facility is probably one of the biggest users of HF in the United States. So we can share chemical safety

information. There under PSM we have similar type process set up to accommodate our chemical hazards. So we can cross-calculate, we can utilize their expertise and vice versa. So again, the safety cornerstones is something that we as a none -- you know we are primarily a chemical and a manufacturing operation which a happens to be nuclear, so we have that extra added emphasis on criticality safety in our particular situation. Of course now the enrichers and everybody else, they got different. But the key thing is is that's a set of cornerstones that all of us can comprehend, all of us can work to. So that also I think comes into play. Because you don't want to get your safety professionals off target.

DR. FLACK: But I mean, and having said that, you'd still be double contingencies.

MR. GERARD: Absolutely. And they understand double contingencies.

DR. FLACK: Yes. So right there, that's criticality in any case. They're going to have to meet that. Now this is laying on top of that. Okay. Now that you have that in place, what else could go wrong?

MR. GERARD: That's parallel double contingencies making sure that you've already identified --

DR. FLACK: Exactly. But that's knowing all the answers and having all the solutions. If you can speed that complete, then I mean everybody could go home almost. We could say it was safe enough, right?

MR. GERARD: We do --

DR. FLACK: I mean that's what PRAs in the past have said we're not. We don't know everything. And I'm back on the soapbox again, right?

MR. GERARD: Understand.

So again, overall industry believes that incremental changes to the oversight process are probably the most appropriate and likely achievable within the existing resources or with a minimal increase in resource in the absence of any real true identified safety concerns. That's a key. You know, we're not dealing with some safety concern that we got to go fix.

NRC and industry need to prioritize this NRC lead effort in view of the numerous ongoing regulatory initiatives, some of which again I mentioned starting before the oversight process. And we consider them a little bit high priority. That said, if the Commission decides to go forward, you know industry will do what we can to make sure

everyone's successful. We obviously want to be successful.

CHAIRMAN RYAN: I guess, at least at this point in my mind I think these are two very important observations that the rollout or implementation, however you want to look at it, of a newer program like this that adds features and maybe supplements other features is really going to take some, I guess, cultural adjustments is the best way to think about. It's not something you just get a manual and have a training session, it's all done. It's going to be I would guess years to get comfortable. Okay, we now understood what was asked and we've now developed and learned and adjusted and modified and readjusted. And we feel like we're not at the place where we need to be. And that's where I would be if I was in your shoes. Is that a fair way to summarize it do you think?

MR. GERARD: I would say so, yes sir. Definitely.

CHAIRMAN RYAN: All right. Well thank you very much. Your comments are welcome and we appreciate you being here today.

MR. GERARD: Well, thank you for allowing me to speak. Thank you.

CHAIRMAN RYAN: Let's see, with that we're kind of in a wrap up stage. Are there any other comments from the staff? Jack, any further comments?

MEMBER SIEBER: None for me.

CHAIRMAN RYAN: Dennis?

MEMBER BLEY: Yes, just one and it's come back, something we wrote in our letter back.

For most of these facilities, and certainly for most of that -- these kind of facilities, you know to have the potential offsite consequences -- I'm sorry. I got this microphone and I forgot to use it.

CHAIRMAN RYAN: That was a bummer there.

MEMBER BLEY: Anyway, backing up. For most of these facilities we have little or not potential for offsite consequences. And for those kinds of events PRA is really not the right tool. For the ones that do have it or for those few events that do have the potential for offsite consequences, I think we mix up those two things too often in these discussions.

So, I think for -- you know, the gentleman that was just on, I think probably for his facility I'd probably agree with everything he said. I think for some others, I think there's a need for a little

more thorough kind of look along the lines that John Flack was talking about. But I think we need to make that kind of distinction. That's it.

CHAIRMAN RYAN: All right. Thanks very much.

With that, hearing no other comments or input, we'll adjourn the meeting. And we thank everybody for their participation.

Thank you.

We're off the record.

(Whereupon, the Subcommittee was adjourned at 11:03 a.m.)

U.S.NRC

United States Nuclear Regulatory Commission

*Protecting People and the Environment*

# ENHANCEMENTS TO THE FUEL CYCLE OVERSIGHT PROCESS - STATUS

Presentation to the ACRS Subcommittee on Radiation Protection and Nuclear Materials

September 23, 2011

Margie Kotzalas

Acting Chief, NMSS/FCSS/TSB

# Commission Direction

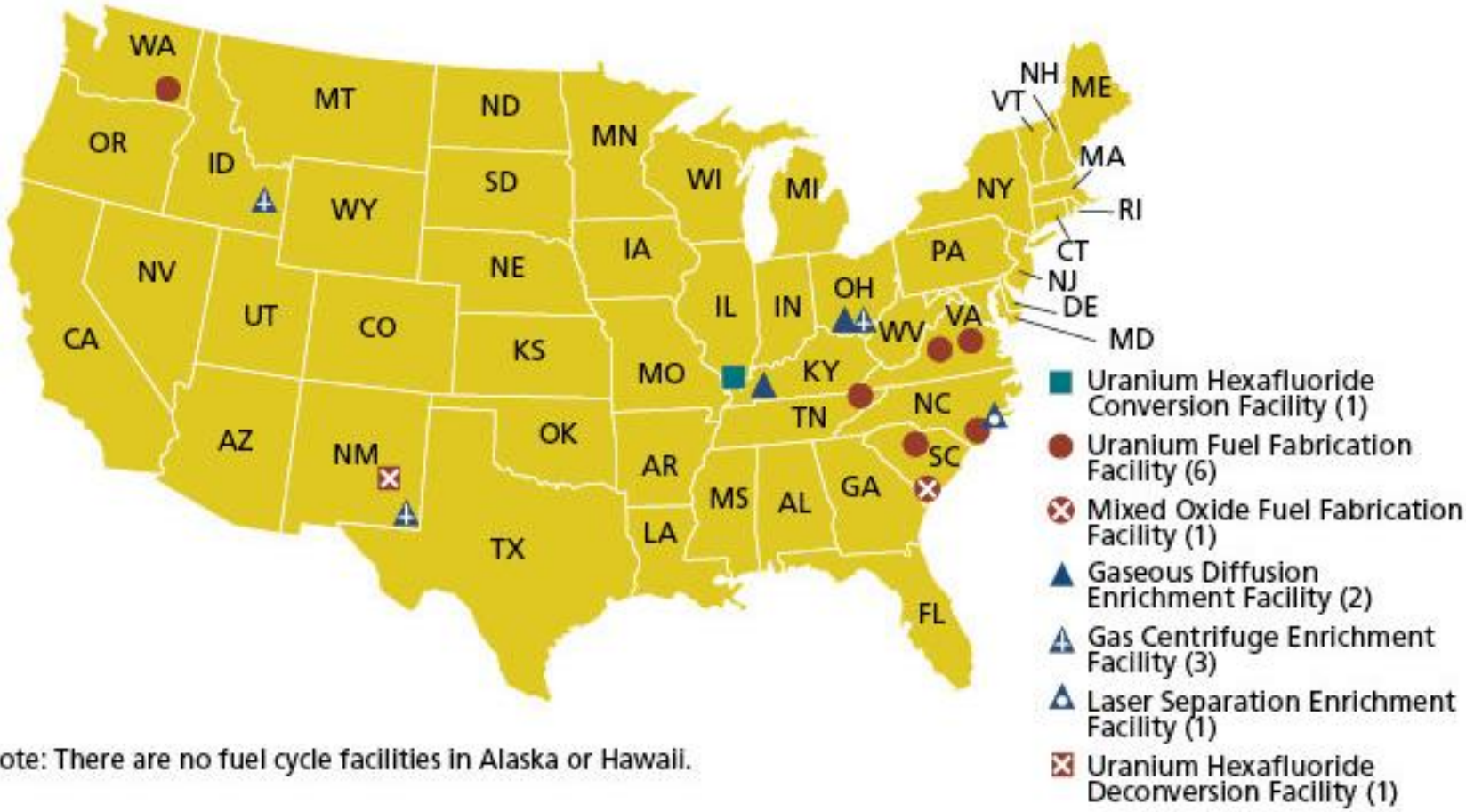


- Concise paper comparing Integrated Safety Analyses (ISAs) for fuel facilities and Probabilistic Risk Assessments (PRAs) for reactors
- Make modest adjustments to the existing oversight program to enhance its effectiveness and efficiency.
- Develop a set of cornerstones that could be applied to the fuel cycle oversight process (FCOP).
- Provide an assessment of the work accomplished and recommendations for next steps.

# Fuel Cycle Facilities



## Locations of Fuel Cycle Facilities




Note: There are no fuel cycle facilities in Alaska or Hawaii.

U.S.NRC

United States Nuclear Regulatory Commission

*Protecting People and the Environment*

# FUEL CYCLE OVERSIGHT PROCESS ENHANCEMENTS

Presentation to the ACRS Subcommittee on Radiation Protection and Nuclear Materials

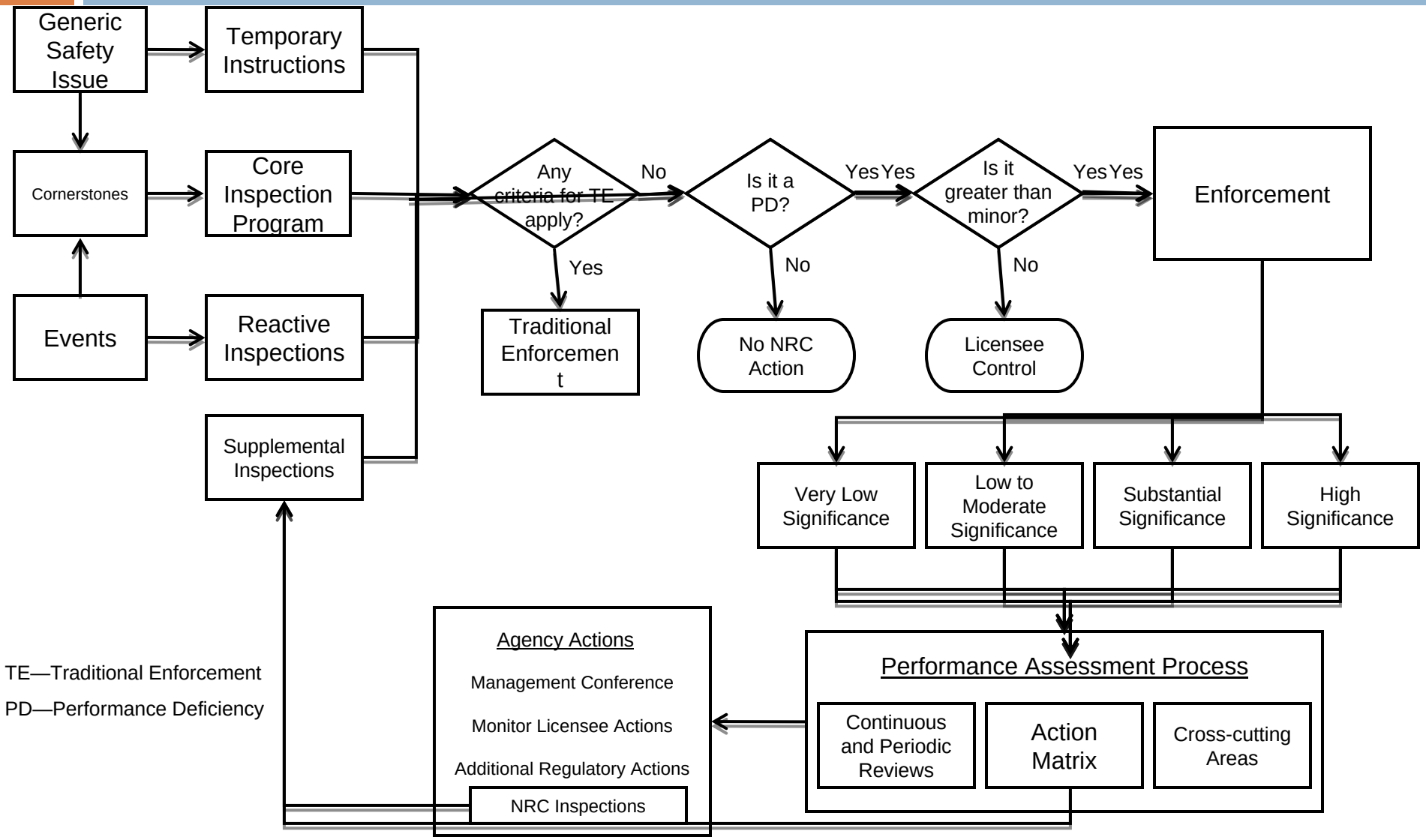
September 23, 2011

Jonathan DeJesus

NMSS/FCSS

# Conceptual Diagram of Enhanced Diagram of Current FCOP FCOP





United States Nuclear Regulatory Commission

*Protecting People and the Environment*

# CORNERSTONE OPTIONS FOR ENHANCING THE FUEL CYCLE OVERSIGHT PROCESS

Presentation to the ACRS Subcommittee on Radiation Protection and Nuclear Materials

September 23, 2011

Doug Collins

NMSS/FCSS

# Further Cornerstone Development



- Outline Goals and Interests for a Set of Cornerstones Organized according to how Licensees did their Hazards Analysis for the Integrated Safety Analyses (ISAs)
- Discuss this Hazards Analysis-Based Set of Cornerstones
- Review Operations-Based Cornerstones Discussed in June Meeting
- Outline Pros and Cons of Hazards Analysis-Based and Operations-Based Cornerstones
- Answer Questions

# Cornerstone Goals and Interests



- Meet the Commission's Direction
- Based on the Strategic Plan
- Result in Similar Oversight Frameworks across NRC Offices
- Responsive to Internal Stakeholder Comments
- Specific to Fuel Cycle Safety and Security
- Risk-Informed, Performance-Based, Objective, Predictable, Repeatable, and Transparent

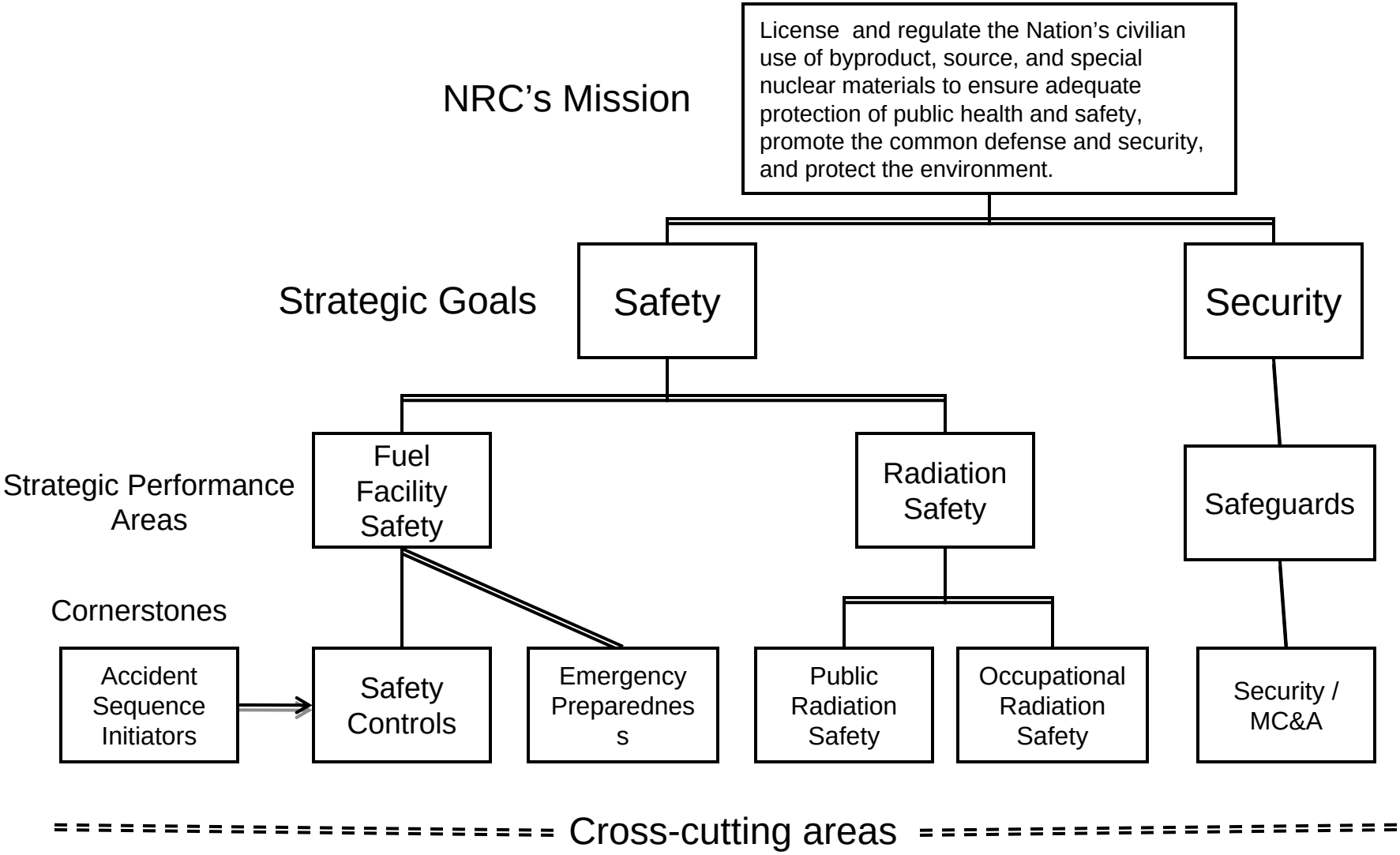
# Hazards Analysis-Based Cornerstones



- Accident Sequence Initiators
- Safety Controls
- Emergency Preparedness
- Public Radiation Safety
- Occupational Radiation Safety
- Security/Material Control and Accounting

# Cornerstones – Hazards Analysis-Based





# Accident Sequence Initiators Cornerstone



- Accident Sequence
  - Process deviations
  - Other events internal to the facility
  - Credible external events
- Accident Sequence Initiators
  - Sequence of specific real events
  - Initiating event
  - Enablers (propagating events)
  - Controls (risk reduction factors)

# Accident Sequence Initiators Cornerstone Objectives



- The objectives of this cornerstone are to ensure that a licensee:

- limits the frequency of accident sequence initiators that lead to the need for IROFS, nuclear criticality safety (NCS) controls, or other safety controls. The ISA or safety analysis assumed a frequency for accident sequence initiators in establishing IROFS, NCS controls, and other safety controls. These IROFS, NCS controls, and other safety controls would be required by the license or 10 CFR Part 70 as a result of the safety analysis, ISA or NCS analysis showing that they are needed to limit the likelihood of intermediate or high consequence accidents or prevent a nuclear criticality accident.

# Accident Sequence Initiators Cornerstone Objectives (continued)



- evaluates and limits, as appropriate, accident sequence initiators that are not required to be limited or controlled by IROFS, NCS controls, or other safety controls (non-IROFS). These are accident sequence initiators that the licensee has determined do not need to be prevented or have their likelihood limited based on the ISA. This could be because the ISA shows that they may be allowed to occur without causing likelihoods or consequences defined in Part 70.
- has identified in the ISA or safety analysis all accident sequence initiators associated with uses of licensed materials and has appropriately assessed the accident sequences to identify those which require IROFS, NCS controls, or other safety controls to prevent or mitigate intermediate or high consequence events and prevent nuclear criticalities.

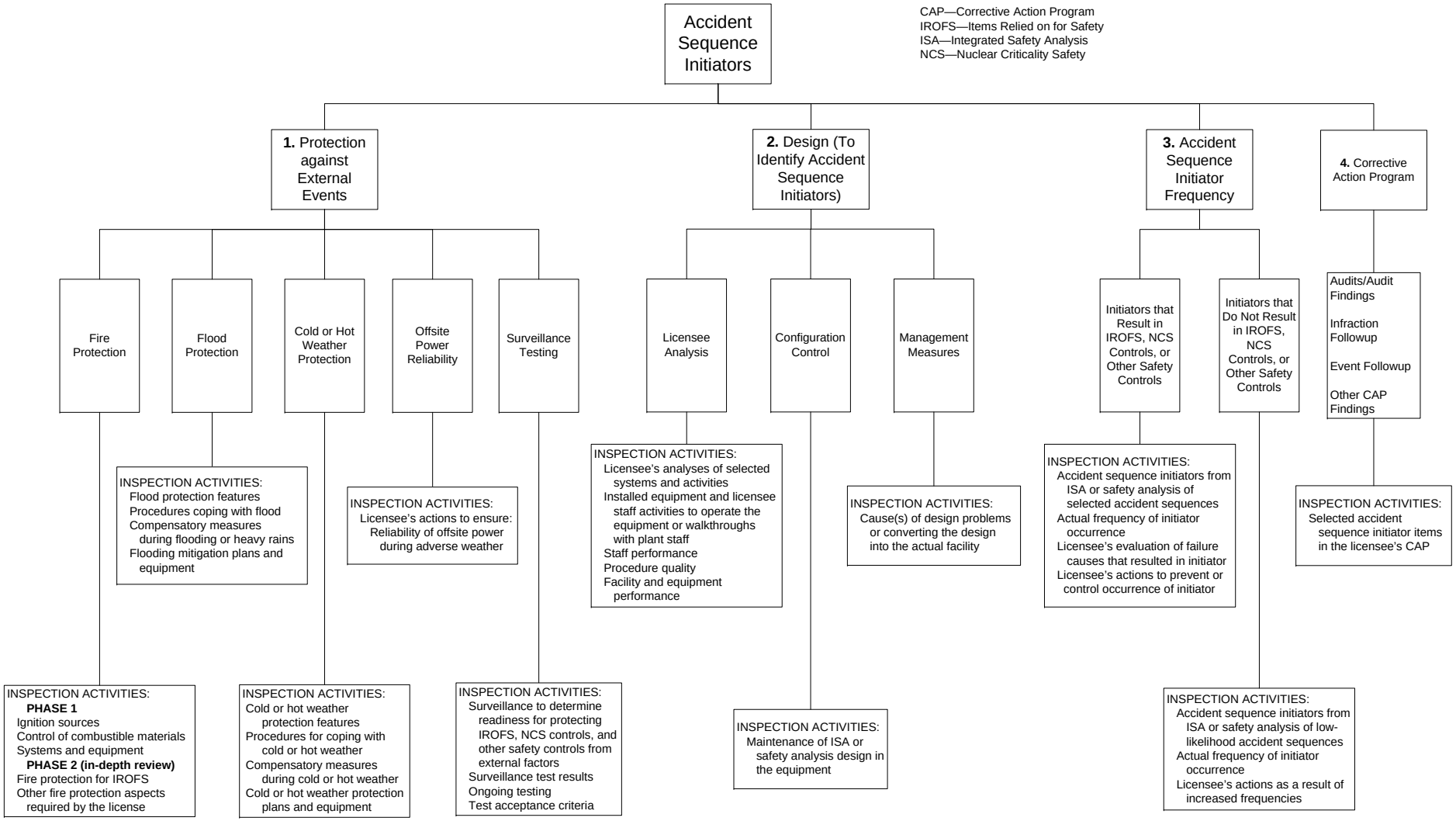
# Accident Sequence Initiators Cornerstone Key Attributes



- Protection Against External Events
- Design (to Identify Accident Sequence Initiators)
- Accident Sequence Initiator Frequency
- Corrective Action Program

# Accident Sequence Initiators Diagram





# Safety Controls Cornerstone Objective



- The objective of this cornerstone is to ensure the availability, reliability, and capability of items relied on for safety (IROFS), nuclear criticality safety (NCS) controls, or other safety controls. These IROFS, NCS controls, and other safety controls prevent, limit the frequency of, or mitigate accident sequences that could lead to intermediate or high consequence events or a nuclear criticality.

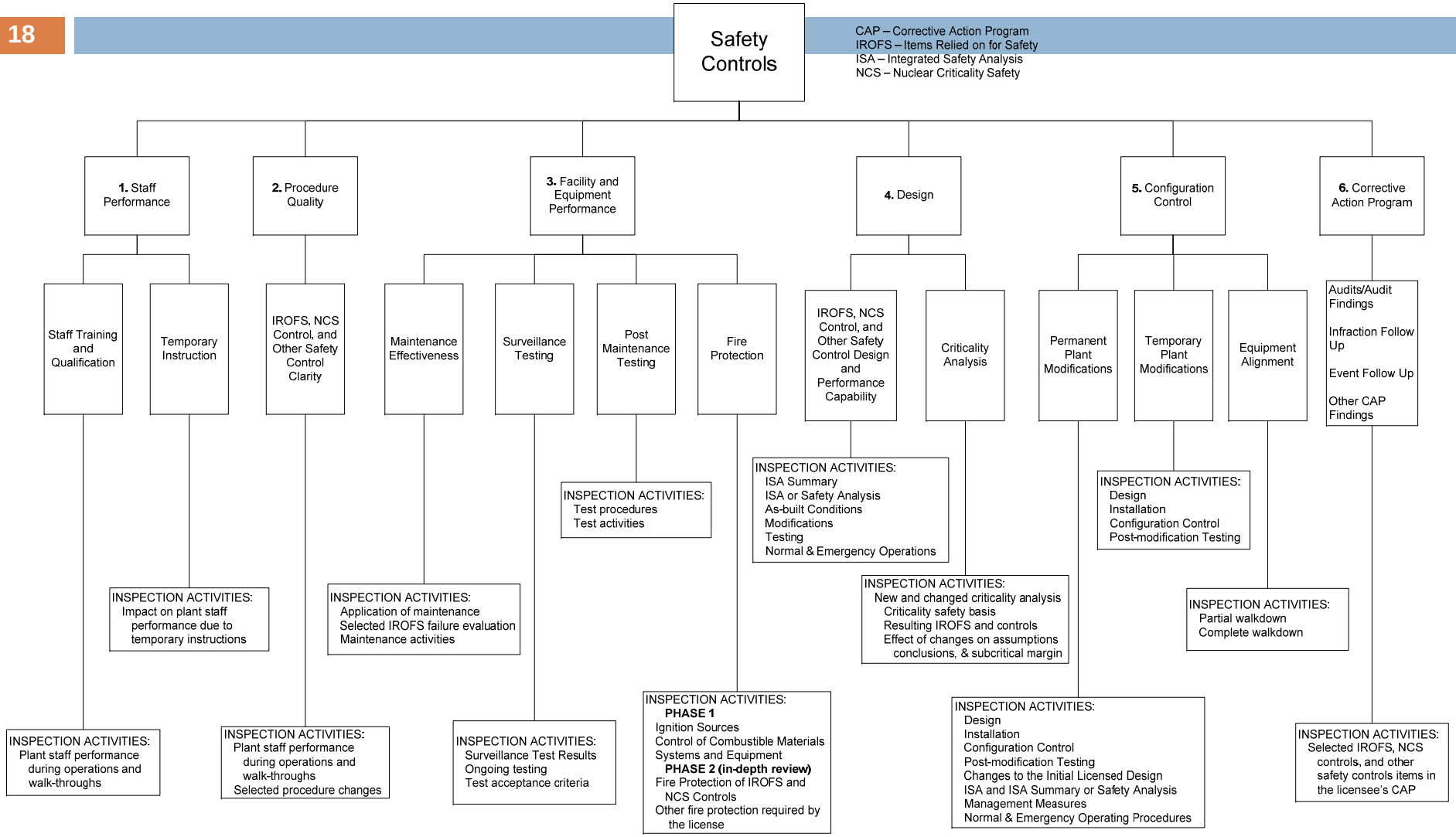
# Safety Controls Cornerstone Key Attributes



- Staff Performance
- Procedure Quality
- Facility and Equipment Performance
- Design
- Configuration Control
- Corrective Action Program

# Safety Controls Diagram





# Remaining Hazards Analysis-Based Cornerstones



- Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Security/Material Control and Accounting (MC&A)
- Remain essentially the same as they were in the materials we provided at and after the last meeting
- Changed “Worker” to “Occupational” to be consistent with ROP terminology
- Propose one cornerstone for physical and information security and MC&A

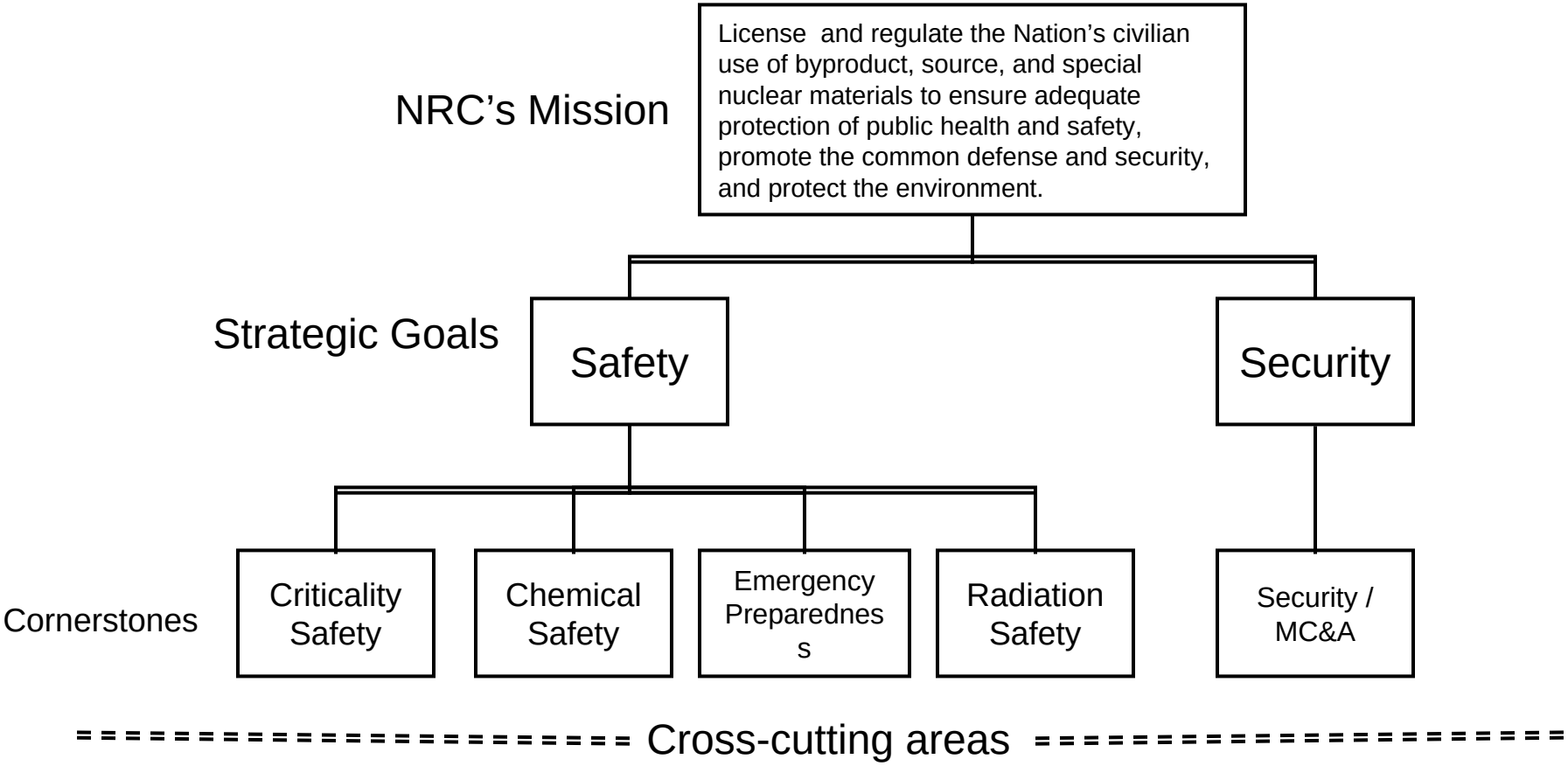
# Current Version of June Cornerstones (Operations-Based)



- Criticality Safety
- Chemical Safety
- Radiation Safety
- Emergency Preparedness
- Security/Material Control and Accounting (MC&A)

# Cornerstones – Operations-Based





# Goals or Interests Both Options Meet



- Both options meet the Commission direction.
- Both options would result in a process that gives reasonable assurance that the Strategic Plan mission, goals, and strategic outcomes would be met.

# Pros and Cons for Hazards Analysis-Based Cornerstones



Pros:

- Results in oversight frameworks across NRC program areas that are very similar which should result in simpler and more effective communication and understanding.
- Organized in the way licensees did the hazard analysis and controls development in the ISA.
- Key attributes for ISA-related activities are integrated into cornerstones that reflect the way licensees' ISAs were developed and are maintained.
- Cornerstones will be consistent across types of licensees (not have to delete Criticality Safety cornerstone for some licensees).

Cons:

- Because of the complexity of the Accident Sequence Initiator cornerstone, stakeholder communications regarding this cornerstone could be difficult.
- "Accident Sequence Initiators" is not the same as "Initiating Events" and might be assumed to be by some internal and external stakeholders.

# Pros and Cons for Operations-Based Cornerstones



Pros:

- Organized along safety program lines similar to the safety areas in 10 CFR Part 70 and how licensees implement safety at plants.
- Easier to communicate with stakeholders because it uses day-to-day operations structure.

Cons:

- Key attributes for ISA-related inspections are similar across cornerstones, thus separating what might be common inspection into separate areas. A failure in design would impact several cornerstones and thus could move the licensee across an action matrix for a problem in one area of performance.
- This would result in two very different regulatory frameworks for oversight in the agency (FCOP and ROP) when having the different frameworks is not necessary.
- Cornerstones will not be the same across licensees (Criticality Safety cornerstone not applicable to processors of natural uranium).

# Summary



- Based on internal stakeholder comment, staff developed a hazards analysis-based set of cornerstones.
- Staff recognizes licensees would prefer the operations-based cornerstones because they believe this set would result in better communication with workers and members of the public surrounding their facilities.

United States Nuclear Regulatory Commission

*Protecting People and the Environment*

# FUEL CYCLE SIGNIFICANCE DETERMINATION PROCESS (FCSDP)

Presentation to the ACRS Subcommittee on Radiation Protection and Nuclear Materials

September 23, 2011

Dennis Damon

NMSS/FCSS

# SDP Types



- SDP types applicable to ISA-related cornerstones
  - Criticality, Chemical, and Radiation Safety (10 CFR 70.61)
  - Accident Sequence Initiators, Safety Controls
- SDP types would apply to both cornerstone options
- Deterministic
  - Emergency Preparedness
  - Radiation Protection (10 CFR Part 20)
  - Security
  - Material Control and Accounting

# SDP Types



- Desired characteristics of an SDP
  - Realistic/accurate
  - Practicable
  - Consistent
- Discussion of three conceptual types of SDPs
  - Deterministic Type
  - Case-by-case Type
  - PRA-based Type

# Deterministic Type



- Based on qualitative criteria, not numbers
- But would have similar risk and safety significance objectives to other types
- Perhaps based on a refined risk-index defense-in-depth method
- Pros:
  - Simpler and less resource intensive than case-by-case and PRA-based types
  - Assignment of controls to general categories more objective than justifying generic failure data to plant-specific controls
  - Standardized, hence consistent across licensees
- Cons:
  - Less informed by analysis and data, hence less precise

# Case-by-Case Type



- Evaluate risk and safety significance of each finding when it occurs
- Adjust ISA results using standardized NRC guidance and data
- Could be simplified quantitative method
- Pros:
  - Reasonably accurate
  - Standardized, hence consistent across licensees
  - Less resource intensive than PRA-based type
  - Could be more generic and simplified than plant-specific PRA
- Cons:
  - Quantitative risk technology for fuel cycle is underdeveloped
  - Hence, requires some quantitative development resources
  - Limited time to do risk assessment on which evaluation is based

# PRA-Based Type



- Requires full PRA for all processes at all facilities
- Requires inspector notebooks for performing significance evaluation

- Pros:
  - Based on licensee PRA, thus most informed and precise basis

- Cons:
  - Requires orders of magnitude more resources
  - PRAs would not be standardized, hence significance might not be consistent
  - Quantitative risk technology for fuel cycle is underdeveloped

# Initial Suggestion



- Preferred alternative
  - Deterministic Type SDP

U.S.NRC

United States Nuclear Regulatory Commission

*Protecting People and the Environment*

# CONCLUSION AND RECOMMENDATION

Presentation to the ACRS Subcommittee on Radiation Protection and Nuclear Materials

September 23, 2011

Jonathan DeJesus

FCOP Enhancement Project Manager

# Commission Direction



- Concise paper comparing ISAs for fuel facilities and PRAs for reactors
- Make modest adjustments to the existing oversight program to enhance its effectiveness and efficiency.
- Develop a set of cornerstones that could be applied to the FCOP.
- Provide an assessment of the work accomplished and recommendations for next steps.

# Conclusion and Recommendation

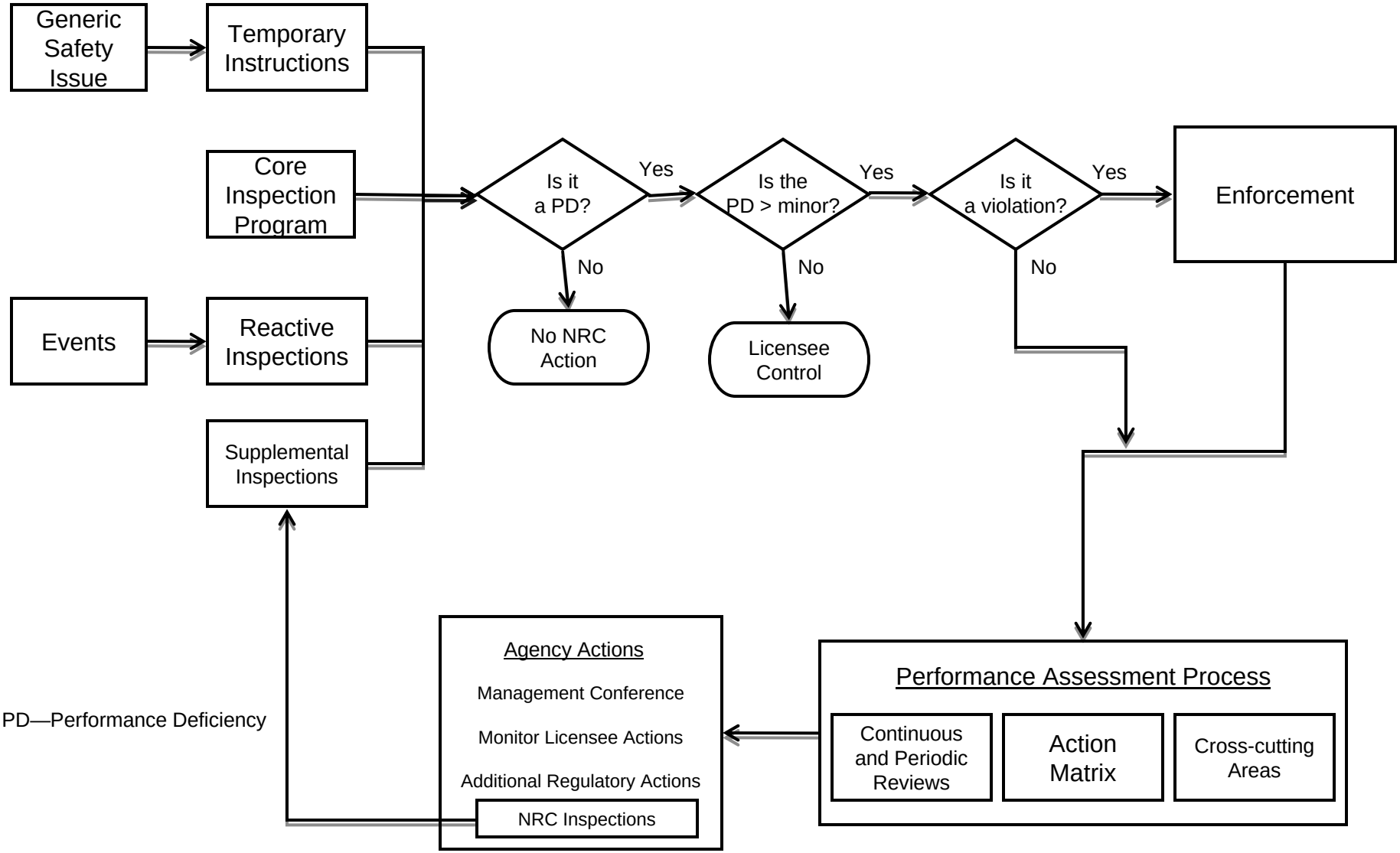


- Further development of all cornerstones in the hazards analysis-based option
- Begin use of the performance deficiency concept
- Develop the deterministic type SDP
- Develop a performance assessment process based on SDP that includes an action matrix and considers cross-cutting areas
- Develop a supplemental inspection program based on licensee performance
- Further revise the Enforcement Policy

# BACKUP SLIDES

# Conceptual Diagram for Alternative






PD—Performance Deficiency

# FUEL FACILITY VIEWS ON THE FUEL CYCLE OVERSIGHT PROCESS

Presented by Gerard Couture, Westinghouse

ACRS Subcommittee on Radiation Protection and Nuclear Materials

September 23, 2011

NEI
NUCLEAR ENERGY INSTITUTE

# Fuel Cycle Oversight Process (FCOP) Framework

- No “safety deficiency” with current oversight process – facilities operating safely
- Concerned with revolutionary approach - resource intensive and overly complex – Smart application of resources?
- Best approach is evolutionary  and structured to consume minimal increase in NRC and licensee resources
- Concerned with proposed definition of performance deficiency

# Corrective Action Program (CAP)

- NRC and industry essentially aligned on importance and use of effective CAP
- Industry willing to generate a CAP guidance document for NRC endorsement, once the Commission provides direction and NRC resources are available

# Cornerstones

- Concerned with complexity and public's ability to understand process
- Concerned with use of color coding system and false parallel to reactors - risk profile of reactor and fuel facility not comparable
- Should rely solely on descriptive terms (e.g., very low, low safety significance)

# Industry Recommendations* to Enhance the FCOP

- Better integrate ISA knowledge – risk significance of plant conditions
- Gain efficiencies in baseline inspection program
- Conduct timely reviews of ISA updates
- Annual Licensee Performance Reviews should be easily understandable for all stakeholders

*See letter dated March 29, 2011 from Janet Schlueter, NEI to Marissa Bailey, NRC

# Regulatory Initiatives Requiring NRC and Stakeholder Support

| FUEL CYCLE OVERSIGHT PROCESS |
|---|
| Enhance NRC's Fuel Cycle Oversight Process (FCOP) |
| Safety Culture Implementation |
| Revise Enforcement Policy to Reflect CAP |

| REGULATORY INITIATIVES |
|---|
| Temporary Instruction (TI) for beyond design basis events under development |
| Part 70 Appendix A Petition for Rulemaking |
| Part 70.72 DG-3037–Facility Change Process |
| Soluble Uranium Intake Draft Guidance |
| Chemical Dermal Exposure Standards |
| Design features in ISA (versus IROFS) |
| Unplanned contamination events |
| Onsite medical treatment of contaminated workers |
| Changes during Construction (CdC) |
| DG-8040 HP Surveys at Enrichment & Fuel Fabrication facilities |
| DG-4018 on Airborne Releases |
| DG-7007, Administrative Procedures for RAM shipment/receipt |
| DG-7008, Leakage tests of packages for shipments of RAM |

| RULEMAKINGS |
|---|
| Proposed Part 40 Rulemaking |
| Part 61 Preliminary Rule |
| Part 61 Rulemaking to risk inform NRC's LLW regulations |
| Potential Rulemaking on Prompt Remediation |
| Part 21- Reporting of Fraudulent Parts |
| Decommissioning Planning Rule |
| Part 20 Radiation Protection Regulations |
| EPA 40 CFR Part 190 & 192 |
| DOT Rulemaking to harmonize with TS-R-1 |
| Part 110 Final rule on import/export |

| SECURITY INITIATIVES/RULEMAKINGS |
|---|
| Cyber security assessments |
| Part 73 Rulemaking for Enhanced Weapons and Security Event notifications |
| Part 74 Preliminary Rule language for Material Control & Accounting |
| Part 73 Rulemaking for Fuel Cycle Security |
| Potential Rulemaking on Chemical Security |
| Update Counterintelligence aspects of NEI 08-11 |
| Part 37 Rulemaking on Physical Protection of Category 1 and 2 sources |
| PRM on Part 70 by American Physical Society on non-proliferation assessments |
| Fall 2011 Information Security Workshop |
| Potential Part 95 Rulemaking on Classified Information |

# Industry Summary

- Incremental changes to FCOP are most appropriate and likely achievable within existing resources or with a minimal increase, in the absence of an identified safety concern
- NRC and industry need to prioritize this NRC-led effort in view of numerous ongoing regulatory initiatives, some of which began before FCOP and industry consider to be a higher priority than FCOP

# Backup Slide

# Industry Proposed Definition of Performance Deficiency

- "An occurrence at or the state of a licensed facility that is the result of a licensee not meeting a regulatory requirement or license commitment. If the occurrence or state is of low to no safety significance and the licensee identified (including events) the occurrence or state and is managing them in accordance with their Corrective Action Program this would not constitute a Performance Deficiency."